Mathematica 11.3 Integration Test Results

Test results for the 594 problems in "4.1.7 (d trig)^m (a+b (c sin)^n)^p.m"

Problem 40: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[c+d x]^3}{a-a \text{Sin}[c+d x]^2} \, dx$$

Optimal (type 3, 58 leaves, 5 steps):

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

Result (type 3, 146 leaves):

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

Problem 41: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[c+d x]^5}{a-a \text{Sin}[c+d x]^2} \, dx$$

Optimal (type 3, 82 leaves, 6 steps):

$$-\frac{15 \text{ArcTanh}[\text{Cos}[c+d x]]}{8 a d}+\frac{15 \text{Sec}[c+d x]}{8 a d}-\frac{5 \text{Csc}[c+d x]^2 \text{Sec}[c+d x]}{8 a d}-\frac{\text{Csc}[c+d x]^4 \text{Sec}[c+d x]}{4 a d}$$

Result (type 3, 194 leaves):

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

Problem 54: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[c+d\,x]^3}{\left(a-a\,\text{Sin}[c+d\,x]^2\right)^2}\,dx$$

Optimal (type 3, 78 leaves, 6 steps):

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

Result (type 3, 208 leaves):

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

Problem 66: Result more than twice size of optimal antiderivative.

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

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

$$-\frac{a\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{d}-\frac{b\,\text{Cos}[c+d\,x]}{d}$$

Result (type 3, 63 leaves):

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

Problem 67: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 40 leaves, 2 steps):

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

Result (type 3, 118 leaves):

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

Problem 76: Result unnecessarily involves imaginary or complex numbers.

$$\int \left(a+b\, \text{Sin}[x]^2\right)^3 dx$$

Optimal (type 3, 87 leaves, 2 steps):

$$\frac{1}{16} (2 a+b) \left(8 a^2+8 a b+5 b^2\right) x-\frac{1}{48} b \left(64 a^2+54 a b+15 b^2\right) \text{Cos}[x]\, \text{Sin}[x]-\frac{5}{24} b^2 (2 a+b)\, \text{Cos}[x]\, \text{Sin}[x]^3-\frac{1}{6} b\, \text{Cos}[x]\, \text{Sin}[x] \left(a+b\, \text{Sin}[x]^2\right)^2$$

Result (type 3, 80 leaves):

$$\frac{1}{192} \Big(12 (2 a+b) \left(8 a^2+8 a b+5 b^2\right) x+9 i b (4 i a+(1+2 i) b) (4 a+(2+i) b)\, \text{Sin}[2 x]+9 b^2 (2 a+b)\, \text{Sin}[4 x]-b^3\, \text{Sin}[6 x]\Big)$$

Problem 78: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 106 leaves, 4 steps):

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

Result (type 3, 180 leaves):

$$\left(-240 a^3 \text{ArcTan}\left[\frac{\sqrt{b}-i \sqrt{a} \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]-240 a^3 \text{ArcTan}\left[\frac{\sqrt{b}+i \sqrt{a} \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]-2 \sqrt{-a-b} \sqrt{b} \text{Cos}[c+d x] \left(120 a^2-100 a b+89 b^2+4 (5 a-7 b) b \text{Cos}[2 (c+d x)]+3 b^2 \text{Cos}[4 (c+d x)]\right)\right) \Big/ \left(240 \sqrt{-a-b}\, b^{7/2} d\right)$$

Problem 79: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 77 leaves, 4 steps):

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

Result (type 3, 150 leaves):

$$\frac{1}{6 \sqrt{-a-b}\, b^{5/2} d} \left(6 a^2 \text{ArcTan}\left[\frac{\sqrt{b}-i \sqrt{a} \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]+6 a^2 \text{ArcTan}\left[\frac{\sqrt{b}+i \sqrt{a} \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{-a-b}}\right]+\sqrt{-a-b} \sqrt{b} \text{Cos}[c+d x] (6 a-5 b+b \text{Cos}[2 (c+d x)])\right)$$

Problem 80: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 52 leaves, 3 steps):

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

Result (type 3, 125 leaves):

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

Problem 81: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 37 leaves, 2 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+d\,x]}{\sqrt{a+b}}\right]}{\sqrt{b}\,\sqrt{a+b}\,d}$$

Result (type 3, 97 leaves):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{b}-i\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]+\text{ArcTan}\left[\frac{\sqrt{b}+i\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]}{\sqrt{-a-b}\,\sqrt{b}\,d}$$

Problem 82: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Csc}[c+d\,x]}{a+b\,\text{Sin}[c+d\,x]^2}\,dx$$

Optimal (type 3, 55 leaves, 4 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a\,d}+\frac{\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+d\,x]}{\sqrt{a+b}}\right]}{a\,\sqrt{a+b}\,d}$$

Result (type 3, 143 leaves):

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

Problem 83: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

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

Optimal (type 3, 85 leaves, 5 steps):

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

Result (type 3, 224 leaves):

$$-\left(\left(\left(2\,a+b-b\,\text{Cos}[2\,(c+d\,x)]\right)\text{Csc}[c+d\,x]^2\left(-8\,b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}-i\,\sqrt{a}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{-a-b}}\right]-8\,b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}+i\,\sqrt{a}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{-a-b}}\right]+\sqrt{-a-b}\left(a\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2+4\,(a-2\,b)\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\right)-a\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\right)\Big/\left(16\,a^2\,\sqrt{-a-b}\,d\,\left(b+a\,\text{Csc}[c+d\,x]^2\right)\right)\right)$$

Problem 84: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 125 leaves, 6 steps):

$$-\frac{\left(3\,a^2-4\,a\,b+8\,b^2\right)\text{ArcTanh}[\text{Cos}[c+d\,x]]}{8\,a^3\,d}+\frac{b^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Cos}[c+d\,x]}{\sqrt{a+b}}\right]}{a^3\,\sqrt{a+b}\,d}-\frac{(3\,a-4\,b)\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{8\,a^2\,d}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{4\,a\,d}$$

Result (type 3, 657 leaves):

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

$$\left.\left(-2\,a-b+b\,\text{Cos}[2\,(c+d\,x)]\right)\text{Csc}[c+d\,x]^2\right)\Big/\left(2\,a^3\,\sqrt{-a-b}\,d\,\left(b+a\,\text{Csc}[c+d\,x]^2\right)\right)+$$

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

$$\left.\left(-2\,a-b+b\,\text{Cos}[2\,(c+d\,x)]\right)\text{Csc}[c+d\,x]^2\right)\Big/\left(2\,a^3\,\sqrt{-a-b}\,d\,\left(b+a\,\text{Csc}[c+d\,x]^2\right)\right)+$$

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

$$\left(64\,a^2\,d\,\left(b+a\,\text{Csc}[c+d\,x]^2\right)\right)+$$

$$\frac{\left(-2\,a-b+b\,\text{Cos}[2\,(c+d\,x)]\right)\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^4\text{Csc}[c+d\,x]^2}{128\,a\,d\,\left(b+a\,\text{Csc}[c+d\,x]^2\right)}+$$

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

$$\left(16\,a^3\,d\,\left(b+a\,\text{Csc}[c+d\,x]^2\right)\right)+$$

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

$$\left(16\,a^3\,d\,\left(b+a\,\text{Csc}[c+d\,x]^2\right)\right)+$$

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

$$\left(64\,a^2\,d\,\left(b+a\,\text{Csc}[c+d\,x]^2\right)\right)-\frac{\left(-2\,a-b+b\,\text{Cos}[2\,(c+d\,x)]\right)\text{Csc}[c+d\,x]^2\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4}{128\,a\,d\,\left(b+a\,\text{Csc}[c+d\,x]^2\right)}$$

Problem 94: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 128 leaves, 5 steps):

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

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

Result (type 3, 194 leaves):

$$\frac{1}{12\,b^{7/2}\,d}\left(-\frac{6\,a^2\,(5\,a+6\,b)\,\text{ArcTan}\left[\frac{\sqrt{b}-i\,\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]}{(-a-b)^{3/2}}-\frac{6\,a^2\,(5\,a+6\,b)\,\text{ArcTan}\left[\frac{\sqrt{b}+i\,\sqrt{a}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{-a-b}}\right]}{(-a-b)^{3/2}}+\sqrt{b}\left(\text{Cos}[c+d\,x]\left(24\,a-9\,b+\frac{12\,a^3}{(a+b)\,(2\,a+b-b\,\text{Cos}[2\,(c+d\,x)])}\right)+b\,\text{Cos}[3\,(c+d\,x)]\right)\right)$$

Problem 95: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 102 leaves, 5 steps):

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

Result (type 3, 172 leaves):

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

Problem 96: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 83 leaves, 3 steps):

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

Result (type 3, 160 leaves):

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

Problem 97: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 74 leaves, 3 steps):

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

Result (type 3, 149 leaves):

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

Problem 98: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 103 leaves, 5 steps):

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

Result (type 3, 194 leaves):

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

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

Problem 99: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 153 leaves, 6 steps):

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

$$\frac{b\,\left(a+2\,b\right)\,\text{Cos}[c+d\,x]}{2\,a^2\,\left(a+b\right)\,d\,\left(a+b-b\,\text{Cos}[c+d\,x]^2\right)}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{2\,a\,d\,\left(a+b-b\,\text{Cos}[c+d\,x]^2\right)}$$

Result (type 3, 390 leaves):

$$\frac{1}{32\,a^3\,d\,\left(b+a\,\text{Csc}[c+d\,x]^2\right)^2}$$

$$\left(-2\,a-b+b\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)\,\text{Csc}[c+d\,x]^3\,\left(\frac{8\,a\,b^2\,\text{Cot}[c+d\,x]}{a+b}+\frac{1}{\left(-a-b\right)^{3/2}}4\,b^{3/2}\,\left(5\,a+4\,b\right)\right.$$

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

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

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

$$4\,\left(a-4\,b\right)\,\left(2\,a+b-b\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)\,\text{Csc}[c+d\,x]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]-$$

$$4\,\left(a-4\,b\right)\,\left(2\,a+b-b\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)\,\text{Csc}[c+d\,x]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\right]-$$

$$\left.a\,\left(2\,a+b-b\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)\,\text{Csc}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2\right)$$

Problem 113: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

$$\int \frac{\text{Sin}[x]}{\sqrt{1+\text{Sin}[x]^2}} \, dx$$

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

$$-\text{ArcSin}\left[\frac{\text{Cos}[x]}{\sqrt{2}}\right]$$

Result (type 3, 29 leaves):

$$i \, \text{Log}\left[i \sqrt{2} \, \text{Cos}[x] + \sqrt{3-\text{Cos}[2 x]}\right]$$

Problem 114: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sin}[x] \sqrt{1+\text{Sin}[x]^2} \, dx$$

Optimal (type 3, 30 leaves, 3 steps):

$$-\text{ArcSin}\left[\frac{\text{Cos}[x]}{\sqrt{2}}\right] - \frac{1}{2} \text{Cos}[x] \sqrt{2-\text{Cos}[x]^2}$$

Result (type 3, 53 leaves):

$$-\frac{\text{Cos}[x] \sqrt{3-\text{Cos}[2 x]}}{2 \sqrt{2}} + i \, \text{Log}\left[i \sqrt{2} \, \text{Cos}[x] + \sqrt{3-\text{Cos}[2 x]}\right]$$

Problem 115: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sin}[7+3 x]}{\sqrt{3+\text{Sin}[7+3 x]^2}} \, dx$$

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

$$-\frac{1}{3} \text{ArcSin}\left[\frac{1}{2} \text{Cos}[7+3 x]\right]$$

Result (type 3, 39 leaves):

$$\frac{1}{3} i \, \text{Log}\left[i \sqrt{2} \, \text{Cos}[7+3 x] + \sqrt{7-\text{Cos}\left[2 (7+3 x)\right]}\right]$$

Problem 119: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\sqrt{a-a \, \text{Sin}[x]^2}} \, dx$$

Optimal (type 3, 16 leaves, 3 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[x]]\,\text{Cos}[x]}{\sqrt{a\,\text{Cos}[x]^2}}$$

Result (type 3, 46 leaves):

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

Problem 120: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\left(a-a\,\text{Sin}[x]^2\right)^{3/2}}\,dx$$

Optimal (type 3, 42 leaves, 4 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[x]]\,\text{Cos}[x]}{2\,a\,\sqrt{a\,\text{Cos}[x]^2}}+\frac{\text{Tan}[x]}{2\,a\,\sqrt{a\,\text{Cos}[x]^2}}$$

Result (type 3, 91 leaves):

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

Problem 172: Result unnecessarily involves higher level functions.

$$\int \text{Sin}[e+f\,x]^5\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 5, 220 leaves, 5 steps):

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

Result (type 6, 184 leaves):

$$\left(4\,a\,\text{AppellF1}\left[3,\frac{1}{2},-p,4,\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\text{Sin}[e+f\,x]^5\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\text{Tan}[e+f\,x]\right)\Big/\left(3\,f\left(8\,a\,\text{AppellF1}\left[3,\frac{1}{2},-p,4,\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]+\left(2\,b\,p\,\text{AppellF1}\left[4,\frac{1}{2},1-p,5,\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]+a\,\text{AppellF1}\left[4,\frac{3}{2},-p,5,\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)$$

Problem 173: Result unnecessarily involves higher level functions.

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

Optimal (type 5, 131 leaves, 4 steps):

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

Result (type 6, 184 leaves):

$$\left(3\,a\,\text{AppellF1}\left[2,\frac{1}{2},-p,3,\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\text{Sin}[e+f\,x]^3\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\text{Tan}[e+f\,x]\right)\Big/\left(2\,f\left(6\,a\,\text{AppellF1}\left[2,\frac{1}{2},-p,3,\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]+\left(2\,b\,p\,\text{AppellF1}\left[3,\frac{1}{2},1-p,4,\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]+a\,\text{AppellF1}\left[3,\frac{3}{2},-p,4,\text{Sin}[e+f\,x]^2,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)$$

Problem 175: Unable to integrate problem.

$$\int \text{Csc}[e+f\,x]\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 6, 83 leaves, 3 steps):

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

Result (type 8, 23 leaves):

$$\int \mathrm{Csc}[e+f x]\,\left(a+b\,\mathrm{Sin}[e+f x]^2\right)^p\,dx$$

Problem 176: Unable to integrate problem.

$$\int \mathrm{Csc}[e+f x]^3\,\left(a+b\,\mathrm{Sin}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 83 leaves, 3 steps):

$$-\frac{1}{f}\mathrm{AppellF1}\left[\frac{1}{2},\,2,\,-p,\,\frac{3}{2},\,\mathrm{Cos}[e+f x]^2,\,\frac{b\,\mathrm{Cos}[e+f x]^2}{a+b}\right]\,\mathrm{Cos}[e+f x]\,\left(a+b-b\,\mathrm{Cos}[e+f x]^2\right)^p\,\left(1-\frac{b\,\mathrm{Cos}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \mathrm{Csc}[e+f x]^3\,\left(a+b\,\mathrm{Sin}[e+f x]^2\right)^p\,dx$$

Problem 177: Unable to integrate problem.

$$\int \mathrm{Csc}[e+f x]^5\,\left(a+b\,\mathrm{Sin}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 83 leaves, 3 steps):

$$-\frac{1}{f}\mathrm{AppellF1}\left[\frac{1}{2},\,3,\,-p,\,\frac{3}{2},\,\mathrm{Cos}[e+f x]^2,\,\frac{b\,\mathrm{Cos}[e+f x]^2}{a+b}\right]\,\mathrm{Cos}[e+f x]\,\left(a+b-b\,\mathrm{Cos}[e+f x]^2\right)^p\,\left(1-\frac{b\,\mathrm{Cos}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \mathrm{Csc}[e+f x]^5\,\left(a+b\,\mathrm{Sin}[e+f x]^2\right)^p\,dx$$

Problem 179: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sin}[e+f x]^2\,\left(a+b\,\mathrm{Sin}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 99 leaves, 3 steps):

$$\frac{1}{3 f}\mathrm{AppellF1}\left[\frac{3}{2},\,2+p,\,-p,\,\frac{5}{2},\,-\mathrm{Tan}[e+f x]^2,\,-\frac{(a+b)\,\mathrm{Tan}[e+f x]^2}{a}\right]\,\left(\mathrm{Sec}[e+f x]^2\right)^p\,\left(a+b\,\mathrm{Sin}[e+f x]^2\right)^p\,\mathrm{Tan}[e+f x]^3\,\left(1+\frac{(a+b)\,\mathrm{Tan}[e+f x]^2}{a}\right)^{-p}$$

Result (type 6, 240 leaves):

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

Problem 180: Unable to integrate problem.

$$\int \text{Csc}[e+f x]^2\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 97 leaves, 3 steps):

$$-\frac{1}{f}\text{AppellF1}\left[-\frac{1}{2},\frac{1}{2},-p,\frac{1}{2},\text{Sin}[e+f x]^2,-\frac{b\,\text{Sin}[e+f x]^2}{a}\right]\sqrt{\text{Cos}[e+f x]^2}\,\text{Csc}[e+f x]\,\text{Sec}[e+f x]\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,\left(1+\frac{b\,\text{Sin}[e+f x]^2}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \text{Csc}[e+f x]^2\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,dx$$

Problem 181: Unable to integrate problem.

$$\int \text{Csc}[e+f x]^4\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 101 leaves, 3 steps):

$$-\frac{1}{3 f}\text{AppellF1}\left[-\frac{3}{2},\frac{1}{2},-p,-\frac{1}{2},\text{Sin}[e+f x]^2,-\frac{b\,\text{Sin}[e+f x]^2}{a}\right]\sqrt{\text{Cos}[e+f x]^2}\,\text{Csc}[e+f x]^3\,\text{Sec}[e+f x]\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,\left(1+\frac{b\,\text{Sin}[e+f x]^2}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \text{Csc}[e+f x]^4\,\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,dx$$

Problem 182: Result is not expressed in closed-form.

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

Optimal (type 3, 335 leaves, 17 steps):

$$\frac{3\,x}{8\,b}+\frac{2\,(-1)^{2/3}\,a^{5/3}\,\text{ArcTan}\Big[\frac{(-1)^{1/3}\,b^{1/3}-a^{1/3}\,\text{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\Big]}{3\,\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}\,b^{7/3}\,d}-$$
$$\frac{2\,a^{5/3}\,\text{ArcTan}\Big[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]}{\sqrt{a^{2/3}-b^{2/3}}}\Big]}{3\,\sqrt{a^{2/3}-b^{2/3}}\,b^{7/3}\,d}+\frac{2\,(-1)^{1/3}\,a^{5/3}\,\text{ArcTan}\Big[\frac{(-1)^{2/3}\,b^{1/3}+a^{1/3}\,\text{Tan}\big[\frac{1}{2}\,(c+d\,x)\big]}{\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}}\Big]}{3\,\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}\,b^{7/3}\,d}+$$
$$\frac{a\,\text{Cos}[c+d\,x]}{b^2\,d}-\frac{3\,\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{8\,b\,d}-\frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]^3}{4\,b\,d}$$

Result (type 7, 219 leaves):

$$\frac{1}{96\,b^2\,d}\Big(96\,a\,\text{Cos}[c+d\,x]-32\,a^2\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,$$
$$\Big(-2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]$$
$$\#1^2-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2\Big)\Big/\left(b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4\right)\,\&\Big]+$$
$$3\,b\,\big(12\,(c+d\,x)-8\,\text{Sin}[2\,(c+d\,x)]+\text{Sin}[4\,(c+d\,x)]\big)\Big)$$

Problem 183: Result is not expressed in closed-form.

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

Optimal (type 3, 273 leaves, 15 steps):

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

Result (type 7, 255 leaves):

$$\frac{1}{12\,b\,d}\left(6\,(c+d\,x)-2\,i\,a\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,\right.$$
$$\left(2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-\right.$$
$$4\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+2\,i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+$$
$$\left.2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4\right)\Big/$$
$$\left.\left(b\,\#1-4\,i\,a\,\#1^2-2\,b\,\#1^3+b\,\#1^5\right)\,\&\Big]-3\,\text{Sin}\big[2\,(c+d\,x)\big]\right)$$

Problem 184: Result is not expressed in closed-form.

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

Optimal (type 3, 259 leaves, 13 steps):

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

Result (type 7, 140 leaves):

$$\frac{1}{3\,b\,d}\left(3\,c+3\,d\,x+2\,i\,a\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,\right.$$
$$\left.\frac{2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1}{b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4}\,\&\Big]\right)$$

Problem 185: Result is not expressed in closed-form.

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

Optimal (type 3, 267 leaves, 11 steps):

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

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

Result (type 7, 172 leaves):

$$-\frac{1}{3\,d}\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,$$
$$\Big(-2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]+i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]$$
$$\#1^2-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\,\#1^2\Big)\Big/\left(b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4\right)\,\&\Big]$$

Problem 186: Result is not expressed in closed-form.

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

Optimal (type 3, 264 leaves, 14 steps):

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

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

Result (type 7, 264 leaves):

$$-\frac{1}{6\,a\,d}\Big(6\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-6\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$i\,b\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,$$
$$\Big(2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]-4\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]$$
$$\#1^2+2\,i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\,\#1^2+2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\,\#1^4-$$
$$i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\,\#1^4\Big)\Big/\left(b\,\#1-4\,i\,a\,\#1^2-2\,b\,\#1^3+b\,\#1^5\right)\,\&\Big]\Big)$$

Problem 187: Result is not expressed in closed-form.

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

Optimal (type 3, 287 leaves, 15 steps):

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

Result (type 7, 181 leaves):

$$\frac{1}{24\,a\,d}\left(16\,i\,b\,\text{RootSum}\left[-b+3\,b\,\#1^2-8\,i\,a\,\#1^3-3\,b\,\#1^4+b\,\#1^6\,\&,\right.\right.$$
$$\left.\frac{2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\,\#1-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\,\#1}{b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4}\,\&\right]-$$
$$\left.3\left(\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2+4\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-4\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)$$

Problem 188: Result is not expressed in closed-form.

$$\int\frac{\text{Csc}[c+d\,x]^5}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 344 leaves, 18 steps):

$$\frac{2\,\left(-1\right)^{2/3}\,b^{5/3}\,\text{ArcTan}\left[\frac{(-1)^{1/3}\,b^{1/3}-a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-(-1)^{2/3}\,b^{2/3}}}\right]}{3\,a^{7/3}\,\sqrt{a^{2/3}-\left(-1\right)^{2/3}\,b^{2/3}}\,d}-\frac{2\,b^{5/3}\,\text{ArcTan}\left[\frac{b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}-b^{2/3}}}\right]}{3\,a^{7/3}\,\sqrt{a^{2/3}-b^{2/3}}\,d}+$$
$$\frac{2\,\left(-1\right)^{1/3}\,b^{5/3}\,\text{ArcTan}\left[\frac{(-1)^{2/3}\,b^{1/3}+a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a^{2/3}+(-1)^{1/3}\,b^{2/3}}}\right]}{3\,a^{7/3}\,\sqrt{a^{2/3}+\left(-1\right)^{1/3}\,b^{2/3}}\,d}-\frac{3\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{8\,a\,d}+$$
$$\frac{b\,\text{Cot}[c+d\,x]}{a^2\,d}-\frac{3\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]}{8\,a\,d}-\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]^3}{4\,a\,d}$$

Result (type 7, 290 leaves):

$$\frac{1}{192 a^2 d}\Bigg(-64 b^2 \text{RootSum}\Big[-b+3 b \#1^2-8 i a \#1^3-3 b \#1^4+b \#1^6\&, \Big(-2 \text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big]+i \text{Log}\Big[1-2 \text{Cos}[c+d x] \#1+\#1^2\Big]+2 \text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big] \#1^2-i \text{Log}\Big[1-2 \text{Cos}[c+d x] \#1+\#1^2\Big] \#1^2\Big)\Big/\Big(b-4 i a \#1-2 b \#1^2+b \#1^4\Big)\&\Big]+3 \Big(32 b \text{Cot}\Big[\frac{1}{2} (c+d x)\Big]-6 a \text{Csc}\Big[\frac{1}{2} (c+d x)\Big]^2-a \text{Csc}\Big[\frac{1}{2} (c+d x)\Big]^4-24 a \text{Log}\Big[\text{Cos}\Big[\frac{1}{2} (c+d x)\Big]\Big]+24 a \text{Log}\Big[\text{Sin}\Big[\frac{1}{2} (c+d x)\Big]\Big]+6 a \text{Sec}\Big[\frac{1}{2} (c+d x)\Big]^2+a \text{Sec}\Big[\frac{1}{2} (c+d x)\Big]^4-32 b \text{Tan}\Big[\frac{1}{2} (c+d x)\Big]\Big)\Bigg)$$

Problem 189: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}[c+d x]^6}{a+b \text{Sin}[c+d x]^3} \, dx$$

Optimal (type 3, 293 leaves, 15 steps):

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

Result (type 7, 164 leaves):

$$-\frac{1}{12 b^2 d}\Bigg(12 a c+12 a d x+9 b \text{Cos}[c+d x]-b \text{Cos}[3 (c+d x)]+8 i a^2 \text{RootSum}\Big[-i b+3 i b \#1^2+8 a \#1^3-3 i b \#1^4+i b \#1^6\&, \frac{2 \text{ArcTan}\Big[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\Big] \#1-i \text{Log}\Big[1-2 \text{Cos}[c+d x] \#1+\#1^2\Big] \#1}{b-4 i a \#1-2 b \#1^2+b \#1^4}\&\Big]\Bigg)$$

Problem 190: Result is not expressed in closed-form.

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

Optimal (type 3, 281 leaves, 14 steps):

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

Result (type 7, 186 leaves):

$$\frac{1}{3 b d}\Big(-3 \text{Cos}[c+d x]+a \text{RootSum}\Big[-\mathrm{i} b+3 \mathrm{i} b \#1^2+8 a \#1^3-3 \mathrm{i} b \#1^4+\mathrm{i} b \#1^6 \&, \Big(-2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]+\mathrm{i} \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right]+2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^2-\mathrm{i} \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^2\Big) \Big/ \left(b-4 \mathrm{i} a \#1-2 b \#1^2+b \#1^4\right) \&\Big]\Big)$$

Problem 191: Result is not expressed in closed-form.

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

Optimal (type 3, 240 leaves, 11 steps):

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

Result (type 7, 231 leaves):

$$\frac{1}{6 d}\mathrm{i}\, \text{RootSum}\Big[-\mathrm{i} b+3 \mathrm{i} b \#1^2+8 a \#1^3-3 \mathrm{i} b \#1^4+\mathrm{i} b \#1^6 \&, \Big(2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]-\mathrm{i} \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right]-4 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^2+2 \mathrm{i} \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^2+2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^4-\mathrm{i} \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^4\Big) \Big/ \left(b \#1-4 \mathrm{i} a \#1^2-2 b \#1^3+b \#1^5\right) \&\Big]$$

Problem 192: Result is not expressed in closed-form.

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

Optimal (type 3, 245 leaves, 11 steps):

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

Result (type 7, 126 leaves):

$$-\frac{1}{3\,d}2\,i\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,\ \frac{2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1}{b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4}\,\&\Big]$$

Problem 193: Result is not expressed in closed-form.

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

Optimal (type 3, 281 leaves, 15 steps):

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

Result (type 7, 196 leaves):

$$\frac{1}{6\,a\,d}\Bigg(-3\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]+2\,b\,\text{RootSum}\Big[-b+3\,b\,\#1^2-8\,i\,a\,\#1^3-3\,b\,\#1^4+b\,\#1^6\,\&,\ \Big(-2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]+i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2\Big)\Big/\left(b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4\right)\,\&\Big]+3\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)$$

Problem 194: Result is not expressed in closed-form.

$$\int\frac{\text{Csc}[c+d\,x]^4}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 296 leaves, 16 steps):

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

Result (type 7, 333 leaves):

$$\frac{1}{24 a^2 d}\Bigg(-8 a \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]+24 b \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-24 b \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+4 i b^2 \operatorname{RootSum}\Big[-b+3 b \sharp 1^2-8 i a \sharp 1^3-3 b \sharp 1^4+b \sharp 1^6\,\&,\ \Big(2 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\sharp 1}\right]-i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x]\, \sharp 1+\sharp 1^2\right]-4 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\sharp 1}\right] \sharp 1^2+2 i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x]\, \sharp 1+\sharp 1^2\right] \sharp 1^2+2 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\sharp 1}\right] \sharp 1^4-i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x]\, \sharp 1+\sharp 1^2\right] \sharp 1^4\Big)\Big/\left(b \sharp 1-4 i a \sharp 1^2-2 b \sharp 1^3+b \sharp 1^5\right)\,\&\Big]+8 a \operatorname{Csc}[c+d x]^3 \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]^4-\frac{1}{2} a \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4 \operatorname{Sin}[c+d x]+8 a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)$$

Problem 195: Result is not expressed in closed-form.

$$\int \frac{\operatorname{Sin}[c+d x]^9}{a-b \operatorname{Sin}[c+d x]^4}\, dx$$

Optimal (type 3, 177 leaves, 6 steps):

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

Result (type 7, 228 leaves):

$$\frac{1}{120\,b^2\,d}\Big(\text{Cos}[c+d\,x]\,\big(120\,a+89\,b-28\,b\,\text{Cos}[2\,(c+d\,x)]+3\,b\,\text{Cos}[4\,(c+d\,x)]\big)+60\,i\,a^2\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\Big(-2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1+i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1+2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^3-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^3\Big)\Big/\big(-b-8\,a\,\#1^2+3\,b\,\#1^2-3\,b\,\#1^4+b\,\#1^6\big)\,\&\Big]\Big)$$

Problem 196: Result is not expressed in closed-form.

$$\int\frac{\text{Sin}[c+d\,x]^7}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 148 leaves, 6 steps):

$$-\frac{a\,\text{ArcTan}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{2\,\sqrt{\sqrt{a}-\sqrt{b}}\,b^{7/4}\,d}+\frac{a\,\text{ArcTanh}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{2\,\sqrt{\sqrt{a}+\sqrt{b}}\,b^{7/4}\,d}+\frac{\text{Cos}[c+d\,x]}{b\,d}-\frac{\text{Cos}[c+d\,x]^3}{3\,b\,d}$$

Result (type 7, 310 leaves):

$$\frac{1}{24\,b\,d}\Big(18\,\text{Cos}[c+d\,x]-2\,\text{Cos}[3\,(c+d\,x)]-3\,i\,a\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\Big(-2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+6\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-3\,i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-6\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4+3\,i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\Big)\Big/\big(-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7\big)\,\&\Big]\Big)$$

Problem 197: Result is not expressed in closed-form.

$$\int\frac{\text{Sin}[c+d\,x]^5}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 138 leaves, 6 steps):

$$-\frac{\sqrt{a}\,\text{ArcTan}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{2\,\sqrt{\sqrt{a}-\sqrt{b}}\,b^{5/4}\,d}-\frac{\sqrt{a}\,\text{ArcTanh}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{2\,\sqrt{\sqrt{a}+\sqrt{b}}\,b^{5/4}\,d}+\frac{\text{Cos}[c+d\,x]}{b\,d}$$

Result (type 7, 198 leaves):

$$\frac{1}{2\,b\,d}\Big(2\,\text{Cos}[c+d\,x]+ i\,a\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\Big(-2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\#1+ i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\#1+2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\#1^3- i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\#1^3\Big)\Big/\big(-b-8\,a\,\#1^2+3\,b\,\#1^2-3\,b\,\#1^4+b\,\#1^6\big)\,\&\Big]\Big)$$

Problem 198: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}[c+d\,x]^3}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 115 leaves, 4 steps):

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

Result (type 7, 285 leaves):

$$-\frac{1}{8\,d} i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\Big(-2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+ i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+6\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\#1^2-3\, i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\#1^2-6\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\#1^4+3\, i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\#1^4+2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\#1^6- i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\#1^6\Big)\Big/\big(-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7\big)\,\&\Big]$$

Problem 199: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}[c+d\,x]}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 125 leaves, 4 steps):

$$-\frac{\text{ArcTan}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{2\,\sqrt{a}\,\sqrt{\sqrt{a}-\sqrt{b}}\;b^{1/4}\,d}-\frac{\text{ArcTanh}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{2\,\sqrt{a}\,\sqrt{\sqrt{a}+\sqrt{b}}\;b^{1/4}\,d}$$

Result (type 7, 183 leaves):

$$\frac{1}{2\,d}\,i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\;\Big(-2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1+i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1+2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^3-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^3\Big)\Big/\big(-b-8\,a\,\#1^2+3\,b\,\#1^2-3\,b\,\#1^4+b\,\#1^6\big)\,\&\Big]$$

Problem 200: Result is not expressed in closed-form.

$$\int\frac{\text{Csc}[c+d\,x]}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 136 leaves, 7 steps):

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

Result (type 7, 318 leaves):

$$-\frac{1}{8\,a\,d}\Big(8\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]-8\,\text{Log}\Big[\text{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]+i\,b\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\;\Big(-2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+6\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-3\,i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-6\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4+3\,i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\Big)\Big/\big(-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7\big)\,\&\Big]\Big)$$

Problem 201: Result is not expressed in closed-form.

$$\int\frac{\text{Csc}[c+d\,x]^3}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 184 leaves, 7 steps):

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

Result (type 7, 242 leaves):

$$\frac{1}{8\,a\,d}\left(-\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2-4\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right]+4\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+4\,i\,b\,\text{RootSum}\left[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\left(-2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1+i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1+2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^3-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^3\right)\Big/\left(-b-8\,a\,\#1^2+3\,b\,\#1^2-3\,b\,\#1^4+b\,\#1^6\right)\,\&\right]+\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

Problem 202: Result is not expressed in closed-form.

$$\int\frac{\text{Csc}[c+d\,x]^5}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 229 leaves, 7 steps):

$$-\frac{b^{5/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{2\,a^2\,\sqrt{\sqrt{a}-\sqrt{b}}\,d}-\frac{(3\,a+8\,b)\,\text{ArcTanh}[\text{Cos}[c+d\,x]]}{8\,a^2\,d}+\frac{b^{5/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{2\,a^2\,\sqrt{\sqrt{a}+\sqrt{b}}\,d}-\frac{1}{16\,a\,d\,(1-\text{Cos}[c+d\,x])^2}-\frac{3}{16\,a\,d\,(1-\text{Cos}[c+d\,x])}+\frac{1}{16\,a\,d\,(1+\text{Cos}[c+d\,x])^2}+\frac{3}{16\,a\,d\,(1+\text{Cos}[c+d\,x])}$$

Result (type 7, 409 leaves):

$$\frac{1}{64 a^2 d}\left(-6 a \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2-a \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4-\right.$$
$$24 a \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]-64 b \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]+24 a \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+$$
$$64 b \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-8 i b^2 \operatorname{RootSum}\left[b-4 b \#1^2-16 a \#1^4+6 b \#1^4-4 b \#1^6+b \#1^8 \&,\right.$$
$$\left(-2 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right]+i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right]+\right.$$
$$6 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^2-3 i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^2-$$
$$6 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^4+3 i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^4+$$
$$\left.2 \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^6-i \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^6\right) \Big/$$
$$\left.\left.\left(-b \#1-8 a \#1^3+3 b \#1^3-3 b \#1^5+b \#1^7\right) \&\right]+6 a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2+a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4\right)$$

Problem 212: Result is not expressed in closed-form.

$$\int \frac{\operatorname{Sin}[c+d x]^9}{\left(a-b \operatorname{Sin}[c+d x]^4\right)^2} \, dx$$

Optimal (type 3, 236 leaves, 7 steps):

$$\frac{\sqrt{a}\left(5 \sqrt{a}-6 \sqrt{b}\right) \operatorname{ArcTan}\left[\frac{b^{1/4} \operatorname{Cos}[c+d x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{8\left(\sqrt{a}-\sqrt{b}\right)^{3/2} b^{9/4} d}+\frac{\sqrt{a}\left(5 \sqrt{a}+6 \sqrt{b}\right) \operatorname{ArcTanh}\left[\frac{b^{1/4} \operatorname{Cos}[c+d x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{8\left(\sqrt{a}+\sqrt{b}\right)^{3/2} b^{9/4} d}-$$
$$\frac{\operatorname{Cos}[c+d x]}{b^2 d}-\frac{a \operatorname{Cos}[c+d x]\left(a+b-b \operatorname{Cos}[c+d x]^2\right)}{4(a-b) b^2 d\left(a-b+2 b \operatorname{Cos}[c+d x]^2-b \operatorname{Cos}[c+d x]^4\right)}$$

Result (type 7, 486 leaves):

$$-\frac{1}{32\,b^2\,d}\left(32\,\text{Cos}[c+d\,x]+\frac{32\,a\,\text{Cos}[c+d\,x]\,\left(2\,a+b-b\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]\right)}{\left(a-b\right)\,\left(8\,a-3\,b+4\,b\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]-b\,\text{Cos}\left[4\,\left(c+d\,x\right)\right]\right)}+\frac{1}{a-b}\,i\,a\,\text{RootSum}\Big[\right.$$

$$b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}$$

$$\left(-2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]+i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]-\right.$$

$$40\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+54\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+$$

$$20\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-27\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2+$$

$$40\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-54\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-$$

$$20\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+27\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+$$

$$\left.\left.2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\right)\,\&\Big]\right)$$

Problem 213: Result is not expressed in closed-form.

$$\int\frac{\text{Sin}[c+d\,x]^7}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^2}\,dx$$

Optimal (type 3, 210 leaves, 5 steps):

$$\frac{\left(3\,\sqrt{a}-4\,\sqrt{b}\right)\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{8\,\left(\sqrt{a}-\sqrt{b}\right)^{3/2}\,b^{7/4}\,d}-\frac{\left(3\,\sqrt{a}+4\,\sqrt{b}\right)\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{8\,\left(\sqrt{a}+\sqrt{b}\right)^{3/2}\,b^{7/4}\,d}-$$

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

Result (type 7, 565 leaves):

$$\frac{1}{32\,(a-b)\,b\,d}\left(\frac{16\,a\,(-5\,\mathrm{Cos}[c+d\,x]+\mathrm{Cos}[3\,(c+d\,x)])}{8\,a-3\,b+4\,b\,\mathrm{Cos}[2\,(c+d\,x)]-b\,\mathrm{Cos}[4\,(c+d\,x)]}-\right.$$
$$i\,\mathrm{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}$$
$$\Big(6\,a\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]-8\,b\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]-$$
$$3\,i\,a\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]+4\,i\,b\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]-$$
$$10\,a\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+24\,b\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+$$
$$5\,i\,a\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-12\,i\,b\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+$$
$$10\,a\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-24\,b\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-$$
$$5\,i\,a\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+12\,i\,b\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4-$$
$$6\,a\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]\,\#1^6+8\,b\,\mathrm{ArcTan}\Big[\frac{\mathrm{Sin}[c+d\,x]}{\mathrm{Cos}[c+d\,x]-\#1}\Big]\,\#1^6+$$
$$\left.3\,i\,a\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6-4\,i\,b\,\mathrm{Log}\big[1-2\,\mathrm{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\Big)\,\&\Big]\right)$$

Problem 214: Result is not expressed in closed-form.

$$\int\frac{\mathrm{Sin}[c+d\,x]^5}{\left(a-b\,\mathrm{Sin}[c+d\,x]^4\right)^2}\,dx$$

Optimal (type 3, 217 leaves, 5 steps):

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

Result (type 7, 469 leaves):

$$-\frac{1}{32\,(a-b)\,b\,d}\left(\frac{32\,\text{Cos}[c+d\,x]\,\left(2\,a+b-b\,\text{Cos}[2\,(c+d\,x)]\right)}{8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)]}+\right.$$

$$i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$

$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\left(-2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]+\right.$$

$$i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]-8\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+$$

$$22\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+4\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-$$

$$11\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2+8\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-$$

$$22\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-4\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+$$

$$11\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-$$

$$\left.\left.i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\right)\&\Big]\right)$$

Problem 215: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}[c+d\,x]^3}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^2}\,dx$$

Optimal (type 3, 186 leaves, 5 steps):

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

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

Result (type 7, 345 leaves):

$$\frac{1}{32\,(a-b)\,d}\left(\frac{16\,(-5\,\text{Cos}[c+d\,x]+\text{Cos}[3\,(c+d\,x)])}{8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)]}-\right.$$
$$i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$
$$\Big(-2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+$$
$$14\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-7\,i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-$$
$$14\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4+7\,i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+$$
$$2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6-i\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\Big)\Big/$$
$$\left.\left(-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7\right)\,\&\Big]\right)$$

Problem 216: Result is not expressed in closed-form.

$$\int\frac{\text{Sin}[c+d\,x]}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^2}\,dx$$

Optimal (type 3, 221 leaves, 5 steps):

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

Result (type 7, 469 leaves):

$$-\frac{1}{32\,a\,(a-b)\,d}\left(\frac{32\,\text{Cos}[c+d\,x]\,\left(2\,a+b-b\,\text{Cos}[2\,(c+d\,x)]\right)}{8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)]}+\right.$$
$$i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$
$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\left(-2\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+\right.$$
$$i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+24\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-$$
$$10\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-12\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+$$
$$5\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-24\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4+$$
$$10\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4+12\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4-$$
$$5\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+2\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6-$$
$$\left.\left.i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\right)\,\&\Big]\right)$$

Problem 217: Result is not expressed in closed-form.

$$\int\frac{\text{Csc}[c+d\,x]}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^2}\,dx$$

Optimal (type 3, 325 leaves, 11 steps):

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

Result (type 7, 600 leaves):

$$\frac{1}{32 a^2 d}\left(\frac{16 a b\,(-5 \operatorname{Cos}[c+d x]+\operatorname{Cos}[3 (c+d x)])}{(a-b)\,(8 a-3 b+4 b \operatorname{Cos}[2 (c+d x)]-b \operatorname{Cos}[4 (c+d x)])}-\right.$$
$$32 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right]+32 \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-\frac{1}{a-b} \, i\, b \operatorname{RootSum}\Big[$$
$$b-4 b \#1^2-16 a \#1^4+6 b \#1^4-4 b \#1^6+b \#1^8 \&,\ \frac{1}{-b \#1-8 a \#1^3+3 b \#1^3-3 b \#1^5+b \#1^7}$$
$$\left(-10 a \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right]+8 b \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right]+\right.$$
$$5 i a \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right]-4 i b \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right]+$$
$$38 a \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^2-24 b \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^2-$$
$$19 i a \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^2+12 i b \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^2-$$
$$38 a \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^4+24 b \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^4+$$
$$19 i a \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^4-12 i b \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^4+$$
$$10 a \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^6-8 b \operatorname{ArcTan}\left[\frac{\operatorname{Sin}[c+d x]}{\operatorname{Cos}[c+d x]-\#1}\right] \#1^6-$$
$$\left.\left.5 i a \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^6+4 i b \operatorname{Log}\left[1-2 \operatorname{Cos}[c+d x] \#1+\#1^2\right] \#1^6\right) \&\Big]\right)$$

Problem 224: Result is not expressed in closed-form.

$$\int \frac{\operatorname{Sin}[c+d x]^9}{\left(a-b \operatorname{Sin}[c+d x]^4\right)^3}\, dx$$

Optimal (type 3, 315 leaves, 6 steps):

$$-\frac{\left(5 a-14 \sqrt{a} \sqrt{b}+12 b\right) \operatorname{ArcTan}\left[\frac{b^{1/4} \operatorname{Cos}[c+d x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{64 \sqrt{a}\left(\sqrt{a}-\sqrt{b}\right)^{5/2} b^{9/4} d}-\frac{\left(5 a+14 \sqrt{a} \sqrt{b}+12 b\right) \operatorname{ArcTanh}\left[\frac{b^{1/4} \operatorname{Cos}[c+d x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{64 \sqrt{a}\left(\sqrt{a}+\sqrt{b}\right)^{5/2} b^{9/4} d}-$$
$$\frac{a \operatorname{Cos}[c+d x]\left(a+b-b \operatorname{Cos}[c+d x]^2\right)}{8 (a-b) b^2 d\left(a-b+2 b \operatorname{Cos}[c+d x]^2-b \operatorname{Cos}[c+d x]^4\right)^2}+$$
$$\frac{\operatorname{Cos}[c+d x]\left(9 a^2-11 a b-10 b^2-2 (2 a-5 b) b \operatorname{Cos}[c+d x]^2\right)}{32 (a-b)^2 b^2 d\left(a-b+2 b \operatorname{Cos}[c+d x]^2-b \operatorname{Cos}[c+d x]^4\right)}$$

Result (type 7, 785 leaves):

$$\frac{1}{128\,(a-b)^2\,b^2\,d}\Bigg(-\Big(\big(32\,\text{Cos}[c+d\,x]\,\big(-9\,a^2+13\,a\,b+5\,b^2+(2\,a-5\,b)\,b\,\text{Cos}[2\,(c+d\,x)]\big)\big)\Big/\Big(8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)]\Big)\Big)-\frac{512\,a\,(a-b)\,\text{Cos}[c+d\,x]\,\big(2\,a+b-b\,\text{Cos}[2\,(c+d\,x)]\big)}{\big(-8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)]\big)^2}+$$
$$i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}$$
$$\Big(-4\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+10\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+$$
$$2\,i\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-5\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-$$
$$20\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+56\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-$$
$$78\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+10\,i\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-$$
$$28\,i\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+39\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+$$
$$20\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-56\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4+$$
$$78\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-10\,i\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+$$
$$28\,i\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4-39\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+$$
$$4\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6-10\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6-$$
$$2\,i\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6+5\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\Big)\,\&\Big]\Bigg)$$

Problem 225: Result is not expressed in closed-form.

$$\int\frac{\text{Sin}[c+d\,x]^7}{\big(a-b\,\text{Sin}[c+d\,x]^4\big)^3}\,dx$$

Optimal (type 3, 290 leaves, 6 steps):

$$\frac{3\,\big(\sqrt{a}-2\,\sqrt{b}\big)\,\text{ArcTan}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{64\,\sqrt{a}\,\big(\sqrt{a}-\sqrt{b}\big)^{5/2}\,b^{7/4}\,d}-\frac{3\,\big(\sqrt{a}+2\,\sqrt{b}\big)\,\text{ArcTanh}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{64\,\sqrt{a}\,\big(\sqrt{a}+\sqrt{b}\big)^{5/2}\,b^{7/4}\,d}-$$
$$\frac{a\,\text{Cos}[c+d\,x]\,\big(2-\text{Cos}[c+d\,x]^2\big)}{8\,(a-b)\,b\,d\,\big(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\big)^2}+$$
$$\frac{\text{Cos}[c+d\,x]\,\big(5\,a-17\,b-3\,(a-3\,b)\,\text{Cos}[c+d\,x]^2\big)}{32\,(a-b)^2\,b\,d\,\big(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\big)}$$

Result (type 7, 630 leaves):

$$\frac{1}{256\,(a-b)^2\,b\,d}\left(-\frac{32\,\text{Cos}[c+d\,x]\,\left(-7\,a+25\,b+3\,(a-3\,b)\,\text{Cos}[2\,(c+d\,x)]\right)}{8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)]}+\frac{512\,a\,(a-b)\,\left(-5\,\text{Cos}[c+d\,x]+\text{Cos}[3\,(c+d\,x)]\right)}{\left(-8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)]\right)^2}-3\,i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(2\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-6\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+3\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-6\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+34\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+3\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-17\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+6\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-34\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-3\,i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+17\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4-2\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6+6\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6+i\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6-3\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\Big)\,\&\Big]\right)$$

Problem 226: Result is not expressed in closed-form.

$$\int\frac{\text{Sin}[c+d\,x]^5}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^3}\,dx$$

Optimal (type 3, 313 leaves, 6 steps):

$$\frac{\left(3\,a-10\,\sqrt{a}\,\sqrt{b}+4\,b\right)\,\text{ArcTan}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{64\,a^{3/2}\,\left(\sqrt{a}-\sqrt{b}\right)^{5/2}\,b^{5/4}\,d}+\frac{\left(3\,a+10\,\sqrt{a}\,\sqrt{b}+4\,b\right)\,\text{ArcTanh}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{64\,a^{3/2}\,\left(\sqrt{a}+\sqrt{b}\right)^{5/2}\,b^{5/4}\,d}-\frac{\text{Cos}[c+d\,x]\,\left(a+b-b\,\text{Cos}[c+d\,x]^2\right)}{8\,(a-b)\,b\,d\,\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)^2}+\frac{\text{Cos}[c+d\,x]\,\left(a^2-11\,a\,b-2\,b^2+2\,b\,(2\,a+b)\,\text{Cos}[c+d\,x]^2\right)}{32\,a\,(a-b)^2\,b\,d\,\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)}$$

Result (type 7, 786 leaves):

$$\frac{1}{128\,(a-b)^2\,b\,d}\left(\frac{32\,\text{Cos}[c+d\,x]\,\left(a^2-9\,a\,b-b^2+b\,(2\,a+b)\,\text{Cos}[2\,(c+d\,x)]\right)}{a\,\left(8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)]\right)}-\right.$$

$$\frac{512\,(a-b)\,\text{Cos}[c+d\,x]\,\left(2\,a+b-b\,\text{Cos}[2\,(c+d\,x)]\right)}{\left(-8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)]\right)^2}+$$

$$\frac{1}{a}\,i\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,$$

$$\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\left(4\,a\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]+\right.$$

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

$$i\,b^2\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+12\,a^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-$$

$$64\,a\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+10\,b^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-$$

$$6\,i\,a^2\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2+32\,i\,a\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-$$

$$5\,i\,b^2\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-12\,a^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4+$$

$$64\,a\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-10\,b^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4+$$

$$6\,i\,a^2\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4-32\,i\,a\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+$$

$$5\,i\,b^2\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4-4\,a\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-$$

$$2\,b^2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6+2\,i\,a\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6+$$

$$\left.\left.i\,b^2\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\right)\&\Big]\right)$$

Problem 227: Result is not expressed in closed-form.

$$\int\frac{\text{Sin}[c+d\,x]^3}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^3}\,dx$$

Optimal (type 3, 288 leaves, 6 steps):

$$-\frac{\left(5\,\sqrt{a}-2\,\sqrt{b}\right)\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{64\,a^{3/2}\,\left(\sqrt{a}-\sqrt{b}\right)^{5/2}\,b^{3/4}\,d}+\frac{\left(5\,\sqrt{a}+2\,\sqrt{b}\right)\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{64\,a^{3/2}\,\left(\sqrt{a}+\sqrt{b}\right)^{5/2}\,b^{3/4}\,d}-$$

$$\frac{\text{Cos}[c+d\,x]\,\left(2-\text{Cos}[c+d\,x]^2\right)}{8\,(a-b)\,d\,\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)^2}-$$

$$\frac{\text{Cos}[c+d\,x]\,\left(11\,a+b-(5\,a+b)\,\text{Cos}[c+d\,x]^2\right)}{32\,a\,(a-b)^2\,d\,\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)}$$

Result (type 7, 631 leaves):

$$\frac{1}{256\,(a-b)^2\,d}\left(\frac{32\,\text{Cos}[c+d\,x]\,\left(-17\,a-b+(5\,a+b)\,\text{Cos}[2\,(c+d\,x)]\right)}{a\,\left(8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)]\right)}+\frac{512\,(a-b)\,\left(-5\,\text{Cos}[c+d\,x]+\text{Cos}[3\,(c+d\,x)]\right)}{\left(-8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)]\right)^2}+\frac{1}{a}\,\mathrm{i}\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(10\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+2\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-5\,\mathrm{i}\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-\mathrm{i}\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-94\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+10\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+47\,\mathrm{i}\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-5\,\mathrm{i}\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+94\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-10\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-47\,\mathrm{i}\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+5\,\mathrm{i}\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4-10\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6-2\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6+5\,\mathrm{i}\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6+\mathrm{i}\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\Big)\,\&\Big]\right)$$

Problem 228: Result is not expressed in closed-form.

$$\int \frac{\text{Sin}[c+d\,x]}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^3}\,dx$$

Optimal (type 3, 313 leaves, 6 steps):

$$-\frac{3\,\left(7\,a-10\,\sqrt{a}\,\sqrt{b}+4\,b\right)\,\text{ArcTan}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\Big]}{64\,a^{5/2}\,\left(\sqrt{a}-\sqrt{b}\right)^{5/2}\,b^{1/4}\,d}-\frac{3\,\left(7\,a+10\,\sqrt{a}\,\sqrt{b}+4\,b\right)\,\text{ArcTanh}\Big[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\Big]}{64\,a^{5/2}\,\left(\sqrt{a}+\sqrt{b}\right)^{5/2}\,b^{1/4}\,d}-\frac{\text{Cos}[c+d\,x]\,\left(a+b-b\,\text{Cos}[c+d\,x]^2\right)}{8\,a\,(a-b)\,d\,\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)^2}-\frac{\text{Cos}[c+d\,x]\,\left((7\,a-3\,b)\,(a+2\,b)-6\,(2\,a-b)\,b\,\text{Cos}[c+d\,x]^2\right)}{32\,a^2\,(a-b)^2\,d\,\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)}$$

Result (type 7, 784 leaves):

$$\frac{1}{128\,a^2\,(a-b)^2\,d}\left(-\frac{32\,\text{Cos}[c+d\,x]\,\left(7\,a^2+5\,a\,b-3\,b^2+3\,b\,(-2\,a+b)\,\text{Cos}[2\,(c+d\,x)]\right)}{8\,a-3\,b+4\,b\,\text{Cos}[2\,(c+d\,x)]-b\,\text{Cos}[4\,(c+d\,x)]}-\frac{512\,a\,(a-b)\,\text{Cos}[c+d\,x]\,\left(2\,a+b-b\,\text{Cos}[2\,(c+d\,x)]\right)}{\left(-8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)]\right)^2}+3\,\text{i}\,\text{RootSum}\Big[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\Big(4\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-2\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-2\,\text{i}\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+\text{i}\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-28\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+24\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-10\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+14\,\text{i}\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-12\,\text{i}\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+5\,\text{i}\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+28\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-24\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4+10\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-14\,\text{i}\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4+12\,\text{i}\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4-5\,\text{i}\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4-4\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6+2\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^6+2\,\text{i}\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6-\text{i}\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^6\Big)\,\&\Big]\right)$$

Problem 229: Result is not expressed in closed-form.

$$\int \frac{\text{Csc}[c+d\,x]}{\left(a-b\,\text{Sin}[c+d\,x]^4\right)^3}\,dx$$

Optimal (type 3, 617 leaves, 16 steps):

$$-\frac{\left(5\sqrt{a}-2\sqrt{b}\right) b^{1/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{64\,a^{5/2}\left(\sqrt{a}-\sqrt{b}\right)^{5/2} d}-\frac{b^{1/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{8\,a^{5/2}\left(\sqrt{a}-\sqrt{b}\right)^{3/2} d}-\frac{b^{1/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}-\sqrt{b}}}\right]}{2\,a^3\sqrt{\sqrt{a}-\sqrt{b}}\;d}-\frac{\text{ArcTanh}[\text{Cos}[c+d\,x]]}{a^3\,d}+\frac{b^{1/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{8\,a^{5/2}\left(\sqrt{a}+\sqrt{b}\right)^{3/2} d}+\frac{b^{1/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{2\,a^3\sqrt{\sqrt{a}+\sqrt{b}}\;d}+\frac{\left(5\sqrt{a}+2\sqrt{b}\right) b^{1/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{\sqrt{\sqrt{a}+\sqrt{b}}}\right]}{64\,a^{5/2}\left(\sqrt{a}+\sqrt{b}\right)^{5/2} d}-\frac{b\,\text{Cos}[c+d\,x]\left(2-\text{Cos}[c+d\,x]^2\right)}{8\,a\,(a-b)\,d\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)^2}-\frac{b\,\text{Cos}[c+d\,x]\left(2-\text{Cos}[c+d\,x]^2\right)}{4\,a^2\,(a-b)\,d\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)}-\frac{b\,\text{Cos}[c+d\,x]\left(11\,a+b-(5\,a+b)\,\text{Cos}[c+d\,x]^2\right)}{32\,a^2\,(a-b)^2\,d\left(a-b+2\,b\,\text{Cos}[c+d\,x]^2-b\,\text{Cos}[c+d\,x]^4\right)}$$

Result (type 7, 920 leaves) :

$$\frac{1}{256 a^3 d}\left(\frac{32 a b \text{Cos}[c+d x] (-41 a+23 b+(13 a-7 b) \text{Cos}[2 (c+d x)])}{(a-b)^2 (8 a-3 b+4 b \text{Cos}[2 (c+d x)]-b \text{Cos}[4 (c+d x)])}+\frac{512 a^2 b (-5 \text{Cos}[c+d x]+\text{Cos}[3 (c+d x)])}{(a-b) (-8 a+3 b-4 b \text{Cos}[2 (c+d x)]+b \text{Cos}[4 (c+d x)])^2}-256 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right]+256 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]-\frac{1}{(a-b)^2} i b \text{RootSum}\Big[b-4 b \#1^2-16 a \#1^4+6 b \#1^4-4 b \#1^6+b \#1^8\&, \frac{1}{-b \#1-8 a \#1^3+3 b \#1^3-3 b \#1^5+b \#1^7}\Big(-90 a^2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]+142 a b \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]-64 b^2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]+45 i a^2 \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right]-71 i a b \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right]+32 i b^2 \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right]+398 a^2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^2-506 a b \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^2+192 b^2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^2-199 i a^2 \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^2+253 i a b \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^2-96 i b^2 \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^2-398 a^2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^4+506 a b \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^4-192 b^2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^4+199 i a^2 \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^4-253 i a b \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^4+96 i b^2 \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^4+90 a^2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^6-142 a b \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^6+64 b^2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^6-45 i a^2 \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^6+71 i a b \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^6-32 i b^2 \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^6\Big)\&\Big]\right)$$

Problem 237: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{a+b \text{Sin}[x]^4} \, dx$$

Optimal (type 3, 487 leaves, 10 steps):

$$-\frac{\left(\sqrt{a}+\sqrt{a+b}\right)\text{ArcTan}\left[\frac{a^{1/4}\sqrt{a+b-\sqrt{a}\sqrt{a+b}}-\sqrt{2}(a+b)^{3/4}\text{Tan}[x]}{a^{1/4}\sqrt{a+b+\sqrt{a}\sqrt{a+b}}}\right]}{2\sqrt{2}a^{3/4}(a+b)^{1/4}\sqrt{a+b+\sqrt{a}\sqrt{a+b}}}+$$

$$\frac{\left(\sqrt{a}+\sqrt{a+b}\right)\text{ArcTan}\left[\frac{a^{1/4}\sqrt{a+b-\sqrt{a}\sqrt{a+b}}+\sqrt{2}(a+b)^{3/4}\text{Tan}[x]}{a^{1/4}\sqrt{a+b+\sqrt{a}\sqrt{a+b}}}\right]}{2\sqrt{2}a^{3/4}(a+b)^{1/4}\sqrt{a+b+\sqrt{a}\sqrt{a+b}}}+$$

$$\left(\left(\sqrt{a}-\sqrt{a+b}\right)\text{Log}\left[\sqrt{a}(a+b)^{1/4}-\sqrt{2}a^{1/4}\sqrt{a+b-\sqrt{a}\sqrt{a+b}}\text{Tan}[x]+(a+b)^{3/4}\text{Tan}[x]^2\right]\right)/$$
$$\left(4\sqrt{2}a^{3/4}(a+b)^{1/4}\sqrt{a+b-\sqrt{a}\sqrt{a+b}}\right)-$$
$$\left(\left(\sqrt{a}-\sqrt{a+b}\right)\text{Log}\left[\sqrt{a}(a+b)^{1/4}+\sqrt{2}a^{1/4}\sqrt{a+b-\sqrt{a}\sqrt{a+b}}\text{Tan}[x]+(a+b)^{3/4}\text{Tan}[x]^2\right]\right)/$$
$$\left(4\sqrt{2}a^{3/4}(a+b)^{1/4}\sqrt{a+b-\sqrt{a}\sqrt{a+b}}\right)$$

Result (type 3, 148 leaves):

$$\frac{1}{2a(a+b)}\left(\left(\sqrt{a}-i\sqrt{b}\right)\sqrt{a+i\sqrt{a}\sqrt{b}}\text{ArcTan}\left[\frac{\sqrt{a+i\sqrt{a}\sqrt{b}}\text{Tan}[x]}{\sqrt{a}}\right]-\right.$$
$$\left.\left(\sqrt{a}+i\sqrt{b}\right)\sqrt{-a+i\sqrt{a}\sqrt{b}}\text{ArcTanh}\left[\frac{\sqrt{-a+i\sqrt{a}\sqrt{b}}\text{Tan}[x]}{\sqrt{a}}\right]\right)$$

Problem 238: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{1+\text{Sin}[x]^4}\,dx$$

Optimal (type 3, 309 leaves, 10 steps):

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

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

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

$$\frac{1}{8}\sqrt{-1+\sqrt{2}}\text{Log}\left[1+\sqrt{2\left(-1+\sqrt{2}\right)}\text{Tan}[x]+\sqrt{2}\text{Tan}[x]^2\right]$$

Result (type 3, 45 leaves):

$$\frac{\text{ArcTan}\left[\sqrt{1-i}\ \text{Tan}[x]\right]}{2\sqrt{1-i}}+\frac{\text{ArcTan}\left[\sqrt{1+i}\ \text{Tan}[x]\right]}{2\sqrt{1+i}}$$

Problem 239: Result unnecessarily involves imaginary or complex numbers.

$$\int \text{Sin}[c+d\,x]\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 4, 477 leaves, 5 steps):

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

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

$$\left.\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{(a+b)^{1/4}}\right],\frac{1}{2}\left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/$$

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

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

$$\left.\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{(a+b)^{1/4}}\right],\frac{1}{2}\left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/$$

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

Result (type 4, 542 leaves):

$$-\frac{\text{Cos}[c+d\,x]\,\sqrt{8\,a+3\,b-4\,b\,\text{Cos}\left[2\,(c+d\,x)\right]+b\,\text{Cos}\left[4\,(c+d\,x)\right]}}{6\,\sqrt{2}\,d}+$$

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

$$2\,\text{Sec}[c+d\,x]\left(a+2\,a\,\text{Tan}[c+d\,x]^2+a\,\text{Tan}[c+d\,x]^4+b\,\text{Tan}[c+d\,x]^4-\right.$$

$$\left(\left(-i\,\sqrt{b}\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{i\,\left(a-i\,\sqrt{a}\,\sqrt{b}+a\,\text{Tan}[c+d\,x]^2+b\,\text{Tan}[c+d\,x]^2\right)}{\sqrt{a}\,\sqrt{b}}}}{\sqrt{2}}\right],\,\frac{2\,\sqrt{a}}{\sqrt{a}-i\,\sqrt{b}}\right]+\right.\right.$$

$$\left(\sqrt{a}+i\,\sqrt{b}\right)\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{i\,\left(a-i\,\sqrt{a}\,\sqrt{b}+a\,\text{Tan}[c+d\,x]^2+b\,\text{Tan}[c+d\,x]^2\right)}{\sqrt{a}\,\sqrt{b}}}}{\sqrt{2}}\right],$$

$$\left.\left.\frac{2\,\sqrt{a}}{\sqrt{a}-i\,\sqrt{b}}\right]\right)\sqrt{\frac{\left(-i\,\sqrt{a}+\sqrt{b}\right)\left(1+\text{Tan}[c+d\,x]^2\right)}{\sqrt{b}}}$$

$$\sqrt{\frac{i\,\left(a-i\,\sqrt{a}\,\sqrt{b}+a\,\text{Tan}[c+d\,x]^2+b\,\text{Tan}[c+d\,x]^2\right)}{\sqrt{a}\,\sqrt{b}}}$$

$$\left.\left(-i\,\sqrt{b}\,\text{Tan}[c+d\,x]^2+\sqrt{a}\,\left(1+\text{Tan}[c+d\,x]^2\right)\right)\right)\Big/$$

$$\left.\left(\sqrt{-\frac{i\,\left(a+i\,\sqrt{a}\,\sqrt{b}+a\,\text{Tan}[c+d\,x]^2+b\,\text{Tan}[c+d\,x]^2\right)}{\sqrt{a}\,\sqrt{b}}}\right)\right)$$

Problem 240: Unable to integrate problem.

$$\int \text{Csc}[c+d\,x]\,\sqrt{a+b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 4, 521 leaves, 8 steps):

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

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

$$\left.\text{EllipticE}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \text{Cos}[c+d x]}{(a+b)^{1/4}}\right], \frac{1}{2} \left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right) \Big/$$

$$\left(d \sqrt{a+b-2 b \text{Cos}[c+d x]^2+b \text{Cos}[c+d x]^4}\right)-$$

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

$$\left.\text{EllipticPi}\left[\frac{\left(\sqrt{b}+\sqrt{a+b}\right)^2}{4 \sqrt{b}\ \sqrt{a+b}}, 2 \text{ArcTan}\left[\frac{b^{1/4} \text{Cos}[c+d x]}{(a+b)^{1/4}}\right], \frac{1}{2} \left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right) \Big/$$

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

Result (type 8, 25 leaves):

$$\int \text{Csc}[c+d x] \sqrt{a+b \text{Sin}[c+d x]^4}\, dx$$

Problem 241: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Sin}[c+d x]^5}{\sqrt{a+b \text{Sin}[c+d x]^4}}\, dx$$

Optimal (type 4, 484 leaves, 5 steps):

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

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

$$\left.\text{EllipticE}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d x]}{(a+b)^{1/4}}\right],\frac{1}{2}\left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/$$

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

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

$$\left.\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d x]}{(a+b)^{1/4}}\right],\frac{1}{2}\left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Big/$$

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

Result (type 1, 1 leaves):

???

Problem 242: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Sin}[c+d x]^3}{\sqrt{a+b\,\text{Sin}[c+d x]^4}}\,dx$$

Optimal (type 4, 431 leaves, 4 steps):

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

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

$$\left.\text{EllipticE}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \text{Cos}[c+d x]}{(a+b)^{1/4}}\right], \frac{1}{2} \left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right) \Big/$$

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

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

$$\left.\text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \text{Cos}[c+d x]}{(a+b)^{1/4}}\right], \frac{1}{2} \left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right) \Big/$$

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

Result (type 4, 35 489 leaves): Display of huge result suppressed!

Problem 243: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sin}[c+d x]}{\sqrt{a+b \text{Sin}[c+d x]^4}} \, dx$$

Optimal (type 4, 171 leaves, 2 steps):

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

$$\left.\text{EllipticF}\left[2 \text{ArcTan}\left[\frac{b^{1/4} \text{Cos}[c+d x]}{(a+b)^{1/4}}\right], \frac{1}{2} \left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right) \Big/$$

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

Result (type 4, 13 300 leaves) :

$$-\Bigg(\Bigg(8\sqrt{2}\ \text{EllipticF}\Bigg[\text{ArcSin}\Bigg[\sqrt{\Big(\Big(\Big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]-}$$

$$\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]\Big)$$

$$\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)\Big)\Big/$$

$$\Big(\Big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]-$$

$$\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]\Big)$$

$$\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)\Big)\Big)\Big],$$

$$\Big(\Big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]-$$

$$\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3\big]\Big)$$

$$\Big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]-$$

$$\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]\Big)\Big)\Big/$$

$$\Big(\Big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]-$$

$$\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3\big]\Big)$$

$$\Big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]-$$

$$\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]\Big)\Big)\Bigg]$$

$$\Big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]-$$

$$\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]\Big)\ \text{Sin}[c+dx]$$

$$\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)^2$$

$$\sqrt{\Big(\Big(\Big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]-}$$

$$\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]\Big)$$

$$\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)\Big)\Big/$$

$$\Big(\Big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]-$$

$$\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,3\big]\Big)$$

$$\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)\Big)\Big)$$

$$\sqrt{\Big(\Big(\Big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]-}$$

$$\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]\Big)$$

$$\Big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,2\big]-$$

$$\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]\Big)$$

$$\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)$$

$$\Big(-\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,4\big]+\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big)\Big)\Big/$$

$$\Big(\Big(\text{Root}\big[a+4a\#1+(6a+16b)\#1^2+4a\#1^3+a\#1^4\&,1\big]-$$

$$\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,4\right]\Big)^2$$

$$\left(-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(d\,\sqrt{8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)]}$$

$$\left(-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,1\right]+\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,2\right]\right)$$

$$\left(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,2\right]-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,4\right]\right)$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\sqrt{\frac{16\,b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^4}{\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^4}}$$

$$\Bigg(-\Bigg(\Bigg(8\,\text{EllipticF}\Bigg[\text{ArcSin}\Bigg[\sqrt{\Big(\Big(\Big(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,2\right]-}$$

$$\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,4\right]\Big)\Big(-\text{Root}\Big[$$

$$a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,1\Big]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)\Big/$$

$$\Big(\Big(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,1\right]-\text{Root}\Big[$$

$$a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,4\Big]\Big)\Big(-\text{Root}\Big[a+4\,a\,\sharp 1+$$

$$(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,2\Big]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)\Big)\Bigg],$$

$$\Big(\Big(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,2\right]-\text{Root}\Big[a+4\,a\,\sharp 1+$$

$$(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,3\Big]\Big)\Big(\text{Root}\Big[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+$$

$$4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,1\Big]-\text{Root}\Big[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,$$

$$4\Big]\Big)\Big)\Big/\Big(\Big(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,1\right]-$$

$$\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,3\right]\Big)$$

$$\Big(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,2\right]-$$

$$\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,4\right]\Big)\Big)\Bigg]$$

$$\Big(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,1\right]-\text{Root}\Big[a+4\,a\,\sharp 1+$$

$$(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,4\Big]\Big)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]$$

$$\left(-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

$$\sqrt{\Big(\Big(\Big(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,1\right]-}$$

$$\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,2\right]\Big)$$

$$\Big(-\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 3]+\text{Tan}[\tfrac{1}{2}(c+d x)]^2\Big)\Big)\Big/$$

$$\Big(\big(\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 1]-$$

$$\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 3]\big)$$

$$\Big(-\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 2]+\text{Tan}[\tfrac{1}{2}(c+d x)]^2\Big)\Big)\Big)$$

$$\sqrt{\Big(\Big(\big(\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 1]-}$$

$$\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 2]\big)$$

$$\big(\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 2]-$$

$$\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 4]\big)$$

$$\Big(-\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 1]+\text{Tan}[\tfrac{1}{2}(c+d x)]^2\Big)$$

$$\Big(-\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 4]+\text{Tan}[\tfrac{1}{2}(c+d x)]^2\Big)\Big)\Big/$$

$$\Big(\big(\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 1]-$$

$$\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 4]\big)^2\ \Big(-\text{Root}[a+4 a \#1+$$

$$(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 2]+\text{Tan}[\tfrac{1}{2}(c+d x)]^2\Big)^2\Big)\Big)\Big)\Big/$$

$$\Big(\big(-\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 1]+\text{Root}[a+4 a \#1+$$

$$(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 2]\big)\ \big(\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+$$

$$4 a \#1^3+a \#1^4 \&, 2]-\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 4]\big)$$

$$\big(1+\text{Tan}[\tfrac{1}{2}(c+d x)]^2\big)^2 \sqrt{\frac{16 b\, \text{Tan}[\frac{1}{2}(c+d x)]^4+a\big(1+\text{Tan}[\frac{1}{2}(c+d x)]^2\big)^4}{\big(1+\text{Tan}[\frac{1}{2}(c+d x)]^2\big)^4}}\Big)\Big)+$$

$$\Big(8\, \text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\Big(\Big(\big(\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 2]-}$$

$$\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 4]\big)$$

$$\Big(-\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 1]+\text{Tan}[\tfrac{1}{2}(c+d x)]^2\Big)\Big)\Big/$$

$$\Big(\big(\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 1]-$$

$$\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 4]\big)\ \Big(-\text{Root}[$$

$$a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 2]+\text{Tan}[\tfrac{1}{2}(c+d x)]^2\Big)\Big)\Big)\Big],$$

$$\Big(\big(\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 2]-\text{Root}[a+4 a \#1+$$

$$(6 a+16 b) \#1^2+4 a \#1^3+a \#1^4 \&, 3]\big)\ \big(\text{Root}[a+4 a \#1+(6 a+16 b) \#1^2+4 a$$

$$\#1^3 + a\,\#1^4\,\&,\,1] - \text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,4])) \Big/ \\ ((\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,1] - \text{Root}[a + 4\,a\,\#1 + \\ (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,3])\,(\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a \\ \#1^3 + a\,\#1^4\,\&,\,2] - \text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,4]))] \\ (\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,1] - \text{Root}[\\ a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,4])\,\text{Sec}\left[\frac{1}{2}\,(c + d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c + d\,x)\right] \\ \left(-\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,2] + \text{Tan}\left[\frac{1}{2}\,(c + d\,x)\right]^2\right)^2$$

$$\sqrt{\Big(\Big((\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,1] - \text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,2])\left(-\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,3] + \text{Tan}\left[\frac{1}{2}\,(c + d\,x)\right]^2\right)\Big) \Big/ \Big((\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,1] - \text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,3])\left(-\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,2] + \text{Tan}\left[\frac{1}{2}\,(c + d\,x)\right]^2\right)\Big)\Big)}$$

$$\sqrt{\Big(\Big((\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,1] - \text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,2])\,(\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,2] - \text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,4])\left(-\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,1] + \text{Tan}\left[\frac{1}{2}\,(c + d\,x)\right]^2\right)\left(-\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,4] + \text{Tan}\left[\frac{1}{2}\,(c + d\,x)\right]^2\right)\Big) \Big/ \Big((\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,1] - \text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,4])^2\left(-\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,2] + \text{Tan}\left[\frac{1}{2}\,(c + d\,x)\right]^2\right)^2\Big)\Big)} \Big/$$

$$\Big((-\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,1] + \text{Root}[\\ a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,2]) \\ (\text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,2] - \\ \text{Root}[a + 4\,a\,\#1 + (6\,a + 16\,b)\,\#1^2 + 4\,a\,\#1^3 + a\,\#1^4\,\&,\,4]) \\ \left(1 + \text{Tan}\left[\frac{1}{2}\,(c + d\,x)\right]^2\right)^3 \sqrt{\frac{16\,b\,\text{Tan}\left[\frac{1}{2}\,(c + d\,x)\right]^4 + a\left(1 + \text{Tan}\left[\frac{1}{2}\,(c + d\,x)\right]^2\right)^4}{\left(1 + \text{Tan}\left[\frac{1}{2}\,(c + d\,x)\right]^2\right)^4}}\Big) -$$

$$\Bigg(2\,\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\big]\Big)$$

$$\left(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2$$

$$\sqrt{\Bigg(\Bigg(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]\Big)\left(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,3\big]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Bigg)\Bigg/\Bigg(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,3\big]\Big)\left(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Bigg)\Bigg)}$$

$$\sqrt{\Bigg(\Bigg(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]\Big)\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\big]\Big)\left(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\left(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\big]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Bigg)\Bigg/\Bigg(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\big]\Big)^2\left(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\Bigg)\Bigg)}$$

$$\Bigg(-\Bigg(\Bigg(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\big]\Big)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\left(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Bigg)\Bigg/\Bigg(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\big]\Big)\left(-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\Bigg)\Bigg)+$$

$$\Bigg(\Big(\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\big]-\text{Root}\big[a+4\,a\,\#1+(6\,a+16\,b)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\big]\Big)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Bigg)\Bigg/$$

$$\left(\left(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,1\right]-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,4\right]\right)\left(-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,2\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)\Big/$$

$$\left(\left(-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,1\right]+\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,2\right]\right)\right.$$

$$\left(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,2\right]-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,4\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2$$

$$\sqrt{\left(\left(\left(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,2\right]-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,4\right]\right)\left(-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,1\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/\left(\left(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,1\right]-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,4\right]\right)\left(-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,2\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)}$$

$$\sqrt{\frac{16\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+a\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^4}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^4}}$$

$$\sqrt{\left(1-\left(\left(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,2\right]-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,3\right]\right)\left(-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,1\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/\left(\left(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,1\right]-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,3\right]\right)\left(-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,2\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)}$$

$$\sqrt{\left(1-\left(\left(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,2\right]-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,4\right]\right)\left(-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,1\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/\left(\left(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,1\right]-\right.\right.\right.}$$

Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 4]) (-Root[
a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2] + Tan[1/2 (c + d x)]^2)))) -
(2 EllipticF[ArcSin[Sqrt[(((Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2] -
Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 4])
(-Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] + Tan[1/2 (c + d x)]^2)) /
((Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] -
Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 4]) (-Root[
a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2] + Tan[1/2 (c + d x)]^2)))]],
((Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2] - Root[
a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 3])
(Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] -
Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 4])) /
((Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] -
Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 3])
(Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2] -
Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 4]))]
(Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] -
Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 4])
(-Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2] + Tan[1/2 (c + d x)]^2)^2
Sqrt[(((Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] - Root[a + 4 a #1 +
(6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2]) (Root[a + 4 a #1 + (6 a + 16 b) #1^2 +
4 a #1^3 + a #1^4 &, 2] - Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 4])
(-Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] + Tan[1/2 (c + d x)]^2)
(-Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 4] + Tan[1/2 (c + d x)]^2)) /
((Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] -
Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 4])^2
(-Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2] + Tan[1/2 (c + d x)]^2)^2))]
(((Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] - Root[a + 4 a #1 +
(6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2]) Sec[1/2 (c + d x)]^2 Tan[1/2 (c + d x)]) /

((Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] - Root[
a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 3])
(-Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2] + Tan[1/2 (c + d x)]^2)) -
((Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] - Root[a + 4 a #1 +
(6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2]) Sec[1/2 (c + d x)]^2 Tan[1/2 (c + d x)]
(-Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 3] + Tan[1/2 (c + d x)]^2)) /
((Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] -
Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 3]) (-Root[
a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2] + Tan[1/2 (c + d x)]^2)^2))) /

((-Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] + Root[
a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2])
(Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2] -
Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 4]) (1 + Tan[1/2 (c + d x)]^2)^2
Sqrt[(((Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] -
Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2])
(-Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 3] + Tan[1/2 (c + d x)]^2)) /
((Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] -
Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 3])
(-Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2] + Tan[1/2 (c + d x)]^2)))]
Sqrt[(16 b Tan[1/2 (c + d x)]^4 + a (1 + Tan[1/2 (c + d x)]^2)^4) / (1 + Tan[1/2 (c + d x)]^2)^4]) -

(2 EllipticF[ArcSin[Sqrt[(((Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 2] -
Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 4])
(-Root[a + 4 a #1 + (6 a + 16 b) #1^2 + 4 a #1^3 + a #1^4 &, 1] + Tan[1/2 (c + d x)]^2)) /

$$\Big(\big(\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1]-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,4]\big)\Big(-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2]+\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)\Big)\Big)\Big],$$

$$\Big(\big(\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2]-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,3]\big)\big(\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1]-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,4]\big)\Big)\Big/\Big(\big(\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1]-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,3]\big)\big(\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2]-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,4]\big)\Big)\Big]$$

$$\big(\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1]-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,4]\big)$$

$$\Big(-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2]+\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)^2$$

$$\sqrt{\Big(\Big(\big(\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1]-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2]\big)\Big(-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,3]+\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)\Big)\Big/\Big(\big(\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1]-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,3]\big)\Big(-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2]+\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)\Big)}$$

$$\Big(\Big(\big(\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1]-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2]\big)\big(\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2]-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,4]\big)\,\text{Sec}\Big[\frac{1}{2}(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]\Big(-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1]+\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)\Big)\Big/\Big(\big(\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1]-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,4]\big)^2\Big(-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2]+\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2\Big)^2\Big)-$$

$$\Big(2\,\big(\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,1]-\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2]\big)$$

$$\big(\text{Root}[a+4a\,\#1+(6a+16b)\,\#1^2+4a\,\#1^3+a\,\#1^4\,\&,2]-\text{Root}[a+4a\,\#1+$$

$$\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\Big)\,\mathrm{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]$$

$$\left(-\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]+\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2\right)$$

$$\left(-\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]+\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2\right)\Big)\Big/$$

$$\Big(\Big(\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-$$

$$\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\Big)^2$$

$$\left(-\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]+\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2\right)^3\Big)+$$

$$\Big(\Big(\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-$$

$$\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]\Big)$$

$$\Big(\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-\mathrm{Root}\Big[a+4\,a\,\#1+$$

$$\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\Big]\Big)\,\mathrm{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]$$

$$\left(-\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]+\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2\right)\Big)\Big/$$

$$\Big(\Big(\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-$$

$$\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\Big)^2\,\Big(-\mathrm{Root}\Big[$$

$$a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\Big]+\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2\Big)^2\Big)\Big)\Big)\Big/$$

$$\Big(\Big(-\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]+\mathrm{Root}\Big[$$

$$a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\Big]\Big)$$

$$\Big(\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-$$

$$\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\Big)\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2\right)^2$$

$$\sqrt{}\Big(\Big(\Big(\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-$$

$$\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]\Big)$$

$$\Big(\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,2\right]-$$

$$\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\Big)$$

$$\left(-\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]+\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2\right)$$

$$\left(-\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]+\mathrm{Tan}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^2\right)\Big)\Big/$$

$$\Big(\Big(\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,1\right]-$$

$$\mathrm{Root}\left[a+4\,a\,\#1+\left(6\,a+16\,b\right)\,\#1^2+4\,a\,\#1^3+a\,\#1^4\,\&,\,4\right]\Big)^2$$

$$\left(-\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\Big)\Big)$$

$$\sqrt{\frac{16\,b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^4+a\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^4}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^4}}\Bigg)+$$

$$\Big(2\,\text{EllipticF}\Big[\text{ArcSin}\Big[\sqrt{\Big(\Big(\Big(\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,2\right]-}$$
$$\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,4\right]\Big)$$
$$\left(-\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,1\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big)\Big/$$
$$\Big(\Big(\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,1\right]-$$
$$\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,4\right]\Big)\Big(-\text{Root}\Big[$$
$$a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,2\Big]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)\Big)\Big)\Big]\Big],$$
$$\Big(\Big(\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,2\right]-\text{Root}\Big[$$
$$a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,3\Big]\Big)$$
$$\Big(\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,1\right]-$$
$$\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,4\right]\Big)\Big)\Big/$$
$$\Big(\Big(\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,1\right]-$$
$$\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,3\right]\Big)$$
$$\Big(\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,2\right]-$$
$$\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,4\right]\Big)\Big)\Big]$$
$$\Big(\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,1\right]-$$
$$\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,4\right]\Big)$$
$$\left(-\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2$$
$$\sqrt{\Big(\Big(\Big(\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,1\right]-}$$
$$\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,2\right]\Big)$$
$$\left(-\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,3\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big)\Big/$$
$$\Big(\Big(\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,1\right]-$$
$$\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,3\right]\Big)$$
$$\left(-\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big)\Big)$$
$$\sqrt{\Big(\Big(\Big(\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,1\right]-\text{Root}\Big[a+4\,a\,\sharp1+}$$
$$(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,2\Big]\Big)\Big(\text{Root}\Big[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+$$
$$4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,2\Big]-\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,4\right]\Big)$$
$$\left(-\text{Root}\left[a+4\,a\,\sharp1+(6\,a+16\,b)\,\sharp1^2+4\,a\,\sharp1^3+a\,\sharp1^4\,\&,\,1\right]+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\left(-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,4\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big)\Big/$$

$$\Big(\Big(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,1\right]-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,4\right]\Big)^2\left(-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,2\right]+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\Big)\Big)$$

$$\Bigg(\Bigg(\Bigg(32\,b\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^3+4\,a\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^3\Bigg)\Bigg/\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^4-$$

$$\Bigg(4\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Bigg(16\,b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^4\Bigg)\Bigg)\Bigg/\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^5\Bigg)\Bigg/$$

$$\Bigg(\Big(-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,1\right]+\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,2\right]\Big)$$

$$\Big(\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,2\right]-\text{Root}\left[a+4\,a\,\sharp 1+(6\,a+16\,b)\,\sharp 1^2+4\,a\,\sharp 1^3+a\,\sharp 1^4\,\&,\,4\right]\Big)$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^2\left(\frac{16\,b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4+a\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^4}{\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^4}\right)^{3/2}\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 244: Unable to integrate problem.

$$\int \frac{\text{Csc}[c+d\,x]}{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 4, 469 leaves, 4 steps):

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

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

$$\left.\text{EllipticF}\left[2\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{(a+b)^{1/4}}\right],\,\frac{1}{2}\,\left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Bigg/$$

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

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

$$\left.\text{EllipticPi}\left[\frac{\left(\sqrt{b}+\sqrt{a+b}\right)^2}{4\,\sqrt{b}\,\sqrt{a+b}},\,2\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Cos}[c+d\,x]}{(a+b)^{1/4}}\right],\,\frac{1}{2}\,\left(1+\frac{\sqrt{b}}{\sqrt{a+b}}\right)\right]\right)\Bigg/$$

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

Result (type 8, 25 leaves) :

$$\int \frac{\text{Csc}[c+d\,x]}{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\,dx$$

Problem 245: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Csc}[c+d\,x]^3}{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 4, 776 leaves, 7 steps) :

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

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

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

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

Result (type 1, 1 leaves):

???

Problem 246: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Sin}[c+d\,x]^2}{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 4, 499 leaves, 4 steps):

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

Result (type 4, 287 leaves):

$$-\left(\left(2\,i\,\mathrm{Cos}[c+d\,x]^2\left(\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,\mathrm{Tan}[c+d\,x]\right],\frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]-\mathrm{EllipticPi}\left[\frac{\sqrt{a}}{\sqrt{a}-i\sqrt{b}},i\,\mathrm{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,\mathrm{Tan}[c+d\,x]\right],\frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]\right)\sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\mathrm{Tan}[c+d\,x]^2}\,\sqrt{2+\left(2-\frac{2\,i\sqrt{b}}{\sqrt{a}}\right)\mathrm{Tan}[c+d\,x]^2}\right)\Big/\left(\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,d\,\sqrt{8\,a+3\,b-4\,b\,\mathrm{Cos}[2\,(c+d\,x)]+b\,\mathrm{Cos}[4\,(c+d\,x)]}\right)\right)$$

Problem 247: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{\sqrt{a+b\,\mathrm{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 4, 162 leaves, 2 steps):

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

Result (type 4, 195 leaves):

$$-\left(\left(2\,i\,\mathrm{Cos}[c+d\,x]^2\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,\mathrm{Tan}[c+d\,x]\right],\frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]\sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\mathrm{Tan}[c+d\,x]^2}\,\sqrt{2+\left(2-\frac{2\,i\sqrt{b}}{\sqrt{a}}\right)\mathrm{Tan}[c+d\,x]^2}\right)\Big/\left(\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,d\,\sqrt{8\,a+3\,b-4\,b\,\mathrm{Cos}[2\,(c+d\,x)]+b\,\mathrm{Cos}[4\,(c+d\,x)]}\right)\right)$$

Problem 248: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[c+d x]^2}{\sqrt{a+b\,\text{Sin}[c+d x]^4}}\,dx$$

Optimal (type 4, 493 leaves, 5 steps):

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

Result (type 4, 1403 leaves):

$$-\frac{\sqrt{8 a+3 b-4 b\,\text{Cos}[2(c+d x)]+b\,\text{Cos}[4(c+d x)]}\,\text{Cot}[c+d x]}{2\sqrt{2}\,a d}+\left(i\, b\,\text{Cos}[c+d x]^2\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,\text{Tan}[c+d x]\right],\frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]\sqrt{1+\left(1-\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}\,\sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}\right)\Big/\left(\sqrt{2}\,a\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,d\sqrt{8 a+3 b-4 b\,\text{Cos}[2(c+d x)]+b\,\text{Cos}[4(c+d x)]}\right)+$$

$$\left(i\sqrt{2}\ b\, \text{Cos}[c+d x]^2 \left(\text{EllipticF}\left[i\, \text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d x]\right], \frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]-\right.\right.$$

$$\left.2\, \text{EllipticPi}\left[\frac{\sqrt{a}}{\sqrt{a}-i\sqrt{b}}, i\, \text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d x]\right], \frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]\right)$$

$$\left.\sqrt{1+\left(1-\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}\ \sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}\right)\Big/$$

$$\left(a\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ d\sqrt{8 a+3 b-4 b\, \text{Cos}[2\ (c+d x)]+b\, \text{Cos}[4\ (c+d x)]}\right)-$$

$$\frac{1}{4 a\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ d\left(1+\text{Tan}[c+d x]^2\right)^2\sqrt{\frac{b\, \text{Tan}[c+d x]^4+a\left(1+\text{Tan}[c+d x]^2\right)^2}{\left(1+\text{Tan}[c+d x]^2\right)^2}}}$$

$$\left(4 a\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d x]+8 a\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d x]^3+\right.$$

$$4 a\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d x]^5+4\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ b\, \text{Tan}[c+d x]^5-$$

$$4\, i\, b\, \text{EllipticPi}\left[\frac{\sqrt{a}}{\sqrt{a}-i\sqrt{b}}, i\, \text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d x]\right], \frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]$$

$$\sqrt{1+\left(1-\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}\ \sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}\ -$$

$$4\, i\, b\, \text{EllipticPi}\left[\frac{\sqrt{a}}{\sqrt{a}-i\sqrt{b}}, i\, \text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d x]\right], \frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]$$

$$\text{Tan}[c+d x]^2\sqrt{1+\left(1-\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}\ \sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}\ +$$

$$4\sqrt{a}\ \left(i\sqrt{a}+\sqrt{b}\right)\text{EllipticE}\left[i\, \text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d x]\right], \frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]$$

$$\left(1+\text{Tan}[c+d x]^2\right)\sqrt{1+\left(1-\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}\ \sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}\ -$$

$$\left(4\sqrt{a}-3\,i\,\sqrt{b}\right)\sqrt{b}\ \text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\ \text{Tan}[c+d\,x]\right],\frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]$$

$$\left(1+\text{Tan}[c+d\,x]^2\right)\sqrt{1+\left(1-\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\ \sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\ \Bigg)$$

Problem 249: Result is not expressed in closed-form.

$$\int \frac{1}{a+b\,\text{Sin}[x]^5}\,dx$$

Optimal (type 3, 384 leaves, 17 steps):

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

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

Result (type 7, 149 leaves):

$$\frac{8}{5}\,i\,\text{RootSum}\left[i\,b-5\,i\,b\,\#1^2+10\,i\,b\,\#1^4+32\,a\,\#1^5-10\,i\,b\,\#1^6+5\,i\,b\,\#1^8-i\,b\,\#1^{10}\,\&,\right.$$

$$\left.\frac{2\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^3-i\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]\#1^3}{b-4\,b\,\#1^2+16\,i\,a\,\#1^3+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8}\,\&\right]$$

Problem 250: Result is not expressed in closed-form.

$$\int \frac{1}{a+b\,\text{Sin}[x]^6}\,dx$$

Optimal (type 3, 171 leaves, 7 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/3}+b^{1/3}}\ \text{Tan}[x]}{a^{1/6}}\right]}{3\,a^{5/6}\sqrt{a^{1/3}+b^{1/3}}}+\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/3}-(-1)^{1/3}b^{1/3}}\ \text{Tan}[x]}{a^{1/6}}\right]}{3\,a^{5/6}\sqrt{a^{1/3}-(-1)^{1/3}b^{1/3}}}+\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/3}+(-1)^{2/3}b^{1/3}}\ \text{Tan}[x]}{a^{1/6}}\right]}{3\,a^{5/6}\sqrt{a^{1/3}+(-1)^{2/3}b^{1/3}}}$$

Result (type 7, 148 leaves):

$$-\frac{8}{3}\,\text{RootSum}\left[b-6\,b\,\#1+15\,b\,\#1^2-64\,a\,\#1^3-20\,b\,\#1^3+15\,b\,\#1^4-6\,b\,\#1^5+b\,\#1^6\,\&,\right.$$

$$\left.\frac{2\,\text{ArcTan}\left[\frac{\text{Sin}[2\,x]}{\text{Cos}[2\,x]-\#1}\right]\#1^2-i\,\text{Log}\left[1-2\,\text{Cos}[2\,x]\,\#1+\#1^2\right]\#1^2}{-b+5\,b\,\#1-32\,a\,\#1^2-10\,b\,\#1^2+10\,b\,\#1^3-5\,b\,\#1^4+b\,\#1^5}\,\&\right]$$

Problem 251: Result is not expressed in closed-form.

$$\int \frac{1}{a + b \operatorname{Sin}[x]^8} \, dx$$

Optimal (type 3, 245 leaves, 9 steps):

$$-\frac{\operatorname{ArcTan}\left[\frac{\sqrt{(-a)^{1/4}-b^{1/4}}\operatorname{Tan}[x]}{(-a)^{1/8}}\right]}{4(-a)^{7/8}\sqrt{(-a)^{1/4}-b^{1/4}}}-\frac{\operatorname{ArcTan}\left[\frac{\sqrt{(-a)^{1/4}-i\,b^{1/4}}\operatorname{Tan}[x]}{(-a)^{1/8}}\right]}{4(-a)^{7/8}\sqrt{(-a)^{1/4}-i\,b^{1/4}}}-\frac{\operatorname{ArcTan}\left[\frac{\sqrt{(-a)^{1/4}+i\,b^{1/4}}\operatorname{Tan}[x]}{(-a)^{1/8}}\right]}{4(-a)^{7/8}\sqrt{(-a)^{1/4}+i\,b^{1/4}}}-\frac{\operatorname{ArcTan}\left[\frac{\sqrt{(-a)^{1/4}+b^{1/4}}\operatorname{Tan}[x]}{(-a)^{1/8}}\right]}{4(-a)^{7/8}\sqrt{(-a)^{1/4}+b^{1/4}}}$$

Result (type 7, 174 leaves):

$$8\operatorname{RootSum}\Big[b-8b\,\#1+28b\,\#1^2-56b\,\#1^3+256a\,\#1^4+70b\,\#1^4-56b\,\#1^5+28b\,\#1^6-8b\,\#1^7+b\,\#1^8\,\&,$$
$$\left(2\operatorname{ArcTan}\left[\frac{\operatorname{Sin}[2x]}{\operatorname{Cos}[2x]-\#1}\right]\#1^3-i\operatorname{Log}\left[1-2\operatorname{Cos}[2x]\,\#1+\#1^2\right]\#1^3\right)\Big/$$
$$\left(-b+7b\,\#1-21b\,\#1^2+128a\,\#1^3+35b\,\#1^3-35b\,\#1^4+21b\,\#1^5-7b\,\#1^6+b\,\#1^7\right)\,\&\Big]$$

Problem 252: Result is not expressed in closed-form.

$$\int \frac{1}{a - b \operatorname{Sin}[x]^5} \, dx$$

Optimal (type 3, 379 leaves, 17 steps):

$$-\frac{2\operatorname{ArcTan}\left[\frac{b^{1/5}-a^{1/5}\operatorname{Tan}\left[\frac{x}{2}\right]}{\sqrt{a^{2/5}-b^{2/5}}}\right]}{5a^{4/5}\sqrt{a^{2/5}-b^{2/5}}}-\frac{2\operatorname{ArcTan}\left[\frac{(-1)^{2/5}b^{1/5}-a^{1/5}\operatorname{Tan}\left[\frac{x}{2}\right]}{\sqrt{a^{2/5}-(-1)^{4/5}b^{2/5}}}\right]}{5a^{4/5}\sqrt{a^{2/5}-(-1)^{4/5}b^{2/5}}}-\frac{2\operatorname{ArcTan}\left[\frac{(-1)^{4/5}b^{1/5}-a^{1/5}\operatorname{Tan}\left[\frac{x}{2}\right]}{\sqrt{a^{2/5}+(-1)^{3/5}b^{2/5}}}\right]}{5a^{4/5}\sqrt{a^{2/5}+(-1)^{3/5}b^{2/5}}}+\frac{2\operatorname{ArcTan}\left[\frac{(-1)^{1/5}b^{1/5}+a^{1/5}\operatorname{Tan}\left[\frac{x}{2}\right]}{\sqrt{a^{2/5}-(-1)^{2/5}b^{2/5}}}\right]}{5a^{4/5}\sqrt{a^{2/5}-(-1)^{2/5}b^{2/5}}}+\frac{2\operatorname{ArcTan}\left[\frac{(-1)^{3/5}b^{1/5}+a^{1/5}\operatorname{Tan}\left[\frac{x}{2}\right]}{\sqrt{a^{2/5}+(-1)^{1/5}b^{2/5}}}\right]}{5a^{4/5}\sqrt{a^{2/5}+(-1)^{1/5}b^{2/5}}}$$

Result (type 7, 149 leaves):

$$-\frac{8}{5}i\operatorname{RootSum}\Big[-i\,b+5i\,b\,\#1^2-10i\,b\,\#1^4+32a\,\#1^5+10i\,b\,\#1^6-5i\,b\,\#1^8+i\,b\,\#1^{10}\,\&,$$
$$\frac{2\operatorname{ArcTan}\left[\frac{\operatorname{Sin}[x]}{\operatorname{Cos}[x]-\#1}\right]\#1^3-i\operatorname{Log}\left[1-2\operatorname{Cos}[x]\,\#1+\#1^2\right]\#1^3}{b-4b\,\#1^2-16i\,a\,\#1^3+6b\,\#1^4-4b\,\#1^6+b\,\#1^8}\,\&\Big]$$

Problem 253: Result is not expressed in closed-form.

$$\int \frac{1}{a - b \operatorname{Sin}[x]^6} \, dx$$

Optimal (type 3, 175 leaves, 7 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/3}-b^{1/3}}\ \text{Tan}[x]}{a^{1/6}}\right]}{3\ a^{5/6}\sqrt{a^{1/3}-b^{1/3}}}+\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/3}+(-1)^{1/3}b^{1/3}}\ \text{Tan}[x]}{a^{1/6}}\right]}{3\ a^{5/6}\sqrt{a^{1/3}+(-1)^{1/3}b^{1/3}}}+\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/3}-(-1)^{2/3}b^{1/3}}\ \text{Tan}[x]}{a^{1/6}}\right]}{3\ a^{5/6}\sqrt{a^{1/3}-(-1)^{2/3}b^{1/3}}}$$

Result (type 7, 148 leaves):

$$\frac{8}{3}\text{RootSum}\Big[b-6\,b\,\#1+15\,b\,\#1^2+64\,a\,\#1^3-20\,b\,\#1^3+15\,b\,\#1^4-6\,b\,\#1^5+b\,\#1^6\,\&,$$
$$\frac{2\,\text{ArcTan}\left[\frac{\text{Sin}[2\,x]}{\text{Cos}[2\,x]-\#1}\right]\#1^2-i\,\text{Log}\left[1-2\,\text{Cos}[2\,x]\,\#1+\#1^2\right]\#1^2}{-b+5\,b\,\#1+32\,a\,\#1^2-10\,b\,\#1^2+10\,b\,\#1^3-5\,b\,\#1^4+b\,\#1^5}\,\&\Big]$$

Problem 254: Result is not expressed in closed-form.

$$\int\frac{1}{a-b\,\text{Sin}[x]^8}\,dx$$

Optimal (type 3, 213 leaves, 9 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/4}-b^{1/4}}\ \text{Tan}[x]}{a^{1/8}}\right]}{4\ a^{7/8}\sqrt{a^{1/4}-b^{1/4}}}+\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/4}-i\,b^{1/4}}\ \text{Tan}[x]}{a^{1/8}}\right]}{4\ a^{7/8}\sqrt{a^{1/4}-i\,b^{1/4}}}+$$
$$\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/4}+i\,b^{1/4}}\ \text{Tan}[x]}{a^{1/8}}\right]}{4\ a^{7/8}\sqrt{a^{1/4}+i\,b^{1/4}}}+\frac{\text{ArcTan}\left[\frac{\sqrt{a^{1/4}+b^{1/4}}\ \text{Tan}[x]}{a^{1/8}}\right]}{4\ a^{7/8}\sqrt{a^{1/4}+b^{1/4}}}$$

Result (type 7, 174 leaves):

$$-8\,\text{RootSum}\Big[b-8\,b\,\#1+28\,b\,\#1^2-56\,b\,\#1^3-256\,a\,\#1^4+70\,b\,\#1^4-56\,b\,\#1^5+28\,b\,\#1^6-8\,b\,\#1^7+b\,\#1^8\,\&,$$
$$\left(2\,\text{ArcTan}\left[\frac{\text{Sin}[2\,x]}{\text{Cos}[2\,x]-\#1}\right]\#1^3-i\,\text{Log}\left[1-2\,\text{Cos}[2\,x]\,\#1+\#1^2\right]\#1^3\right)\Big/$$
$$\left(-b+7\,b\,\#1-21\,b\,\#1^2-128\,a\,\#1^3+35\,b\,\#1^3-35\,b\,\#1^4+21\,b\,\#1^5-7\,b\,\#1^6+b\,\#1^7\right)\,\&\Big]$$

Problem 255: Result is not expressed in closed-form.

$$\int\frac{1}{1+\text{Sin}[x]^5}\,dx$$

Optimal (type 3, 195 leaves, 15 steps):

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

Result (type 7, 411 leaves):

$$-\frac{1}{10} i \,\text{RootSum}\Big[1+2 i \#1-8 \#1^2-14 i \#1^3+30 \#1^4+14 i \#1^5-8 \#1^6-2 i \#1^7+\#1^8\&, \frac{1}{i-8 \#1-21 i \#1^2+60 \#1^3+35 i \#1^4-24 \#1^5-7 i \#1^6+4 \#1^7} \Big(-2 \text{ArcTan}\Big[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\Big]+i \,\text{Log}\big[1-2 \text{Cos}[x] \#1+\#1^2\big]-8 i \,\text{ArcTan}\Big[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\Big] \#1- 4 \,\text{Log}\big[1-2 \text{Cos}[x] \#1+\#1^2\big] \#1+30 \,\text{ArcTan}\Big[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\Big] \#1^2- 15 i \,\text{Log}\big[1-2 \text{Cos}[x] \#1+\#1^2\big] \#1^2+80 i \,\text{ArcTan}\Big[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\Big] \#1^3+ 40 \,\text{Log}\big[1-2 \text{Cos}[x] \#1+\#1^2\big] \#1^3-30 \,\text{ArcTan}\Big[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\Big] \#1^4+ 15 i \,\text{Log}\big[1-2 \text{Cos}[x] \#1+\#1^2\big] \#1^4-8 i \,\text{ArcTan}\Big[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\Big] \#1^5- 4 \,\text{Log}\big[1-2 \text{Cos}[x] \#1+\#1^2\big] \#1^5+2 \,\text{ArcTan}\Big[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\Big] \#1^6- i \,\text{Log}\big[1-2 \text{Cos}[x] \#1+\#1^2\big] \#1^6\Big)\&\Big]+\frac{2 \,\text{Sin}\big[\frac{x}{2}\big]}{5 \left(\text{Cos}\big[\frac{x}{2}\big]+\text{Sin}\big[\frac{x}{2}\big]\right)}$$

Problem 257: Result is not expressed in closed-form.

$$\int \frac{1}{1+\text{Sin}[x]^8} \, dx$$

Optimal (type 3, 218 leaves, 9 steps):

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

Result (type 7, 141 leaves):

$$8\,\text{RootSum}\Big[1-8 \#1+28 \#1^2-56 \#1^3+326 \#1^4-56 \#1^5+28 \#1^6-8 \#1^7+\#1^8\&, \frac{2 \,\text{ArcTan}\Big[\frac{\text{Sin}[2 x]}{\text{Cos}[2 x]-\#1}\Big] \#1^3-i \,\text{Log}\big[1-2 \text{Cos}[2 x] \#1+\#1^2\big] \#1^3}{-1+7 \#1-21 \#1^2+163 \#1^3-35 \#1^4+21 \#1^5-7 \#1^6+\#1^7}\&\Big]$$

Problem 258: Result is not expressed in closed-form.

$$\int \frac{1}{1-\text{Sin}[x]^5}\,dx$$

Optimal (type 3, 187 leaves, 15 steps):

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

Result (type 7, 413 leaves):

$$\frac{1}{10}\,i\,\text{RootSum}\Big[1-2\,i\,\#1-8\,\#1^2+14\,i\,\#1^3+30\,\#1^4-14\,i\,\#1^5-8\,\#1^6+2\,i\,\#1^7+\#1^8\,\&,$$
$$\frac{1}{-i-8\,\#1+21\,i\,\#1^2+60\,\#1^3-35\,i\,\#1^4-24\,\#1^5+7\,i\,\#1^6+4\,\#1^7}$$
$$\Big(-2\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]+i\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]+8\,i\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1+$$
$$4\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]\#1+30\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^2-$$
$$15\,i\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]\#1^2-80\,i\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^3-$$
$$40\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]\#1^3-30\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^4+$$
$$15\,i\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]\#1^4+8\,i\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^5+$$
$$4\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]\#1^5+2\,\text{ArcTan}\left[\frac{\text{Sin}[x]}{\text{Cos}[x]-\#1}\right]\#1^6-$$
$$i\,\text{Log}\left[1-2\,\text{Cos}[x]\,\#1+\#1^2\right]\#1^6\Big)\,\&\Big]+\frac{2\,\text{Sin}\left[\frac{x}{2}\right]}{5\left(\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right)}$$

Problem 265: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[x]}{a-a\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 7 leaves, 2 steps):

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

Result (type 3, 37 leaves):

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

Problem 270: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[x]}{a-a\,\text{Sin}[x]^2}\,dx$$

Optimal (type 3, 22 leaves, 3 steps):

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

Result (type 3, 45 leaves):

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

Problem 276: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[x]^3}{\left(a-a\,\text{Sin}[x]^2\right)^2}\,dx$$

Optimal (type 3, 7 leaves, 2 steps):

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

Result (type 3, 37 leaves):

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

Problem 277: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[x]}{\left(a-a\,\text{Sin}[x]^2\right)^2}\,dx$$

Optimal (type 3, 22 leaves, 3 steps):

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

Result (type 3, 45 leaves):

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

Problem 291: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[e+f x]^6 \left(a+b \,\mathrm{Sin}[e+f x]^2\right) dx$$

Optimal (type 3, 50 leaves, 3 steps):

$$\frac{a\,\mathrm{Tan}[e+f x]}{f}+\frac{(2 a+b)\,\mathrm{Tan}[e+f x]^3}{3 f}+\frac{(a+b)\,\mathrm{Tan}[e+f x]^5}{5 f}$$

Result (type 3, 117 leaves):

$$\frac{8 a\,\mathrm{Tan}[e+f x]}{15 f}-\frac{2 b\,\mathrm{Tan}[e+f x]}{15 f}+\frac{4 a\,\mathrm{Sec}[e+f x]^2\,\mathrm{Tan}[e+f x]}{15 f}-\frac{b\,\mathrm{Sec}[e+f x]^2\,\mathrm{Tan}[e+f x]}{15 f}+\frac{a\,\mathrm{Sec}[e+f x]^4\,\mathrm{Tan}[e+f x]}{5 f}+\frac{b\,\mathrm{Sec}[e+f x]^4\,\mathrm{Tan}[e+f x]}{5 f}$$

Problem 292: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[e+f x]^8 \left(a+b \,\mathrm{Sin}[e+f x]^2\right) dx$$

Optimal (type 3, 72 leaves, 3 steps):

$$\frac{a\,\mathrm{Tan}[e+f x]}{f}+\frac{(3 a+b)\,\mathrm{Tan}[e+f x]^3}{3 f}+\frac{(3 a+2 b)\,\mathrm{Tan}[e+f x]^5}{5 f}+\frac{(a+b)\,\mathrm{Tan}[e+f x]^7}{7 f}$$

Result (type 3, 161 leaves):

$$\frac{16 a\,\mathrm{Tan}[e+f x]}{35 f}-\frac{8 b\,\mathrm{Tan}[e+f x]}{105 f}+\frac{8 a\,\mathrm{Sec}[e+f x]^2\,\mathrm{Tan}[e+f x]}{35 f}-\frac{4 b\,\mathrm{Sec}[e+f x]^2\,\mathrm{Tan}[e+f x]}{105 f}+\frac{6 a\,\mathrm{Sec}[e+f x]^4\,\mathrm{Tan}[e+f x]}{35 f}-\frac{b\,\mathrm{Sec}[e+f x]^4\,\mathrm{Tan}[e+f x]}{35 f}+\frac{a\,\mathrm{Sec}[e+f x]^6\,\mathrm{Tan}[e+f x]}{7 f}+\frac{b\,\mathrm{Sec}[e+f x]^6\,\mathrm{Tan}[e+f x]}{7 f}$$

Problem 294: Result unnecessarily involves imaginary or complex numbers.

$$\int \mathrm{Cos}[e+f x]^2 \left(a+b \,\mathrm{Sin}[e+f x]^2\right)^2 dx$$

Optimal (type 3, 116 leaves, 5 steps):

$$\frac{1}{16}\left(8 a^2+4 a b+b^2\right) x+\frac{\left(8 a^2+4 a b+b^2\right)\mathrm{Cos}[e+f x]\,\mathrm{Sin}[e+f x]}{16 f}-\frac{b\,(8 a+3 b)\,\mathrm{Cos}[e+f x]^3\,\mathrm{Sin}[e+f x]}{24 f}-\frac{b\,\mathrm{Cos}[e+f x]^5\,\mathrm{Sin}[e+f x]\left(a+(a+b)\,\mathrm{Tan}[e+f x]^2\right)}{6 f}$$

Result (type 3, 79 leaves):

$$\frac{1}{192 f}\left(12\left((2-2 i) a+b\right)\left((2+2 i) a+b\right)(e+f x)+3(4 a-b)(4 a+b) \operatorname{Sin}[2(e+f x)]-3 b(4 a+b) \operatorname{Sin}[4(e+f x)]+b^2 \operatorname{Sin}[6(e+f x)]\right)$$

Problem 308: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Sec}[x]}{a+b \operatorname{Sin}[x]^2} dx$$

Optimal (type 3, 40 leaves, 4 steps):

$$\frac{\sqrt{b} \operatorname{ArcTan}\left[\frac{\sqrt{b} \operatorname{Sin}[x]}{\sqrt{a}}\right]}{\sqrt{a}(a+b)}+\frac{\operatorname{ArcTanh}[\operatorname{Sin}[x]]}{a+b}$$

Result (type 3, 96 leaves):

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

Problem 310: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Sec}[x]^3}{a+b \operatorname{Sin}[x]^2} dx$$

Optimal (type 3, 61 leaves, 5 steps):

$$\frac{b^{3/2} \operatorname{ArcTan}\left[\frac{\sqrt{b} \operatorname{Sin}[x]}{\sqrt{a}}\right]}{\sqrt{a}(a+b)^2}+\frac{(a+3 b) \operatorname{ArcTanh}[\operatorname{Sin}[x]]}{2(a+b)^2}+\frac{\operatorname{Sec}[x] \operatorname{Tan}[x]}{2(a+b)}$$

Result (type 3, 147 leaves):

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

Problem 312: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Sec}[x]^5}{a+b \operatorname{Sin}[x]^2} dx$$

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

$$\frac{b^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sin}[x]}{\sqrt{a}}\right]}{\sqrt{a}\,(a+b)^3}+\frac{\left(3a^2+10ab+15b^2\right)\text{ArcTanh}[\text{Sin}[x]]}{8\,(a+b)^3}+\frac{(3a+7b)\,\text{Sec}[x]\,\text{Tan}[x]}{8\,(a+b)^2}+\frac{\text{Sec}[x]^3\,\text{Tan}[x]}{4\,(a+b)}$$

Result (type 3, 214 leaves):

$$-\frac{1}{16\,(a+b)^3}\left(\frac{8\,b^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Csc}[x]}{\sqrt{b}}\right]}{\sqrt{a}}-\frac{8\,b^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Sin}[x]}{\sqrt{a}}\right]}{\sqrt{a}}+2\left(3a^2+10ab+15b^2\right)\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right]-2\left(3a^2+10ab+15b^2\right)\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]-\frac{(a+b)^2}{\left(\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right)^4}+\frac{(a+b)^2}{\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^4}+\frac{(a+b)\,(3a+7b)}{\left(\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right)^2}+\frac{(a+b)\,(3a+7b)}{-1+\text{Sin}[x]}\right)$$

Problem 373: Result unnecessarily involves higher level functions.

$$\int \text{Cos}[e+f x]^5\left(a+b\,\text{Sin}[e+f x]^2\right)^p\,dx$$

Optimal (type 5, 214 leaves, 5 steps):

$$-\frac{(3a+b\,(7+2p))\,\text{Sin}[e+fx]\left(a+b\,\text{Sin}[e+fx]^2\right)^{1+p}}{b^2 f\,(3+2p)\,(5+2p)}-\frac{\text{Cos}[e+fx]^2\,\text{Sin}[e+fx]\left(a+b\,\text{Sin}[e+fx]^2\right)^{1+p}}{b f\,(5+2p)}+\left(\left(3a^2+2ab\,(5+2p)+b^2\left(15+16p+4p^2\right)\right)\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Sin}[e+fx]^2}{a}\right]\text{Sin}[e+fx]\left(a+b\,\text{Sin}[e+fx]^2\right)^p\left(1+\frac{b\,\text{Sin}[e+fx]^2}{a}\right)^{-p}\right)\Big/\left(b^2 f\,(3+2p)\,(5+2p)\right)$$

Result (type 6, 191 leaves):

$$\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},-2,-p,\frac{3}{2},\text{Sin}[e+fx]^2,-\frac{b\,\text{Sin}[e+fx]^2}{a}\right]\text{Cos}[e+fx]^4\,\text{Sin}[e+fx]\left(a+b\,\text{Sin}[e+fx]^2\right)^p\right)\Big/\left(f\left(3\,a\,\text{AppellF1}\left[\frac{1}{2},-2,-p,\frac{3}{2},\text{Sin}[e+fx]^2,-\frac{b\,\text{Sin}[e+fx]^2}{a}\right]+2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},-2,1-p,\frac{5}{2},\text{Sin}[e+fx]^2,-\frac{b\,\text{Sin}[e+fx]^2}{a}\right]-2\,a\,\text{AppellF1}\left[\frac{3}{2},-1,-p,\frac{5}{2},\text{Sin}[e+fx]^2,-\frac{b\,\text{Sin}[e+fx]^2}{a}\right]\right)\text{Sin}[e+fx]^2\right)\right)$$

Problem 374: Unable to integrate problem.

$$\int \cos[e+fx]^3 \left(a+b\sin[e+fx]^2\right)^p \, dx$$

Optimal (type 5, 124 leaves, 4 steps):

$$-\frac{\sin[e+fx]\left(a+b\sin[e+fx]^2\right)^{1+p}}{bf(3+2p)}+\frac{1}{bf(3+2p)}\left(a+b(3+2p)\right)\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\sin[e+fx]^2}{a}\right]\sin[e+fx]\left(a+b\sin[e+fx]^2\right)^p\left(1+\frac{b\sin[e+fx]^2}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \cos[e+fx]^3 \left(a+b\sin[e+fx]^2\right)^p \, dx$$

Problem 376: Unable to integrate problem.

$$\int \sec[e+fx] \left(a+b\sin[e+fx]^2\right)^p \, dx$$

Optimal (type 6, 76 leaves, 3 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},1,-p,\frac{3}{2},\sin[e+fx]^2,-\frac{b\sin[e+fx]^2}{a}\right]\sin[e+fx]\left(a+b\sin[e+fx]^2\right)^p\left(1+\frac{b\sin[e+fx]^2}{a}\right)^{-p}$$

Result (type 8, 23 leaves):

$$\int \sec[e+fx] \left(a+b\sin[e+fx]^2\right)^p \, dx$$

Problem 377: Unable to integrate problem.

$$\int \sec[e+fx]^3 \left(a+b\sin[e+fx]^2\right)^p \, dx$$

Optimal (type 6, 76 leaves, 3 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},\sin[e+fx]^2,-\frac{b\sin[e+fx]^2}{a}\right]\sin[e+fx]\left(a+b\sin[e+fx]^2\right)^p\left(1+\frac{b\sin[e+fx]^2}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \sec[e+fx]^3 \left(a+b\sin[e+fx]^2\right)^p \, dx$$

Problem 378: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f x]^4 \left(a+b\,\text{Sin}[e+f x]^2\right)^p dx$$

Optimal (type 6, 90 leaves, 3 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},-\frac{3}{2},-p,\frac{3}{2},\text{Sin}[e+f x]^2,-\frac{b\,\text{Sin}[e+f x]^2}{a}\right] \sqrt{\text{Cos}[e+f x]^2}\left(a+b\,\text{Sin}[e+f x]^2\right)^p \left(1+\frac{b\,\text{Sin}[e+f x]^2}{a}\right)^{-p} \text{Tan}[e+f x]$$

Result (type 6, 199 leaves):

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

Problem 379: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f x]^2 \left(a+b\,\text{Sin}[e+f x]^2\right)^p dx$$

Optimal (type 6, 90 leaves, 3 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},\text{Sin}[e+f x]^2,-\frac{b\,\text{Sin}[e+f x]^2}{a}\right] \sqrt{\text{Cos}[e+f x]^2}\left(a+b\,\text{Sin}[e+f x]^2\right)^p \left(1+\frac{b\,\text{Sin}[e+f x]^2}{a}\right)^{-p} \text{Tan}[e+f x]$$

Result (type 6, 195 leaves):

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

Problem 381: Unable to integrate problem.

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

Optimal (type 6, 90 leaves, 3 steps):

$$\frac{1}{f}\operatorname{AppellF1}\left[\frac{1}{2}, \frac{3}{2}, -p, \frac{3}{2}, \operatorname{Sin}[e+f x]^2, -\frac{b \operatorname{Sin}[e+f x]^2}{a}\right] \sqrt{\operatorname{Cos}[e+f x]^2} \left(a+b \operatorname{Sin}[e+f x]^2\right)^p \left(1+\frac{b \operatorname{Sin}[e+f x]^2}{a}\right)^{-p} \operatorname{Tan}[e+f x]$$

Result (type 8, 25 leaves):

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

Problem 382: Unable to integrate problem.

$$\int \operatorname{Sec}[e+f x]^4 \left(a+b \operatorname{Sin}[e+f x]^2\right)^p \, dx$$

Optimal (type 6, 90 leaves, 3 steps):

$$\frac{1}{f}\operatorname{AppellF1}\left[\frac{1}{2}, \frac{5}{2}, -p, \frac{3}{2}, \operatorname{Sin}[e+f x]^2, -\frac{b \operatorname{Sin}[e+f x]^2}{a}\right] \sqrt{\operatorname{Cos}[e+f x]^2} \left(a+b \operatorname{Sin}[e+f x]^2\right)^p \left(1+\frac{b \operatorname{Sin}[e+f x]^2}{a}\right)^{-p} \operatorname{Tan}[e+f x]$$

Result (type 8, 25 leaves):

$$\int \operatorname{Sec}[e+f x]^4 \left(a+b \operatorname{Sin}[e+f x]^2\right)^p \, dx$$

Problem 383: Result is not expressed in closed-form.

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

Optimal (type 3, 219 leaves, 11 steps):

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

Result (type 7, 230 leaves):

$$\frac{1}{12\,b\,d}\left(-3\,\text{Cos}\left[2\,(c+d\,x)\right]+24\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-4\,\text{RootSum}\left[a+3\,a\,\#1^2+8\,b\,\#1^3+3\,a\,\#1^4+a\,\#1^6\,\&,\right.\right.$$
$$\left(-b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+4\,a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1+\right.$$
$$8\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^2+2\,a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^3+$$
$$\left.b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^4+2\,a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^5\right)\Big/$$
$$\left.\left.\left(a\,\#1+4\,b\,\#1^2+2\,a\,\#1^3+a\,\#1^5\right)\,\&\right]\right)$$

Problem 384: Result is not expressed in closed-form.

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

Optimal (type 3, 167 leaves, 9 steps):

$$-\frac{\text{ArcTan}\left[\frac{a^{1/3}-2\,b^{1/3}\,\text{Sin}[c+d\,x]}{\sqrt{3}\,a^{1/3}}\right]}{\sqrt{3}\,a^{2/3}\,b^{1/3}\,d}+\frac{\text{Log}\left[a^{1/3}+b^{1/3}\,\text{Sin}[c+d\,x]\right]}{3\,a^{2/3}\,b^{1/3}\,d}-$$
$$\frac{\text{Log}\left[a^{2/3}-a^{1/3}\,b^{1/3}\,\text{Sin}[c+d\,x]+b^{2/3}\,\text{Sin}[c+d\,x]^2\right]}{6\,a^{2/3}\,b^{1/3}\,d}-\frac{\text{Log}\left[a+b\,\text{Sin}[c+d\,x]^3\right]}{3\,b\,d}$$

Result (type 7, 216 leaves):

$$-\frac{1}{3\,b\,d}\left(-3\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\right.$$
$$\text{RootSum}\left[a+3\,a\,\#1^2+8\,b\,\#1^3+3\,a\,\#1^4+a\,\#1^6\,\&,\left(-b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.\right.$$
$$a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1+4\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^2+$$
$$2\,a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^3+b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^4+$$
$$\left.\left.\left.a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^5\right)\Big/\left(a\,\#1+4\,b\,\#1^2+2\,a\,\#1^3+a\,\#1^5\right)\,\&\right]\right)$$

Problem 386: Result is not expressed in closed-form.

$$\int \frac{\text{Sec}[c+d\,x]}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 290 leaves, 11 steps):

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

Result (type 7, 288 leaves):

$$\frac{1}{3\,(a-b)\,(a+b)\,d}\Bigg(3\left(b\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+(-a+b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+(a+b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)-b\,\text{RootSum}\Big[a+3\,a\,\#1^2+8\,b\,\#1^3+3\,a\,\#1^4+a\,\#1^6\,\&,\ \Big(b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]-a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1+4\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^2+4\,a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^3-b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^4+a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^5\Big)\Big/\left(a\,\#1+4\,b\,\#1^2+2\,a\,\#1^3+a\,\#1^5\right)\&\Big]\Bigg)$$

Problem 387: Result is not expressed in closed-form.

$$\int\frac{\text{Sec}[c+d\,x]^3}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 385 leaves, 11 steps):

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

Result (type 7, 535 leaves):

$$\frac{1}{12\,d}\left(-\frac{6\,(a+4\,b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{(a+b)^2}+\frac{6\,(a-4\,b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{(a-b)^2}+\frac{1}{(a^2-b^2)^2}\,4\,b\left(-3\,(a^2+2\,b^2)\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+\text{RootSum}\left[a+3\,a\,\#1^2+8\,b\,\#1^3+3\,a\,\#1^4+a\,\#1^6\,\&,\frac{1}{a\,\#1+4\,b\,\#1^2+2\,a\,\#1^3+a\,\#1^5}\left(2\,a^2\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+a^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1-4\,a\,b^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1+4\,a^2\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^2+8\,b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^2+2\,a^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^3+10\,a\,b^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^3-2\,a^2\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^4-b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^4+a^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^5+2\,a\,b^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^5\right)\&\right]\right)+\frac{3}{(a+b)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}-\frac{3}{(a-b)\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}\right)$$

Problem 388: Result is not expressed in closed-form.

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

Optimal (type 3, 764 leaves, 38 steps):

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

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

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

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

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

Result (type 7, 300 leaves):

$$-\frac{1}{3bd}\Big(3\,\text{Cos}[c+dx]+$$
$$i\,\text{RootSum}\Big[-i b+3 i b \#1^2+8 a \#1^3-3 i b \#1^4+i b \#1^6\,\&,\Big(2 b\,\text{ArcTan}\left[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\right]-$$
$$i b\,\text{Log}\left[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\right]-2 i a\,\text{ArcTan}\left[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\right]\#1-$$
$$a\,\text{Log}\left[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\right]\#1+2 i a\,\text{ArcTan}\left[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\right]\#1^3+$$
$$a\,\text{Log}\left[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\right]\#1^3+2 b\,\text{ArcTan}\left[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\right]\#1^4-$$
$$i b\,\text{Log}\left[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\right]\#1^4\Big)\Big/\left(b\#1-4 i a\#1^2-2 b\#1^3+b\#1^5\right)\,\&\Big]\Big)$$

Problem 389: Result is not expressed in closed-form.

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

Optimal (type 3, 484 leaves, 24 steps):

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

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

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

Result (type 7, 231 leaves):

$$-\frac{1}{6\,d}\,i\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,$$
$$\Big(2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+4\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]$$
$$\#1^2-2\,i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2+2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-$$
$$i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4\Big)\Big/\left(b\,\#1-4\,i\,a\,\#1^2-2\,b\,\#1^3+b\,\#1^5\right)\,\&\Big]$$

Problem 390: Result is not expressed in closed-form.

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

Optimal (type 3, 245 leaves, 11 steps):

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

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

Result (type 7, 126 leaves):

$$-\frac{1}{3\,d}2\,i\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,$$
$$\frac{2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1}{b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4}\,\&\Big]$$

Problem 391: Result is not expressed in closed-form.

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

Optimal (type 3, 299 leaves, ? steps):

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

Result (type 7, 432 leaves):

$$\Big(-6\,b+6\,b\,\text{Cos}[c+d\,x]-i\,b\,\text{Cos}[c+d\,x]$$
$$\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,\ \frac{1}{b\,\#1-4\,i\,a\,\#1^2-2\,b\,\#1^3+b\,\#1^5}$$
$$\Big(2\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+$$
$$4\,i\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1+2\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1-$$
$$12\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+6\,i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-$$
$$4\,i\,a\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^3-2\,a\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^3+$$
$$2\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-i\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4\Big)\,\&\Big]+$$
$$6\,a\,\text{Sin}[c+d\,x]\Big)\Big/\Big(6\,(a-b)\,(a+b)\,d\,\Big(\text{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]-\text{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big)$$
$$\Big(\text{Cos}\Big[\frac{1}{2}(c+d\,x)\Big]+\text{Sin}\Big[\frac{1}{2}(c+d\,x)\Big]\Big)\Big)$$

Problem 392: Result is not expressed in closed-form.

$$\int \frac{\text{Sec}[c+d\,x]^4}{a+b\,\text{Sin}[c+d\,x]^3}\,dx$$

Optimal (type 3, 1093 leaves, ? steps):

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

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

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

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

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

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

$$\frac{2\,b^{4/3}\,\left(a^2+2\,b^2\right)\,\text{ArcTanh}\left[\frac{b^{1/3}+(-1)^{2/3}\,a^{1/3}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}}\right]}{3\,\sqrt{(-1)^{1/3}\,a^{2/3}+b^{2/3}}\,\left(a^2-b^2\right)^2\,d}+\frac{\text{Cos}[c+d\,x]}{12\,(a+b)\,d\,(1-\text{Sin}[c+d\,x])^2}+$$

$$\frac{\text{Cos}[c+d\,x]}{12\,(a+b)\,d\,(1-\text{Sin}[c+d\,x])}+\frac{(a+4\,b)\,\text{Cos}[c+d\,x]}{4\,(a+b)^2\,d\,(1-\text{Sin}[c+d\,x])}-$$

$$\frac{\text{Cos}[c+d\,x]}{12\,(a-b)\,d\,(1+\text{Sin}[c+d\,x])^2}-\frac{(a-4\,b)\,\text{Cos}[c+d\,x]}{4\,(a-b)^2\,d\,(1+\text{Sin}[c+d\,x])}-\frac{\text{Cos}[c+d\,x]}{12\,(a-b)\,d\,(1+\text{Sin}[c+d\,x])}$$

Result (type 7, 679 leaves) :

$$\frac{1}{24\,(a-b)^2\,(a+b)^2\,d}\Bigg(4\,i\,b^2\,\text{RootSum}\Big[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,\ \frac{1}{b\,\#1-4\,i\,a\,\#1^2-2\,b\,\#1^3+b\,\#1^5}$$
$$\Big(2\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]+4\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]-$$
$$i\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]-2\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]+$$
$$12\,i\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1+6\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1-$$
$$20\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2-16\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^2+$$
$$10\,i\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2+8\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^2-$$
$$12\,i\,a\,b\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^3-6\,a\,b\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^3+$$
$$2\,a^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4+4\,b^2\,\text{ArcTan}\Big[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\Big]\,\#1^4-$$
$$i\,a^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4-2\,i\,b^2\,\text{Log}\big[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\big]\,\#1^4\Big)\,\&\Big]+$$
$$\text{Sec}[c+d\,x]^3\,\Big(4\,a^2\,b+32\,b^3-3\,b\,\big(5\,a^2+13\,b^2\big)\,\text{Cos}[c+d\,x]+12\,b\,\big(a^2+2\,b^2\big)\,\text{Cos}\big[2\,(c+d\,x)\big]-$$
$$5\,a^2\,b\,\text{Cos}\big[3\,(c+d\,x)\big]-13\,b^3\,\text{Cos}\big[3\,(c+d\,x)\big]+12\,a^3\,\text{Sin}[c+d\,x]-$$
$$30\,a\,b^2\,\text{Sin}[c+d\,x]+4\,a^3\,\text{Sin}\big[3\,(c+d\,x)\big]-22\,a\,b^2\,\text{Sin}\big[3\,(c+d\,x)\big]\Big)\Bigg)$$

Problem 393: Result is not expressed in closed-form.

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

Optimal (type 3, 288 leaves, 10 steps):

$$-\frac{2\,\left(2\,a^2+3\,a^{4/3}\,b^{2/3}+b^2\right)\,\text{ArcTan}\Big[\frac{a^{1/3}-2\,b^{1/3}\,\text{Sin}[c+d\,x]}{\sqrt{3}\,a^{1/3}}\Big]}{3\,\sqrt{3}\,a^{5/3}\,b^{7/3}\,d}+$$
$$\frac{2\,\left(2\,a^2-3\,a^{4/3}\,b^{2/3}+b^2\right)\,\text{Log}\big[a^{1/3}+b^{1/3}\,\text{Sin}[c+d\,x]\big]}{9\,a^{5/3}\,b^{7/3}\,d}-\frac{1}{9\,a^{5/3}\,b^{7/3}\,d}$$
$$\left(2\,a^2-3\,a^{4/3}\,b^{2/3}+b^2\right)\,\text{Log}\big[a^{2/3}-a^{1/3}\,b^{1/3}\,\text{Sin}[c+d\,x]+b^{2/3}\,\text{Sin}[c+d\,x]^2\big]-$$
$$\frac{\text{Sin}[c+d\,x]}{b^2\,d}-\frac{\text{Sin}[c+d\,x]\,\left(a^2-b^2+3\,a\,b\,\text{Sin}[c+d\,x]+3\,b^2\,\text{Sin}[c+d\,x]^2\right)}{3\,a\,b^2\,d\,\left(a+b\,\text{Sin}[c+d\,x]^3\right)}$$

Result (type 7, 490 leaves):

$$-\frac{1}{9 b^2 d}\left(\frac{1}{a}\text{RootSum}\left[-i b+3 i b \#1^2+8 a \#1^3-3 i b \#1^4+i b \#1^6\&,\frac{1}{b \#1-4 i a \#1^2-2 b \#1^3+b \#1^5}\left(-6 a b \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]+3 i a b \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right]+8 i a^2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1+4 i b^2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1+4 a^2 \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1+2 b^2 \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1+8 i a^2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^3+4 i b^2 \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^3+4 a^2 \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^3+2 b^2 \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^3+6 a b \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^4-3 i a b \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^4\right)\&\right]+9 \text{Sin}[c+d x]-\frac{6\left(3 a b+3 a b \text{Cos}[2(c+d x)]-2\left(a^2-b^2\right) \text{Sin}[c+d x]\right)}{a\left(4 a+3 b \text{Sin}[c+d x]-b \text{Sin}[3(c+d x)]\right)}\right)$$

Problem 394: Result is not expressed in closed-form.

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

Optimal (type 3, 238 leaves, 8 steps):

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

Result (type 7, 346 leaves):

$$\frac{1}{9 a b d}\left(i \text{RootSum}\left[-i b+3 i b \#1^2+8 a \#1^3-3 i b \#1^4+i b \#1^6\&,\left(-2 i a \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]-a \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right]-4 b \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1+2 i b \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1-4 b \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^3+2 i b \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^3+2 i a \text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right] \#1^4+a \text{Log}\left[1-2 \text{Cos}[c+d x] \#1+\#1^2\right] \#1^4\right)\Big/\left(b \#1-4 i a \#1^2-2 b \#1^3+b \#1^5\right)\&\right]+\frac{6\left(3 a+a \text{Cos}[2(c+d x)]+2 b \text{Sin}[c+d x]\right)}{4 a+3 b \text{Sin}[c+d x]-b \text{Sin}[3(c+d x)]}\right)$$

Problem 395: Result is not expressed in closed-form.

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

Optimal (type 3, 183 leaves, 9 steps):

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

Result (type 7, 221 leaves):

$$\frac{1}{9\,a\,d}2\left(-i\,\text{RootSum}\left[-i\,b+3\,i\,b\,\#1^2+8\,a\,\#1^3-3\,i\,b\,\#1^4+i\,b\,\#1^6\,\&,\right.\right.$$
$$\left(2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]-i\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]+\right.$$
$$\left.2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d x]}{\text{Cos}[c+d x]-\#1}\right]\#1^2-i\,\text{Log}\left[1-2\,\text{Cos}[c+d x]\,\#1+\#1^2\right]\#1^2\right)\Big/$$
$$\left.\left.\left(b-4\,i\,a\,\#1-2\,b\,\#1^2+b\,\#1^4\right)\,\&\right]+\frac{6\,\left(a+b\,\text{Sin}[c+d x]\right)}{b\,\left(4\,a+3\,b\,\text{Sin}[c+d x]-b\,\text{Sin}\left[3\,\left(c+d x\right)\right]\right)}\right)$$

Problem 397: Result is not expressed in closed-form.

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

Optimal (type 3, 587 leaves, 18 steps):

$$-\frac{b^{1/3}\,\left(a^{4/3}-2\,b^{4/3}\right)\,\text{ArcTan}\left[\frac{a^{1/3}-2\,b^{1/3}\,\text{Sin}[c+d x]}{\sqrt{3}\,a^{1/3}}\right]}{3\,\sqrt{3}\,a^{5/3}\,\left(a^2-b^2\right)\,d}-\frac{b^{1/3}\,\left(a^2-2\,a^{2/3}\,b^{4/3}+b^2\right)\,\text{ArcTan}\left[\frac{a^{1/3}-2\,b^{1/3}\,\text{Sin}[c+d x]}{\sqrt{3}\,a^{1/3}}\right]}{\sqrt{3}\,a^{1/3}\,\left(a^2-b^2\right)^2\,d}-$$
$$\frac{\text{Log}[1-\text{Sin}[c+d x]]}{2\,\left(a+b\right)^2\,d}+\frac{\text{Log}[1+\text{Sin}[c+d x]]}{2\,\left(a-b\right)^2\,d}-\frac{b^{1/3}\,\left(a^{4/3}+2\,b^{4/3}\right)\,\text{Log}\left[a^{1/3}+b^{1/3}\,\text{Sin}[c+d x]\right]}{9\,a^{5/3}\,\left(a^2-b^2\right)\,d}-$$
$$\frac{b^{1/3}\,\left(a^2+2\,a^{2/3}\,b^{4/3}+b^2\right)\,\text{Log}\left[a^{1/3}+b^{1/3}\,\text{Sin}[c+d x]\right]}{3\,a^{1/3}\,\left(a^2-b^2\right)^2\,d}+$$
$$\left(b^{1/3}\,\left(a^{4/3}+2\,b^{4/3}\right)\,\text{Log}\left[a^{2/3}-a^{1/3}\,b^{1/3}\,\text{Sin}[c+d x]+b^{2/3}\,\text{Sin}[c+d x]^2\right]\right)\Big/\left(18\,a^{5/3}\,\left(a^2-b^2\right)\,d\right)+$$
$$\frac{1}{6\,a^{1/3}\,\left(a^2-b^2\right)^2\,d}b^{1/3}\,\left(a^2+2\,a^{2/3}\,b^{4/3}+b^2\right)\,\text{Log}\left[a^{2/3}-a^{1/3}\,b^{1/3}\,\text{Sin}[c+d x]+b^{2/3}\,\text{Sin}[c+d x]^2\right]-$$
$$\frac{2\,a\,b\,\text{Log}\left[a+b\,\text{Sin}[c+d x]^3\right]}{3\,\left(a^2-b^2\right)^2\,d}+\frac{b\,\left(a-\text{Sin}[c+d x]\,\left(b-a\,\text{Sin}[c+d x]\right)\right)}{3\,a\,\left(a^2-b^2\right)\,d\,\left(a+b\,\text{Sin}[c+d x]^3\right)}$$

Result (type 7, 478 leaves):

$$\frac{1}{9\,d}\left(-\frac{9\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{(a+b)^2}+\frac{9\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]}{(a-b)^2}+\frac{1}{a\,(a^2-b^2)^2}\,2\,b\left(9\,a^2\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-\text{RootSum}\left[a+3\,a\,\#1^2+8\,b\,\#1^3+3\,a\,\#1^4+a\,\#1^6\,\&,\frac{1}{a\,\#1+4\,b\,\#1^2+2\,a\,\#1^3+a\,\#1^5}\left(4\,a^2\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-a^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1-2\,a\,b^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1+12\,a^2\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^2+10\,a^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^3+2\,a\,b^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^3-4\,a^2\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^4+b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^4+3\,a^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\#1^5\right)\&\right]\right)-\frac{6\,b\,(-3\,a+a\,\text{Cos}[2\,(c+d\,x)]+2\,b\,\text{Sin}[c+d\,x])}{a\,(a-b)\,(a+b)\,(4\,a+3\,b\,\text{Sin}[c+d\,x]-b\,\text{Sin}[3\,(c+d\,x)])}\right)$$

Problem 398: Result is not expressed in closed-form.

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

Optimal (type 3, 747 leaves, 18 steps):

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

$$\frac{b^{5/3}\left(4 a^{8/3}-9 a^2 b^{2/3}+8 a^{2/3} b^2-3 b^{8/3}\right) \text{ArcTan}\left[\frac{a^{1/3}-2 b^{1/3} \text{Sin}[c+d x]}{\sqrt{3}\, a^{1/3}}\right]}{\sqrt{3}\, a^{1/3}\left(a^2-b^2\right)^3 d}-\frac{(a+7 b) \text{Log}[1-\text{Sin}[c+d x]]}{4 (a+b)^3 d}+$$

$$\frac{(a-7 b) \text{Log}[1+\text{Sin}[c+d x]]}{4 (a-b)^3 d}+\frac{b^{5/3}\left(4 a^2+3 a^{4/3} b^{2/3}+2 b^2\right) \text{Log}\left[a^{1/3}+b^{1/3} \text{Sin}[c+d x]\right]}{9 a^{5/3}\left(a^2-b^2\right)^2 d}+$$

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

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

$$\left(18 a^{5/3}\left(a^2-b^2\right)^2 d\right)-\frac{1}{6 a^{1/3}\left(a^2-b^2\right)^3 d}$$

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

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

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

Result (type 7, 773 leaves) :

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

$$\frac{1}{9\,a\,(a^2-b^2)^3\,d}\,2\,b\,\Bigg(-9\,a^2\,(a^2+5\,b^2)\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\text{RootSum}\Big[a+3\,a\,\#1^2+8\,b\,\#1^3+3\,a\,\#1^4+a\,\#1^6\,\&,\ \frac{1}{a\,\#1+4\,b\,\#1^2+2\,a\,\#1^3+a\,\#1^5}$$

$$\Big(8\,a^4\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]+11\,a^2\,b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]-b^5\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]+3\,a^5\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1-$$

$$15\,a^3\,b^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1-6\,a\,b^4\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1+12\,a^4\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^2+60\,a^2\,b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^2+$$

$$6\,a^5\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^3+60\,a^3\,b^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^3+6\,a\,b^4\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^3-8\,a^4\,b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^4-$$

$$11\,a^2\,b^3\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^4+b^5\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^4+3\,a^5\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^5+15\,a^3\,b^2\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\#1^5\Big)\,\&\Big]\Bigg)+$$

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

$$\Big(2\,\big(-2\,a^3\,b-7\,a\,b^3+3\,a\,b^3\,\text{Cos}[2\,(c+d\,x)]+4\,a^2\,b^2\,\text{Sin}[c+d\,x]+2\,b^4\,\text{Sin}[c+d\,x]\big)\Big)\Big/\Big(3\,a\,(a-b)^2\,(a+b)^2\,d\,(-4\,a-3\,b\,\text{Sin}[c+d\,x]+b\,\text{Sin}[3\,(c+d\,x)])\Big)$$

Problem 404: Result is not expressed in closed-form.

$$\int\frac{\text{Cos}[c+d\,x]^7}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 131 leaves, 6 steps):

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

Result (type 7, 524 leaves):

$$\frac{1}{24\,b\,d}\Bigg(3\,\text{RootSum}\Big[b-4\,b\,\text{#1}^2-16\,a\,\text{#1}^4+6\,b\,\text{#1}^4-4\,b\,\text{#1}^6+b\,\text{#1}^8\,\&,\ \frac{1}{-b\,\text{#1}-8\,a\,\text{#1}^3+3\,b\,\text{#1}^3-3\,b\,\text{#1}^5+b\,\text{#1}^7}$$
$$\Big(-2\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\text{#1}}\right]-6\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\text{#1}}\right]+$$
$$i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\text{#1}+\text{#1}^2\right]+3\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\text{#1}+\text{#1}^2\right]-$$
$$22\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\text{#1}}\right]\text{#1}^2-2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\text{#1}}\right]\text{#1}^2+$$
$$11\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\text{#1}+\text{#1}^2\right]\text{#1}^2+i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\text{#1}+\text{#1}^2\right]\text{#1}^2-$$
$$22\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\text{#1}}\right]\text{#1}^4-2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\text{#1}}\right]\text{#1}^4+$$
$$11\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\text{#1}+\text{#1}^2\right]\text{#1}^4+i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\text{#1}+\text{#1}^2\right]\text{#1}^4-$$
$$2\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\text{#1}}\right]\text{#1}^6-6\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\text{#1}}\right]\text{#1}^6+$$
$$i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\text{#1}+\text{#1}^2\right]\text{#1}^6+3\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\text{#1}+\text{#1}^2\right]\text{#1}^6\Big)\,\&\Big]-$$
$$2\,\left(33\,\text{Sin}[c+d\,x]+\text{Sin}[3\,(c+d\,x)]\right)\Bigg)$$

Problem 405: Result is not expressed in closed-form.

$$\int \frac{\text{Cos}[c+d\,x]^5}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 113 leaves, 6 steps):

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

Result (type 7, 411 leaves):

$$-\frac{1}{4\,b\,d}\left(\text{RootSum}\left[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\left(2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+4\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-2\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2+4\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4+2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-2\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\right)\&\right]+4\,\text{Sin}[c+d\,x]\right)$$

Problem 406: Result is not expressed in closed-form.

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

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

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

Result (type 7, 283 leaves):

$$-\frac{1}{8\,d}\text{RootSum}\left[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\ \left(2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]+6\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-3\,i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2+6\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-3\,i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\right)\Big/\left(-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7\right)\&\right]$$

Problem 408: Result is not expressed in closed-form.

$$\int\frac{\text{Sec}[c+d\,x]}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 117 leaves, 7 steps):

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

Result (type 7, 342 leaves):

$$\frac{1}{8\,a\,d-8\,b\,d}\left(-8\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]+8\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-b\,\text{RootSum}\left[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\left(2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]-10\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+5\,i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-10\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4+5\,i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+2\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-i\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\right)\Big/\left(-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7\right)\,\&\right]\right)$$

Problem 409: Result is not expressed in closed-form.

$$\int\frac{\text{Sec}[c+d\,x]^3}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 175 leaves, 7 steps):

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

Result (type 7, 529 leaves):

$$\frac{1}{4\,(a-b)^2\,d}\left(-2\,(a-5\,b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+\right.$$
$$2\,(a-5\,b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$
$$b\,\text{RootSum}\left[b-4\,b\,\#1^2-16\,a\,\#1^4+6\,b\,\#1^4-4\,b\,\#1^6+b\,\#1^8\,\&,\,\frac{1}{-b\,\#1-8\,a\,\#1^3+3\,b\,\#1^3-3\,b\,\#1^5+b\,\#1^7}\right.$$
$$\left(2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]-\right.$$
$$4\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2-6\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^2+$$
$$2\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2+3\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^2-$$
$$4\,a\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4-6\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^4+$$
$$2\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+3\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^4+$$
$$\left.\left.2\,b\,\text{ArcTan}\left[\frac{\text{Sin}[c+d\,x]}{\text{Cos}[c+d\,x]-\#1}\right]\#1^6-i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+d\,x]\,\#1+\#1^2\right]\#1^6\right)\&\right]+$$
$$\left.\frac{a-b}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}+\frac{-a+b}{\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^2}\right)$$

Problem 410: Result is not expressed in closed-form.

$$\int\frac{\text{Sec}[c+d\,x]^5}{a-b\,\text{Sin}[c+d\,x]^4}\,dx$$

Optimal (type 3, 249 leaves, 7 steps):

$$\frac{b^{5/4}\,\text{ArcTan}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\,\left(\sqrt{a}+\sqrt{b}\right)^3\,d}+\frac{\left(3\,a^2-6\,a\,b+35\,b^2\right)\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,(a-b)^3\,d}-$$
$$\frac{b^{5/4}\,\text{ArcTanh}\left[\frac{b^{1/4}\,\text{Sin}[c+d\,x]}{a^{1/4}}\right]}{2\,a^{3/4}\,\left(\sqrt{a}-\sqrt{b}\right)^3\,d}+\frac{1}{16\,(a-b)\,d\,(1-\text{Sin}[c+d\,x])^2}+\frac{3\,a-11\,b}{16\,(a-b)^2\,d\,(1-\text{Sin}[c+d\,x])}-$$
$$\frac{1}{16\,(a-b)\,d\,(1+\text{Sin}[c+d\,x])^2}-\frac{3\,a-11\,b}{16\,(a-b)^2\,d\,(1+\text{Sin}[c+d\,x])}$$

Result (type 7, 731 leaves):

$$\frac{1}{16\,(a-b)^3\,d}\left(-2\left(3a^2-6ab+35b^2\right)\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+\right.$$

$$2\left(3a^2-6ab+35b^2\right)\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]-$$

$$2b^2\,\text{RootSum}\Big[b-4b\,\#1^2-16a\,\#1^4+6b\,\#1^4-4b\,\#1^6+b\,\#1^8\,\&,$$

$$\frac{1}{-b\,\#1-8a\,\#1^3+3b\,\#1^3-3b\,\#1^5+b\,\#1^7}\left(2a\,\text{ArcTan}\left[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\right]+\right.$$

$$6b\,\text{ArcTan}\left[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\right]-i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\right]-$$

$$3\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\right]-26a\,\text{ArcTan}\left[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\right]\#1^2-$$

$$14b\,\text{ArcTan}\left[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\right]\#1^2+13\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\right]\#1^2+$$

$$7\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\right]\#1^2-26a\,\text{ArcTan}\left[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\right]\#1^4-$$

$$14b\,\text{ArcTan}\left[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\right]\#1^4+13\,i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\right]\#1^4+$$

$$7\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\right]\#1^4+2a\,\text{ArcTan}\left[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\right]\#1^6+$$

$$6b\,\text{ArcTan}\left[\frac{\text{Sin}[c+dx]}{\text{Cos}[c+dx]-\#1}\right]\#1^6-i\,a\,\text{Log}\left[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\right]\#1^6-$$

$$\left.3\,i\,b\,\text{Log}\left[1-2\,\text{Cos}[c+dx]\,\#1+\#1^2\right]\#1^6\right)\&\Big]+$$

$$\frac{(a-b)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4}+\frac{(3a-11b)(a-b)}{\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}-$$

$$\frac{(a-b)^2}{\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^4}+$$

$$\left.\frac{(a-b)(-3a+11b)}{\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}\right)$$

Problem 420: Unable to integrate problem.

$$\int \text{Cos}[e+fx]^5\left(a+b\,\text{Sin}[e+fx]^4\right)^p\,dx$$

Optimal (type 5, 197 leaves, 8 steps):

$$\frac{\text{Sin}[e+f x]\left(a+b\,\text{Sin}[e+f x]^4\right)^{1+p}}{b f (5+4 p)}-\frac{1}{b f (5+4 p)}\left(a-b(5+4 p)\right)\text{Hypergeometric2F1}\left[\frac{1}{4},-p,\frac{5}{4},-\frac{b\,\text{Sin}[e+f x]^4}{a}\right]\text{Sin}[e+f x]\left(a+b\,\text{Sin}[e+f x]^4\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^4}{a}\right)^{-p}-\frac{1}{3 f}2\,\text{Hypergeometric2F1}\left[\frac{3}{4},-p,\frac{7}{4},-\frac{b\,\text{Sin}[e+f x]^4}{a}\right]\text{Sin}[e+f x]^3\left(a+b\,\text{Sin}[e+f x]^4\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^4}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \text{Cos}[e+f x]^5\left(a+b\,\text{Sin}[e+f x]^4\right)^p\,dx$$

Problem 421: Unable to integrate problem.

$$\int \text{Cos}[e+f x]^3\left(a+b\,\text{Sin}[e+f x]^4\right)^p\,dx$$

Optimal (type 5, 140 leaves, 7 steps):

$$\frac{1}{f}\text{Hypergeometric2F1}\left[\frac{1}{4},-p,\frac{5}{4},-\frac{b\,\text{Sin}[e+f x]^4}{a}\right]\text{Sin}[e+f x]\left(a+b\,\text{Sin}[e+f x]^4\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^4}{a}\right)^{-p}-\frac{1}{3 f}\text{Hypergeometric2F1}\left[\frac{3}{4},-p,\frac{7}{4},-\frac{b\,\text{Sin}[e+f x]^4}{a}\right]\text{Sin}[e+f x]^3\left(a+b\,\text{Sin}[e+f x]^4\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^4}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \text{Cos}[e+f x]^3\left(a+b\,\text{Sin}[e+f x]^4\right)^p\,dx$$

Problem 423: Unable to integrate problem.

$$\int \text{Sec}[e+f x]\left(a+b\,\text{Sin}[e+f x]^4\right)^p\,dx$$

Optimal (type 6, 158 leaves, 7 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{4},1,-p,\frac{5}{4},\text{Sin}[e+f x]^4,-\frac{b\,\text{Sin}[e+f x]^4}{a}\right]\text{Sin}[e+f x]\left(a+b\,\text{Sin}[e+f x]^4\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^4}{a}\right)^{-p}+\frac{1}{3 f}\text{AppellF1}\left[\frac{3}{4},1,-p,\frac{7}{4},\text{Sin}[e+f x]^4,-\frac{b\,\text{Sin}[e+f x]^4}{a}\right]\text{Sin}[e+f x]^3\left(a+b\,\text{Sin}[e+f x]^4\right)^p\left(1+\frac{b\,\text{Sin}[e+f x]^4}{a}\right)^{-p}$$

Result (type 8, 23 leaves):

$$\int \text{Sec}[e+f x]\left(a+b\,\text{Sin}[e+f x]^4\right)^p\,dx$$

Problem 424: Unable to integrate problem.

$$\int \text{Sec}[e+f x]^3 \left(a+b\,\text{Sin}[e+f x]^4\right)^p \, dx$$

Optimal (type 6, 239 leaves, 9 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{4}, 2, -p, \frac{5}{4}, \text{Sin}[e+f x]^4, -\frac{b\,\text{Sin}[e+f x]^4}{a}\right] \text{Sin}[e+f x] \left(a+b\,\text{Sin}[e+f x]^4\right)^p \left(1+\frac{b\,\text{Sin}[e+f x]^4}{a}\right)^{-p} + \frac{1}{3 f} 2\,\text{AppellF1}\left[\frac{3}{4}, 2, -p, \frac{7}{4}, \text{Sin}[e+f x]^4, -\frac{b\,\text{Sin}[e+f x]^4}{a}\right] \text{Sin}[e+f x]^3 \left(a+b\,\text{Sin}[e+f x]^4\right)^p \left(1+\frac{b\,\text{Sin}[e+f x]^4}{a}\right)^{-p} + \frac{1}{5 f}\text{AppellF1}\left[\frac{5}{4}, 2, -p, \frac{9}{4}, \text{Sin}[e+f x]^4, -\frac{b\,\text{Sin}[e+f x]^4}{a}\right] \text{Sin}[e+f x]^5 \left(a+b\,\text{Sin}[e+f x]^4\right)^p \left(1+\frac{b\,\text{Sin}[e+f x]^4}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \text{Sec}[e+f x]^3 \left(a+b\,\text{Sin}[e+f x]^4\right)^p \, dx$$

Problem 431: Unable to integrate problem.

$$\int \text{Cos}[e+f x]^5 \left(a+b\,\text{Sin}[e+f x]^n\right)^p \, dx$$

Optimal (type 5, 226 leaves, 9 steps):

$$\frac{1}{f}\text{Hypergeometric2F1}\left[\frac{1}{n}, -p, 1+\frac{1}{n}, -\frac{b\,\text{Sin}[e+f x]^n}{a}\right] \text{Sin}[e+f x] \left(a+b\,\text{Sin}[e+f x]^n\right)^p \left(1+\frac{b\,\text{Sin}[e+f x]^n}{a}\right)^{-p} - \frac{1}{3 f} 2\,\text{Hypergeometric2F1}\left[\frac{3}{n}, -p, \frac{3+n}{n}, -\frac{b\,\text{Sin}[e+f x]^n}{a}\right] \text{Sin}[e+f x]^3 \left(a+b\,\text{Sin}[e+f x]^n\right)^p \left(1+\frac{b\,\text{Sin}[e+f x]^n}{a}\right)^{-p} + \frac{1}{5 f}\text{Hypergeometric2F1}\left[\frac{5}{n}, -p, \frac{5+n}{n}, -\frac{b\,\text{Sin}[e+f x]^n}{a}\right] \text{Sin}[e+f x]^5 \left(a+b\,\text{Sin}[e+f x]^n\right)^p \left(1+\frac{b\,\text{Sin}[e+f x]^n}{a}\right)^{-p}$$

Result (type 8, 25 leaves):

$$\int \text{Cos}[e+f x]^5 \left(a+b\,\text{Sin}[e+f x]^n\right)^p \, dx$$

Problem 432: Unable to integrate problem.

$$\int \text{Cos}[e+f x]^3 \left(a+b\,\text{Sin}[e+f x]^n\right)^p \, dx$$

Optimal (type 5, 148 leaves, 7 steps):

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

Result (type 8, 25 leaves):

$$\int \text{Cos}[e+f\,x]^3\left(a+b\,\text{Sin}[e+f\,x]^n\right)^p\,dx$$

Problem 474: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f\,x]^2}{\sqrt{a-a\,\text{Sin}[e+f\,x]^2}}\,dx$$

Optimal (type 3, 62 leaves, 4 steps):

$$-\frac{\text{ArcTanh}[\text{Sin}[e+f\,x]]\,\text{Cos}[e+f\,x]}{2\,f\,\sqrt{a\,\text{Cos}[e+f\,x]^2}}+\frac{\text{Tan}[e+f\,x]}{2\,f\,\sqrt{a\,\text{Cos}[e+f\,x]^2}}$$

Result (type 3, 142 leaves):

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

Problem 483: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 106 leaves, 5 steps):

$$-\frac{\text{ArcTanh}[\text{Sin}[e+f\,x]]\,\text{Cos}[e+f\,x]}{8\,a\,f\,\sqrt{a\,\text{Cos}[e+f\,x]^2}}-\frac{\text{Tan}[e+f\,x]}{8\,a\,f\,\sqrt{a\,\text{Cos}[e+f\,x]^2}}+\frac{\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]}{4\,a\,f\,\sqrt{a\,\text{Cos}[e+f\,x]^2}}$$

Result (type 3, 213 leaves):

$$\frac{1}{64 f \left(a \operatorname{Cos}[e+f x]^2\right)^{3/2}} \operatorname{Sec}[e+f x] \left(3 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]+ 4 \operatorname{Cos}[2(e+f x)] \left(\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]- \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\right)+\operatorname{Cos}[4(e+f x)] \left(\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]-\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]-\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\right)- 3 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]+\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]+14 \operatorname{Sin}[e+f x]-2 \operatorname{Sin}[3(e+f x)]\right)$$

Problem 543: Result more than twice size of optimal antiderivative.

$$\int \left(a+b \operatorname{Sin}[e+f x]^2\right)^p (d \operatorname{Tan}[e+f x])^m \, dx$$

Optimal (type 6, 120 leaves, 3 steps):

$$\frac{1}{d f (1+m)} \operatorname{AppellF1}\left[\frac{1+m}{2}, \frac{1+m}{2}, -p, \frac{3+m}{2}, \operatorname{Sin}[e+f x]^2, -\frac{b \operatorname{Sin}[e+f x]^2}{a}\right] \left(\operatorname{Cos}[e+f x]^2\right)^{\frac{1+m}{2}} \left(a+b \operatorname{Sin}[e+f x]^2\right)^p \left(1+\frac{b \operatorname{Sin}[e+f x]^2}{a}\right)^{-p} (d \operatorname{Tan}[e+f x])^{1+m}$$

Result (type 6, 260 leaves):

$$\left(a (3+m) \operatorname{AppellF1}\left[\frac{1+m}{2}, \frac{1+m}{2}, -p, \frac{3+m}{2}, \operatorname{Sin}[e+f x]^2, -\frac{b \operatorname{Sin}[e+f x]^2}{a}\right] \left(a+b \operatorname{Sin}[e+f x]^2\right)^p \operatorname{Tan}[e+f x] (d \operatorname{Tan}[e+f x])^m\right) \Big/ \left(f (1+m) \left(a (3+m) \operatorname{AppellF1}\left[\frac{1+m}{2}, \frac{1+m}{2}, -p, \frac{3+m}{2}, \operatorname{Sin}[e+f x]^2, -\frac{b \operatorname{Sin}[e+f x]^2}{a}\right]+ \left(2 b p \operatorname{AppellF1}\left[\frac{3+m}{2}, \frac{1+m}{2}, 1-p, \frac{5+m}{2}, \operatorname{Sin}[e+f x]^2, -\frac{b \operatorname{Sin}[e+f x]^2}{a}\right]+a (1+m) \operatorname{AppellF1}\left[\frac{3+m}{2}, \frac{3+m}{2}, -p, \frac{5+m}{2}, \operatorname{Sin}[e+f x]^2, -\frac{b \operatorname{Sin}[e+f x]^2}{a}\right]\right) \operatorname{Sin}[e+f x]^2\right)\right)$$

Problem 547: Unable to integrate problem.

$$\int \operatorname{Cot}[c+d x]^3 \left(a+b \operatorname{Sin}[c+d x]^2\right)^p \, dx$$

Optimal (type 5, 95 leaves, 3 steps):

$$-\frac{\operatorname{Csc}[c+d x]^2 \left(a+b \operatorname{Sin}[c+d x]^2\right)^{1+p}}{2 a d}+\frac{1}{2 a^2 d (1+p)} (a-b p) \operatorname{Hypergeometric2F1}\left[1, 1+p, 2+p, 1+\frac{b \operatorname{Sin}[c+d x]^2}{a}\right] \left(a+b \operatorname{Sin}[c+d x]^2\right)^{1+p}$$

Result (type 8, 25 leaves):

$$\int \text{Cot}[c+d x]^3 \left(a+b \text{Sin}[c+d x]^2\right)^p \, dx$$

Problem 552: Result is not expressed in closed-form.

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

Optimal (type 3, 153 leaves, 11 steps):

$$\frac{b^{2/3} \text{ArcTan}\left[\frac{a^{1/3}-2 b^{1/3} \text{Sin}[x]}{\sqrt{3} a^{1/3}}\right]}{\sqrt{3} a^{5/3}}-\frac{\text{Csc}[x]^2}{2 a}-\frac{\text{Log}[\text{Sin}[x]]}{a}-\frac{b^{2/3} \text{Log}\left[a^{1/3}+b^{1/3} \text{Sin}[x]\right]}{3 a^{5/3}}+\frac{b^{2/3} \text{Log}\left[a^{2/3}-a^{1/3} b^{1/3} \text{Sin}[x]+b^{2/3} \text{Sin}[x]^2\right]}{6 a^{5/3}}+\frac{\text{Log}\left[a+b \text{Sin}[x]^3\right]}{3 a}$$

Result (type 7, 210 leaves):

$$\frac{1}{24 a}\left(8 \text{RootSum}\left[a+3 a \#1^2+8 b \#1^3+3 a \#1^4+a \#1^6 \&, \left(-b \text{Log}\left[-\#1+\text{Tan}\left[\frac{x}{2}\right]\right]+a \text{Log}\left[-\#1+\text{Tan}\left[\frac{x}{2}\right]\right] \#1+4 b \text{Log}\left[-\#1+\text{Tan}\left[\frac{x}{2}\right]\right] \#1^2+2 a \text{Log}\left[-\#1+\text{Tan}\left[\frac{x}{2}\right]\right] \#1^3+b \text{Log}\left[-\#1+\text{Tan}\left[\frac{x}{2}\right]\right] \#1^4+a \text{Log}\left[-\#1+\text{Tan}\left[\frac{x}{2}\right]\right] \#1^5\right) \Big/ \left(a \#1+4 b \#1^2+2 a \#1^3+a \#1^5\right) \&\right]-3 \left(\text{Csc}\left[\frac{x}{2}\right]^2+8 \left(\text{Log}\left[\text{Sec}\left[\frac{x}{2}\right]^2\right]+\text{Log}[\text{Sin}[x]]\right)+\text{Sec}\left[\frac{x}{2}\right]^2\right)\right)$$

Problem 554: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 28 leaves, 4 steps):

$$-\frac{2 \text{ArcTanh}\left[\frac{\sqrt{a+b \text{Sin}[x]^3}}{\sqrt{a}}\right]}{3 \sqrt{a}}$$

Result (type 3, 66 leaves):

$$-\frac{2 \sqrt{b} \text{ArcSinh}\left[\frac{\sqrt{a} \text{Csc}[x]^{3/2}}{\sqrt{b}}\right] \sqrt{\frac{b+a \text{Csc}[x]^3}{b}}}{3 \sqrt{a} \text{Csc}[x]^{3/2} \sqrt{a+b \text{Sin}[x]^3}}$$

Problem 555: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x] \sqrt{a+b \,\text{Sin}[c+d x]^4}\, dx$$

Optimal (type 3, 59 leaves, 5 steps):

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

Result (type 3, 166 leaves):

$$\left(\sqrt{\text{Cos}[c+d x]^4 \left(a+2 a \,\text{Tan}[c+d x]^2+(a+b) \,\text{Tan}[c+d x]^4\right)} \left(\sqrt{a} \left(\text{Log}\left[\text{Tan}[c+d x]^2\right]-\text{Log}\left[a+a \,\text{Tan}[c+d x]^2+\sqrt{a} \sqrt{a \,\text{Sec}[c+d x]^4+b \,\text{Tan}[c+d x]^4}\right]\right)\right.\right.$$
$$\left.\left.\text{Sec}[c+d x]^2+\sqrt{a \,\text{Sec}[c+d x]^4+b \,\text{Tan}[c+d x]^4}\right)\right) \Big/ \left(2 d \sqrt{a \,\text{Sec}[c+d x]^4+b \,\text{Tan}[c+d x]^4}\right)$$

Problem 556: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[c+d x]^3}{\sqrt{a+b \,\text{Sin}[c+d x]^4}}\, dx$$

Optimal (type 3, 89 leaves, 4 steps):

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

Result (type 4, 63 448 leaves): Display of huge result suppressed!

Problem 557: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[c+d x]}{\sqrt{a+b \,\text{Sin}[c+d x]^4}}\, dx$$

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

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

Result (type 4, 39 909 leaves): Display of huge result suppressed!

Problem 558: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]}{\sqrt{a+b \,\text{Sin}[c+d x]^4}} \, dx$$

Optimal (type 3, 35 leaves, 4 steps):

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

Result (type 3, 142 leaves):

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

Problem 559: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^3}{\sqrt{a+b \,\text{Sin}[c+d x]^4}} \, dx$$

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

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

Result (type 3, 185 leaves):

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

Problem 561: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Tan}[c+d x]^2}{\sqrt{a+b \,\text{Sin}[c+d x]^4}} \, dx$$

Optimal (type 4, 411 leaves, 4 steps):

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

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

$$\left.\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d x]^2\right)\sqrt{\frac{a+2 a\,\text{Tan}[c+d x]^2+(a+b)\,\text{Tan}[c+d x]^4}{\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d x]^2\right)^2}}\right)\Bigg/$$

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

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

$$\left.\sqrt{\frac{a+2 a\,\text{Tan}[c+d x]^2+(a+b)\,\text{Tan}[c+d x]^4}{\left(\sqrt{a}+\sqrt{a+b}\,\text{Tan}[c+d x]^2\right)^2}}\right)\Bigg/\left(2\,(a+b)^{3/4}\,d\sqrt{a+b\,\text{Sin}[c+d x]^4}\right)$$

Result (type 4, 291 leaves):

$$-\left(\left(2\,i\sqrt{2}\,\sqrt{a}\,\text{Cos}[c+d x]^2\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,\text{Tan}[c+d x]\right],\frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]-\right.\right.\right.$$

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,\text{Tan}[c+d x]\right],\frac{\sqrt{a}+i\sqrt{b}}{\sqrt{a}-i\sqrt{b}}\right]\right)$$

$$\left.\sqrt{1+\left(1-\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}\,\sqrt{1+\left(1+\frac{i\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d x]^2}\right)\Bigg/$$

$$\left.\left(\left(\sqrt{a}+i\sqrt{b}\right)\sqrt{1-\frac{i\sqrt{b}}{\sqrt{a}}}\,d\sqrt{8 a+3 b-4 b\,\text{Cos}[2\,(c+d x)]+b\,\text{Cos}[4\,(c+d x)]}\right)\right)$$

Problem 562: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{\sqrt{a+b\,\text{Sin}[c+d x]^4}}\,dx$$

Optimal (type 4, 162 leaves, 2 steps):

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

Result (type 4, 195 leaves) :

$$-\left(\left(\left(2\,i\,\text{Cos}[c+d\,x]^2\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\,\sqrt{b}}{\sqrt{a}}}\,\text{Tan}[c+d\,x]\right],\frac{\sqrt{a}+i\,\sqrt{b}}{\sqrt{a}-i\,\sqrt{b}}\right]\right.\right.\right.$$
$$\left.\sqrt{1+\left(1+\frac{i\,\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\,\sqrt{2+\left(2-\frac{2\,i\,\sqrt{b}}{\sqrt{a}}\right)\text{Tan}[c+d\,x]^2}\right)\Big/$$
$$\left.\left(\sqrt{1-\frac{i\,\sqrt{b}}{\sqrt{a}}}\,d\,\sqrt{8\,a+3\,b-4\,b\,\text{Cos}[2\,(c+d\,x)]+b\,\text{Cos}[4\,(c+d\,x)]}\right)\right)$$

Problem 563: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cot}[c+d\,x]^2}{\sqrt{a+b\,\text{Sin}[c+d\,x]^4}}\,dx$$

Optimal (type 4, 477 leaves, 6 steps) :

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

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

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

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

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

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

Result (type 4, 378 leaves) :

$$-\frac{\sqrt{8\,a+3\,b-4\,b\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]+b\,\text{Cos}\left[4\,\left(c+d\,x\right)\right]}\,\,\text{Cot}[c+d\,x]}{2\,\sqrt{2}\,\,a\,d}-$$

$$\left(\text{Cos}[c+d\,x]^4\,\left(a\,\text{Sec}[c+d\,x]^4\,\text{Tan}[c+d\,x]+b\,\text{Tan}[c+d\,x]^5+\frac{1}{\sqrt{1-\frac{i\,\sqrt{b}}{\sqrt{a}}}}\right.\right.$$

$$\left(i\,a+\sqrt{a}\,\,\sqrt{b}\right)\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\,\sqrt{b}}{\sqrt{a}}}\,\,\text{Tan}[c+d\,x]\right],\,\frac{\sqrt{a}\,+i\,\sqrt{b}}{\sqrt{a}\,-i\,\sqrt{b}}\right]-\right.$$

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{1-\frac{i\,\sqrt{b}}{\sqrt{a}}}\,\,\text{Tan}[c+d\,x]\right],\,\frac{\sqrt{a}\,+i\,\sqrt{b}}{\sqrt{a}\,-i\,\sqrt{b}}\right]\right)$$

$$\left.\left.\text{Sec}[c+d\,x]^2\,\sqrt{1+\left(1-\frac{i\,\sqrt{b}}{\sqrt{a}}\right)\,\text{Tan}[c+d\,x]^2}\,\,\sqrt{1+\left(1+\frac{i\,\sqrt{b}}{\sqrt{a}}\right)\,\text{Tan}[c+d\,x]^2}\right)\right)\Bigg/$$

$$\left(a\,d\,\sqrt{\text{Cos}[c+d\,x]^4\,\left(a+2\,a\,\text{Tan}[c+d\,x]^2+\left(a+b\right)\,\text{Tan}[c+d\,x]^4\right)}\right)$$

Problem 565: Result more than twice size of optimal antiderivative.

$$\int \left(a+b\,\text{Sin}[c+d\,x]^4\right)^p\,\text{Tan}[c+d\,x]^3\,dx$$

Optimal (type 6, 279 leaves, 11 steps):

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

$$\left.\left(4\,\left(a+b\right)^2\,d\,\left(1+p\right)\right)\right)+\frac{\text{Sec}[c+d\,x]^2\,\left(a+b\,\text{Sin}[c+d\,x]^4\right)^{1+p}}{2\,\left(a+b\right)\,d}-$$

$$\frac{1}{2\,\left(a+b\right)\,d}\left(a+b+2\,b\,p\right)\,\text{AppellF1}\left[\frac{1}{2},\,1,\,-p,\,\frac{3}{2},\,\text{Sin}[c+d\,x]^4,\,-\frac{b\,\text{Sin}[c+d\,x]^4}{a}\right]$$

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

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

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

Result (type 6, 2007 leaves):

$$-\left(\left(\left(\left((1-2p)\,\text{AppellF1}\left[-2p,-p,-p,1-2p,-\frac{(a+b)\,\text{Sec}[c+dx]^2}{-b+\sqrt{-ab}},\frac{(a+b)\,\text{Sec}[c+dx]^2}{b+\sqrt{-ab}}\right]+2p\,\text{AppellF1}\left[1-2p,-p,-p,2-2p,-\frac{(a+b)\,\text{Sec}[c+dx]^2}{-b+\sqrt{-ab}},\frac{(a+b)\,\text{Sec}[c+dx]^2}{b+\sqrt{-ab}}\right]\text{Sec}[c+dx]^2\right)\left(a+b\,\text{Sin}[c+dx]^4\right)^p\text{Tan}[c+dx]^3\left(\frac{-a+\sqrt{-ab}-(a+b)\,\text{Tan}[c+dx]^2}{b+\sqrt{-ab}}\right)^{-p}\left(\frac{a+\sqrt{-ab}+(a+b)\,\text{Tan}[c+dx]^2}{-b+\sqrt{-ab}}\right)^{-p}\left(\text{Cos}[c+dx]^4\left(a+2a\,\text{Tan}[c+dx]^2+(a+b)\,\text{Tan}[c+dx]^4\right)\right)^p\right)\Big/$$

$$\left(4dp(-1+2p)\left(\frac{1}{2\left(-b+\sqrt{-ab}\right)(-1+2p)}(a+b)\,\text{Sec}[c+dx]^2\left((1-2p)\,\text{AppellF1}\left[-2p,-p,-p,1-2p,-\frac{(a+b)\,\text{Sec}[c+dx]^2}{-b+\sqrt{-ab}},\frac{(a+b)\,\text{Sec}[c+dx]^2}{b+\sqrt{-ab}}\right]+2p\,\text{AppellF1}\left[1-2p,-p,-p,2-2p,-\frac{(a+b)\,\text{Sec}[c+dx]^2}{-b+\sqrt{-ab}},\frac{(a+b)\,\text{Sec}[c+dx]^2}{b+\sqrt{-ab}}\right]\text{Sec}[c+dx]^2\right)\text{Tan}[c+dx]\left(\frac{-a+\sqrt{-ab}-(a+b)\,\text{Tan}[c+dx]^2}{b+\sqrt{-ab}}\right)^{-p}\left(\frac{a+\sqrt{-ab}+(a+b)\,\text{Tan}[c+dx]^2}{-b+\sqrt{-ab}}\right)^{-1-p}\left(\text{Cos}[c+dx]^4\left(a+2a\,\text{Tan}[c+dx]^2+(a+b)\,\text{Tan}[c+dx]^4\right)\right)^p-\right.\right.$$

$$\frac{1}{2\left(b+\sqrt{-ab}\right)(-1+2p)}(a+b)\,\text{Sec}[c+dx]^2\left((1-2p)\,\text{AppellF1}\left[-2p,-p,-p,1-2p,-\frac{(a+b)\,\text{Sec}[c+dx]^2}{-b+\sqrt{-ab}},\frac{(a+b)\,\text{Sec}[c+dx]^2}{b+\sqrt{-ab}}\right]+2p\,\text{AppellF1}\left[1-2p,-p,-p,2-2p,-\frac{(a+b)\,\text{Sec}[c+dx]^2}{-b+\sqrt{-ab}},\frac{(a+b)\,\text{Sec}[c+dx]^2}{b+\sqrt{-ab}}\right]\text{Sec}[c+dx]^2\right)\text{Tan}[c+dx]\left(\frac{-a+\sqrt{-ab}-(a+b)\,\text{Tan}[c+dx]^2}{b+\sqrt{-ab}}\right)^{-1-p}\left(\frac{a+\sqrt{-ab}+(a+b)\,\text{Tan}[c+dx]^2}{-b+\sqrt{-ab}}\right)^{-p}\left(\text{Cos}[c+dx]^4\left(a+2a\,\text{Tan}[c+dx]^2+(a+b)\,\text{Tan}[c+dx]^4\right)\right)^p-$$

$$\frac{1}{4p(-1+2p)}\left(\frac{-a+\sqrt{-ab}-(a+b)\,\text{Tan}[c+dx]^2}{b+\sqrt{-ab}}\right)^{-p}\left(\frac{a+\sqrt{-ab}+(a+b)\,\text{Tan}[c+dx]^2}{-b+\sqrt{-ab}}\right)^{-p}\left(\text{Cos}[c+dx]^4\left(a+2a\,\text{Tan}[c+dx]^2+(a+b)\,\text{Tan}[c+dx]^4\right)\right)^p\left(4p\,\text{AppellF1}\left[1-2p,-p,-p,2-2p,-\frac{(a+b)\,\text{Sec}[c+dx]^2}{-b+\sqrt{-ab}},\frac{(a+b)\,\text{Sec}[c+dx]^2}{b+\sqrt{-ab}}\right]\right.$$

$$\text{Sec}[c+dx]^2\,\text{Tan}[c+dx]+(1-2p)\left(-\left(\left(4(a+b)p^2\,\text{AppellF1}\left[1-2p,\right.\right.\right.\right.$$

$$1-p,\ -p,\ 2-2p,\ -\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\ \frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\Big]$$

$$\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Bigg)\Big/\left(\left(-b+\sqrt{-a\,b}\right)(1-2p)\right)\Bigg)+$$

$$\Bigg(4\,(a+b)\,p^2\,\text{AppellF1}\Big[1-2p,\ -p,\ 1-p,\ 2-2p,\ -\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},$$

$$\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Bigg)\Big/\left(\left(b+\sqrt{-a\,b}\right)(1-2p)\right)\Bigg)+$$

$$2\,p\,\text{Sec}[c+d\,x]^2\,\Bigg(\Bigg(2\,(a+b)\,(1-2p)\,p\,\text{AppellF1}\Big[2-2p,\ 1-p,\ -p,\ 3-2p,$$

$$-\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\ \frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\Big]\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Bigg)\Big/$$

$$\left(\left(-b+\sqrt{-a\,b}\right)(2-2p)\right)-\Bigg(2\,(a+b)\,(1-2p)\,p\,\text{AppellF1}\Big[2-2p,$$

$$-p,\ 1-p,\ 3-2p,\ -\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\ \frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\Big]$$

$$\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]\Bigg)\Big/\left(\left(b+\sqrt{-a\,b}\right)(2-2p)\right)\Bigg)\Bigg)-$$

$$\frac{1}{4\,(-1+2p)}\Bigg((1-2p)\,\text{AppellF1}\Big[-2p,\ -p,\ -p,\ 1-2p,\ -\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},$$

$$\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\Big]+2\,p\,\text{AppellF1}\Big[1-2p,\ -p,\ -p,\ 2-2p,$$

$$-\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\ \frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\Big]\,\text{Sec}[c+d\,x]^2\Bigg)$$

$$\left(\frac{-a+\sqrt{-a\,b}-(a+b)\,\text{Tan}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right)^{-p}\left(\frac{a+\sqrt{-a\,b}+(a+b)\,\text{Tan}[c+d\,x]^2}{-b+\sqrt{-a\,b}}\right)^{-p}$$

$$\left(\text{Cos}[c+d\,x]^4\left(a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4\right)\right)^{-1+p}$$

$$\Big(\text{Cos}[c+d\,x]^4\left(4\,a\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]+4\,(a+b)\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]^3\right)-$$

$$4\,\text{Cos}[c+d\,x]^3\,\text{Sin}[c+d\,x]\left(a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x]^4\right)\Big)\Bigg)\Bigg)\Bigg)$$

Problem 566: Result more than twice size of optimal antiderivative.

$$\int\left(a+b\,\text{Sin}[c+d\,x]^4\right)^p\,\text{Tan}[c+d\,x]\,dx$$

Optimal (type 6, 141 leaves, 7 steps):

$$\left(\text{Hypergeometric2F1}\left[1,\,1+p,\,2+p,\,\frac{a+b\,\text{Sin}[c+d\,x]^4}{a+b}\right]\left(a+b\,\text{Sin}[c+d\,x]^4\right)^{1+p}\right)\Big/\left(4\,(a+b)\,d\,(1+p)\right)+\frac{1}{2\,d}\text{AppellF1}\left[\frac{1}{2},\,1,\,-p,\,\frac{3}{2},\,\text{Sin}[c+d\,x]^4,\,-\frac{b\,\text{Sin}[c+d\,x]^4}{a}\right]\text{Sin}[c+d\,x]^2\left(a+b\,\text{Sin}[c+d\,x]^4\right)^p\left(1+\frac{b\,\text{Sin}[c+d\,x]^4}{a}\right)^{-p}$$

Result (type 6, 466 leaves):

$$-\left(\left(\left(-b+\sqrt{-a\,b}\right)\left(b+\sqrt{-a\,b}\right)(-1+2\,p)\,\text{AppellF1}\left[-2\,p,\,-p,\,-p,\,1-2\,p,\,-\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\,\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right]\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]\left(a+b\,\text{Sin}[c+d\,x]^4\right)^p\left(-a+\sqrt{-a\,b}-(a+b)\,\text{Tan}[c+d\,x]^2\right)\left(a+\sqrt{-a\,b}+(a+b)\,\text{Tan}[c+d\,x]^2\right)\right)\Big/\left(2\,(a+b)^2\,d\,p\left(b\,(-1+2\,p)\,\text{AppellF1}\left[-2\,p,\,-p,\,-p,\,1-2\,p,\,-\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\,\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right]\text{Sin}[2\,(c+d\,x)]+2\,p\left(\left(b+\sqrt{-a\,b}\right)\text{AppellF1}\left[1-2\,p,\,1-p,\,-p,\,2-2\,p,\,-\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\,\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right]+\left(b-\sqrt{-a\,b}\right)\text{AppellF1}\left[1-2\,p,\,-p,\,1-p,\,2-2\,p,\,-\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{-b+\sqrt{-a\,b}},\,\frac{(a+b)\,\text{Sec}[c+d\,x]^2}{b+\sqrt{-a\,b}}\right]\right)\text{Tan}[c+d\,x]\right)\left(a+2\,a\,\text{Tan}[c+d\,x]^2+(a+b)\,\text{Tan}[c+d\,x^4]\right)\right)\right)$$

Problem 568: Unable to integrate problem.

$$\int \text{Cot}[c+d\,x]^3\left(a+b\,\text{Sin}[c+d\,x]^4\right)^p\,dx$$

Optimal (type 5, 127 leaves, 6 steps):

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

Result (type 8, 25 leaves):

$$\int \text{Cot}[c+d\,x]^3\left(a+b\,\text{Sin}[c+d\,x]^4\right)^p\,dx$$

Problem 574: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \left(a+b\,\text{Sin}[c+d\,x]^n\right)^3\,\text{Tan}[c+d\,x]^m\,dx$$

Optimal (type 5, 306 leaves, 10 steps):

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

Result (type 6, 13 001 leaves):

$$\Bigg(\Bigg(\Bigg(a^3\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)^m\Bigg)\Bigg/\left((1+m)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right.$$
$$\Bigg((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-$$
$$2\,\Bigg(\text{AppellF1}\left[\frac{3+m}{2},m,2,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-$$
$$m\,\text{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\Bigg)$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Bigg)\Bigg)+\Bigg(3\times 2^n\,a^2\,b\,(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}\,(1+m+n),\right.$$
$$\left.m,1+n,\frac{1}{2}\,(3+m+n),\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)^m\left(\frac{\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)^n\Bigg)\Bigg/$$
$$\Bigg((1+m+n)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\Bigg((3+m+n)\,\text{AppellF1}\left[\frac{1}{2}\,(1+m+n),m,\right.$$
$$\left.1+n,\frac{1}{2}\,(3+m+n),\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-$$

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

$$\left(3\times 2^{2n}\,a\,b^2\,(3+m+2n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{2n}\right)\Big/$$

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

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

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

$$\Big(a^3\,\text{Tan}[c+d x]^m+3a^2 b\,\text{Sin}[c+d x]^n\,\text{Tan}[c+d x]^m+3 a b^2\,\text{Sin}[c+d x]^{2n}\,\text{Tan}[c+d x]^m+b^3\,\text{Sin}[c+d x]^{3n}$$

$$\left.\left.\text{Tan}[c+d\,x]^m\right)\right)\Big/$$

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

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

$$\left((1+m)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\right.\right.\right.$$

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

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

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

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

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

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

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

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

$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+\left(a^3\,(3+m)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right.$$

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

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

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

$$\left.\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^m\right)\Big/\left((1+m)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$

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

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

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg)-\Bigg(3\times 2^n a^2 b\,(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\Bigg)\Big/$$

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

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

$$\Bigg(3\times 2^{-1+n} a^2 b\,(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\Bigg)\Big/$$

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

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

$$\Bigg(3\times 2^n a^2 b\,(3+m+n)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg(-\frac{1}{3+m+n}(1+n)(1+m+n)$$

$$\text{AppellF1}\left[1+\frac{1}{2}(1+m+n),m,2+n,1+\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{1}{3+m+n}$$
$$m\,(1+m+n)\,\text{AppellF1}\Big[1+\frac{1}{2}(1+m+n),\,1+m,\,1+n,\,1+\frac{1}{2}(3+m+n),$$
$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\Big)$$
$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m\left(\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^n\Bigg)\Big/$$
$$\Bigg((1+m+n)\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Big((3+m+n)\,\text{AppellF1}\Big[\frac{1}{2}(1+m+n),\,m,$$
$$1+n,\,\frac{1}{2}(3+m+n),\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]-$$
$$2\Big((1+n)\,\text{AppellF1}\Big[\frac{1}{2}(3+m+n),\,m,\,2+n,\,\frac{1}{2}(5+m+n),\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]-m\,\text{AppellF1}\Big[\frac{1}{2}(3+m+n),\,1+m,\,1+n,\,\frac{1}{2}$$
$$(5+m+n),\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big)\Bigg)-$$
$$\Bigg(3\times 2^{2n}\,a\,b^2\,(3+m+2n)\,\text{AppellF1}\Big[\frac{1}{2}(1+m+2n),\,m,\,1+2n,\,\frac{1}{2}(3+m+2n),$$
$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m\left(\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{2n}\Bigg)\Big/$$
$$\Bigg((1+m+2n)\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2\Big((3+m+2n)\,\text{AppellF1}\Big[\frac{1}{2}(1+m+2n),$$
$$m,\,1+2n,\,\frac{1}{2}(3+m+2n),\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]-$$
$$2\Big((1+2n)\,\text{AppellF1}\Big[\frac{1}{2}(3+m+2n),\,m,\,2(1+n),\,\frac{1}{2}(5+m+2n),\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]-m\,\text{AppellF1}\Big[\frac{1}{2}(3+m+2n),\,1+m,\,1+2n,\,\frac{1}{2}$$
$$(5+m+2n),\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big)\Bigg)+$$
$$\Bigg(3\times 2^{-1+2n}\,a\,b^2\,(3+m+2n)\,\text{AppellF1}\Big[\frac{1}{2}(1+m+2n),\,m,\,1+2n,\,\frac{1}{2}(3+m+2n),$$
$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2$$
$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m\left(\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{2n}\Bigg)\Big/$$

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

$$\left(3\times 2^{2n}\,a\,b^2\,(3+m+2n)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]\left(-\frac{1}{3+m+2n}(1+2n)\,(1+m+2n)\right.\right.$$
$$\text{AppellF1}\left[1+\frac{1}{2}(1+m+2n),m,2+2n,1+\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{1}{3+m+2n}$$
$$m\,(1+m+2n)\,\text{AppellF1}\left[1+\frac{1}{2}(1+m+2n),1+m,1+2n,1+\frac{1}{2}(3+m+2n),\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)$$
$$\left.\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m\left(\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{2n}\right)\Big/$$
$$\left((1+m+2n)\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\left((3+m+2n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+2n),\right.\right.\right.$$
$$m,1+2n,\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-$$
$$2\left((1+2n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n),m,2(1+n),\frac{1}{2}(5+m+2n),\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-m\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n),1+m,1+2n,\frac{1}{2}\right.$$
$$\left.\left.\left.\left.(5+m+2n),\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)-$$

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

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

$$\Bigg(2^{-1+3n}\,b^3\,(3+m+3n)\,\mathrm{AppellF1}\Big[\frac{1}{2}(1+m+3n),\ m,\ 1+3n,\ \frac{1}{2}(3+m+3n),\ \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m \left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{3n}\Bigg) \Big/$$

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

$$\Bigg(2^{3n}\,b^3\,(3+m+3n)\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\Big(-\frac{1}{3+m+3n}(1+3n)(1+m+3n)\,\mathrm{AppellF1}\Big[1+\frac{1}{2}(1+m+3n),\ m,\ 2+3n,\ 1+\frac{1}{2}(3+m+3n),\ \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right] + \frac{1}{3+m+3n}\,m\,(1+m+3n)\,\mathrm{AppellF1}\Big[1+\frac{1}{2}(1+m+3n),\ 1+m,\ 1+3n,\ 1+\frac{1}{2}(3+m+3n),\ \mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\Big) \left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m \left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{3n}\Bigg) \Big/$$

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

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

$$\Bigg(a^3 m(3+m)\,\mathrm{AppellF1}\Big[\frac{1+m}{2},m,1,\frac{3+m}{2},\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+m}\left(\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2}-\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}\right)\Bigg)\Bigg/$$

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

$$\Bigg(3\times 2^n a^2 b\, m(3+m+n)\,\mathrm{AppellF1}\Big[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+m}\left(\frac{\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{n}\left(\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2}-\frac{\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}\right)\Bigg)\Bigg/$$

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

$$\left(3\times 2^{2n} a b^2 m (3+m+2n) \text{AppellF1}\left[\frac{1}{2}(1+m+2n), m, 1+2n, \frac{1}{2}(3+m+2n), \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] \text{Tan}\left[\frac{1}{2}(c+dx)\right] \left(-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{-1+m} \left(\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{2n} \left(\frac{\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2} - \frac{\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)}\right)\right) \Big/ \left((1+m+2n)\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\left((3+m+2n)\text{AppellF1}\left[\frac{1}{2}(1+m+2n), m, 1+2n, \frac{1}{2}(3+m+2n), \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] - 2\left((1+2n)\text{AppellF1}\left[\frac{1}{2}(3+m+2n), m, 2(1+n), \frac{1}{2}(5+m+2n), \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] - m\,\text{AppellF1}\left[\frac{1}{2}(3+m+2n), 1+m, 1+2n, \frac{1}{2}(5+m+2n), \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right) +$$

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

$$\left(3\times 2^n a^2 b\, n\, (3+m+n)\, \text{AppellF1}\left[\frac{1}{2}(1+m+n),\, m,\, 1+n,\, \frac{1}{2}(3+m+n),\right.\right.$$

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

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m \left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+n}$$

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

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

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

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

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

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

$$\left(3\times 2^{1+2n} a\, b^2 n\, (3+m+2n)\, \text{AppellF1}\left[\frac{1}{2}(1+m+2n),\, m,\, 1+2n,\, \frac{1}{2}(3+m+2n),\right.\right.$$

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

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m \left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+2n}$$

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

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

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

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

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

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

$$\left(3\times 2^{3n} b^3 n (3+m+3n) \text{AppellF1}\left[\frac{1}{2}(1+m+3n), m, 1+3n, \frac{1}{2}(3+m+3n), \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] \text{Tan}\left[\frac{1}{2}(c+dx)\right] \left(-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^m \left(\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{-1+3n} \left(-\frac{\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2 \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2} + \frac{\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)}\right)\right) \Big/ \left((1+m+3n)\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right) \left((3+m+3n) \text{AppellF1}\left[\frac{1}{2}(1+m+3n), m, 1+3n, \frac{1}{2}(3+m+3n), \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] - 2\left((1+3n) \text{AppellF1}\left[\frac{1}{2}(3+m+3n), m, 2+3n, \frac{1}{2}(5+m+3n), \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right] - m \text{AppellF1}\left[\frac{1}{2}(3+m+3n), 1+m, 1+3n, \frac{1}{2}(5+m+3n), \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right) -$$

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

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

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

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{5+m}$$

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

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

$$\left((1+m)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left((3+m)\ \text{AppellF1}\left[\frac{1+m}{2}, m, 1, \frac{3+m}{2},\right.\right.\right.$$

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

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

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

$$\left(3\times 2^n a^2 b\ (3+m+n)\ \text{AppellF1}\left[\frac{1}{2}(1+m+n), m, 1+n, \frac{1}{2}(3+m+n),\right.\right.$$

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

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{5+m+n}(1+m)\,(3+m+n)$$

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

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

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

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

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

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

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

$$\Bigg(3\times 2^{2n}\,a\,b^2\,(3+m+2n)\,\text{AppellF1}\Big[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),$$

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

$$\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^m\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^{2n}$$

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

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

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

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

$$m,2+2n,1+\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$

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

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

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

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

$$m\,\Big(-\frac{1}{5+m+3n}(1+3n)\,(3+m+3n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+3n),\,1+m,\,2+3n,\,1+\frac{1}{2}(5+m+3n),\,\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]+\frac{1}{5+m+3n}(1+m)\,(3+m+3n)\,\text{AppellF1}\Big[1+\frac{1}{2}(3+m+3n),\,2+m,\,1+3n,\,1+\frac{1}{2}(5+m+3n),\,\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(c+dx)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(c+dx)\Big]\Big)\Big)\Big)\Big/$$

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

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

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

Problem 575: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 215 leaves, 8 steps):

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

Result (type 6, 8343 leaves):

$$\Bigg(2^{1+m}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^m$$
$$\Bigg(\Bigg(a^2\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Bigg)\Bigg/$$
$$\Bigg((1+m)\,\Bigg((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-$$
$$2\,\Bigg(\text{AppellF1}\left[\frac{3+m}{2},m,2,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-$$
$$m\,\text{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\Bigg)$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Bigg)\Bigg)+\Bigg(2^{1+n}\,a\,b\,(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\right.$$
$$\left.\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^n\Bigg)\Bigg/$$
$$\Bigg((1+m+n)\,\Bigg((3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-2\,\Bigg((1+n)\,\text{AppellF1}\left[\frac{1}{2}(3+m+n),m,2+n,\frac{1}{2}(5+m+n),\right.$$

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

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

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

$$\left(a^2\,\text{Tan}[c+d x]^m + 2 a b\,\text{Sin}[c+d x]^n\,\text{Tan}[c+d x]^m + b^2\,\text{Sin}[c+d x]^{2n}\,\text{Tan}[c+d x]^m\right)\Bigg)\Big/$$

$$\Bigg(d\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg(-\frac{1}{\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2} 2^{1+m}\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m$$

$$\Bigg(\Big(a^2 (3+m)\,\text{AppellF1}\Big[\frac{1+m}{2}, m, 1, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\Big/$$

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

$$\Big(2^{1+n} a b (3+m+n)\,\text{AppellF1}\Big[\frac{1}{2}(1+m+n), m, 1+n, \frac{1}{2}(3+m+n), \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$

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

$$\Bigg(4^n b^2(3+m+2n)\,\text{AppellF1}\Big[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{2n}\Bigg)\Big/\Bigg((1+m+2n)\Bigg((3+m+2n)\,\text{AppellF1}\Big[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-2\Big((1+2n)\,\text{AppellF1}\Big[\frac{1}{2}(3+m+2n),m,2(1+n),\frac{1}{2}(5+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-m\,\text{AppellF1}\Big[\frac{1}{2}(3+m+2n),1+m,1+2n,\frac{1}{2}(5+m+2n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg)+$$

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

$$\Bigg(\Big(a^2(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\Big/\Bigg((1+m)\Bigg((3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-2\Big(\text{AppellF1}\Big[\frac{3+m}{2},m,2,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-m\,\text{AppellF1}\Big[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg)+\Bigg(2^{1+n}a\,b\,(3+m+n)\,\text{AppellF1}\Big[\frac{1}{2}(1+m+n),m,1+n,$$

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

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

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

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

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

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

$$\Bigg(4^n\,b^2\left(3+m+2\,n\right)\text{AppellF1}\left[\frac{1}{2}\left(1+m+2\,n\right),\ m,\ 1+2\,n,\ \frac{1}{2}\left(3+m+2\,n\right),\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\left(\frac{\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^{2\,n}\Bigg)\Bigg/$$

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

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

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

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

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

$$\frac{1}{1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\,2^{1+m}\,m\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^{-1+m}$$

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

$$\Bigg(\left(a^2\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},\ m,\ 1,\ \frac{3+m}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\right)\Bigg/$$

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

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

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

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

$$\Bigg(2^{1+n}\,a\,b\,(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\Bigg)\Bigg/$$

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

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

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

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

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Bigg)+$$

$$\Bigg(4^n\,b^2\,(3+m+2n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+2n),m,1+2n,\frac{1}{2}(3+m+2n),\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{2n}\Bigg)\Bigg/$$

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

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

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

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

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Bigg)\Bigg)+$$

$$\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\,2^{1+m}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m$$

$$\Bigg(\Bigg(a^2\,(3+m)\,\Bigg(-\frac{1}{3+m}(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},m,2,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

$$m\,(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},1+m,1,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\Big)\Big/$$

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

$$\Big(2^{1+n}\,a\,b\left(3+m+n\right)\Big(-\frac{1}{3+m+n}\left(1+n\right)\left(1+m+n\right)\mathrm{AppellF1}\Big[1+\frac{1}{2}\left(1+m+n\right),m,2+n,$$
$$1+\frac{1}{2}\left(3+m+n\right),\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$
$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{3+m+n}m\left(1+m+n\right)\mathrm{AppellF1}\Big[1+\frac{1}{2}\left(1+m+n\right),$$
$$1+m,1+n,1+\frac{1}{2}\left(3+m+n\right),\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]$$
$$\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\left(\frac{\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^n\Big)\Big/$$

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

$$\Big(4^n\,b^2\left(3+m+2\,n\right)\Big(-\frac{1}{3+m+2\,n}\left(1+2\,n\right)\left(1+m+2\,n\right)\mathrm{AppellF1}\Big[1+\frac{1}{2}\left(1+m+2\,n\right),$$
$$m,2+2\,n,1+\frac{1}{2}\left(3+m+2\,n\right),\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,$$
$$-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$
$$\frac{1}{3+m+2\,n}m\left(1+m+2\,n\right)\mathrm{AppellF1}\Big[1+\frac{1}{2}\left(1+m+2\,n\right),1+m,1+2\,n,$$
$$1+\frac{1}{2}\left(3+m+2\,n\right),\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]$$
$$\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\left(\frac{\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^{2\,n}\Big)\Big/$$

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

$$\left(2^{1+n}\,a\,b\,n\,(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^{-1+n}\left(-\frac{\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^2}+\frac{\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2}{2\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)}\right)\right)\Big/$$

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

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

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

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

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

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

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

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

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

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

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

$$-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big]-m\,\text{AppellF1}\Big[\frac{1}{2}\left(3+m+n\right),1+m,1+n,\frac{1}{2}(5+m+n),$$
$$\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big)^2\Big)-$$
$$\Bigg(4^n b^2\left(3+m+2 n\right)\text{AppellF1}\Big[\frac{1}{2}\left(1+m+2 n\right),m,1+2 n,\frac{1}{2}\left(3+m+2 n\right),$$
$$\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big]\left(\frac{\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]}{1+\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2}\right)^{2 n}$$
$$\Bigg(-2\Bigg(\left(1+2 n\right)\text{AppellF1}\Big[\frac{1}{2}\left(3+m+2 n\right),m,2\left(1+n\right),\frac{1}{2}\left(5+m+2 n\right),$$
$$\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big]-m\,\text{AppellF1}\Big[\frac{1}{2}\left(3+m+2 n\right),$$
$$1+m,1+2 n,\frac{1}{2}\left(5+m+2 n\right),\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big]\Bigg)$$
$$\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+\left(3+m+2 n\right)\Bigg(-\frac{1}{3+m+2 n}\left(1+2 n\right)$$
$$\left(1+m+2 n\right)\text{AppellF1}\Big[1+\frac{1}{2}\left(1+m+2 n\right),m,2+2 n,1+\frac{1}{2}\left(3+m+2 n\right),$$
$$\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+$$
$$\frac{1}{3+m+2 n}m\left(1+m+2 n\right)\text{AppellF1}\Big[1+\frac{1}{2}\left(1+m+2 n\right),1+m,1+2 n,$$
$$1+\frac{1}{2}\left(3+m+2 n\right),\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big]$$
$$\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\Bigg)-2\,\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2$$
$$\Bigg(\left(1+2 n\right)\Bigg(-\frac{1}{5+m+2 n}2\left(1+n\right)\left(3+m+2 n\right)\text{AppellF1}\Big[1+\frac{1}{2}\left(3+m+2 n\right),m,$$
$$1+2\left(1+n\right),1+\frac{1}{2}\left(5+m+2 n\right),\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big]$$
$$\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+\frac{1}{5+m+2 n}m\left(3+m+2 n\right)\text{AppellF1}\Big[$$
$$1+\frac{1}{2}\left(3+m+2 n\right),1+m,2\left(1+n\right),1+\frac{1}{2}\left(5+m+2 n\right),\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big]\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]\Bigg)-$$
$$m\Bigg(-\frac{1}{5+m+2 n}\left(1+2 n\right)\left(3+m+2 n\right)\text{AppellF1}\Big[1+\frac{1}{2}\left(3+m+2 n\right),1+m,2+2 n,$$
$$1+\frac{1}{2}\left(5+m+2 n\right),\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2\Big]\text{Sec}\Big[\frac{1}{2}\Big(c+$$
$$d x\Big)\Big]^2\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+\frac{1}{5+m+2 n}\left(1+m\right)\left(3+m+2 n\right)\text{AppellF1}\Big[$$
$$1+\frac{1}{2}\left(3+m+2 n\right),2+m,1+2 n,1+\frac{1}{2}\left(5+m+2 n\right),\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]^2,$$

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

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

Problem 576: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\left(a+b\,\text{Sin}[c+d x]^n\right)\text{Tan}[c+d x]^m\,dx$$

Optimal (type 5, 124 leaves, 6 steps):

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

Result (type 6, 5184 leaves):

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

$$\Big(\Big(a(3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,m,\,1,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big)\Big/$$

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

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

$$\frac{1}{2}\left(3+m+n\right),\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\Big]\left(\frac{\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}}\right)^{n}\Bigg)\Bigg/$$

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

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

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

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

$$\left(a\,\mathrm{Tan}\left[c+d\,x\right]^{m}+b\,\mathrm{Sin}\left[c+d\,x\right]^{n}\,\mathrm{Tan}\left[c+d\,x\right]^{m}\right)\Bigg/\Bigg(d$$

$$\left(1+\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right)$$

$$\Bigg(-\frac{1}{\left(1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right)^{2}}\,2^{1+m}\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\left(-\frac{\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{-1+\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}}\right)^{m}$$

$$\Bigg(\left(a\left(3+m\right)\mathrm{AppellF1}\left[\frac{1+m}{2},\,m,\,1,\,\frac{3+m}{2},\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\right]\right)\Bigg/$$

$$\Bigg(\left(1+m\right)\Bigg(\left(3+m\right)\mathrm{AppellF1}\left[\frac{1+m}{2},\,m,\,1,\,\frac{3+m}{2},\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},\right.$$

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

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

$$\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},\,-\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\Big]\Bigg)\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2}\Bigg)\Bigg)+$$

$$\Bigg(2^{n}\,b\left(3+m+n\right)\mathrm{AppellF1}\left[\frac{1}{2}\left(1+m+n\right),\,m,\,1+n,\,\frac{1}{2}\left(3+m+n\right),\,\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^{2},\right.$$

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

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

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

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

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

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

$$\left(\left(a\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\Big/\right.$$

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

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

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

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

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

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

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

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

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

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

$$\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}2^{1+m}\,m\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+m}$$

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

$$\left(\left(a\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\Big/\right.$$

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

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

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

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Big)+\Bigg(2^n\,b\,(3+m+n)\,\text{AppellF1}\left[\frac{1}{2}(1+m+n),m,1+n,\right.$$

$$\left.\frac{1}{2}(3+m+n),\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\Bigg)\Big/$$

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

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

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

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

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

$$\frac{1}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\,2^{1+m}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^m$$

$$\Bigg(\Bigg(a\,(3+m)\,\Bigg(-\frac{1}{3+m}(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},m,2,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

$$m\,(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},1+m,1,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

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

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

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

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

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

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

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

$$m,\ 2,\ 1+\frac{3+m}{2},\ \mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]+\frac{1}{3+m}m\ (1+m)\ \mathrm{AppellF1}\Big[1+\frac{1+m}{2},\ 1+m,\ 1,\ 1+\frac{3+m}{2},$$

$$\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]\Big)-$$

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

$$\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]+$$

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

$$-\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]-$$

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

$$-\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]+\frac{1}{5+m}$$

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

$$-\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big((1+m)\ \ \Big((3+m)\ \mathrm{AppellF1}\Big[\frac{1+m}{2},\ m,\ 1,\ \frac{3+m}{2},\ \mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,$$

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

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

$$\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\Big)\ \mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big)^2\Big)-$$

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

$$-\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\ \left(\frac{\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]}{1+\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2}\right)^n$$

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

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

$$\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]^2\Big]\Big)\ \mathrm{Sec}\left[\frac{1}{2}\ (c+d\ x)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\ (c+d\ x)\right]+$$

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

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

$$\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3+m+n} m (1+m+n) \operatorname{AppellF1}\left[1+\frac{1}{2}(1+m+n),\right.$$
$$\left.1+m, 1+n, 1+\frac{1}{2}(3+m+n), \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\left.\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right) - 2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\left((1+n)\left(-\frac{1}{5+m+n}(2+n)(3+m+n) \operatorname{AppellF1}\left[1+\frac{1}{2}(3+m+n), m,\right.\right.\right.$$
$$\left.3+n, 1+\frac{1}{2}(5+m+n), \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{5+m+n} m (3+m+n) \operatorname{AppellF1}\left[\right.$$
$$1+\frac{1}{2}(3+m+n), 1+m, 2+n, 1+\frac{1}{2}(5+m+n), \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$
$$\left.\left.-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right) -$$
$$m\left(-\frac{1}{5+m+n}(1+n)(3+m+n) \operatorname{AppellF1}\left[1+\frac{1}{2}(3+m+n), 1+m,\right.\right.$$
$$\left.2+n, 1+\frac{1}{2}(5+m+n), \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{5+m+n}(1+m)(3+m+n) \operatorname{AppellF1}\left[\right.$$
$$1+\frac{1}{2}(3+m+n), 2+m, 1+n, 1+\frac{1}{2}(5+m+n), \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,$$
$$\left.\left.\left.\left.-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right) \Big/$$
$$\left((1+m+n)\left((3+m+n) \operatorname{AppellF1}\left[\frac{1}{2}(1+m+n), m, 1+n, \frac{1}{2}(3+m+n),\right.\right.\right.$$
$$\left.\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] -$$
$$2\left((1+n) \operatorname{AppellF1}\left[\frac{1}{2}(3+m+n), m, 2+n, \frac{1}{2}(5+m+n), \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] - m \operatorname{AppellF1}\left[\frac{1}{2}(3+m+n), 1+m, 1+n, \frac{1}{2}(5+m+n),\right.$$
$$\left.\left.\left.\left.\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\right)$$

Problem 585: Unable to integrate problem.

$$\int \operatorname{Cot}[c+d x]^3 \left(a+b \operatorname{Sin}[c+d x]^n\right)^p \, dx$$

Optimal (type 5, 136 leaves, 7 steps) :

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

Result (type 8, 25 leaves):

$$\int \text{Cot}[c+d\,x]^3\left(a+b\,\text{Sin}[c+d\,x]^n\right)^p\,dx$$

Problem 591: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 107 leaves, 7 steps):

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

Result (type 5, 120 leaves):

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

Problem 592: Result more than twice size of optimal antiderivative.

$$\int (c\,\text{Cos}[e+f\,x])^m\,(d\,\text{Sin}[e+f\,x])^n\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 6, 137 leaves, 3 steps):

$$\frac{1}{d\,f\,(1+n)}c\,\text{AppellF1}\left[\frac{1+n}{2},\,\frac{1-m}{2},\,-p,\,\frac{3+n}{2},\,\text{Sin}[e+f\,x]^2,\,-\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right](c\,\text{Cos}[e+f\,x])^{-1+m}\left(\text{Cos}[e+f\,x]^2\right)^{\frac{1-m}{2}}(d\,\text{Sin}[e+f\,x])^{1+n}\left(a+b\,\text{Sin}[e+f\,x]^2\right)^p\left(1+\frac{b\,\text{Sin}[e+f\,x]^2}{a}\right)^{-p}$$

Result (type 6, 279 leaves):

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

Problem 593: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 79 leaves, 3 steps):

$$\left(\text{EllipticE}\left[e+f\,x+\text{ArcTan}[b,c],-\frac{b^2+c^2}{a}\right]\sqrt{a+(c\,\text{Cos}[e+f\,x]+b\,\text{Sin}[e+f\,x])^2}\right)\Big/$$
$$\left(f\,\sqrt{1+\frac{(c\,\text{Cos}[e+f\,x]+b\,\text{Sin}[e+f\,x])^2}{a}}\right)$$

Result (type 4, 325 leaves):

$$-\left(\left(\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{\frac{\sqrt{(b^2+c^2)^2}+(b^2-c^2)\,\text{Cos}[2\,(e+f\,x)]-2\,b\,c\,\text{Sin}[2\,(e+f\,x)]}{\sqrt{(b^2+c^2)^2}}}}{\sqrt{2}}\right],\ \frac{2\sqrt{(b^2+c^2)^2}}{2\,a+b^2+c^2+\sqrt{(b^2+c^2)^2}}\right]\right.\right.$$

$$\sqrt{\left(2\,a+b^2+c^2+(-b^2+c^2)\,\text{Cos}[2\,(e+f\,x)]+2\,b\,c\,\text{Sin}[2\,(e+f\,x)]\right)}$$

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

$$\left(\sqrt{2}\,\sqrt{(b^2+c^2)^2}\,f\,\sqrt{\left(\left(2\,a+b^2+c^2+(-b^2+c^2)\,\text{Cos}[2\,(e+f\,x)]+2\,b\,c\,\text{Sin}[2\,(e+f\,x)]\right)\right/}\right.$$

$$\left.\left.\left(2\,a+b^2+c^2+\sqrt{(b^2+c^2)^2}\right)\right)\sqrt{\frac{\left(2\,b\,c\,\text{Cos}[2\,(e+f\,x)]+(b^2-c^2)\,\text{Sin}[2\,(e+f\,x)]\right)^2}{(b^2+c^2)^2}}\right)$$

Problem 594: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 79 leaves, 3 steps):

$$\left(\text{EllipticF}\left[e+f\,x+\text{ArcTan}[b,c],\ -\frac{b^2+c^2}{a}\right]\sqrt{1+\frac{(c\,\text{Cos}[e+f\,x]+b\,\text{Sin}[e+f\,x])^2}{a}}\right)\Big/$$

$$\left(f\,\sqrt{a+(c\,\text{Cos}[e+f\,x]+b\,\text{Sin}[e+f\,x])^2}\right)$$

Result (type 6, 529 leaves):

$$\frac{1}{b\,c\,\sqrt{\frac{(b^2+c^2)^2}{b^2\,c^2}}\,f}$$

$$\sqrt{2}\,\text{AppellF1}\Big[\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{3}{2},\frac{2\,a+b^2+c^2+b\,c\,\sqrt{\frac{(b^2+c^2)^2}{b^2\,c^2}}\,\text{Sin}\big[2\,(e+f\,x)+\text{ArcTan}\big[\frac{-b^2+c^2}{2\,b\,c}\big]\big]}{2\,a+b^2+c^2-b\,c\,\sqrt{\frac{(b^2+c^2)^2}{b^2\,c^2}}},$$

$$\frac{2\,a+b^2+c^2+b\,c\,\sqrt{\frac{(b^2+c^2)^2}{b^2\,c^2}}\,\text{Sin}\big[2\,(e+f\,x)+\text{ArcTan}\big[\frac{-b^2+c^2}{2\,b\,c}\big]\big]}{2\,a+b^2+c^2+b\,c\,\sqrt{\frac{(b^2+c^2)^2}{b^2\,c^2}}}\Big]$$

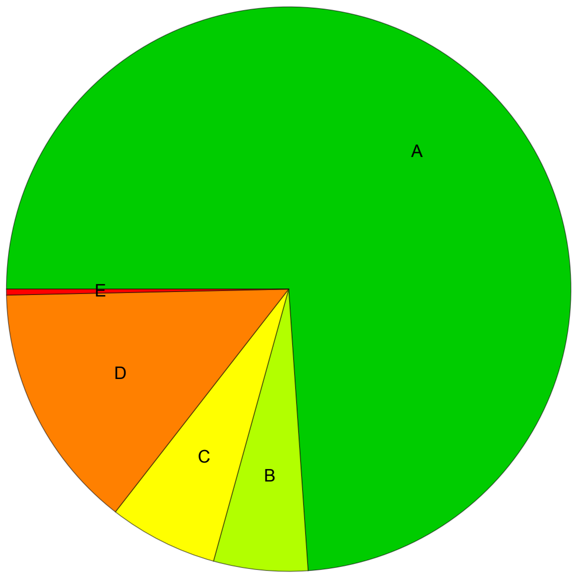
$$\text{Sec}\Big[2\,(e+f\,x)+\text{ArcTan}\Big[\frac{-b^2+c^2}{2\,b\,c}\Big]\Big]\,\sqrt{-\frac{b\,c\,\sqrt{\frac{(b^2+c^2)^2}{b^2\,c^2}}\,\Big(-1+\text{Sin}\big[2\,(e+f\,x)+\text{ArcTan}\big[\frac{-b^2+c^2}{2\,b\,c}\big]\big]\Big)}{2\,a+b^2+c^2+b\,c\,\sqrt{\frac{(b^2+c^2)^2}{b^2\,c^2}}}}$$

$$\sqrt{-\frac{b\,c\,\sqrt{\frac{(b^2+c^2)^2}{b^2\,c^2}}\,\Big(1+\text{Sin}\big[2\,(e+f\,x)+\text{ArcTan}\big[\frac{-b^2+c^2}{2\,b\,c}\big]\big]\Big)}{2\,a+b^2+c^2-b\,c\,\sqrt{\frac{(b^2+c^2)^2}{b^2\,c^2}}}}$$

$$\sqrt{\left(2\,a+b^2+c^2+b\,c\,\sqrt{\frac{(b^2+c^2)^2}{b^2\,c^2}}\,\text{Sin}\Big[2\,(e+f\,x)+\text{ArcTan}\Big[\frac{-b^2+c^2}{2\,b\,c}\Big]\Big]\right)}$$

Summary of Integration Test Results

594 integration problems



A - 439 optimal antiderivatives

B - 32 more than twice size of optimal antiderivatives

C - 37 unnecessarily complex antiderivatives

D - 84 unable to integrate problems

E - 2 integration timeouts