Mathematica 11.3 Integration Test Results

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

Problem 35: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 59 leaves):

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

Problem 36: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 59 leaves) :

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

Problem 37: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 59 leaves) :

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

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

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

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

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

Result (type 3, 37 leaves):

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

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

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

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

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

Result (type 3, 67 leaves):

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

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

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

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

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

Result (type 3, 69 leaves):

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

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

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

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

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

Result (type 3, 77 leaves):

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

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

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

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

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

Result (type 3, 98 leaves):

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

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

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

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

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

Result (type 3, 84 leaves):

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

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

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

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

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

Result (type 3, 116 leaves):

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

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

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

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

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

Result (type 3, 31 leaves):

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

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

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

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

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

Result (type 3, 90 leaves):

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

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

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

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

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

Result (type 3, 132 leaves):

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

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

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

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

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

Result (type 3, 219 leaves):

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

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

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

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

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

Result (type 3, 75 leaves):

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

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

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

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

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

Result (type 3, 143 leaves):

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

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

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

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

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

Result (type 3, 205 leaves):

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

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

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

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

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

Result (type 3, 121 leaves):

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

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

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

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

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

Result (type 3, 103 leaves):

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

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

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

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

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

Result (type 3, 93 leaves):

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

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

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

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

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

Result (type 3, 148 leaves):

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

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

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

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

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

Result (type 3, 215 leaves):

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

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

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

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

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

Result (type 3, 277 leaves):

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

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

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

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

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

Result (type 3, 113 leaves):

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

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

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

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

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

Result (type 3, 113 leaves):

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

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

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

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

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

Result (type 3, 190 leaves):

$$-\frac{7\,\mathrm{Csc}\left[\frac{1}{2}(a+b x)\right]^2}{32 b}-\frac{\mathrm{Csc}\left[\frac{1}{2}(a+b x)\right]^4}{64 b}-\frac{15\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(a+b x)\right]\right]}{8 b}+\frac{15\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{8 b}+\frac{7\,\mathrm{Sec}\left[\frac{1}{2}(a+b x)\right]^2}{32 b}+\frac{\mathrm{Sec}\left[\frac{1}{2}(a+b x)\right]^4}{64 b}+\frac{\mathrm{Sin}\left[\frac{1}{2}(a+b x)\right]}{b\left(\mathrm{Cos}\left[\frac{1}{2}(a+b x)\right]-\mathrm{Sin}\left[\frac{1}{2}(a+b x)\right]\right)}-\frac{\mathrm{Sin}\left[\frac{1}{2}(a+b x)\right]}{b\left(\mathrm{Cos}\left[\frac{1}{2}(a+b x)\right]+\mathrm{Sin}\left[\frac{1}{2}(a+b x)\right]\right)}$$

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

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

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

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

Result (type 3, 268 leaves):

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

Problem 243: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 78 leaves):

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

Problem 245: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 65 leaves):

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

Problem 246: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 76 leaves):

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

Problem 247: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 62 leaves):

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

Problem 248: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 69 leaves):

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

Problem 249: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 91 leaves):

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

Problem 250: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 92 leaves):

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

Problem 251: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 102 leaves):

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

Problem 257: Result unnecessarily involves higher level functions.

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

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

$$\frac{7\,d^3\,\left(d\,\text{Cos}[a+b\,x]\right)^{3/2}\left(c\,\text{Sin}[a+b\,x]\right)^{3/2}}{30\,b\,c}+\frac{d\,\left(d\,\text{Cos}[a+b\,x]\right)^{7/2}\left(c\,\text{Sin}[a+b\,x]\right)^{3/2}}{5\,b\,c}+\frac{7\,d^4\,\sqrt{d\,\text{Cos}[a+b\,x]}\,\text{EllipticE}\left[a-\frac{\pi}{4}+b\,x,2\right]\sqrt{c\,\text{Sin}[a+b\,x]}}{20\,b\,\sqrt{\text{Sin}[2\,a+2\,b\,x]}}$$

Result (type 5, 109 leaves):

$$\left(d^4\,\sqrt{d\,\text{Cos}[a+b\,x]}\,\sqrt{c\,\text{Sin}[a+b\,x]}\left(-14\,\text{Hypergeometric2F1}\left[\frac{1}{4},\frac{3}{4},\frac{7}{4},\text{Cos}[a+b\,x]^2\right]\text{Sin}\left[2\,(a+b\,x)\right]+\left(\text{Sin}[a+b\,x]^2\right)^{3/4}\left(20\,\text{Sin}\left[2\,(a+b\,x)\right]+3\,\text{Sin}\left[4\,(a+b\,x)\right]\right)\right)\right)\Big/\left(120\,b\,\left(\text{Sin}[a+b\,x]^2\right)^{3/4}\right)$$

Problem 258: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 87 leaves):

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

Problem 259: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 69 leaves):

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

Problem 260: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 92 leaves):

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

Problem 261: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 110 leaves):

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

Problem 262: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 82 leaves):

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

Problem 263: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 67 leaves):

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

Problem 267: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 85 leaves):

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

Problem 268: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 67 leaves):

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

Problem 269: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 93 leaves):

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

Problem 270: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 103 leaves):

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

Problem 271: Result unnecessarily involves higher level functions.

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

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

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

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

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

Result (type 5, 80 leaves):

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

Problem 272: Result unnecessarily involves higher level functions.

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

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

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

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

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

Result (type 5, 89 leaves):

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

Problem 276: Result unnecessarily involves higher level functions.

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

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

$$\frac{c d^3 (d \operatorname{Cos}[a+b x])^{3/2} (c \operatorname{Sin}[a+b x])^{3/2}}{20 b} + \frac{3 c d (d \operatorname{Cos}[a+b x])^{7/2} (c \operatorname{Sin}[a+b x])^{3/2}}{70 b} - \frac{c (d \operatorname{Cos}[a+b x])^{11/2} (c \operatorname{Sin}[a+b x])^{3/2}}{7 b d} + \frac{3 c^2 d^4 \sqrt{d \operatorname{Cos}[a+b x]} \operatorname{EllipticE}\left[a-\frac{\pi}{4}+b x, 2\right] \sqrt{c \operatorname{Sin}[a+b x]}}{40 b \sqrt{\operatorname{Sin}[2 a+2 b x]}}$$

Result (type 5, 122 leaves):

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

Problem 277: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 99 leaves):

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

Problem 278: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 85 leaves):

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

Problem 279: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 85 leaves):

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

Problem 280: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 111 leaves) :

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

Problem 281: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 119 leaves) :

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

Problem 282: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 82 leaves):

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

Problem 283: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 88 leaves):

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

Problem 287: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 94 leaves):

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

Problem 289: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 36 leaves):

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

Problem 290: Result unnecessarily involves higher level functions.

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

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

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

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

Result (type 5, 49 leaves):

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

Problem 291: Result unnecessarily involves higher level functions.

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

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

$$\frac{5\,d^3\sqrt{d\,\text{Cos}[a+b\,x]}\sqrt{c\,\text{Sin}[a+b\,x]}}{6\,b\,c}+$$

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

Result (type 5, 140 leaves):

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

Problem 292: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 69 leaves):

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

Problem 293: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 67 leaves):

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

Problem 294: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 104 leaves):

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

Problem 295: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 103 leaves):

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

Problem 296: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 69 leaves):

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

Problem 300: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 57 leaves):

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

Problem 301: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 78 leaves):

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

Problem 302: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 80 leaves):

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

Problem 303: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 93 leaves):

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

Problem 324: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 57 leaves):

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

Problem 325: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 55 leaves):

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

Problem 326: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 83 leaves):

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

Problem 327: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 81 leaves):

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

Problem 328: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 80 leaves):

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

Problem 329: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 57 leaves):

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

Problem 330: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 57 leaves):

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

Problem 331: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 78 leaves):

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

Problem 332: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 80 leaves):

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

Problem 333: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 80 leaves):

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

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

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

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

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

Result (type 5, 158 leaves):

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

Problem 450: Result unnecessarily involves higher level functions.

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

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

$$-\frac{1}{32\sqrt{2}\sqrt{b}\,f}21\,a^{9/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{b}\sqrt{a\,\text{Sin}[e+f\,x]}}{\sqrt{a}\sqrt{b\,\text{Cos}[e+f\,x]}}\right]\sqrt{b\,\text{Cos}[e+f\,x]}\sqrt{b\,\text{Sec}[e+f\,x]}+\frac{1}{32\sqrt{2}\sqrt{b}\,f}21\,a^{9/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{b}\sqrt{a\,\text{Sin}[e+f\,x]}}{\sqrt{a}\sqrt{b\,\text{Cos}[e+f\,x]}}\right]\sqrt{b\,\text{Cos}[e+f\,x]}\sqrt{b\,\text{Sec}[e+f\,x]}+\frac{1}{64\sqrt{2}\sqrt{b}\,f}21\,a^{9/2}\sqrt{b\,\text{Cos}[e+f\,x]}\,\text{Log}\left[\sqrt{a}-\frac{\sqrt{2}\sqrt{b}\sqrt{a\,\text{Sin}[e+f\,x]}}{\sqrt{b\,\text{Cos}[e+f\,x]}}+\sqrt{a}\,\text{Tan}[e+f\,x]\right]\sqrt{b\,\text{Sec}[e+f\,x]}-\frac{1}{64\sqrt{2}\sqrt{b}\,f}21\,a^{9/2}\sqrt{b\,\text{Cos}[e+f\,x]}\,\text{Log}\left[\sqrt{a}+\frac{\sqrt{2}\sqrt{b}\sqrt{a\,\text{Sin}[e+f\,x]}}{\sqrt{b\,\text{Cos}[e+f\,x]}}+\sqrt{a}\,\text{Tan}[e+f\,x]\right]\sqrt{b\,\text{Sec}[e+f\,x]}-\frac{7\,a^3\,b\,(a\,\text{Sin}[e+f\,x])^{3/2}}{16\,f\sqrt{b\,\text{Sec}[e+f\,x]}}-\frac{a\,b\,(a\,\text{Sin}[e+f\,x])^{7/2}}{4\,f\sqrt{b\,\text{Sec}[e+f\,x]}}$$

Result (type 5, 109 leaves):

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

Problem 451: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 87 leaves):

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

Problem 452: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 67 leaves):

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

Problem 456: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 90 leaves):

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

Problem 457: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 83 leaves):

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

Problem 458: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 66 leaves):

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

Problem 459: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 75 leaves):

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

Problem 460: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 111 leaves):

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

Problem 461: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 99 leaves):

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

Problem 462: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 86 leaves):

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

Problem 463: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 75 leaves):

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

Problem 464: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 64 leaves):

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

Problem 465: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 84 leaves):

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

Problem 466: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 75 leaves):

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

Problem 467: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 60 leaves):

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

Problem 472: Result unnecessarily involves higher level functions.

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

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

$$-\frac{1}{128\sqrt{2}\,b^{5/2}\,f}7\,a^{9/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{a\,\text{Sin}[e+f\,x]}}{\sqrt{a}\,\sqrt{b\,\text{Cos}[e+f\,x]}}\right]\sqrt{b\,\text{Cos}[e+f\,x]}\,\sqrt{b\,\text{Sec}[e+f\,x]}+$$

$$\frac{7\,a^{9/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{a\,\text{Sin}[e+f\,x]}}{\sqrt{a}\,\sqrt{b\,\text{Cos}[e+f\,x]}}\right]\sqrt{b\,\text{Cos}[e+f\,x]}\,\sqrt{b\,\text{Sec}[e+f\,x]}}{128\sqrt{2}\,b^{5/2}\,f}+\frac{1}{256\sqrt{2}\,b^{5/2}\,f}$$

$$7\,a^{9/2}\sqrt{b\,\text{Cos}[e+f\,x]}\,\text{Log}\left[\sqrt{a}-\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{a\,\text{Sin}[e+f\,x]}}{\sqrt{b\,\text{Cos}[e+f\,x]}}+\sqrt{a}\,\text{Tan}[e+f\,x]\right]\sqrt{b\,\text{Sec}[e+f\,x]}-$$

$$\frac{1}{256\sqrt{2}\,b^{5/2}\,f}7\,a^{9/2}\sqrt{b\,\text{Cos}[e+f\,x]}\,\text{Log}\left[\sqrt{a}+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{a\,\text{Sin}[e+f\,x]}}{\sqrt{b\,\text{Cos}[e+f\,x]}}+\sqrt{a}\,\text{Tan}[e+f\,x]\right]$$

$$\sqrt{b\,\text{Sec}[e+f\,x]}-\frac{7\,a^3\,(a\,\text{Sin}[e+f\,x])^{3/2}}{192\,b\,f\sqrt{b\,\text{Sec}[e+f\,x]}}-\frac{a\,(a\,\text{Sin}[e+f\,x])^{7/2}}{48\,b\,f\sqrt{b\,\text{Sec}[e+f\,x]}}+\frac{(a\,\text{Sin}[e+f\,x])^{11/2}}{6\,a\,b\,f\sqrt{b\,\text{Sec}[e+f\,x]}}$$

Result (type 5, 125 leaves):

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

Problem 473: Result unnecessarily involves higher level functions.

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

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

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

$$\frac{3\,a^{5/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{a\,\text{Sin}[e+f\,x]}}{\sqrt{a}\,\sqrt{b\,\text{Cos}[e+f\,x]}}\right]\sqrt{b\,\text{Cos}[e+f\,x]}\,\sqrt{b\,\text{Sec}[e+f\,x]}}{32\sqrt{2}\,b^{5/2}\,f}+\frac{1}{64\sqrt{2}\,b^{5/2}\,f}$$

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

$$\frac{1}{64\sqrt{2}\,b^{5/2}\,f}3\,a^{5/2}\sqrt{b\,\text{Cos}[e+f\,x]}\,\text{Log}\left[\sqrt{a}+\frac{\sqrt{2}\,\sqrt{b}\,\sqrt{a\,\text{Sin}[e+f\,x]}}{\sqrt{b\,\text{Cos}[e+f\,x]}}+\sqrt{a}\,\text{Tan}[e+f\,x]\right]$$

$$\sqrt{b\,\text{Sec}[e+f\,x]}-\frac{a\,(a\,\text{Sin}[e+f\,x])^{3/2}}{16\,b\,f\sqrt{b\,\text{Sec}[e+f\,x]}}+\frac{(a\,\text{Sin}[e+f\,x])^{7/2}}{4\,a\,b\,f\sqrt{b\,\text{Sec}[e+f\,x]}}$$

Result (type 5, 93 leaves):

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

Problem 474: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 82 leaves):

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

Problem 475: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 89 leaves):

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

Problem 477: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 103 leaves):

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

Problem 478: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 87 leaves):

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

Problem 479: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 84 leaves):

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

Problem 480: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 78 leaves):

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

Problem 481: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 119 leaves):

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

Problem 482: Result unnecessarily involves higher level functions.

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

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

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

Result (type 5, 131 leaves):

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

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

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

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

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

Result (type 6, 2938 leaves):

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

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

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

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

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

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

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

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

Result (type 6, 2946 leaves):

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Result (type 6, 2940 leaves):

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$(3+m)\Big(-\frac{1}{3+m}(1+m)(1+m-n)\,\text{AppellF1}\left[1+\frac{1+m}{2},n,2+m-n,1+\frac{3+m}{2},\right.$$

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

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

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

$$\Big((1+m-n)\Big(-\frac{1}{5+m}(3+m)(2+m-n)\,\text{AppellF1}\left[1+\frac{3+m}{2},n,3+m-n,1+\frac{5+m}{2},\right.$$

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

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

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

$$n\Big(-\frac{1}{5+m}(3+m)(1+m-n)\,\text{AppellF1}\left[1+\frac{3+m}{2},1+n,2+m-n,1+\frac{5+m}{2},\right.$$

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

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

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

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

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

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

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

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

Result (type 6, 2948 leaves):

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

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

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

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

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

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

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

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

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

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

$$\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2\Big]\,\mathrm{Sec}\left[\tfrac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]+$$

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

$$-\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2\Big]\,\mathrm{Sec}\left[\tfrac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Big/$$

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

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

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

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

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

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

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

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

$$\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2\Big]\Bigg)\,\mathrm{Sec}\left[\tfrac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]+$$

$$(3+m)\,\Bigg(-\frac{1}{3+m}(1+m)\,(1+m-n)\,\mathrm{AppellF1}\Big[1+\frac{1+m}{2},n,2+m-n,1+\frac{3+m}{2},$$

$$\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2\Big]\,\mathrm{Sec}\left[\tfrac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]+$$

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

$$-\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2\Big]\,\mathrm{Sec}\left[\tfrac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]\Bigg)-2\,\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2$$

$$\Bigg((1+m-n)\,\Bigg(-\frac{1}{5+m}(3+m)\,(2+m-n)\,\mathrm{AppellF1}\Big[1+\frac{3+m}{2},n,3+m-n,1+\frac{5+m}{2},$$

$$\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2\Big]\,\mathrm{Sec}\left[\tfrac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]+$$

$$\frac{1}{5+m}(3+m)\,n\,\mathrm{AppellF1}\Big[1+\frac{3+m}{2},1+n,2+m-n,1+\frac{5+m}{2},$$

$$\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]^2\Big]\,\mathrm{Sec}\left[\tfrac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\tfrac{1}{2}(e+f x)\right]\Bigg)-$$

$$n\,\Bigg(-\frac{1}{5+m}(3+m)\,(1+m-n)\,\mathrm{AppellF1}\Big[1+\frac{3+m}{2},1+n,2+m-n,1+\frac{5+m}{2},$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Result (type 6, 2658 leaves):

$$\Bigg((-2+n)$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Result (type 6, 5198 leaves):

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Result (type 6, 8327 leaves):

$$\Bigg(384\,(b\,\text{Sec}[e+f x])^n\,\text{Sin}[e+f x]^6$$
$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-7+n}$$
$$\left(\left(\text{AppellF1}\left[\frac{1}{2},\,n,\,4-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^3\right)\Big/\right.$$
$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,4-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2$$
$$\Bigg((-4+n)\,\text{AppellF1}\left[\frac{3}{2},\,n,\,5-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\Big[$$
$$\left.\frac{3}{2},\,1+n,\,4-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)-$$
$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,5-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-8+n}\Bigg(\Bigg(\text{AppellF1}\Big[\frac{1}{2},n,4-n,\frac{3}{2},$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$192\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-7+n}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\left(-\frac{1}{3}(7-n)\,\text{AppellF1}\left[\frac{3}{2},n,8-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,7-n,\frac{5}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,7-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.$$
$$2\left((-7+n)\,\text{AppellF1}\left[\frac{3}{2},n,8-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,7-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)-\left(\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)^3$$
$$\left(2\left((-4+n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+3\left(-\frac{1}{3}(4-n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+$$
$$\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2$$
$$\left((-4+n)\left(-\frac{3}{5}(5-n)\,\text{AppellF1}\left[\frac{5}{2},n,6-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+$$
$$\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,5-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)+n\left(-\frac{3}{5}(4-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,\right.\right.$$
$$5-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\right.$$
$$\left.\frac{1}{2}(e+fx)\right]+\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,4-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.$$
$$2\left((-4+n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.$$

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2+$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$
$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\left(2\left((-5+n)\,\text{AppellF1}\left[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$
$$3\left(-\frac{1}{3}(5-n)\,\text{AppellF1}\left[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,5-n,\frac{5}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$
$$2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left((-5+n)\left(-\frac{3}{5}(6-n)\,\text{AppellF1}\left[\frac{5}{2},n,7-n,\frac{7}{2},\text{Tan}\left[\right.\right.\right.\right.$$
$$\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$
$$\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,6-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+n\left(-\frac{3}{5}(5-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,\right.\right.$$
$$6-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\right.$$
$$\frac{1}{2}(e+f x)\right]+\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,5-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\right)\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$
$$2\left((-5+n)\,\text{AppellF1}\left[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2-$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,6-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$
$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)$$
$$\left(2\left((-6+n)\,\text{AppellF1}\left[\frac{3}{2},n,7-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

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

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

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

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

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

$$\Big((-6+n)\Big(-\frac{3}{5}(7-n)\,\text{AppellF1}\left[\frac{5}{2},n,8-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.$$

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

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

$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)+n\Big(-\frac{3}{5}(6-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,\right.$$

$$7-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\Big[$$

$$\frac{1}{2}(e+fx)\Big]+\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,6-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},n,6-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+$$

$$2\Big((-6+n)\,\text{AppellF1}\left[\frac{3}{2},n,7-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+$$

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\Big)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)^2+$$

$$\Big(\text{AppellF1}\left[\frac{1}{2},n,7-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]$$

$$\Big(2\Big((-7+n)\,\text{AppellF1}\left[\frac{3}{2},n,8-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+$$

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,7-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\Big)$$

$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+3\Big(-\frac{1}{3}(7-n)\,\text{AppellF1}\left[\frac{3}{2},n,8-n,\frac{5}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+$$

$$\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,7-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)+2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2$$

$$\left((-7+n)\left(-\frac{3}{5}(8-n)\,\text{AppellF1}\left[\frac{5}{2},n,9-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,8-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+n\left(-\frac{3}{5}(7-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,8-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,7-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,7-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-7+n)\,\text{AppellF1}\left[\frac{3}{2},n,8-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,7-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\Bigg)\Bigg)$$

Problem 498: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (b\,\text{Sec}[e+f x])^n\,\text{Sin}[e+f x]^4\,dx$$

Optimal (type 5, 73 leaves, 2 steps):

$$-\left(\left(b\,\text{Hypergeometric2F1}\left[-\frac{3}{2},\frac{1-n}{2},\frac{3-n}{2},\text{Cos}[e+f x]^2\right](b\,\text{Sec}[e+f x])^{-1+n}\,\text{Sin}[e+f x]\right)\Big/\left(f(1-n)\sqrt{\text{Sin}[e+f x]^2}\right)\right)$$

Result (type 6, 6231 leaves):

$$\Bigg(96\,(b\,\text{Sec}[e+f x])^n\,\text{Sin}[e+f x]^4\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-5+n}$$

$$\left(\left(\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right)\Big/\right.$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)-$$

$$\left(2\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-4+n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-5+n)\,\text{AppellF1}\left[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Bigg)\Bigg)\Big/$$

$$\Bigg(f\Bigg(96\,(-5+n)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-6+n}\Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\Bigg)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)-\left(2\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-4+n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\right.\right.\right.$$

$$1+n,\ 4-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\Big)+$$

$$\text{AppellF1}\left[\frac{1}{2},\ n,\ 5-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right]\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},\ n,\ 5-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right]+2\ \Big((-5+n)$$

$$\text{AppellF1}\left[\frac{3}{2},\ n,\ 6-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right]+n\,\text{AppellF1}\Big[\frac{3}{2},$$

$$1+n,\ 5-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\Big)\Big)+$$

$$48\,\text{Sec}\left[\frac{1}{2}\ (e+f\,x)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2}\right)^n\left(1+\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right)^{-5+n}$$

$$\Big(\Big(\text{AppellF1}\left[\frac{1}{2},\ n,\ 3-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right)^2\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},\ n,\ 3-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right]+$$

$$2\ \Big((-3+n)\ \text{AppellF1}\left[\frac{3}{2},\ n,\ 4-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right]+$$

$$n\,\text{AppellF1}\left[\frac{3}{2},\ 1+n,\ 3-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right]\Big)$$

$$\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\Big)-\Big(2\,\text{AppellF1}\Big[\frac{1}{2},\ n,\ 4-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\Big]\ \left(1+\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},\ n,\ 4-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right]+2\ \Big((-4+n)$$

$$\text{AppellF1}\left[\frac{3}{2},\ n,\ 5-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right]+n\,\text{AppellF1}\Big[\frac{3}{2},$$

$$1+n,\ 4-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\Big)+$$

$$\text{AppellF1}\left[\frac{1}{2},\ n,\ 5-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right]\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},\ n,\ 5-n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right]+2\ \Big((-5+n)$$

$$\text{AppellF1}\left[\frac{3}{2},\ n,\ 6-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right]+n\,\text{AppellF1}\Big[\frac{3}{2},$$

$$1+n,\ 5-n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\Big)\Big)+$$

$$96\,n\,\text{Sec}\left[\frac{1}{2}\ (e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2}\right)^{1+n}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\right)^{-5+n}$$

$$\left(\left(\text{AppellF1}\left[\frac{1}{2},\, n,\, 3-n,\, \frac{3}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right.\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\, n,\, 3-n,\, \frac{3}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$2\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2},\, n,\, 4-n,\, \frac{5}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},\, 1+n,\, 3-n,\, \frac{5}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)-\left(2\,\text{AppellF1}\left[\frac{1}{2},\, n,\, 4-n,\, \frac{3}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\, n,\, 4-n,\, \frac{3}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+2\,\left((-4+n)\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{2},\, n,\, 5-n,\, \frac{5}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\right.$$

$$\left.\left.\left.1+n,\, 4-n,\, \frac{5}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)+$$

$$\text{AppellF1}\left[\frac{1}{2},\, n,\, 5-n,\, \frac{3}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\, n,\, 5-n,\, \frac{3}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+2\,\left((-5+n)\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{2},\, n,\, 6-n,\, \frac{5}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\right.$$

$$\left.\left.\left.\left.1+n,\, 5-n,\, \frac{5}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)+$$

$$96\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\,\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^n\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^{-5+n}$$

$$\left(\left(\left(2\,\text{AppellF1}\left[\frac{1}{2},\, n,\, 3-n,\, \frac{3}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right.\right.\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\, n,\, 3-n,\, \frac{3}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$2\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2},\, n,\, 4-n,\, \frac{5}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},\, 1+n,\, 3-n,\, \frac{5}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\, -\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)+\left(\left(-\frac{1}{3}\,(3-n)\,\text{AppellF1}\left[\frac{3}{2},\, n,\, 4-n,\, \frac{5}{2},\, \text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$

$$\frac{1}{3} n \,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big) \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\Big) \Big/$$
$$\Big(3 \,\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$
$$2 \Big((-3+n) \,\text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$
$$n \,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)$$
$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big) - \Big(2 \,\text{AppellF1}\left[\frac{1}{2}, n, 4-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big) \Big/$$
$$\Big(3 \,\text{AppellF1}\left[\frac{1}{2}, n, 4-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$
$$2 \Big((-4+n) \,\text{AppellF1}\left[\frac{3}{2}, n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$
$$n \,\text{AppellF1}\left[\frac{3}{2}, 1+n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)$$
$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big) - \Big(2 \Big(-\frac{1}{3}(4-n) \,\text{AppellF1}\left[\frac{3}{2}, n, 5-n, \frac{5}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] +$$
$$\frac{1}{3} n \,\text{AppellF1}\left[\frac{3}{2}, 1+n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big) \left(1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big) \Big/$$
$$\Big(3 \,\text{AppellF1}\left[\frac{1}{2}, n, 4-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 \Big((-4+n)$$
$$\text{AppellF1}\left[\frac{3}{2}, n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + n \,\text{AppellF1}\left[\frac{3}{2},\right.$$
$$\left.1+n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big) +$$
$$\Big(-\frac{1}{3}(5-n) \,\text{AppellF1}\left[\frac{3}{2}, n, 6-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right] + \frac{1}{3} n \,\text{AppellF1}\left[\frac{3}{2}, 1+n, 5-n, \frac{5}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big) \Big/$$
$$\Big(3 \,\text{AppellF1}\left[\frac{1}{2}, n, 5-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$
$$2 \Big((-5+n) \,\text{AppellF1}\left[\frac{3}{2}, n, 6-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$
$$n \,\text{AppellF1}\left[\frac{3}{2}, 1+n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)$$

$$\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big) - \Big(\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] \left(1+\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right)^2$$

$$\Big(2\Big(\left(-3+n\right) \text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] + n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]\Big)$$

$$\text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right] + 3\Big(-\frac{1}{3}\left(3-n\right) \text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right] +$$

$$\frac{1}{3} n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]\Big) + 2\,\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2$$

$$\Big(\left(-3+n\right)\Big(-\frac{3}{5}\left(4-n\right) \text{AppellF1}\left[\frac{5}{2}, n, 5-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right] +$$

$$\frac{3}{5} n\,\text{AppellF1}\left[\frac{5}{2}, 1+n, 4-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]\Big) + n\Big(-\frac{3}{5}\left(3-n\right) \text{AppellF1}\left[\frac{5}{2}, 1+n,\right.$$

$$\left.4-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right] + \frac{3}{5}\left(1+n\right) \text{AppellF1}\left[\frac{5}{2}, 2+n, 3-n, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]\Big)\Big)\Big)\Big) \Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] +$$

$$2\Big(\left(-3+n\right) \text{AppellF1}\left[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] + n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 3-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]\Big) \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big)^2 +$$

$$\Big(2\,\text{AppellF1}\left[\frac{1}{2}, n, 4-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right)\Big(2\Big(\left(-4+n\right) \text{AppellF1}\left[\frac{3}{2}, n, 5-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] + n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 4-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]\Big) \text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right] +$$

$$3\left(-\frac{1}{3}(4-n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$

$$2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left((-4+n)\left(-\frac{3}{5}(5-n)\,\text{AppellF1}\left[\frac{5}{2},n,6-n,\frac{7}{2},\text{Tan}\left[\right.\right.\right.\right.$$

$$\left.\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$\frac{3}{5}n\,\text{AppellF1}\left[\frac{5}{2},1+n,5-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+n\left(-\frac{3}{5}(4-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,\right.\right.$$

$$\left.5-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\Big[$$

$$\frac{1}{2}(e+f x)\Big]+\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,4-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,4-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$2\left((-4+n)\,\text{AppellF1}\left[\frac{3}{2},n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2-$$

$$\left(\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$

$$\left(2\left((-5+n)\,\text{AppellF1}\left[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+3\left(-\frac{1}{3}(5-n)\,\text{AppellF1}\left[\frac{3}{2},n,6-n,\frac{5}{2},\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\left.\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\left((-5+n)\left(-\frac{3}{5}(6-n)\,\text{AppellF1}\left[\frac{5}{2},n,7-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$\frac{3}{5}\,n\,\text{AppellF1}\left[\frac{5}{2},1+n,6-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)+n\left(-\frac{3}{5}(5-n)\,\text{AppellF1}\left[\frac{5}{2},1+n,\right.\right.$$
$$6-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\Big[$$
$$\frac{1}{2}(e+f x)\Big]+\frac{3}{5}(1+n)\,\text{AppellF1}\left[\frac{5}{2},2+n,5-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},n,5-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$
$$2\Bigg((-5+n)\,\text{AppellF1}\left[\frac{3}{2},n,6-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$
$$n\,\text{AppellF1}\left[\frac{3}{2},1+n,5-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)^2\Bigg)\Bigg)$$

Problem 499: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (b\,\text{Sec}[e+f x])^n\,\text{Sin}[e+f x]^2\,dx$$

Optimal (type 5, 73 leaves, 2 steps):

$$-\left(\left(b\,\text{Hypergeometric2F1}\left[-\frac{1}{2},\frac{1-n}{2},\frac{3-n}{2},\text{Cos}[e+f x]^2\right](b\,\text{Sec}[e+f x])^{-1+n}\,\text{Sin}[e+f x]\right)\Big/\right.$$
$$\left.\left(f\,(1-n)\sqrt{\text{Sin}[e+f x]^2}\right)\right)$$

Result (type 6, 4143 leaves):

$$\Bigg(24\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-3+n}(b\,\text{Sec}[e+f x])^n$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^n\text{Sin}[e+f x]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]$$
$$\Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg/$$
$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2$$
$$\Bigg((-2+n)\,\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\Big[$$
$$\frac{3}{2},1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)-$$
$$\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\right.$$
$$\left((-3+n)\,\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\left.\frac{3}{2},1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)\right)\Big/$$
$$\left(f\left(12\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-2+n}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^n\right.\right.$$
$$\left(\left(\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big/\right.$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-2+n)\right.\right.$$
$$\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\right.$$
$$\left.\left.\left.1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)-$$
$$\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-3+n)\right.\right.$$
$$\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\right.$$
$$\left.\left.\left.\left.1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$
$$24(-3+n)\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-3+n}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^n\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$
$$\left(\left(\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)\Big/\right.$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-2+n)\right.\right.$$
$$\text{AppellF1}\left[\frac{3}{2},n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\right.$$
$$\left.\left.\left.1+n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)-$$
$$\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,3-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\left((-3+n)\right.\right.$$
$$\text{AppellF1}\left[\frac{3}{2},n,4-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+n\,\text{AppellF1}\left[\frac{3}{2},\right.$$
$$\left.\left.\left.\left.1+n,3-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+$$
$$24\left(\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-3+n}\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]^2\text{Sec}[e+f x]\right)^n\text{Tan}\left[\frac{1}{2}(e+f x)\right]$$
$$\left(\left(\text{AppellF1}\left[\frac{1}{2},n,2-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\right.\right.\right.$$

$$\frac{1}{2}(e+f x)]\Big)\Big/\Big(3\,\text{AppellF1}[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] +$$

$$2\,\Big(\big(-2+n\big)\,\text{AppellF1}[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] +$$

$$n\,\text{AppellF1}[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]\Big)$$

$$\text{Tan}[\frac{1}{2}(e+f x)]^2\Big) + \Big(\text{Sec}[\frac{1}{2}(e+f x)]^2$$

$$\Big(-\frac{1}{3}\,(2-n)\,\text{AppellF1}[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]$$

$$\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)] + \frac{1}{3}\,n\,\text{AppellF1}[\frac{3}{2}, 1+n, 2-n, \frac{5}{2},$$

$$\text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] + 2\,\Big(\big(-2+n\big)$$

$$\text{AppellF1}[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] + n\,\text{AppellF1}[\frac{3}{2},$$

$$1+n, 2-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]\Big)\,\text{Tan}[\frac{1}{2}(e+f x)]^2\Big) -$$

$$\Big(-\frac{1}{3}\,(3-n)\,\text{AppellF1}[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]$$

$$\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)] + \frac{1}{3}\,n\,\text{AppellF1}[\frac{3}{2}, 1+n, 3-n, \frac{5}{2},$$

$$\text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]\Big)\Big/$$

$$\Big(3\,\text{AppellF1}[\frac{1}{2}, n, 3-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] + 2\,\Big(\big(-3+n\big)$$

$$\text{AppellF1}[\frac{3}{2}, n, 4-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] + n\,\text{AppellF1}[\frac{3}{2},$$

$$1+n, 3-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]\Big)\,\text{Tan}[\frac{1}{2}(e+f x)]^2\Big) -$$

$$\Big(\text{AppellF1}[\frac{1}{2}, n, 2-n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2$$

$$\Big(2\,\Big(\big(-2+n\big)\,\text{AppellF1}[\frac{3}{2}, n, 3-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2] +$$

$$n\,\text{AppellF1}[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]\Big)$$

$$\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)] + 3\,\Big(-\frac{1}{3}\,(2-n)\,\text{AppellF1}[\frac{3}{2}, n, 3-n, \frac{5}{2},$$

$$\text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]\,\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)] +$$

$$\frac{1}{3}\,n\,\text{AppellF1}[\frac{3}{2}, 1+n, 2-n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(e+f x)]^2, -\text{Tan}[\frac{1}{2}(e+f x)]^2]$$

$$\text{Sec}[\frac{1}{2}(e+f x)]^2\,\text{Tan}[\frac{1}{2}(e+f x)]\Big) + 2\,\text{Tan}[\frac{1}{2}(e+f x)]^2$$

$$\Big(\big(-2+n\big)\,\Big(-\frac{3}{5}\,(3-n)\,\text{AppellF1}\Big[\frac{5}{2},\,n,\,4-n,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]+$$

$$\frac{3}{5}\,n\,\text{AppellF1}\Big[\frac{5}{2},\,1+n,\,3-n,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]\Big)+n\,\Big(-\frac{3}{5}\,(2-n)\,\text{AppellF1}\Big[\frac{5}{2},\,1+n,$$

$$3-n,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Tan}\Big[$$

$$\frac{1}{2}\,(e+f\,x)\Big]+\frac{3}{5}\,(1+n)\,\text{AppellF1}\Big[\frac{5}{2},\,2+n,\,2-n,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,2-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]+$$

$$2\,\Big(\big(-2+n\big)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]+$$

$$n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big)^2+$$

$$\Big(\text{AppellF1}\Big[\frac{1}{2},\,n,\,3-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]$$

$$\Big(2\,\Big(\big(-3+n\big)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,4-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]+$$

$$n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,3-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\Big)$$

$$\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]+3\,\Big(-\frac{1}{3}\,(3-n)\,\text{AppellF1}\Big[\frac{3}{2},\,n,\,4-n,\,\frac{5}{2},$$

$$\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]+$$

$$\frac{1}{3}\,n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,3-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]\Big)+2\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2$$

$$\Big(\big(-3+n\big)\,\Big(-\frac{3}{5}\,(4-n)\,\text{AppellF1}\Big[\frac{5}{2},\,n,\,5-n,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]+$$

$$\frac{3}{5}\,n\,\text{AppellF1}\Big[\frac{5}{2},\,1+n,\,4-n,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]\Big)+n\,\Big(-\frac{3}{5}\,(3-n)\,\text{AppellF1}\Big[\frac{5}{2},\,1+n,$$

$$4-n,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(e+f\,x)\Big]^2\,\text{Tan}\Big[$$

$$\frac{1}{2}\left(e+f\,x\right)\Big] + \frac{3}{5}\left(1+n\right)\text{AppellF1}\Big[\frac{5}{2},\,2+n,\,3-n,\,\frac{7}{2},\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,3-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big] +$$

$$2\,\Big(\left(-3+n\right)\text{AppellF1}\Big[\frac{3}{2},\,n,\,4-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big] +$$

$$n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,3-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big)^2\Big) +$$

$$24\,n\,\Big(\text{Sec}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big)^{-3+n}\,\Big(\text{Cos}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\,\text{Sec}\left[e+f\,x\right]\Big)^{-1+n}$$

$$\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]$$

$$\Big(\Big(\text{AppellF1}\Big[\frac{1}{2},\,n,\,2-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,2-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big] +$$

$$2\,\Big(\left(-2+n\right)\text{AppellF1}\Big[\frac{3}{2},\,n,\,3-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big] +$$

$$n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,2-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big) -$$

$$\text{AppellF1}\Big[\frac{1}{2},\,n,\,3-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big]\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},\,n,\,3-n,\,\frac{3}{2},\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big] +$$

$$2\,\Big(\left(-3+n\right)\text{AppellF1}\Big[\frac{3}{2},\,n,\,4-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big] +$$

$$n\,\text{AppellF1}\Big[\frac{3}{2},\,1+n,\,3-n,\,\frac{5}{2},\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2\Big)\Big)$$

$$\Big(-\text{Cos}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]\,\text{Sec}\left[e+f\,x\right]\,\text{Sin}\Big[\frac{1}{2}\left(e+f\,x\right)\Big] + \text{Cos}\Big[\frac{1}{2}\left(e+f\,x\right)\Big]^2$$

$$\text{Sec}\left[e+f\,x\right]\,\text{Tan}\left[e+f\,x\right]\Big)\Big)\Big)$$

Problem 501: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Csc}[e+f x]^2 \left(b\, \text{Sec}[e+f x]\right)^n \, dx$$

Optimal (type 5, 73 leaves, 2 steps):

$$-\frac{1}{f\,(1-n)} b\, \text{Csc}[e+f x]$$

$$\text{Hypergeometric2F1}\left[\frac{3}{2}, \frac{1-n}{2}, \frac{3-n}{2}, \text{Cos}[e+f x]^2\right] \left(b\, \text{Sec}[e+f x]\right)^{-1+n} \sqrt{\text{Sin}[e+f x]^2}$$

Result (type 6, 3228 leaves):

$$\Big(\text{Cot}\left[\frac{1}{2}(e+f x)\right] \text{Csc}[e+f x]^2\, \text{Sec}[e+f x]^n \left(b\, \text{Sec}[e+f x]\right)^n$$

$$\Big(-\Big(\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big/$$

$$\Big(\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$2 n \Big(\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\Big[\frac{1}{2},$$

$$1+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big) +$$

$$\Big(3\, \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big/$$

$$\Big(3\, \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$2 n \Big(\text{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\Big[\frac{3}{2},$$

$$1+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big)\Big)\Big/$$

$$\Big(2 f \Big(-\frac{1}{4} \text{Csc}\left[\frac{1}{2}(e+f x)\right]^2 \text{Sec}[e+f x]^n \Big(-\Big(\text{AppellF1}\Big[-\frac{1}{2}, n, -n, \frac{1}{2},$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big/$$

$$\Big(\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n$$

$$\Big(\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\Big[\frac{1}{2},$$

$$1+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big) +$$

$$\Big(3\, \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big/$$

$$\Big(3\, \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$2 n \Big(\text{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\Big[\frac{3}{2},$$

$$1+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big) +$$

$$\frac{1}{2} n \operatorname{Cot}\left[\frac{1}{2}(e+f x)\right] \operatorname{Sec}[e+f x]^{1+n} \operatorname{Sin}[e+f x]$$
$$\left(-\left(\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right/\right.$$
$$\left(\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n\right.$$
$$\left(\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{1}{2},\right.\right.$$
$$\left.\left.\left. 1+n, -n, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right) +$$
$$\left(3 \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) \Big/$$
$$\left(3 \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +\right.$$
$$2 n \left(\text{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$\left.\left.\left. 1+n, -n, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right) +$$
$$\frac{1}{2} \operatorname{Cot}\left[\frac{1}{2}(e+f x)\right] \operatorname{Sec}[e+f x]^n \left(-\left(\left(-n \text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.\right.$$
$$-\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right] - n \text{AppellF1}\left[\frac{1}{2}, 1+n, -n,\right.$$
$$\left.\left.\frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right) \Big/$$
$$\left(\text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n\right.$$
$$\left(\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{1}{2},\right.\right.$$
$$\left.\left.\left. 1+n, -n, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right) +$$
$$\left(3 \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$
$$\left.\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right) \Big/$$
$$\left(3 \text{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +\right.$$
$$2 n \left(\text{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \text{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$\left.\left.\left. 1+n, -n, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right) +$$
$$\left(3 \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2 \left(\frac{1}{3} n \text{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}\right.\right.\right.\right.$$
$$\left.(e+f x)\right]^2\right] \operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right] + \frac{1}{3} n \text{AppellF1}\left[\frac{3}{2}, 1+n, -n,\right.$$
$$\left.\left.\left.\frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right) \Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$
$$2 n\left(\text{AppellF1}\left[\frac{3}{2},n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$\left.\left.1+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)+$$
$$\left(\text{AppellF1}\left[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$
$$\left(-n\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]-n\,\text{AppellF1}\left[\frac{1}{2},1+n,-n,\frac{3}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$
$$2 n\left(\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$
$$\left.\text{AppellF1}\left[\frac{1}{2},1+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+2 n\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2$$
$$\left(-\frac{1}{3}(1-n)\,\text{AppellF1}\left[\frac{3}{2},n,2-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{2}{3} n\,\text{AppellF1}\left[\frac{3}{2},1+n,1-n,\frac{5}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$
$$\frac{1}{3}(1+n)\,\text{AppellF1}\left[\frac{3}{2},2+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\Big/$$
$$\left(\text{AppellF1}\left[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$
$$2 n\left(\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\left.\frac{1}{2},1+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2-$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right.$$
$$\left(2 n\left(\text{AppellF1}\left[\frac{3}{2},n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\right.$$
$$\text{AppellF1}\left[\frac{3}{2},1+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$
$$3\left(\frac{1}{3} n\,\text{AppellF1}\left[\frac{3}{2},n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{3} n\,\mathrm{AppellF1}\left[\frac{3}{2},1+n,-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)+ 2\,n\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(-\frac{3}{5}(1-n)\,\mathrm{AppellF1}\left[\frac{5}{2},n,2-n,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{6}{5} n\,\mathrm{AppellF1}\left[\frac{5}{2},1+n,1-n,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{3}{5}(1+n)\,\mathrm{AppellF1}\left[\frac{5}{2},2+n,-n,\frac{7}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Bigg)\Bigg)\Bigg/ \left(3\,\mathrm{AppellF1}\left[\frac{1}{2},n,-n,\frac{3}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2 n\left(\mathrm{AppellF1}\left[\frac{3}{2},n,1-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\mathrm{AppellF1}\left[\frac{3}{2},1+n,-n,\frac{5}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\Bigg)\Bigg)$$

Problem 502: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Csc}[e+f x]^4\,(b\,\mathrm{Sec}[e+f x])^n\,dx$$

Optimal (type 5, 73 leaves, 2 steps):

$$-\frac{1}{f(1-n)} b\,\mathrm{Csc}[e+f x]\,\mathrm{Hypergeometric2F1}\left[\frac{5}{2},\frac{1-n}{2},\frac{3-n}{2},\mathrm{Cos}[e+f x]^2\right](b\,\mathrm{Sec}[e+f x])^{-1+n}\sqrt{\mathrm{Sin}[e+f x]^2}$$

Result (type 6, 6799 leaves):

$$\Bigg(\mathrm{Cot}\left[\frac{1}{2}(e+f x)\right]^3\mathrm{Csc}[e+f x]^4\,(b\,\mathrm{Sec}[e+f x])^n\left(\frac{1+\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n \Bigg(-\Bigg(\mathrm{AppellF1}\left[-\frac{3}{2},n,-n,-\frac{1}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg/ \Bigg(\mathrm{AppellF1}\left[-\frac{3}{2},n,-n,-\frac{1}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]- 2\,n\left(\mathrm{AppellF1}\left[-\frac{1}{2},n,1-n,\frac{1}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\mathrm{AppellF1}\left[-\frac{1}{2},1+n,-n,\frac{1}{2},\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg)-$$

$$\Big(9\,\text{AppellF1}\Big[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+$$

$$2\,n\,\Big(\text{AppellF1}\Big[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+\text{AppellF1}\Big[\frac{1}{2},$$

$$1+n,-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)+$$

$$\Big(27\,\text{AppellF1}\Big[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^4\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\Big[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+$$

$$2\,n\,\Big(\text{AppellF1}\Big[\frac{3}{2},n,1-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+\text{AppellF1}\Big[\frac{3}{2},$$

$$1+n,-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)+$$

$$\Big(5\,\text{AppellF1}\Big[\frac{3}{2},n,-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^6\Big)\Big/$$

$$\Big(5\,\text{AppellF1}\Big[\frac{3}{2},n,-n,\frac{5}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+$$

$$2\,n\,\Big(\text{AppellF1}\Big[\frac{5}{2},n,1-n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+\text{AppellF1}\Big[\frac{5}{2},$$

$$1+n,-n,\frac{7}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\Big)\Big)\Big/$$

$$\Big(24\,f\,\Big(-\frac{1}{16}\,\text{Cot}\Big[\frac{1}{2}(e+f x)\Big]^2\,\text{Csc}\Big[\frac{1}{2}(e+f x)\Big]^2\,\left(\frac{1+\text{Tan}\big[\frac{1}{2}(e+f x)\big]^2}{1-\text{Tan}\big[\frac{1}{2}(e+f x)\big]^2}\right)^n$$

$$\Big(-\Big(\text{AppellF1}\Big[-\frac{3}{2},n,-n,-\frac{1}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{3}{2},n,-n,-\frac{1}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]-2\,n\,\Big(\text{AppellF1}\Big[$$

$$-\frac{1}{2},n,1-n,\frac{1}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+\text{AppellF1}\Big[-\frac{1}{2},$$

$$1+n,-n,\frac{1}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\Big)-$$

$$\Big(9\,\text{AppellF1}\Big[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\Big/$$

$$\Big(\text{AppellF1}\Big[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+$$

$$2\,n\,\Big(\text{AppellF1}\Big[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+\text{AppellF1}\Big[\frac{1}{2},$$

$$1+n,-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)+$$

$$\Big(27\,\text{AppellF1}\Big[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^4\Big)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$2\,n\,\left(\text{AppellF1}\left[\frac{3}{2},\,n,\,1-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},\right.\right.$$

$$\left.\left.1+n,\,-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Bigg)+$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},\,n,\,-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^6\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},\,n,\,-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$2\,n\,\left(\text{AppellF1}\left[\frac{5}{2},\,n,\,1-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\right.\right.$$

$$\left.\left.1+n,\,-n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Bigg)\Bigg)+$$

$$\frac{1}{24}\,n\,\text{Cot}\left[\frac{1}{2}\,(e+f\,x)\right]^3\,\left(\frac{1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}\right)^{-1+n}\,\left(\frac{\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]}{1-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2}+\right.$$

$$\left.\left(\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\Big/\left(1-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^2\right)$$

$$\left(-\left(\text{AppellF1}\left[-\frac{3}{2},\,n,\,-n,\,-\frac{1}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\Big/\right.\right.$$

$$\left(\text{AppellF1}\left[-\frac{3}{2},\,n,\,-n,\,-\frac{1}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-2\,n\,\left(\text{AppellF1}\left[\right.\right.\right.$$

$$-\frac{1}{2},\,n,\,1-n,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\text{AppellF1}\left[-\frac{1}{2},$$

$$\left.\left.\left.1+n,\,-n,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\Bigg)-$$

$$\left(9\,\text{AppellF1}\left[-\frac{1}{2},\,n,\,-n,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},\,n,\,-n,\,\frac{1}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$2\,n\,\left(\text{AppellF1}\left[\frac{1}{2},\,n,\,1-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\text{AppellF1}\left[\frac{1}{2},\right.\right.$$

$$\left.\left.1+n,\,-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Bigg)+$$

$$\left(27\,\text{AppellF1}\left[\frac{1}{2},\,n,\,-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^4\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,-n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.$$

$$2\,n\,\left(\text{AppellF1}\left[\frac{3}{2},\,n,\,1-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\text{AppellF1}\left[\frac{3}{2},\right.\right.$$

$$\left.\left.1+n,\,-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Bigg)+$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},\,n,\,-n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^6\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{3}{2},n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$2\,n\left(\text{AppellF1}\left[\frac{5}{2},n,1-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$\left.\text{AppellF1}\left[\frac{5}{2},1+n,-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)+\frac{1}{24}\text{Cot}\left[\frac{1}{2}(e+f x)\right]^3\left(\frac{1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\right)^n$$

$$\left(-\left(\left(3\,n\,\text{AppellF1}\left[-\frac{1}{2},n,1-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\right.\right.$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+3\,n\,\text{AppellF1}\left[-\frac{1}{2},1+n,-n,\frac{1}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{3}{2},n,-n,-\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-2\,n\left(\text{AppellF1}\left[\right.\right.\right.$$

$$-\frac{1}{2},n,1-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[-\frac{1}{2},$$

$$\left.\left.\left.1+n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)\right)-$$

$$\left(9\,\text{AppellF1}\left[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$2\,n\left(\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[\frac{1}{2},\right.\right.$$

$$\left.\left.1+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)-$$

$$\left(9\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(-n\,\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]-n\,\text{AppellF1}\left[\frac{1}{2},1+n,-n,\right.$$

$$\left.\left.\left.\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\Big/$$

$$\left(\text{AppellF1}\left[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.$$

$$2\,n\left(\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[\frac{1}{2},\right.\right.$$

$$\left.\left.1+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)+$$

$$\left(54\,\text{AppellF1}\left[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^3\Big)\Big/$$

$$\Big(3\,\mathrm{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \Big(\mathrm{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \mathrm{AppellF1}\left[\frac{3}{2}, 1+n, -n, \frac{5}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big) \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big) +$$

$$\Big(27\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^4 \Big(\frac{1}{3} n\,\mathrm{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right] + \frac{1}{3} n\,\mathrm{AppellF1}\left[\frac{3}{2}, 1+n, -n, \frac{5}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\Big/$$

$$\Big(3\,\mathrm{AppellF1}\left[\frac{1}{2}, n, -n, \frac{3}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \Big(\mathrm{AppellF1}\left[\frac{3}{2}, n, 1-n, \frac{5}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \mathrm{AppellF1}\left[\frac{3}{2}, 1+n, -n, \frac{5}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big) \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big) +$$

$$\Big(15\,\mathrm{AppellF1}\left[\frac{3}{2}, n, -n, \frac{5}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^5\Big)\Big/$$

$$\Big(5\,\mathrm{AppellF1}\left[\frac{3}{2}, n, -n, \frac{5}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \Big(\mathrm{AppellF1}\left[\frac{5}{2}, n, 1-n, \frac{7}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \mathrm{AppellF1}\left[\frac{5}{2}, 1+n, -n, \frac{7}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big) \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big) +$$

$$\Big(5\,\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^6 \Big(\frac{3}{5} n\,\mathrm{AppellF1}\left[\frac{5}{2}, n, 1-n, \frac{7}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right] + \frac{3}{5} n\,\mathrm{AppellF1}\left[\frac{5}{2}, 1+n, -n, \frac{7}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\Big/$$

$$\Big(5\,\mathrm{AppellF1}\left[\frac{3}{2}, n, -n, \frac{5}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + 2 n \Big(\mathrm{AppellF1}\left[\frac{5}{2}, n, 1-n, \frac{7}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] + \mathrm{AppellF1}\left[\frac{5}{2}, 1+n, -n, \frac{7}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big) \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big) +$$

$$\Big(\mathrm{AppellF1}\left[-\frac{3}{2}, n, -n, -\frac{1}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\Big(3 n\,\mathrm{AppellF1}\left[-\frac{1}{2}, n, 1-n, \frac{1}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$
\begin{aligned}
&\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]+3\, n\, \text{AppellF1}\left[-\frac{1}{2}, 1+n, -n, \frac{1}{2},\right.\\
&\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]-\\
&2\, n \left(\text{AppellF1}\left[-\frac{1}{2}, n, 1-n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[\right.\right.\\
&\left.\left.-\frac{1}{2}, 1+n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\\
&\text{Tan}\left[\frac{1}{2}(e+f x)\right]-2\, n\, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2 \left(\left(1-n\right) \text{AppellF1}\left[\frac{1}{2}, n, 2-n, \frac{3}{2},\right.\right.\\
&\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]-\\
&2\, n\, \text{AppellF1}\left[\frac{1}{2}, 1+n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\\
&\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]-\left(1+n\right) \text{AppellF1}\left[\frac{1}{2}, 2+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}\right.\right.\\
&\left.\left.\left.\left.(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right) \Big/\\
&\left(\text{AppellF1}\left[-\frac{3}{2}, n, -n, -\frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-2\, n \left(\text{AppellF1}\left[\right.\right.\right.\\
&-\frac{1}{2}, n, 1-n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+\text{AppellF1}\left[-\frac{1}{2},\right.\\
&\left.\left.\left.1+n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2+\\
&\left(9\, \text{AppellF1}\left[-\frac{1}{2}, n, -n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right.\\
&\left(-n\, \text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\\
&\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]-n\, \text{AppellF1}\left[\frac{1}{2}, 1+n, -n, \frac{3}{2},\right.\\
&\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]+\\
&2\, n \left(\text{AppellF1}\left[\frac{1}{2}, n, 1-n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\right.\\
&\left.\text{AppellF1}\left[\frac{1}{2}, 1+n, -n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\\
&\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]+2\, n\, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\\
&\left(-\frac{1}{3}\left(1-n\right) \text{AppellF1}\left[\frac{3}{2}, n, 2-n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.\\
&\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{2}{3}\, n\, \text{AppellF1}\left[\frac{3}{2}, 1+n, 1-n, \frac{5}{2},\right.\\
&\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \text{Tan}\left[\frac{1}{2}(e+f x)\right]+\\
&\frac{1}{3}\left(1+n\right) \text{AppellF1}\left[\frac{3}{2}, 2+n, -n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.
\end{aligned}
$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\text{AppellF1}\left[-\frac{1}{2},n,-n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$2 n\Big(\text{AppellF1}\left[\frac{1}{2},n,1-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\Big[$$

$$\frac{1}{2},1+n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)^2-$$

$$\Big(27\,\text{AppellF1}\left[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^4\Big(2 n\Big(\text{AppellF1}\Big[\frac{3}{2},n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]+\text{AppellF1}\Big[\frac{3}{2},1+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$3\Big(\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{1}{3}n\,\text{AppellF1}\Big[\frac{3}{2},1+n,-n,\frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)+$$

$$2 n\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big(-\frac{3}{5}(1-n)\,\text{AppellF1}\Big[\frac{5}{2},n,2-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{6}{5}n\,\text{AppellF1}\Big[\frac{5}{2},$$

$$1+n,1-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{3}{5}(1+n)\,\text{AppellF1}\Big[\frac{5}{2},2+n,-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Big)\Big)\Big)\Big/$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},n,-n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

$$2 n\Big(\text{AppellF1}\left[\frac{3}{2},n,1-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\Big[$$

$$\frac{3}{2},1+n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)^2-$$

$$\Big(5\,\text{AppellF1}\left[\frac{3}{2},n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+f x)\right]^6$$

$$\Big(2 n\Big(\text{AppellF1}\left[\frac{5}{2},n,1-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+$$

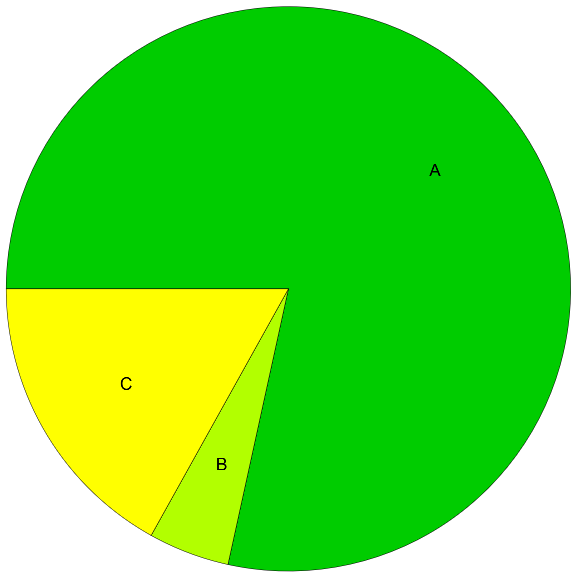
$$\text{AppellF1}\Big[\frac{5}{2},1+n,-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+$$

$$5\left(\frac{3}{5}\,n\,\text{AppellF1}\left[\frac{5}{2},n,1-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{3}{5}\,n\,\text{AppellF1}\left[\frac{5}{2},1+n,-n,\frac{7}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)+$$
$$2\,n\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\left(-\frac{5}{7}(1-n)\,\text{AppellF1}\left[\frac{7}{2},n,2-n,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{10}{7}\,n\,\text{AppellF1}\left[\frac{7}{2},\right.$$
$$\left.1+n,1-n,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]+\frac{5}{7}(1+n)\,\text{AppellF1}\left[\frac{7}{2},2+n,-n,\frac{9}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\right)\right)\right)\Big/$$
$$\left(5\,\text{AppellF1}\left[\frac{3}{2},n,-n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+2\,n\right.$$
$$\left(\text{AppellF1}\left[\frac{5}{2},n,1-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{AppellF1}\left[\frac{5}{2},\right.\right.$$
$$\left.\left.\left.\left.1+n,-n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)^2\right)\right)$$

Summary of Integration Test Results

538 integration problems



A - 422 optimal antiderivatives

B - 25 more than twice size of optimal antiderivatives

C - 91 unnecessarily complex antiderivatives

D - 0 unable to integrate problems

E - 0 integration timeouts