Mathematica 11.3 Integration Test Results

Test results for the 471 problems in "4.5.7 (d trig)^m (a+b (c sec)^n)^p.m"

Problem 5: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 27 leaves, 3 steps):

$$-\frac{(a+b)\,\text{ArcTanh}[\text{Cos}[e+f x]]}{f}+\frac{b\,\text{Sec}[e+f x]}{f}$$

Result (type 3, 84 leaves):

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

Problem 6: Result more than twice size of optimal antiderivative.

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

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

$$-\frac{(a+3 b)\,\text{ArcTanh}[\text{Cos}[e+f x]]}{2 f}-\frac{(a+b)\,\text{Cot}[e+f x]\,\text{Csc}[e+f x]}{2 f}+\frac{b\,\text{Sec}[e+f x]}{f}$$

Result (type 3, 236 leaves):

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

Problem 7: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 81 leaves, 5 steps):

$$-\frac{3 (a+5 b) \operatorname{ArcTanh}[\operatorname{Cos}[e+f x]]}{8 f}-\frac{(3 a+7 b) \operatorname{Cot}[e+f x] \operatorname{Csc}[e+f x]}{8 f}-\frac{(a+b) \operatorname{Cot}[e+f x] \operatorname{Csc}[e+f x]^3}{4 f}+\frac{b \operatorname{Sec}[e+f x]}{f}$$

Result (type 3, 198 leaves):

$$\frac{1}{64 f}\left(-2 (3 a+7 b) \operatorname{Csc}\left[\frac{1}{2}(e+f x)\right]^2-(a+b) \operatorname{Csc}\left[\frac{1}{2}(e+f x)\right]^4+\frac{1}{-1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2}\left(2\left(-3 (a+13 b)+4 \operatorname{Cos}[e+f x]\left(8 b+3 (a+5 b) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]\right]-3 (a+5 b) \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]\right)\right)\right)\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2-(a+b) \operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^4+(4 (a+2 b)+(3 a+7 b) \operatorname{Cos}[e+f x]) \operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^4 \operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right)$$

Problem 18: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 52 leaves, 4 steps):

$$-\frac{(a+b)^2 \operatorname{ArcTanh}[\operatorname{Cos}[e+f x]]}{f}+\frac{b (2 a+b) \operatorname{Sec}[e+f x]}{f}+\frac{b^2 \operatorname{Sec}[e+f x]^3}{3 f}$$

Result (type 3, 108 leaves):

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

Problem 19: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 104 leaves, 5 steps):

$$-\frac{(a+b)\,(a+5\,b)\,\text{ArcTanh}[\text{Cos}[e+f\,x]]}{2\,f}-\frac{\left(3\,a^2+6\,a\,b+5\,b^2\right)\,\text{Cot}[e+f\,x]\,\text{Csc}[e+f\,x]}{6\,f}+\frac{b\,(6\,a+5\,b)\,\text{Sec}[e+f\,x]}{3\,f}+\frac{b^2\,\text{Csc}[e+f\,x]^2\,\text{Sec}[e+f\,x]^3}{3\,f}$$

Result (type 3, 1021 leaves):

$$\frac{\left(-a^2-2\,a\,b-b^2\right)\,\text{Cos}[e+f\,x]^4\,\text{Csc}\left[\frac{e}{2}+\frac{f\,x}{2}\right]^2\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2}{2\,f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2}-$$
$$\left(2\,\left(a^2+6\,a\,b+5\,b^2\right)\,\text{Cos}[e+f\,x]^4\,\text{Log}\left[\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right]\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2\right)\Big/$$
$$\left(f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2\right)+$$
$$\left(2\,\left(a^2+6\,a\,b+5\,b^2\right)\,\text{Cos}[e+f\,x]^4\,\text{Log}\left[\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right]\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2\right)\Big/$$
$$\left(f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2\right)+\frac{2\,b\,(12\,a+13\,b)\,\text{Cos}[e+f\,x]^4\,\text{Sec}[e]\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2}{3\,f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2}+$$
$$\frac{\left(a^2+2\,a\,b+b^2\right)\,\text{Cos}[e+f\,x]^4\,\text{Sec}\left[\frac{e}{2}+\frac{f\,x}{2}\right]^2\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2}{2\,f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2}+$$
$$\left(2\,b^2\,\text{Cos}[e+f\,x]^4\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2\,\text{Sin}\left[\frac{f\,x}{2}\right]\right)\Big/$$
$$\left(3\,f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2\,\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\,\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^3\right)+$$
$$\left(\text{Cos}[e+f\,x]^4\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2\,\left(b^2\,\text{Cos}\left[\frac{e}{2}\right]+b^2\,\text{Sin}\left[\frac{e}{2}\right]\right)\right)\Big/$$
$$\left(3\,f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2\,\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\,\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)+$$
$$\left(2\,\text{Cos}[e+f\,x]^4\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2\,\left(12\,a\,b\,\text{Sin}\left[\frac{f\,x}{2}\right]+13\,b^2\,\text{Sin}\left[\frac{f\,x}{2}\right]\right)\right)\Big/$$
$$\left(3\,f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2\,\left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\,\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)\right)-$$
$$\left(2\,b^2\,\text{Cos}[e+f\,x]^4\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2\,\text{Sin}\left[\frac{f\,x}{2}\right]\right)\Big/$$
$$\left(3\,f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2\,\left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right)\,\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^3\right)+$$
$$\left(\text{Cos}[e+f\,x]^4\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2\,\left(b^2\,\text{Cos}\left[\frac{e}{2}\right]-b^2\,\text{Sin}\left[\frac{e}{2}\right]\right)\right)\Big/$$
$$\left(3\,f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2\,\left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right)\,\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)^2\right)-$$
$$\left(2\,\text{Cos}[e+f\,x]^4\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2\,\left(12\,a\,b\,\text{Sin}\left[\frac{f\,x}{2}\right]+13\,b^2\,\text{Sin}\left[\frac{f\,x}{2}\right]\right)\right)\Big/$$
$$\left(3\,f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2\,\left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right)\,\left(\text{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right)\right)$$

Problem 21: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 148 leaves, 7 steps):

$$\frac{5}{16}\left(a^2-12\,a\,b+8\,b^2\right)x-\frac{\left(3\,a^2-36\,a\,b+8\,b^2\right)\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]}{16\,f}+\frac{a\,(a-12\,b)\,\text{Cos}[e+f\,x]^3\,\text{Sin}[e+f\,x]}{24\,f}-\frac{\left(a^2-12\,a\,b+12\,b^2\right)\text{Tan}[e+f\,x]}{6\,f}+\frac{a^2\,\text{Sin}[e+f\,x]^6\,\text{Tan}[e+f\,x]}{6\,f}+\frac{b^2\,\text{Tan}[e+f\,x]^3}{3\,f}$$

Result (type 3, 499 leaves):

$$\frac{1}{768\,f\,\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)^2}\left(b+a\,\text{Cos}[e+f\,x]^2\right)^2\text{Sec}[e]\,\text{Sec}[e+f\,x]^3 \left(360\left(a^2-12\,a\,b+8\,b^2\right)f\,x\,\text{Cos}[f\,x]+360\left(a^2-12\,a\,b+8\,b^2\right)f\,x\,\text{Cos}[2\,e+f\,x]+120\,a^2\,f\,x\,\text{Cos}[2\,e+3\,f\,x]-1440\,a\,b\,f\,x\,\text{Cos}[2\,e+3\,f\,x]+960\,b^2\,f\,x\,\text{Cos}[2\,e+3\,f\,x]+120\,a^2\,f\,x\,\text{Cos}[4\,e+3\,f\,x]-1440\,a\,b\,f\,x\,\text{Cos}[4\,e+3\,f\,x]+960\,b^2\,f\,x\,\text{Cos}[4\,e+3\,f\,x]-81\,a^2\,\text{Sin}[f\,x]+3444\,a\,b\,\text{Sin}[f\,x]-3168\,b^2\,\text{Sin}[f\,x]-81\,a^2\,\text{Sin}[2\,e+f\,x]-1164\,a\,b\,\text{Sin}[2\,e+f\,x]+2208\,b^2\,\text{Sin}[2\,e+f\,x]-109\,a^2\,\text{Sin}[2\,e+3\,f\,x]+2076\,a\,b\,\text{Sin}[2\,e+3\,f\,x]-1936\,b^2\,\text{Sin}[2\,e+3\,f\,x]-109\,a^2\,\text{Sin}[4\,e+3\,f\,x]+540\,a\,b\,\text{Sin}[4\,e+3\,f\,x]-144\,b^2\,\text{Sin}[4\,e+3\,f\,x]-21\,a^2\,\text{Sin}[4\,e+5\,f\,x]+156\,a\,b\,\text{Sin}[4\,e+5\,f\,x]-48\,b^2\,\text{Sin}[4\,e+5\,f\,x]-21\,a^2\,\text{Sin}[6\,e+5\,f\,x]+156\,a\,b\,\text{Sin}[6\,e+5\,f\,x]-48\,b^2\,\text{Sin}[6\,e+5\,f\,x]+6\,a^2\,\text{Sin}[6\,e+7\,f\,x]-12\,a\,b\,\text{Sin}[6\,e+7\,f\,x]+6\,a^2\,\text{Sin}[8\,e+7\,f\,x]-12\,a\,b\,\text{Sin}[8\,e+7\,f\,x]-a^2\,\text{Sin}[8\,e+9\,f\,x]-a^2\,\text{Sin}[10\,e+9\,f\,x]\right)$$

Problem 24: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 106 leaves):

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

Problem 25: Result more than twice size of optimal antiderivative.

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

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

$$-\frac{(a+b)^2 \text{Cot}[e+f x]}{f}+\frac{2 b (a+b) \text{Tan}[e+f x]}{f}+\frac{b^2 \text{Tan}[e+f x]^3}{3 f}$$

Result (type 3, 109 leaves):

$$\Big(4 \left(b+a \text{Cos}[e+f x]^2\right)^2 \text{Sec}[e+f x]^3 \Big(b^2 \text{Sec}[e] \text{Sin}[f x]+\text{Cos}[e+f x]^2 \Big(3 (a+b)^2 \text{Cot}[e+f x] \text{Csc}[e]+b (6 a+5 b) \text{Sec}[e]\Big) \text{Sin}[f x]+b^2 \text{Cos}[e+f x] \text{Tan}[e]\Big)\Big) \Big/ \left(3 f (a+2 b+a \text{Cos}[2 (e+f x)])^2\right)$$

Problem 27: Result more than twice size of optimal antiderivative.

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

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

$$-\frac{\left(a^2+6 a b+6 b^2\right) \text{Cot}[e+f x]}{f}-\frac{2 (a+b) (a+2 b) \text{Cot}[e+f x]^3}{3 f}-\frac{(a+b)^2 \text{Cot}[e+f x]^5}{5 f}+\frac{2 b (a+2 b) \text{Tan}[e+f x]}{f}+\frac{b^2 \text{Tan}[e+f x]^3}{3 f}$$

Result (type 3, 353 leaves):

$$-\frac{1}{1920 f} \text{Csc}[e] \text{Csc}[e+f x]^5 \text{Sec}[e] \text{Sec}[e+f x]^3 \Big(20 a (5 a+12 b) \text{Sin}[2 e]-32 \left(2 a^2+9 a b+12 b^2\right) \text{Sin}[2 f x]-24 a^2 \text{Sin}[2 (e+f x)]-108 a b \text{Sin}[2 (e+f x)]-54 b^2 \text{Sin}[2 (e+f x)]+8 a^2 \text{Sin}[4 (e+f x)]+36 a b \text{Sin}[4 (e+f x)]+18 b^2 \text{Sin}[4 (e+f x)]+8 a^2 \text{Sin}[6 (e+f x)]+36 a b \text{Sin}[6 (e+f x)]+18 b^2 \text{Sin}[6 (e+f x)]-4 a^2 \text{Sin}[8 (e+f x)]-18 a b \text{Sin}[8 (e+f x)]-9 b^2 \text{Sin}[8 (e+f x)]+8 a^2 \text{Sin}[2 (e+2 f x)]+96 a b \text{Sin}[2 (e+2 f x)]+128 b^2 \text{Sin}[2 (e+2 f x)]+40 a^2 \text{Sin}[4 e+2 f x]+8 a^2 \text{Sin}[4 e+6 f x]+96 a b \text{Sin}[4 e+6 f x]+128 b^2 \text{Sin}[4 e+6 f x]-4 a^2 \text{Sin}[6 e+8 f x]-48 a b \text{Sin}[6 e+8 f x]-64 b^2 \text{Sin}[6 e+8 f x]\Big)$$

Problem 28: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

$$\frac{\sqrt{b} (a+b)^2 \text{ArcTan}\left[\frac{\sqrt{a} \text{Cos}[e+f x]}{\sqrt{b}}\right]}{a^{7/2} f}-\frac{(a+b)^2 \text{Cos}[e+f x]}{a^3 f}+\frac{(2 a+b) \text{Cos}[e+f x]^3}{3 a^2 f}-\frac{\text{Cos}[e+f x]^5}{5 a f}$$

Result (type 3, 425 leaves):

$$\frac{1}{1920\, a^{7/2}\, \sqrt{b}\, f\, \left(a+b\, \text{Sec}[e+f\, x]^2\right)}\left(a+2\, b+a\, \text{Cos}\left[2\, (e+f\, x)\right]\right)$$

$$\left(15\, \left(5\, a^3+64\, a^2\, b+128\, a\, b^2+64\, b^3\right)\, \text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(-\sqrt{a}-i\, \sqrt{a+b}\, \sqrt{\left(\text{Cos}[e]-i\, \text{Sin}[e]\right)^2}\right)\right.\right.\right.$$

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

$$15\, \left(5\, a^3+64\, a^2\, b+128\, a\, b^2+64\, b^3\right)\, \text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(-\sqrt{a}+i\, \sqrt{a+b}\, \sqrt{\left(\text{Cos}[e]-i\, \text{Sin}[e]\right)^2}\right)\right.\right.$$

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

$$75\, a^3\, \text{ArcTan}\left[\frac{\sqrt{a}-\sqrt{a+b}\, \text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]}{\sqrt{b}}\right]-75\, a^3\, \text{ArcTan}\left[\frac{\sqrt{a}+\sqrt{a+b}\, \text{Tan}\left[\frac{1}{2}\, (e+f\, x)\right]}{\sqrt{b}}\right]-$$

$$8\, \sqrt{a}\, \sqrt{b}\, \text{Cos}[e+f\, x]$$

$$\left.\left(89\, a^2+220\, a\, b+120\, b^2-4\, a\, (7\, a+5\, b)\, \text{Cos}\left[2\, (e+f\, x)\right]+3\, a^2\, \text{Cos}\left[4\, (e+f\, x)\right]\right)\right)\, \text{Sec}[e+f\, x]^2$$

Problem 29: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 71 leaves, 4 steps):

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

Result (type 3, 376 leaves):

$$\frac{1}{48\, a^{5/2}\sqrt{b}\, f\left(a+b\,\mathrm{Sec}[e+f x]^2\right)}\left(a+2 b+a\,\mathrm{Cos}[2(e+f x)]\right)\Bigg(3\left(a^2+8 a b+8 b^2\right)\mathrm{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}-i\sqrt{a+b}\sqrt{(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^2}\Big)\mathrm{Sin}[e]\,\mathrm{Tan}\Big[\frac{f x}{2}\Big]+\mathrm{Cos}[e]\Big(\sqrt{a}-\sqrt{a+b}\sqrt{(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^2}\,\mathrm{Tan}\Big[\frac{f x}{2}\Big]\Big)\Big)\Big]+3\left(a^2+8 a b+8 b^2\right)\mathrm{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}+i\sqrt{a+b}\sqrt{(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^2}\Big)\mathrm{Sin}[e]\,\mathrm{Tan}\Big[\frac{f x}{2}\Big]+\mathrm{Cos}[e]\Big(\sqrt{a}+\sqrt{a+b}\sqrt{(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^2}\,\mathrm{Tan}\Big[\frac{f x}{2}\Big]\Big)\Big)\Big]-3 a^2\,\mathrm{ArcTan}\Big[\frac{\sqrt{a}-\sqrt{a+b}\,\mathrm{Tan}\big[\frac{1}{2}(e+f x)\big]}{\sqrt{b}}\Big]-3 a^2\,\mathrm{ArcTan}\Big[\frac{\sqrt{a}+\sqrt{a+b}\,\mathrm{Tan}\big[\frac{1}{2}(e+f x)\big]}{\sqrt{b}}\Big]+4\sqrt{a}\sqrt{b}\,\mathrm{Cos}[e+f x]\left(-5 a-6 b+a\,\mathrm{Cos}[2(e+f x)]\right)\Bigg)\mathrm{Sec}[e+f x]^2$$

Problem 30: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 47 leaves, 3 steps):

$$\frac{\sqrt{b}\,\mathrm{ArcTan}\Big[\frac{\sqrt{a}\,\mathrm{Cos}[e+f x]}{\sqrt{b}}\Big]}{a^{3/2} f}-\frac{\mathrm{Cos}[e+f x]}{a f}$$

Result (type 3, 329 leaves):

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

Problem 31: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

$$\frac{\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{b}}\right]}{\sqrt{a}\,(a+b)\,f}-\frac{\text{ArcTanh}[\text{Cos}[e+f\,x]]}{(a+b)\,f}$$

Result (type 3, 239 leaves):

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

Problem 32: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

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

Optimal (type 3, 86 leaves, 5 steps):

$$\frac{\sqrt{a}\,\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{b}}\right]}{(a+b)^2 f}-\frac{(a-b)\,\text{ArcTanh}[\text{Cos}[e+f x]]}{2\,(a+b)^2 f}-\frac{\text{Cot}[e+f x]\,\text{Csc}[e+f x]}{2\,(a+b)\,f}$$

Result (type 3, 371 leaves):

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

Problem 33: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 129 leaves, 6 steps):

$$\frac{a^{3/2}\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{b}}\right]}{(a+b)^3 f}-\frac{\left(3 a^2-6 a b-b^2\right)\text{ArcTanh}[\text{Cos}[e+f x]]}{8\,(a+b)^3 f}-\frac{(3 a-b)\,\text{Cot}[e+f x]\,\text{Csc}[e+f x]}{8\,(a+b)^2 f}-\frac{\text{Cot}[e+f x]\,\text{Csc}[e+f x]^3}{4\,(a+b)\,f}$$

Result (type 3, 903 leaves):

$$\left(a^{3/2}\sqrt{b}\right.$$
$$\text{ArcTan}\left[\frac{1}{2\sqrt{b}}\text{Sec}\left[\frac{f x}{2}\right]\left(2\sqrt{a}\,\text{Cos}\left[e+\frac{f x}{2}\right]-i\sqrt{a+b}\,\text{Cos}\left[e-\frac{f x}{2}\right]\sqrt{\text{Cos}[2 e]-i\,\text{Sin}[2 e]}\,+\right.\right.$$
$$i\sqrt{a+b}\,\text{Cos}\left[e+\frac{f x}{2}\right]\sqrt{\text{Cos}[2 e]-i\,\text{Sin}[2 e]}\,+\sqrt{a+b}\,\sqrt{\text{Cos}[2 e]-i\,\text{Sin}[2 e]}$$
$$\left.\left.\text{Sin}\left[e-\frac{f x}{2}\right]-\sqrt{a+b}\,\sqrt{\text{Cos}[2 e]-i\,\text{Sin}[2 e]}\,\text{Sin}\left[e+\frac{f x}{2}\right]\right)\right]$$
$$\left.(a+2 b+a\,\text{Cos}[2 e+2 f x])\,\text{Sec}[e+f x]^2\right)\Big/\left(2\,(a+b)^3 f\,\left(a+b\,\text{Sec}[e+f x]^2\right)\right)+$$
$$\left(a^{3/2}\sqrt{b}\,\text{ArcTan}\left[\frac{1}{2\sqrt{b}}\text{Sec}\left[\frac{f x}{2}\right]\left(2\sqrt{a}\,\text{Cos}\left[e+\frac{f x}{2}\right]+i\sqrt{a+b}\,\text{Cos}\left[e-\frac{f x}{2}\right]\right.\right.\right.$$
$$\sqrt{\text{Cos}[2 e]-i\,\text{Sin}[2 e]}\,-i\sqrt{a+b}\,\text{Cos}\left[e+\frac{f x}{2}\right]\sqrt{\text{Cos}[2 e]-i\,\text{Sin}[2 e]}\,-\sqrt{a+b}$$
$$\left.\left.\sqrt{\text{Cos}[2 e]-i\,\text{Sin}[2 e]}\,\text{Sin}\left[e-\frac{f x}{2}\right]+\sqrt{a+b}\,\sqrt{\text{Cos}[2 e]-i\,\text{Sin}[2 e]}\,\text{Sin}\left[e+\frac{f x}{2}\right]\right)\right]$$
$$\left.(a+2 b+a\,\text{Cos}[2 e+2 f x])\,\text{Sec}[e+f x]^2\right)\Big/\left(2\,(a+b)^3 f\,\left(a+b\,\text{Sec}[e+f x]^2\right)\right)+$$
$$\frac{(-3 a+b)\,(a+2 b+a\,\text{Cos}[2 e+2 f x])\,\text{Csc}\left[\frac{e}{2}+\frac{f x}{2}\right]^2\text{Sec}[e+f x]^2}{64\,(a+b)^2 f\,\left(a+b\,\text{Sec}[e+f x]^2\right)}-$$
$$\frac{(a+2 b+a\,\text{Cos}[2 e+2 f x])\,\text{Csc}\left[\frac{e}{2}+\frac{f x}{2}\right]^4\text{Sec}[e+f x]^2}{128\,(a+b)\,f\,\left(a+b\,\text{Sec}[e+f x]^2\right)}+$$
$$\left(\left(-3 a^2+6 a b+b^2\right)\,(a+2 b+a\,\text{Cos}[2 e+2 f x])\,\text{Log}\left[\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]\right]\,\text{Sec}[e+f x]^2\right)\Big/$$
$$\left(16\,(a+b)^3 f\,\left(a+b\,\text{Sec}[e+f x]^2\right)\right)+$$
$$\left(\left(3 a^2-6 a b-b^2\right)\,(a+2 b+a\,\text{Cos}[2 e+2 f x])\,\text{Log}\left[\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right]\,\text{Sec}[e+f x]^2\right)\Big/$$
$$\left(16\,(a+b)^3 f\,\left(a+b\,\text{Sec}[e+f x]^2\right)\right)+$$
$$\frac{(3 a-b)\,(a+2 b+a\,\text{Cos}[2 e+2 f x])\,\text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^2\text{Sec}[e+f x]^2}{64\,(a+b)^2 f\,\left(a+b\,\text{Sec}[e+f x]^2\right)}+$$
$$\frac{(a+2 b+a\,\text{Cos}[2 e+2 f x])\,\text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4\text{Sec}[e+f x]^2}{128\,(a+b)\,f\,\left(a+b\,\text{Sec}[e+f x]^2\right)}$$

Problem 34: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sin}[e+f x]^6}{a+b\,\text{Sec}[e+f x]^2}\,dx$$

Optimal (type 3, 166 leaves, 7 steps):

$$\frac{\left(5 a^3+30 a^2 b+40 a b^2+16 b^3\right) x}{16 a^4}-\frac{\sqrt{b}\,(a+b)^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{a^4 f}-\frac{\left(11 a^2+18 a b+8 b^2\right) \text{Cos}[e+f x]\,\text{Sin}[e+f x]}{16 a^3 f}+\frac{(3 a+2 b)\,\text{Cos}[e+f x]^3\,\text{Sin}[e+f x]}{8 a^2 f}+\frac{\text{Cos}[e+f x]^3\,\text{Sin}[e+f x]^3}{6 a f}$$

Result (type 3, 357 leaves):

$$\frac{1}{768 a^4 \sqrt{b}\,\sqrt{a+b}\, f\,\left(a+b\,\text{Sec}[e+f x]^2\right)\sqrt{b\,(\text{Cos}[e]-i\,\text{Sin}[e])^4}}\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)\text{Sec}[e+f x]^2\left(3\sqrt{b}\left(9 a^4+136 a^3 b+384 a^2 b^2+384 a b^3+128 b^4\right)\text{ArcTan}\left[(\text{Sec}[f x]\,(\text{Cos}[2 e]-i\,\text{Sin}[2 e])\,(-(a+2 b)\,\text{Sin}[f x]+a\,\text{Sin}[2 e+f x]))\Big/\left(2\sqrt{a+b}\,\sqrt{b\,(\text{Cos}[e]-i\,\text{Sin}[e])^4}\right)\right](\text{Cos}[2 e]-i\,\text{Sin}[2 e])+\sqrt{b\,(\text{Cos}[e]-i\,\text{Sin}[e])^4}\left(3 a^3 (9 a+8 b)\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]+2\sqrt{b}\,\sqrt{a+b}\left(-12 a^3 e+60 a^3 f x+360 a^2 b f x+480 a b^2 f x+192 b^3 f x-3 a\left(15 a^2+32 a b+16 b^2\right)\text{Sin}[2 (e+f x)]+3 a^2 (3 a+2 b)\,\text{Sin}[4 (e+f x)]-a^3\,\text{Sin}[6 (e+f x)]\right)\right)\right)$$

Problem 35: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sin}[e+f x]^4}{a+b\,\text{Sec}[e+f x]^2}\,dx$$

Optimal (type 3, 117 leaves, 6 steps):

$$\frac{\left(3 a^2+12 a b+8 b^2\right) x}{8 a^3}-\frac{\sqrt{b}\,(a+b)^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{a^3 f}-\frac{(5 a+4 b)\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]}{8 a^2 f}+\frac{\text{Cos}[e+f x]^3\,\text{Sin}[e+f x]}{4 a f}$$

Result (type 3, 303 leaves):

$$\frac{1}{64 a^3 \sqrt{b} \sqrt{a+b} f \left(a+b \operatorname{Sec}[e+f x]^2\right) \sqrt{b (\operatorname{Cos}[e]-i \operatorname{Sin}[e])^4}} (a+2 b+a \operatorname{Cos}[2 (e+f x)]) \operatorname{Sec}[e+f x]^2 \left(\sqrt{b} \left(3 a^3+34 a^2 b+64 a b^2+32 b^3\right) \operatorname{ArcTan}\left[(\operatorname{Sec}[f x] (\operatorname{Cos}[2 e]-i \operatorname{Sin}[2 e]) (-(a+2 b) \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x])) \Big/ \left(2 \sqrt{a+b} \sqrt{b (\operatorname{Cos}[e]-i \operatorname{Sin}[e])^4}\right)\right] (\operatorname{Cos}[2 e]-i \operatorname{Sin}[2 e]) + \sqrt{b (\operatorname{Cos}[e]-i \operatorname{Sin}[e])^4} \left(a^2 (3 a+2 b) \operatorname{ArcTan}\left[\frac{\sqrt{b} \operatorname{Tan}[e+f x]}{\sqrt{a+b}}\right]+\sqrt{b} \sqrt{a+b} \left(-2 a^2 e+12 a^2 f x+48 a b f x+32 b^2 f x-8 a (a+b) \operatorname{Sin}[2 (e+f x)]+a^2 \operatorname{Sin}[4 (e+f x)]\right)\right)\right)$$

Problem 36: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 76 leaves, 5 steps):

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

Result (type 3, 245 leaves):

$$\left((a+2 b+a \operatorname{Cos}[2 (e+f x)]) \operatorname{Sec}[e+f x]^2 \left(\frac{\operatorname{ArcTan}\left[\frac{\sqrt{b} \operatorname{Tan}[e+f x]}{\sqrt{a+b}}\right]}{\sqrt{b} \sqrt{a+b} f}-\frac{1}{a^2}\left(-4 (a+2 b) x-\left(\left(a^2+8 a b+8 b^2\right) \operatorname{ArcTan}\left[(\operatorname{Sec}[f x] (\operatorname{Cos}[2 e]-i \operatorname{Sin}[2 e]) (-(a+2 b) \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x])) \Big/ \left(2 \sqrt{a+b} \sqrt{b (\operatorname{Cos}[e]-i \operatorname{Sin}[e])^4}\right)\right] (\operatorname{Cos}[2 e]-i \operatorname{Sin}[2 e])\right) \Big/ \left(\sqrt{a+b} f \sqrt{b (\operatorname{Cos}[e]-i \operatorname{Sin}[e])^4}\right)+\frac{2 a \operatorname{Cos}[2 f x] \operatorname{Sin}[2 e]}{f}+\frac{2 a \operatorname{Cos}[2 e] \operatorname{Sin}[2 f x]}{f}\right)\right)\right) \Big/ \left(16 \left(a+b \operatorname{Sec}[e+f x]^2\right)\right)$$

Problem 37: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 45 leaves, 3 steps):

$$\frac{x}{a}+\frac{\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{a+b}\,\text{Cot}[e+f\,x]}{\sqrt{b}}\right]}{a\sqrt{a+b}\,f}$$

Result (type 3, 182 leaves):

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

Problem 38: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 54 leaves, 3 steps):

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

Result (type 3, 189 leaves):

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

Problem 39: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[e+f x]^4}{a+b\,\text{Sec}[e+f x]^2}\,dx$$

Optimal (type 3, 76 leaves, 4 steps):

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

Result (type 3, 226 leaves):

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

Problem 40: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[e+f x]^6}{a+b\,\text{Sec}[e+f x]^2}\,dx$$

Optimal (type 3, 105 leaves, 4 steps):

$$-\frac{a^2\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{(a+b)^{7/2} f}-\frac{a^2\,\text{Cot}[e+f x]}{(a+b)^3 f}-\frac{(2a+b)\,\text{Cot}[e+f x]^3}{3(a+b)^2 f}-\frac{\text{Cot}[e+f x]^5}{5(a+b) f}$$

Result (type 3, 318 leaves):

$$\frac{1}{480\,(a+b)^{7/2}\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)\sqrt{b\,(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^4}}$$
$$(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])\,\text{Sec}[e+f\,x]^2$$
$$\Big(240\,a^2\,b\,\text{ArcTan}\Big[\big(\text{Sec}[f\,x]\,(\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e])\,(-(a+2\,b)\,\text{Sin}[f\,x]+a\,\text{Sin}[2\,e+f\,x])\big)\Big/$$
$$\Big(2\,\sqrt{a+b}\,\sqrt{b\,(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^4}\Big)\Big]\,(\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e])+\sqrt{a+b}\,\text{Csc}[e]\,\text{Csc}[e+f\,x]^5$$
$$\sqrt{b\,(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^4}\,\big(10\,(8\,a^2+b^2)\,\text{Sin}[f\,x]-30\,b\,(3\,a+b)\,\text{Sin}[2\,e+f\,x]-$$
$$40\,a^2\,\text{Sin}[2\,e+3\,f\,x]+30\,a\,b\,\text{Sin}[2\,e+3\,f\,x]+10\,b^2\,\text{Sin}[2\,e+3\,f\,x]+$$
$$15\,a\,b\,\text{Sin}[4\,e+3\,f\,x]+8\,a^2\,\text{Sin}[4\,e+5\,f\,x]-9\,a\,b\,\text{Sin}[4\,e+5\,f\,x]-2\,b^2\,\text{Sin}[4\,e+5\,f\,x]\big)\Big)$$

Problem 41: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 161 leaves, 6 steps):

$$\frac{\sqrt{b}\,(a+b)\,(3\,a+7\,b)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{b}}\right]}{2\,a^{9/2}\,f}-\frac{(a+b)\,(3\,a+7\,b)\,\text{Cos}[e+f\,x]}{2\,a^4\,f}+$$
$$\frac{(a+b)\,(3\,a+7\,b)\,\text{Cos}[e+f\,x]^3}{6\,a^3\,b\,f}-\frac{\text{Cos}[e+f\,x]^5}{5\,a^2\,f}-\frac{(a+b)^2\,\text{Cos}[e+f\,x]^5}{2\,a^2\,b\,f\,\left(b+a\,\text{Cos}[e+f\,x]^2\right)}$$

Result (type 3, 454 leaves):

$$\frac{1}{3840\, a^{9/2}\, f}\Bigg(\frac{1}{b^{3/2}} 15\left(3 a^4+384 a^2 b^2+1280 a b^3+896 b^4\right) \text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}-i \sqrt{a+b} \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\Big) \text{Sin}[e]\, \text{Tan}\Big[\frac{f x}{2}\Big]+ \text{Cos}[e]\Big(\sqrt{a}-\sqrt{a+b} \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\, \text{Tan}\Big[\frac{f x}{2}\Big]\Big)\Big)\Big]+\frac{1}{b^{3/2}} 15\left(3 a^4+384 a^2 b^2+1280 a b^3+896 b^4\right) \text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}+i \sqrt{a+b} \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\Big) \text{Sin}[e]\, \text{Tan}\Big[\frac{f x}{2}\Big]+\text{Cos}[e]\Big(\sqrt{a}+\sqrt{a+b} \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\, \text{Tan}\Big[\frac{f x}{2}\Big]\Big)\Big)\Big]-\frac{45 a^4\, \text{ArcTan}\Big[\frac{\sqrt{a}-\sqrt{a+b}\, \text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{b}}\Big]}{b^{3/2}}-\frac{45 a^4\, \text{ArcTan}\Big[\frac{\sqrt{a}+\sqrt{a+b}\, \text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{b}}\Big]}{b^{3/2}}-\Big(16 \sqrt{a}\, \text{Cos}[e+f x]\left(150 a^3+1436 a^2 b+2960 a b^2+1680 b^3+a\left(125 a^2+688 a b+560 b^2\right) \text{Cos}[2(e+f x)]-2 a^2(11 a+14 b) \text{Cos}[4(e+f x)]+3 a^3 \text{Cos}[6(e+f x)]\right)\Big)\Big/\left(a+2 b+a\, \text{Cos}[2(e+f x)]\right)\Bigg)$$

Problem 42: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 114 leaves, 5 steps):

$$\frac{\sqrt{b}\,(3 a+5 b)\, \text{ArcTan}\Big[\frac{\sqrt{a}\, \text{Cos}[e+f x]}{\sqrt{b}}\Big]}{2 a^{7/2} f}-\frac{(a+2 b)\, \text{Cos}[e+f x]}{a^3 f}+\frac{\text{Cos}[e+f x]^3}{3 a^2 f}-\frac{b\,(a+b)\, \text{Cos}[e+f x]}{2 a^3 f\left(b+a\, \text{Cos}[e+f x]^2\right)}$$

Result (type 3, 403 leaves):

$$\frac{1}{384\, a^{7/2}\, f}\left(\frac{1}{b^{3/2}} 3\left(3 a^3+192 a b^2+320 b^3\right) \text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(-\sqrt{a}-i \sqrt{a+b} \sqrt{(\text{Cos}[e]-i \text{Sin}[e])^2}\right) \text{Sin}[e] \text{Tan}\left[\frac{f x}{2}\right]+\text{Cos}[e]\left(\sqrt{a}-\sqrt{a+b} \sqrt{(\text{Cos}[e]-i \text{Sin}[e])^2} \text{Tan}\left[\frac{f x}{2}\right]\right)\right)\right]+\frac{1}{b^{3/2}} 3\left(3 a^3+192 a b^2+320 b^3\right) \text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(-\sqrt{a}+i \sqrt{a+b} \sqrt{(\text{Cos}[e]-i \text{Sin}[e])^2}\right) \text{Sin}[e] \text{Tan}\left[\frac{f x}{2}\right]+\text{Cos}[e]\left(\sqrt{a}+\sqrt{a+b} \sqrt{(\text{Cos}[e]-i \text{Sin}[e])^2} \text{Tan}\left[\frac{f x}{2}\right]\right)\right)\right]-\frac{9 a^3 \text{ArcTan}\left[\frac{\sqrt{a}-\sqrt{a+b} \text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{b}}\right]}{b^{3/2}}-\frac{9 a^3 \text{ArcTan}\left[\frac{\sqrt{a}+\sqrt{a+b} \text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{b}}\right]}{b^{3/2}}-\left(32 \sqrt{a} \text{Cos}[e+f x]\left(9 a^2+56 a b+60 b^2+4 a(2 a+5 b) \text{Cos}[2(e+f x)]-a^2 \text{Cos}[4(e+f x)]\right)\right) \Big/ \left(a+2 b+a \text{Cos}[2(e+f x)]\right)\right)$$

Problem 43: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 84 leaves, 4 steps):

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

Result (type 3, 393 leaves):

$$\frac{1}{64 a^{5/2} f \left(a+b \operatorname{Sec}[e+f x]^2\right)^2} \left(a+2 b+a \operatorname{Cos}[2 (e+f x)]\right)^2$$
$$\left(\frac{1}{b^{3/2}} \left(a^2+24 b^2\right) \operatorname{ArcTan}\left[\frac{1}{\sqrt{b}} \left(\left(-\sqrt{a}-i \sqrt{a+b} \sqrt{\left(\operatorname{Cos}[e]-i \operatorname{Sin}[e]\right)^2}\right) \operatorname{Sin}[e] \operatorname{Tan}\left[\frac{f x}{2}\right]+\right.\right.\right.$$
$$\left.\left.\operatorname{Cos}[e] \left(\sqrt{a}-\sqrt{a+b} \sqrt{\left(\operatorname{Cos}[e]-i \operatorname{Sin}[e]\right)^2} \operatorname{Tan}\left[\frac{f x}{2}\right]\right)\right)\right]+\frac{1}{b^{3/2}}$$
$$\left(a^2+24 b^2\right) \operatorname{ArcTan}\left[\frac{1}{\sqrt{b}} \left(\left(-\sqrt{a}+i \sqrt{a+b} \sqrt{\left(\operatorname{Cos}[e]-i \operatorname{Sin}[e]\right)^2}\right) \operatorname{Sin}[e] \operatorname{Tan}\left[\frac{f x}{2}\right]+\right.\right.$$
$$\left.\left.\operatorname{Cos}[e] \left(\sqrt{a}+\sqrt{a+b} \sqrt{\left(\operatorname{Cos}[e]-i \operatorname{Sin}[e]\right)^2} \operatorname{Tan}\left[\frac{f x}{2}\right]\right)\right)\right]-$$
$$\frac{a^2 \operatorname{ArcTan}\left[\frac{\sqrt{a}-\sqrt{a+b} \operatorname{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{b}}\right]}{b^{3/2}}-\frac{a^2 \operatorname{ArcTan}\left[\frac{\sqrt{a}+\sqrt{a+b} \operatorname{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{b}}\right]}{b^{3/2}}-$$
$$\left.\frac{16 \sqrt{a} \operatorname{Cos}[e+f x] \left(a+3 b+a \operatorname{Cos}[2 (e+f x)]\right)}{a+2 b+a \operatorname{Cos}[2 (e+f x)]}\right) \operatorname{Sec}[e+f x]^4$$

Problem 44: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 99 leaves, 5 steps):

$$\frac{\sqrt{b} (3 a+b) \operatorname{ArcTan}\left[\frac{\sqrt{a} \operatorname{Cos}[e+f x]}{\sqrt{b}}\right]}{2 a^{3/2} (a+b)^2 f}-\frac{\operatorname{ArcTanh}[\operatorname{Cos}[e+f x]]}{(a+b)^2 f}-\frac{b \operatorname{Cos}[e+f x]}{2 a (a+b) f \left(b+a \operatorname{Cos}[e+f x]^2\right)}$$

Result (type 3, 384 leaves):

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

Problem 45: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 147 leaves, 6 steps):

$$\frac{(3\,a-b)\,\sqrt{b}\,\text{ArcTan}\Big[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{b}}\Big]}{2\,\sqrt{a}\,(a+b)^3\,f}-\frac{(a-3\,b)\,\text{ArcTanh}[\text{Cos}[e+f\,x]]}{2\,(a+b)^3\,f}+$$
$$\frac{(a-b)\,\text{Cos}[e+f\,x]}{2\,(a+b)^2\,f\,\left(b+a\,\text{Cos}[e+f\,x]^2\right)}-\frac{\text{Cot}[e+f\,x]\,\text{Csc}[e+f\,x]}{2\,(a+b)\,f\,\left(b+a\,\text{Cos}[e+f\,x]^2\right)}$$

Result (type 3, 468 leaves):

$$\frac{1}{32\,(a+b)^3 f\,(a+b\,\text{Sec}[e+f x]^2)^2}\,(a+2 b+a\,\text{Cos}[2\,(e+f x)])\,\text{Sec}[e+f x]^3$$
$$\Bigg(-8 b\,(a+b)-\frac{1}{\sqrt{a}}4\sqrt{b}\,(-3 a+b)\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}-i\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\Big)$$
$$\text{Sin}[e]\,\text{Tan}\Big[\frac{f x}{2}\Big]+\text{Cos}[e]\,\Big(\sqrt{a}-\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f x}{2}\Big]\Big)\Big)\Big]$$
$$(a+2 b+a\,\text{Cos}[2\,(e+f x)])\,\text{Sec}[e+f x]-\frac{1}{\sqrt{a}}4\sqrt{b}\,(-3 a+b)$$
$$\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}+i\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f x}{2}\Big]+$$
$$\text{Cos}[e]\,\Big(\sqrt{a}+\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f x}{2}\Big]\Big)\Big)\Big]\,(a+2 b+a\,\text{Cos}[2\,(e+f x)])$$
$$\text{Sec}[e+f x]-(a+b)\,(a+2 b+a\,\text{Cos}[2\,(e+f x)])\,\text{Csc}\Big[\frac{1}{2}\,(e+f x)\Big]^2\,\text{Sec}[e+f x]-$$
$$4\,(a-3 b)\,(a+2 b+a\,\text{Cos}[2\,(e+f x)])\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(e+f x)\Big]\Big]\,\text{Sec}[e+f x]+$$
$$4\,(a-3 b)\,(a+2 b+a\,\text{Cos}[2\,(e+f x)])\,\text{Log}\Big[\text{Sin}\Big[\frac{1}{2}\,(e+f x)\Big]\Big]\,\text{Sec}[e+f x]+$$
$$(a+b)\,(a+2 b+a\,\text{Cos}[2\,(e+f x)])\,\text{Sec}\Big[\frac{1}{2}\,(e+f x)\Big]^2\,\text{Sec}[e+f x]\Bigg)$$

Problem 46: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 197 leaves, 7 steps):

$$\frac{3\sqrt{a}\,(a-b)\,\sqrt{b}\,\text{ArcTan}\Big[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{b}}\Big]}{2\,(a+b)^4 f}-$$
$$\frac{3\,(a^2-6 a b+b^2)\,\text{ArcTanh}[\text{Cos}[e+f x]]}{8\,(a+b)^4 f}+\frac{3 a\,(a-3 b)\,\text{Cos}[e+f x]}{8\,(a+b)^3 f\,(b+a\,\text{Cos}[e+f x]^2)}-$$
$$\frac{(a-5 b)\,\text{Cot}[e+f x]\,\text{Csc}[e+f x]}{8\,(a+b)^2 f\,(b+a\,\text{Cos}[e+f x]^2)}-\frac{\text{Cot}[e+f x]\,\text{Csc}[e+f x]^3}{4\,(a+b)\,f\,(b+a\,\text{Cos}[e+f x]^2)}$$

Result (type 3, 450 leaves):

$$\frac{1}{256\,(a+b)^4 f\,(a+b\,\text{Sec}[e+f x]^2)^2}\,(a+2 b+a \text{Cos}[2 (e+f x)])\Bigg(96 \sqrt{a}\,(a-b) \sqrt{b}\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}-i \sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i \text{Sin}[e])^2}\Big) \text{Sin}[e] \text{Tan}\Big[\frac{f x}{2}\Big]+\text{Cos}[e]\Big(\sqrt{a}-\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i \text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f x}{2}\Big]\Big)\Big)\Big]\,(a+2 b+a \text{Cos}[2 (e+f x)])+96 \sqrt{a}\,(a-b) \sqrt{b}\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}+i \sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i \text{Sin}[e])^2}\Big) \text{Sin}[e] \text{Tan}\Big[\frac{f x}{2}\Big]+\text{Cos}[e]\Big(\sqrt{a}+\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i \text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f x}{2}\Big]\Big)\Big)\Big]\,(a+2 b+a \text{Cos}[2 (e+f x)])-2 (a+b)\,(11 a^2+43 a b-4 b^2+4 (2 a^2-5 a b+5 b^2) \text{Cos}[2 (e+f x)]-3 a (a-3 b) \text{Cos}[4 (e+f x)]) \text{Cot}[e+f x] \text{Csc}[e+f x]^3-24 (a^2-6 a b+b^2)\,(a+2 b+a \text{Cos}[2 (e+f x)]) \text{Log}\Big[\text{Cos}\Big[\frac{1}{2}(e+f x)\Big]\Big]+24 (a^2-6 a b+b^2)\,(a+2 b+a \text{Cos}[2 (e+f x)]) \text{Log}\Big[\text{Sin}\Big[\frac{1}{2}(e+f x)\Big]\Big]\Bigg) \text{Sec}[e+f x]^4$$

Problem 47: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 267 leaves, 8 steps):

$$\frac{(5 a^3+60 a^2 b+120 a b^2+64 b^3)\,x}{16 a^5}-\frac{\sqrt{b}\,(a+b)^{3/2}\,(3 a+8 b)\,\text{ArcTan}\Big[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\Big]}{2 a^5 f}-\frac{(33 a^2+82 a b+48 b^2)\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]}{48 a^3 f\,(a+b+b\,\text{Tan}[e+f x]^2)}+\frac{(9 a+8 b)\,\text{Cos}[e+f x]^3\,\text{Sin}[e+f x]}{24 a^2 f\,(a+b+b\,\text{Tan}[e+f x]^2)}+\frac{\text{Cos}[e+f x]^3\,\text{Sin}[e+f x]^3}{6 a f\,(a+b+b\,\text{Tan}[e+f x]^2)}-\frac{b\,(19 a^2+52 a b+32 b^2)\,\text{Tan}[e+f x]}{16 a^4 f\,(a+b+b\,\text{Tan}[e+f x]^2)}$$

Result (type 3, 2987 leaves):

$$-\Bigg(\Bigg(\Big((a+2 b+a \text{Cos}[2 e+2 f x])^2 \text{Sec}[e+f x]^4\,\Bigg(16 x+\Big(\Big(-a^3+6 a^2 b+24 a b^2+16 b^3\Big) \text{ArcTan}\Big[(\text{Sec}[f x]\,(\text{Cos}[2 e]-i \text{Sin}[2 e])\,(-(a+2 b) \text{Sin}[f x]+a \text{Sin}[2 e+f x]))\Big/\Big(2 \sqrt{a+b}\,\sqrt{b\,(\text{Cos}[e]-i \text{Sin}[e])^4}\Big)\Big]\,(\text{Cos}[2 e]-i \text{Sin}[2 e])\Big)\Big/\Big(b\,(a+b)^{3/2} f \sqrt{b\,(\text{Cos}[e]-i \text{Sin}[e])^4}\Big)+\Big((a^2+8 a b+8 b^2)\,((a+2 b) \text{Sin}[2 e]-a \text{Sin}[2 f x])\Big)\Big/\Big(b\,(a+b)\,f\,(a+2 b+a \text{Cos}[2 (e+f x)])\,(\text{Cos}[e]-\text{Sin}[e])\,(\text{Cos}[e]+\text{Sin}[e])\Big)\Bigg)\Bigg)\Bigg/\Big(512 a^2\,(a+b\,\text{Sec}[e+f x]^2)^2\Big)\Bigg)+\Big(3\,(a+2 b+a \text{Cos}[2 e+2 f x])^2$$

$$\mathrm{Sec}[e+f x]^4 \Bigg(-64\,(a+2b)\,x+\Big(\big(a^4-16a^3b-144a^2b^2-256ab^3-128b^4\big)$$

$$\mathrm{ArcTan}\Big[\big(\mathrm{Sec}[f x]\,(\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e])\,(-(a+2b)\,\mathrm{Sin}[f x]+a\,\mathrm{Sin}[2e+f x])\big)\Big/$$

$$\Big(2\sqrt{a+b}\,\sqrt{b\,(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^4}\Big)\Big]\,(\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e])\Big)\Big/$$

$$\Big(b\,(a+b)^{3/2}\,f\sqrt{b\,(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^4}\Big)+\frac{16\,a\,\mathrm{Cos}[2 f x]\,\mathrm{Sin}[2e]}{f}+$$

$$\frac{16\,a\,\mathrm{Cos}[2e]\,\mathrm{Sin}[2 f x]}{f}-\Big(\big(a^3+18a^2b+48ab^2+32b^3\big)\,\big((a+2b)\,\mathrm{Sin}[2e]-a\,\mathrm{Sin}[2 f x]\big)\Big)\Big/$$

$$\Big(b\,(a+b)\,f\,\big(a+2b+a\,\mathrm{Cos}[2\,(e+f x)]\big)\,(\mathrm{Cos}[e]-\mathrm{Sin}[e])\,(\mathrm{Cos}[e]+\mathrm{Sin}[e])\Big)\Bigg)\Bigg/$$

$$\Big(4096\,a^3\,\big(a+b\,\mathrm{Sec}[e+f x]^2\big)^2\Big)+\Bigg(3\,\big(a+2b+a\,\mathrm{Cos}[2e+2 f x]\big)^2$$

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

$$\Big(2048\,b^{3/2}\,f\,\big(a+b\,\mathrm{Sec}[e+f x]^2\big)^2\Big)-$$

$$\Bigg(\big(a+2b+a\,\mathrm{Cos}[2e+2 f x]\big)^2\,\mathrm{Sec}[e+f x]^4$$

$$\left(-\frac{a\,\mathrm{ArcTan}\Big[\frac{\sqrt{b}\,\mathrm{Tan}[e+f x]}{\sqrt{a+b}}\Big]}{(a+b)^{3/2}}+\frac{\sqrt{b}\,(a+2b)\,\mathrm{Sin}[2\,(e+f x)]}{(a+b)\,\big(a+2b+a\,\mathrm{Cos}[2\,(e+f x)]\big)}\right)\Bigg)\Bigg/$$

$$\Big(2048\,b^{3/2}\,f\,\big(a+b\,\mathrm{Sec}[e+f x]^2\big)^2\Big)+$$

$$\frac{1}{256\,\big(a+b\,\mathrm{Sec}[e+f x]^2\big)^2}\big(a+2b+a\,\mathrm{Cos}[2e+2 f x]\big)^2\,\mathrm{Sec}[e+f x]^4$$

$$\Bigg(\frac{1}{a+b}\big(-a^5+30a^4b+480a^3b^2+1600a^2b^3+1920ab^4+768b^5\big)\,\Bigg(\Bigg(\mathrm{ArcTan}\Big[\mathrm{Sec}[f x]$$

$$\left(\frac{\mathrm{Cos}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}}-\frac{i\,\mathrm{Sin}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}}\right)$$

$$\big(-a\,\mathrm{Sin}[f x]-2b\,\mathrm{Sin}[f x]+a\,\mathrm{Sin}[2e+f x]\big)\Big]\,\mathrm{Cos}[2e]\Bigg)\Bigg/$$

$$\Big(8\,a^4\,b\sqrt{a+b}\,f\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}\Big)-\Bigg(i\,\mathrm{ArcTan}\Big[\mathrm{Sec}[f x]$$

$$\left(\frac{\mathrm{Cos}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}}-\frac{i\,\mathrm{Sin}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}}\right)$$

$$\left.\left.\left(-a\,\text{Sin}[f\,x]-2\,b\,\text{Sin}[f\,x]+a\,\text{Sin}[2\,e+f\,x]\right)\right]\text{Sin}[2\,e]\right)\Big/\left(8\,a^4\,b\,\sqrt{a+b}\;f\;\sqrt{b\,\text{Cos}[4\,e]-\mathbb{i}\,b\,\text{Sin}[4\,e]}\right)\Bigg)+\frac{1}{8\,a^4\,b\,(a+b)\,f\,(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x])}$$

$$\text{Sec}[2\,e]\,\big(160\,a^4\,b\,f\,x\,\text{Cos}[2\,e]+1248\,a^3\,b^2\,f\,x\,\text{Cos}[2\,e]+3392\,a^2\,b^3\,f\,x\,\text{Cos}[2\,e]+3840\,a\,b^4\,f\,x\,\text{Cos}[2\,e]+1536\,b^5\,f\,x\,\text{Cos}[2\,e]+80\,a^4\,b\,f\,x\,\text{Cos}[2\,f\,x]+464\,a^3\,b^2\,f\,x\,\text{Cos}[2\,f\,x]+768\,a^2\,b^3\,f\,x\,\text{Cos}[2\,f\,x]+384\,a\,b^4\,f\,x\,\text{Cos}[2\,f\,x]+80\,a^4\,b\,f\,x\,\text{Cos}[4\,e+2\,f\,x]+464\,a^3\,b^2\,f\,x\,\text{Cos}[4\,e+2\,f\,x]+768\,a^2\,b^3\,f\,x\,\text{Cos}[4\,e+2\,f\,x]+384\,a\,b^4\,f\,x\,\text{Cos}[4\,e+2\,f\,x]+a^5\,\text{Sin}[2\,e]+34\,a^4\,b\,\text{Sin}[2\,e]+224\,a^3\,b^2\,\text{Sin}[2\,e]+576\,a^2\,b^3\,\text{Sin}[2\,e]+640\,a\,b^4\,\text{Sin}[2\,e]+256\,b^5\,\text{Sin}[2\,e]-a^5\,\text{Sin}[2\,f\,x]-62\,a^4\,b\,\text{Sin}[2\,f\,x]-318\,a^3\,b^2\,\text{Sin}[2\,f\,x]-512\,a^2\,b^3\,\text{Sin}[2\,f\,x]-256\,a\,b^4\,\text{Sin}[2\,f\,x]-30\,a^4\,b\,\text{Sin}[4\,e+2\,f\,x]-158\,a^3\,b^2\,\text{Sin}[4\,e+2\,f\,x]-256\,a^2\,b^3\,\text{Sin}[4\,e+2\,f\,x]-128\,a\,b^4\,\text{Sin}[4\,e+2\,f\,x]-12\,a^4\,b\,\text{Sin}[2\,e+4\,f\,x]-36\,a^3\,b^2\,\text{Sin}[2\,e+4\,f\,x]-24\,a^2\,b^3\,\text{Sin}[2\,e+4\,f\,x]-12\,a^4\,b\,\text{Sin}[6\,e+4\,f\,x]-36\,a^3\,b^2\,\text{Sin}[6\,e+4\,f\,x]-24\,a^2\,b^3\,\text{Sin}[6\,e+4\,f\,x]+2\,a^4\,b\,\text{Sin}[4\,e+6\,f\,x]+2\,a^3\,b^2\,\text{Sin}[4\,e+6\,f\,x]+2\,a^4\,b\,\text{Sin}[8\,e+6\,f\,x]+2\,a^3\,b^2\,\text{Sin}[8\,e+6\,f\,x]\big)\Bigg)+$$

$$\frac{1}{512\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2}\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2\,\text{Sec}[e+f\,x]^4$$

$$\Bigg(-\frac{1}{a+b}\left(a^6-48\,a^5\,b-1200\,a^4\,b^2-6400\,a^3\,b^3-13\,440\,a^2\,b^4-12\,288\,a\,b^5-4096\,b^6\right)$$

$$\Bigg(\Bigg(\text{ArcTan}\Big[\text{Sec}[f\,x]\left(\frac{\text{Cos}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4\,e]-\mathbb{i}\,b\,\text{Sin}[4\,e]}}-\frac{\mathbb{i}\,\text{Sin}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4\,e]-\mathbb{i}\,b\,\text{Sin}[4\,e]}}\right)\left(-a\,\text{Sin}[f\,x]-2\,b\,\text{Sin}[f\,x]+a\,\text{Sin}[2\,e+f\,x]\right)\Big]\,\text{Cos}[2\,e]\Bigg)\Big/\left(8\,a^5\,b\,\sqrt{a+b}\;f\,\sqrt{b\,\text{Cos}[4\,e]-\mathbb{i}\,b\,\text{Sin}[4\,e]}\right)-$$

$$\Bigg(\mathbb{i}\,\text{ArcTan}\Big[\text{Sec}[f\,x]\left(\frac{\text{Cos}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4\,e]-\mathbb{i}\,b\,\text{Sin}[4\,e]}}-\frac{\mathbb{i}\,\text{Sin}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4\,e]-\mathbb{i}\,b\,\text{Sin}[4\,e]}}\right)\left(-a\,\text{Sin}[f\,x]-2\,b\,\text{Sin}[f\,x]+a\,\text{Sin}[2\,e+f\,x]\right)\Big]\,\text{Sin}[2\,e]\Bigg)\Big/\left(8\,a^5\,b\,\sqrt{a+b}\;f\,\sqrt{b\,\text{Cos}[4\,e]-\mathbb{i}\,b\,\text{Sin}[4\,e]}\right)\Bigg)-$$

$$\frac{1}{24\,a^5\,b\,(a+b)\,f\,(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x])}\,\text{Sec}[2\,e]\,\big(-960\,a^5\,b\,f\,x\,\text{Cos}[2\,e]-10\,944\,a^4\,b^2\,f\,x\,\text{Cos}[2\,e]-44\,544\,a^3\,b^3\,f\,x\,\text{Cos}[2\,e]-83\,712\,a^2\,b^4\,f\,x\,\text{Cos}[2\,e]-73\,728\,a\,b^5\,f\,x\,\text{Cos}[2\,e]-24\,576\,b^6\,f\,x\,\text{Cos}[2\,e]-480\,a^5\,b\,f\,x\,\text{Cos}[2\,f\,x]-4512\,a^4\,b^2\,f\,x\,\text{Cos}[2\,f\,x]-13\,248\,a^3\,b^3\,f\,x\,\text{Cos}[2\,f\,x]-15\,360\,a^2\,b^4\,f\,x\,\text{Cos}[2\,f\,x]-6144\,a\,b^5\,f\,x\,\text{Cos}[2\,f\,x]-480\,a^5\,b\,f\,x\,\text{Cos}[4\,e+2\,f\,x]-4512\,a^4\,b^2\,f\,x\,\text{Cos}[4\,e+2\,f\,x]-13\,248\,a^3\,b^3\,f\,x\,\text{Cos}[4\,e+2\,f\,x]-15\,360\,a^2\,b^4\,f\,x\,\text{Cos}[4\,e+2\,f\,x]-6144\,a\,b^5\,f\,x\,\text{Cos}[4\,e+2\,f\,x]-3\,a^6\,\text{Sin}[2\,e]-156\,a^5\,b\,\text{Sin}[2\,e]-1500\,a^4\,b^2\,\text{Sin}[2\,e]-5760\,a^3\,b^3\,\text{Sin}[2\,e]-10\,560\,a^2\,b^4\,\text{Sin}[2\,e]-9216\,a\,b^5\,\text{Sin}[2\,e]-3072\,b^6\,\text{Sin}[2\,e]+3\,a^6\,\text{Sin}[2\,f\,x]+366\,a^5\,b\,\text{Sin}[2\,f\,x]+3000\,a^4\,b^2\,\text{Sin}[2\,f\,x]+8400\,a^3\,b^3\,\text{Sin}[2\,f\,x]+9600\,a^2\,b^4\,\text{Sin}[2\,f\,x]+3840\,a\,b^5\,\text{Sin}[2\,f\,x]+216\,a^5\,b\,\text{Sin}[4\,e+2\,f\,x]+1800\,a^4\,b^2\,\text{Sin}[4\,e+2\,f\,x]+$$

$$5040 a^3 b^3 \text{Sin}[4 e + 2 f x] + 5760 a^2 b^4 \text{Sin}[4 e + 2 f x] + 2304 a b^5 \text{Sin}[4 e + 2 f x] + 76 a^5 b \text{Sin}[2 e + 4 f x] + 460 a^4 b^2 \text{Sin}[2 e + 4 f x] + 768 a^3 b^3 \text{Sin}[2 e + 4 f x] + 384 a^2 b^4 \text{Sin}[2 e + 4 f x] + 76 a^5 b \text{Sin}[6 e + 4 f x] + 460 a^4 b^2 \text{Sin}[6 e + 4 f x] + 768 a^3 b^3 \text{Sin}[6 e + 4 f x] + 384 a^2 b^4 \text{Sin}[6 e + 4 f x] - 16 a^5 b \text{Sin}[4 e + 6 f x] - 48 a^4 b^2 \text{Sin}[4 e + 6 f x] - 32 a^3 b^3 \text{Sin}[4 e + 6 f x] - 16 a^5 b \text{Sin}[8 e + 6 f x] - 48 a^4 b^2 \text{Sin}[8 e + 6 f x] - 32 a^3 b^3 \text{Sin}[8 e + 6 f x] + 4 a^5 b \text{Sin}[6 e + 8 f x] + 4 a^4 b^2 \text{Sin}[6 e + 8 f x] + 4 a^5 b \text{Sin}[10 e + 8 f x] + 4 a^4 b^2 \text{Sin}[10 e + 8 f x]\Big)$$

Problem 48: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 191 leaves, 7 steps):

$$\frac{3 \left(a^2 + 8 a b + 8 b^2\right) x}{8 a^4} - \frac{3 \sqrt{b} \sqrt{a + b} \left(a + 2 b\right) \text{ArcTan}\left[\frac{\sqrt{b} \text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{2 a^4 f} - \frac{\left(5 a + 6 b\right) \text{Cos}[e + f x] \text{Sin}[e + f x]}{8 a^2 f \left(a + b + b \text{Tan}[e + f x]^2\right)} + \frac{\text{Cos}[e + f x]^3 \text{Sin}[e + f x]}{4 a f \left(a + b + b \text{Tan}[e + f x]^2\right)} - \frac{3 b \left(3 a + 4 b\right) \text{Tan}[e + f x]}{8 a^3 f \left(a + b + b \text{Tan}[e + f x]^2\right)}$$

Result (type 3, 1354 leaves):

$$-\Bigg(\Bigg(\left(a + 2 b + a \text{Cos}[2 e + 2 f x]\right)^2 \text{Sec}[e + f x]^4 \Bigg(16 x + \Big(\left(-a^3 + 6 a^2 b + 24 a b^2 + 16 b^3\right) \text{ArcTan}\Big[\left(\text{Sec}[f x] \left(\text{Cos}[2 e] - i \text{Sin}[2 e]\right) \left(-\left(a + 2 b\right) \text{Sin}[f x] + a \text{Sin}[2 e + f x]\right)\right) \Big/ \left(2 \sqrt{a + b} \sqrt{b \left(\text{Cos}[e] - i \text{Sin}[e]\right)^4}\right)\Big] \left(\text{Cos}[2 e] - i \text{Sin}[2 e]\right)\Big) \Big/ \left(b \left(a + b\right)^{3/2} f \sqrt{b \left(\text{Cos}[e] - i \text{Sin}[e]\right)^4}\right) + \Big(\left(a^2 + 8 a b + 8 b^2\right) \left(\left(a + 2 b\right) \text{Sin}[2 e] - a \text{Sin}[2 f x]\right)\Big) \Big/ \Big(b \left(a + b\right) f \left(a + 2 b + a \text{Cos}\left[2 \left(e + f x\right)\right]\right) \left(\text{Cos}[e] - \text{Sin}[e]\right) \left(\text{Cos}[e] + \text{Sin}[e]\right)\Big)\Bigg)\Bigg) \Big/ \left(256 a^2 \left(a + b \text{Sec}[e + f x]^2\right)^2\right)\Bigg) + \Bigg(3 \left(a + 2 b + a \text{Cos}[2 e + 2 f x]\right)^2 \text{Sec}[e + f x]^4 \left(\frac{\left(a + 2 b\right) \text{ArcTan}\left[\frac{\sqrt{b} \text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{\left(a + b\right)^{3/2}} - \frac{a \sqrt{b} \text{Sin}\left[2 \left(e + f x\right)\right]}{\left(a + b\right) \left(a + 2 b + a \text{Cos}\left[2 \left(e + f x\right)\right]\right)}\right)\Bigg) \Big/ \left(1024 b^{3/2} f \left(a + b \text{Sec}[e + f x]^2\right)^2\right) + \frac{1}{128 \left(a + b \text{Sec}[e + f x]^2\right)^2} \left(a + 2 b + a \text{Cos}[2 e + 2 f x]\right)^2$$

$$\text{Sec}[e+f x]^4 \left(\frac{1}{a+b}\left(-a^5+30 a^4 b+480 a^3 b^2+1600 a^2 b^3+1920 a b^4+768 b^5\right)\left(\left(\text{ArcTan}\Big[\text{Sec}[f x]\right.\right.\right.$$

$$\left(\frac{\text{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \,\text{Cos}[4 e]-i\, b\, \text{Sin}[4 e]}}-\frac{i\, \text{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b\, \text{Cos}[4 e]-i\, b\, \text{Sin}[4 e]}}\right)$$

$$\left.\left(-a\, \text{Sin}[f x]-2 b\, \text{Sin}[f x]+a\, \text{Sin}[2 e+f x]\right)\Big]\, \text{Cos}[2 e]\right) \Big/$$

$$\left(8 a^4 b \sqrt{a+b}\, f \sqrt{b\, \text{Cos}[4 e]-i\, b\, \text{Sin}[4 e]}\right)-\left(i\, \text{ArcTan}\Big[\text{Sec}[f x]\right.$$

$$\left(\frac{\text{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b\, \text{Cos}[4 e]-i\, b\, \text{Sin}[4 e]}}-\frac{i\, \text{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b\, \text{Cos}[4 e]-i\, b\, \text{Sin}[4 e]}}\right)$$

$$\left.\left(-a\, \text{Sin}[f x]-2 b\, \text{Sin}[f x]+a\, \text{Sin}[2 e+f x]\right)\Big]\, \text{Sin}[2 e]\right) \Big/ \Big(8 a^4 b \sqrt{a+b}\, f$$

$$\left.\left.\sqrt{b\, \text{Cos}[4 e]-i\, b\, \text{Sin}[4 e]}\right)\right)+\frac{1}{8 a^4 b\, (a+b)\, f\, (a+2 b+a\, \text{Cos}[2 e+2 f x])}$$

$$\text{Sec}[2 e]\, \Big(160 a^4 b f x\, \text{Cos}[2 e]+1248 a^3 b^2 f x\, \text{Cos}[2 e]+3392 a^2 b^3 f x\, \text{Cos}[2 e]+$$
$$3840 a b^4 f x\, \text{Cos}[2 e]+1536 b^5 f x\, \text{Cos}[2 e]+80 a^4 b f x\, \text{Cos}[2 f x]+$$
$$464 a^3 b^2 f x\, \text{Cos}[2 f x]+768 a^2 b^3 f x\, \text{Cos}[2 f x]+384 a b^4 f x\, \text{Cos}[2 f x]+$$
$$80 a^4 b f x\, \text{Cos}[4 e+2 f x]+464 a^3 b^2 f x\, \text{Cos}[4 e+2 f x]+768 a^2 b^3 f x\, \text{Cos}[4 e+2 f x]+$$
$$384 a b^4 f x\, \text{Cos}[4 e+2 f x]+a^5\, \text{Sin}[2 e]+34 a^4 b\, \text{Sin}[2 e]+224 a^3 b^2\, \text{Sin}[2 e]+$$
$$576 a^2 b^3\, \text{Sin}[2 e]+640 a b^4\, \text{Sin}[2 e]+256 b^5\, \text{Sin}[2 e]-a^5\, \text{Sin}[2 f x]-62 a^4 b\, \text{Sin}[2 f x]-$$
$$318 a^3 b^2\, \text{Sin}[2 f x]-512 a^2 b^3\, \text{Sin}[2 f x]-256 a b^4\, \text{Sin}[2 f x]-30 a^4 b\, \text{Sin}[4 e+2 f x]-$$
$$158 a^3 b^2\, \text{Sin}[4 e+2 f x]-256 a^2 b^3\, \text{Sin}[4 e+2 f x]-128 a b^4\, \text{Sin}[4 e+2 f x]-$$
$$12 a^4 b\, \text{Sin}[2 e+4 f x]-36 a^3 b^2\, \text{Sin}[2 e+4 f x]-24 a^2 b^3\, \text{Sin}[2 e+4 f x]-$$
$$12 a^4 b\, \text{Sin}[6 e+4 f x]-36 a^3 b^2\, \text{Sin}[6 e+4 f x]-24 a^2 b^3\, \text{Sin}[6 e+4 f x]+2 a^4 b$$
$$\left.\text{Sin}[4 e+6 f x]+2 a^3 b^2\, \text{Sin}[4 e+6 f x]+2 a^4 b\, \text{Sin}[8 e+6 f x]+2 a^3 b^2\, \text{Sin}[8 e+6 f x]\Big)\right)$$

Problem 49: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 130 leaves, 6 steps):

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

Result (type 3, 825 leaves):

$$-\Bigg(\Bigg(\Big(\big(a+2b+a\,\text{Cos}[2e+2fx]\big)^2\,\text{Sec}[e+fx]^4\,\Big(16x+\Big(\big(-a^3+6a^2b+24ab^2+16b^3\big)\,\text{ArcTan}\Big[\Big(\text{Sec}[fx]\,\big(\text{Cos}[2e]-\mathbb{i}\,\text{Sin}[2e]\big)\,\big(-(a+2b)\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]\big)\Big)\Big/\Big(2\sqrt{a+b}\,\sqrt{b\,\big(\text{Cos}[e]-\mathbb{i}\,\text{Sin}[e]\big)^4}\Big)\Big]\,\big(\text{Cos}[2e]-\mathbb{i}\,\text{Sin}[2e]\big)\Big)\Big/\Big(b\,(a+b)^{3/2}\,f\,\sqrt{b\,\big(\text{Cos}[e]-\mathbb{i}\,\text{Sin}[e]\big)^4}\Big)+\Big(\big(a^2+8ab+8b^2\big)\,\big((a+2b)\,\text{Sin}[2e]-a\,\text{Sin}[2fx]\big)\Big)\Big/\Big(b\,(a+b)\,f\,\big(a+2b+a\,\text{Cos}[2(e+fx)]\big)\,\big(\text{Cos}[e]-\text{Sin}[e]\big)\,\big(\text{Cos}[e]+\text{Sin}[e]\big)\Big)\Big)\Big)\Big/\Big(128a^2\,\big(a+b\,\text{Sec}[e+fx]^2\big)^2\Big)\Bigg)-\Bigg(\big(a+2b+a\,\text{Cos}[2e+2fx]\big)^2\,\text{Sec}[e+fx]^4\,\Big(-64(a+2b)x+\Big(\big(a^4-16a^3b-144a^2b^2-256ab^3-128b^4\big)\,\text{ArcTan}\Big[\Big(\text{Sec}[fx]\,\big(\text{Cos}[2e]-\mathbb{i}\,\text{Sin}[2e]\big)\,\big(-(a+2b)\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]\big)\Big)\Big/\Big(2\sqrt{a+b}\,\sqrt{b\,\big(\text{Cos}[e]-\mathbb{i}\,\text{Sin}[e]\big)^4}\Big)\Big]\,\big(\text{Cos}[2e]-\mathbb{i}\,\text{Sin}[2e]\big)\Big)\Big/\Big(b\,(a+b)^{3/2}\,f\,\sqrt{b\,\big(\text{Cos}[e]-\mathbb{i}\,\text{Sin}[e]\big)^4}\Big)+\frac{16a\,\text{Cos}[2fx]\,\text{Sin}[2e]}{f}+\frac{16a\,\text{Cos}[2e]\,\text{Sin}[2fx]}{f}-\Big(\big(a^3+18a^2b+48ab^2+32b^3\big)\,\big((a+2b)\,\text{Sin}[2e]-a\,\text{Sin}[2fx]\big)\Big)\Big/\Big(b\,(a+b)\,f\,\big(a+2b+a\,\text{Cos}[2(e+fx)]\big)\,\big(\text{Cos}[e]-\text{Sin}[e]\big)\,\big(\text{Cos}[e]+\text{Sin}[e]\big)\Big)\Big)\Bigg)\Big/\Big(256a^3\,\big(a+b\,\text{Sec}[e+fx]^2\big)^2\Big)+\Bigg(\big(a+2b+a\,\text{Cos}[2e+2fx]\big)^2\,\text{Sec}[e+fx]^4\,\left(\frac{(a+2b)\,\text{ArcTan}\Big[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b}}\Big]}{(a+b)^{3/2}}-\frac{a\sqrt{b}\,\text{Sin}[2(e+fx)]}{(a+b)\,\big(a+2b+a\,\text{Cos}[2(e+fx)]\big)}\right)\Bigg)\Big/\Big(128b^{3/2}\,f\,\big(a+b\,\text{Sec}[e+fx]^2\big)^2\Big)+\Bigg(\big(a+2b+a\,\text{Cos}[2e+2fx]\big)^2\,\text{Sec}[e+fx]^4\,\left(-\frac{a\,\text{ArcTan}\Big[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b}}\Big]}{(a+b)^{3/2}}+\frac{\sqrt{b}\,(a+2b)\,\text{Sin}[2(e+fx)]}{(a+b)\,\big(a+2b+a\,\text{Cos}[2(e+fx)]\big)}\right)\Bigg)\Big/\Big(256b^{3/2}\,f\,\big(a+b\,\text{Sec}[e+fx]^2\big)^2\Big)$$

Problem 50: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 92 leaves, 5 steps):

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

Result (type 3, 240 leaves):

$$\Bigg(\left(a+2\,b+a\,\text{Cos}\left[2\,\left(e+f\,x\right)\right]\right)\,\text{Sec}[e+f\,x]^4$$
$$\Bigg(2\,x\,\left(a+2\,b+a\,\text{Cos}\left[2\,\left(e+f\,x\right)\right]\right)+\Bigg(b\,\left(3\,a+2\,b\right)\,\text{ArcTan}\Big[\left(\text{Sec}[f\,x]\,\left(\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]\right)\right.$$
$$\left.\left(-\left(a+2\,b\right)\,\text{Sin}[f\,x]+a\,\text{Sin}[2\,e+f\,x]\right)\right)\Big/\left(2\,\sqrt{a+b}\,\sqrt{b\,\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^4}\right)\Big]$$
$$\left(a+2\,b+a\,\text{Cos}\left[2\,\left(e+f\,x\right)\right]\right)\,\left(\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]\right)\Bigg)\Big/$$
$$\left(\left(a+b\right)^{3/2}\,f\,\sqrt{b\,\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^4}\right)+$$
$$\frac{b\,\left(\left(a+2\,b\right)\,\text{Sin}[2\,e]-a\,\text{Sin}[2\,f\,x]\right)}{\left(a+b\right)\,f\,\left(\text{Cos}[e]-\text{Sin}[e]\right)\,\left(\text{Cos}[e]+\text{Sin}[e]\right)}\Bigg)\Bigg)\Big/\left(8\,a^2\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2\right)$$

Problem 51: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 91 leaves, 4 steps):

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

Result (type 3, 242 leaves):

$$\Big((a+2b+a\,\text{Cos}[2(e+fx)])\,\text{Sec}[e+fx]^4\Big(\Big(3\,b\,\text{ArcTan}\Big[(\text{Sec}[fx]\,(\text{Cos}[2e]-\text{i}\,\text{Sin}[2e])\,(-(a+2b)\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]))\Big/\Big(2\sqrt{a+b}\,\sqrt{b\,(\text{Cos}[e]-\text{i}\,\text{Sin}[e])^4}\Big)\Big]\,(a+2b+a\,\text{Cos}[2(e+fx)])\,(\text{Cos}[2e]-\text{i}\,\text{Sin}[2e])\Big)\Big/\Big(\sqrt{a+b}\,\sqrt{b\,(\text{Cos}[e]-\text{i}\,\text{Sin}[e])^4}\Big)+2\,(a+2b+a\,\text{Cos}[2(e+fx)])\,\text{Csc}[e]\,\text{Csc}[e+fx]\,\text{Sin}[fx]+\frac{b\,((a+2b)\,\text{Sin}[2e]-a\,\text{Sin}[2fx])}{a\,(\text{Cos}[e]-\text{Sin}[e])\,(\text{Cos}[e]+\text{Sin}[e])}\Big)\Big)\Big/\Big(8\,(a+b)^2\,f\,(a+b\,\text{Sec}[e+fx]^2)^2\Big)$$

Problem 52: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[e+fx]^4}{(a+b\,\text{Sec}[e+fx]^2)^2}\,dx$$

Optimal (type 3, 123 leaves, 5 steps):

$$-\frac{(3a-2b)\sqrt{b}\,\text{ArcTan}\Big[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b}}\Big]}{2\,(a+b)^{7/2}\,f}-\frac{(a-b)\,\text{Cot}[e+fx]}{(a+b)^3\,f}-\frac{\text{Cot}[e+fx]^3}{3\,(a+b)^2\,f}-\frac{a\,b\,\text{Tan}[e+fx]}{2\,(a+b)^3\,f\,(a+b+b\,\text{Tan}[e+fx]^2)}$$

Result (type 3, 637 leaves):

$$-\frac{\left(a+2\,b+a\,\mathrm{Cos}[2\,e+2\,f\,x]\right)^2\,\mathrm{Cot}[e]\,\mathrm{Csc}[e+f\,x]^2\,\mathrm{Sec}[e+f\,x]^4}{12\,(a+b)^2\,f\,\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^2}+$$

$$\Bigg(\left(3\,a-2\,b\right)\,\left(a+2\,b+a\,\mathrm{Cos}[2\,e+2\,f\,x]\right)^2\,\mathrm{Sec}[e+f\,x]^4\,\Bigg(\Bigg(\Bigg(b\,\mathrm{ArcTan}\Big[$$

$$\mathrm{Sec}[f\,x]\,\left(\frac{\mathrm{Cos}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4\,e]-i\,b\,\mathrm{Sin}[4\,e]}}-\frac{i\,\mathrm{Sin}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4\,e]-i\,b\,\mathrm{Sin}[4\,e]}}\right)$$

$$\left(-a\,\mathrm{Sin}[f\,x]-2\,b\,\mathrm{Sin}[f\,x]+a\,\mathrm{Sin}[2\,e+f\,x]\right)\Big]\,\mathrm{Cos}[2\,e]\Bigg)\Big/$$

$$\left(8\,\sqrt{a+b}\,f\,\sqrt{b\,\mathrm{Cos}[4\,e]-i\,b\,\mathrm{Sin}[4\,e]}\right)-\Bigg(i\,b\,\mathrm{ArcTan}\Big[$$

$$\mathrm{Sec}[f\,x]\,\left(\frac{\mathrm{Cos}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4\,e]-i\,b\,\mathrm{Sin}[4\,e]}}-\frac{i\,\mathrm{Sin}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4\,e]-i\,b\,\mathrm{Sin}[4\,e]}}\right)$$

$$\left(-a\,\mathrm{Sin}[f\,x]-2\,b\,\mathrm{Sin}[f\,x]+a\,\mathrm{Sin}[2\,e+f\,x]\right)\Big]\,\mathrm{Sin}[2\,e]\Bigg)\Big/$$

$$\left(8\,\sqrt{a+b}\,f\,\sqrt{b\,\mathrm{Cos}[4\,e]-i\,b\,\mathrm{Sin}[4\,e]}\right)\Bigg)\Bigg)\Big/\left((a+b)^3\,\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^2\right)+$$

$$\Big(\left(a+2\,b+a\,\mathrm{Cos}[2\,e+2\,f\,x]\right)^2\,\mathrm{Csc}[e]\,\mathrm{Csc}[e+f\,x]^3\,\mathrm{Sec}[e+f\,x]^4$$

$$\mathrm{Sin}[f\,x]\Big)\Big/$$

$$\left(12\,(a+b)^2\,f\,\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^2\right)+$$

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

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

$$\left(6\,(a+b)^3\,f\,\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^2\right)+$$

$$\Big(\left(a+2\,b+a\,\mathrm{Cos}[2\,e+2\,f\,x]\right)\,\mathrm{Sec}[e+f\,x]^4$$

$$\left(a\,b\,\mathrm{Sin}[2\,e]+2\,b^2\,\mathrm{Sin}[2\,e]-a\,b\,\mathrm{Sin}[2\,f\,x]\right)\Big)\Big/$$

$$\left(8\,(a+b)^3\,f\,\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^2\,\left(\mathrm{Cos}[e]-\mathrm{Sin}[e]\right)\,\left(\mathrm{Cos}[e]+\mathrm{Sin}[e]\right)\right)$$

Problem 53: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 188 leaves, 6 steps):

$$-\frac{a\,(3\,a-4\,b)\,\sqrt{b}\,\mathrm{ArcTan}\left[\frac{\sqrt{b}\,\mathrm{Tan}[e+f\,x]}{\sqrt{a+b}}\right]}{2\,(a+b)^{9/2}\,f}-\frac{\left(5\,a^2-10\,a\,b-b^2\right)\,\mathrm{Cot}[e+f\,x]}{5\,(a+b)^4\,f}-\frac{(10\,a+3\,b)\,\mathrm{Cot}[e+f\,x]^3}{15\,(a+b)^3\,f}-$$

$$\frac{\mathrm{Cot}[e+f\,x]^5}{5\,(a+b)\,f\,\left(a+b+b\,\mathrm{Tan}[e+f\,x]^2\right)}-\frac{b\,\left(5\,a^2+2\,b^2\right)\,\mathrm{Tan}[e+f\,x]}{10\,(a+b)^4\,f\,\left(a+b+b\,\mathrm{Tan}[e+f\,x]^2\right)}$$

Result (type 3, 777 leaves):

$$\frac{1}{7680\,(a+b)^4 f\,(a+b\,\mathrm{Sec}[e+f x]^2)^2}(a+2b+a\,\mathrm{Cos}[2(e+f x)])\,\mathrm{Sec}[e+f x]^4\Big(\Big(960\,a\,(3a-4b)\,b\,\mathrm{ArcTan}\Big[(\mathrm{Sec}[f x]\,(\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e])\,(-(a+2b)\,\mathrm{Sin}[f x]+a\,\mathrm{Sin}[2e+f x]))\Big/\Big(2\sqrt{a+b}\,\sqrt{b\,(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^4}\Big)\Big]\,(a+2b+a\,\mathrm{Cos}[2(e+f x)])\,(\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e])\Big)\Big/\Big(\sqrt{a+b}\,\sqrt{b\,(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^4}\Big)-$$
$$\mathrm{Csc}[e]\,\mathrm{Csc}[e+f x]^5\,\mathrm{Sec}[2e]\,\big(10\,a\,(16a^2+34ab+123b^2)\,\mathrm{Sin}[f x]-a\,(16a^2-223ab+1336b^2)\,\mathrm{Sin}[3 f x]+240a^3\,\mathrm{Sin}[2e-f x]+640a^2 b\,\mathrm{Sin}[2e-f x]-1460ab^2\,\mathrm{Sin}[2e-f x]+240b^3\,\mathrm{Sin}[2e-f x]-240a^3\,\mathrm{Sin}[2e+f x]-715a^2 b\,\mathrm{Sin}[2e+f x]+860ab^2\,\mathrm{Sin}[2e+f x]-240b^3\,\mathrm{Sin}[2e+f x]+160a^3\,\mathrm{Sin}[4e+f x]+415a^2 b\,\mathrm{Sin}[4e+f x]+1830ab^2\,\mathrm{Sin}[4e+f x]+165a^2 b\,\mathrm{Sin}[2e+3 f x]-30ab^2\,\mathrm{Sin}[2e+3 f x]+120b^3\,\mathrm{Sin}[2e+3 f x]-16a^3\,\mathrm{Sin}[4e+3 f x]+208a^2 b\,\mathrm{Sin}[4e+3 f x]-1036ab^2\,\mathrm{Sin}[4e+3 f x]+180a^2 b\,\mathrm{Sin}[6e+3 f x]-330ab^2\,\mathrm{Sin}[6e+3 f x]+120b^3\,\mathrm{Sin}[6e+3 f x]+48a^3\,\mathrm{Sin}[2e+5 f x]-268a^2 b\,\mathrm{Sin}[2e+5 f x]+290ab^2\,\mathrm{Sin}[2e+5 f x]-24b^3\,\mathrm{Sin}[2e+5 f x]+48a^3\,\mathrm{Sin}[6e+5 f x]-223a^2 b\,\mathrm{Sin}[6e+5 f x]+230ab^2\,\mathrm{Sin}[6e+5 f x]-24b^3\,\mathrm{Sin}[6e+5 f x]-45a^2 b\,\mathrm{Sin}[8e+5 f x]+60ab^2\,\mathrm{Sin}[8e+5 f x]-16a^3\,\mathrm{Sin}[4e+7 f x]+83a^2 b\,\mathrm{Sin}[4e+7 f x]-6ab^2\,\mathrm{Sin}[4e+7 f x]-15a^2 b\,\mathrm{Sin}[6e+7 f x]-16a^3\,\mathrm{Sin}[8e+7 f x]+68a^2 b\,\mathrm{Sin}[8e+7 f x]-6ab^2\,\mathrm{Sin}[8e+7 f x]\big)\Big)$$

Problem 54: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 214 leaves, 6 steps):

$$\frac{\sqrt{b}\,(15a^2+70ab+63b^2)\,\mathrm{ArcTan}\Big[\frac{\sqrt{a}\,\mathrm{Cos}[e+f x]}{\sqrt{b}}\Big]}{8\,a^{11/2} f}-\frac{(3a^2+14ab+13b^2)\,\mathrm{Cos}[e+f x]}{2\,a^5 f}+\frac{(a+3b)\,(3a+5b)\,\mathrm{Cos}[e+f x]^3}{12\,a^4 b f}-\frac{\mathrm{Cos}[e+f x]^5}{5\,a^3 f}-\frac{(a+b)^2\,\mathrm{Cos}[e+f x]^7}{4\,a^2 b f\,(b+a\,\mathrm{Cos}[e+f x]^2)^2}-\frac{b\,(a+b)\,(3a+11b)\,\mathrm{Cos}[e+f x]}{8\,a^5 f\,(b+a\,\mathrm{Cos}[e+f x]^2)}$$

Result (type 3, 1641 leaves):

$$\frac{1}{491520\,a^{11/2}\,b^{5/2} f\,(a+b\,\mathrm{Sec}[e+f x]^2)^3}(a+2b+a\,\mathrm{Cos}[2(e+f x)])\,\mathrm{Sec}[e+f x]^6\Big(-900\,a^{11/2} b^{3/2}\,\mathrm{Cos}[e+f x]-109000\,a^{9/2} b^{5/2}\,\mathrm{Cos}[e+f x]-936000\,a^{7/2} b^{7/2}\,\mathrm{Cos}[e+f x]-2803072\,a^{5/2} b^{9/2}\,\mathrm{Cos}[e+f x]-3763200\,a^{3/2} b^{11/2}\,\mathrm{Cos}[e+f x]-$$

$1\,935\,360\,\sqrt{a}\,b^{13/2}\,\text{Cos}[e+f\,x]-900\,a^{11/2}\,b^{3/2}\,\text{Cos}[e+f\,x]\,\text{Cos}[2\,(e+f\,x)]+$
$900\,a^{9/2}\,b^{3/2}\,\text{Cos}[e+f\,x]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])+24\,000\,a^{7/2}\,b^{5/2}\,\text{Cos}[e+f\,x]$
$(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])+43\,200\,a^{5/2}\,b^{7/2}\,\text{Cos}[e+f\,x]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])+$
$225\,a^5\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}-i\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f\,x}{2}\Big]+$
$\text{Cos}[e]\,\Big(\sqrt{a}-\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f\,x}{2}\Big]\Big)\Big)\Big]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^2+$
$115\,200\,a^2\,b^3\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}-i\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f\,x}{2}\Big]+$
$\text{Cos}[e]\,\Big(\sqrt{a}-\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f\,x}{2}\Big]\Big)\Big)\Big]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^2+$
$537\,600\,a\,b^4\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}-i\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f\,x}{2}\Big]+$
$\text{Cos}[e]\,\Big(\sqrt{a}-\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f\,x}{2}\Big]\Big)\Big)\Big]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^2+$
$483\,840\,b^5\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}-i\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f\,x}{2}\Big]+$
$\text{Cos}[e]\,\Big(\sqrt{a}-\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f\,x}{2}\Big]\Big)\Big)\Big]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^2+$
$225\,a^5\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}+i\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f\,x}{2}\Big]+$
$\text{Cos}[e]\,\Big(\sqrt{a}+\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f\,x}{2}\Big]\Big)\Big)\Big]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^2+$
$115\,200\,a^2\,b^3\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}+i\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f\,x}{2}\Big]+$
$\text{Cos}[e]\,\Big(\sqrt{a}+\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f\,x}{2}\Big]\Big)\Big)\Big]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^2+$
$537\,600\,a\,b^4\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}+i\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f\,x}{2}\Big]+$
$\text{Cos}[e]\,\Big(\sqrt{a}+\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f\,x}{2}\Big]\Big)\Big)\Big]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^2+$
$483\,840\,b^5\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}+i\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f\,x}{2}\Big]+$
$\text{Cos}[e]\,\Big(\sqrt{a}+\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f\,x}{2}\Big]\Big)\Big)\Big]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^2-$
$225\,a^5\,\text{ArcTan}\Big[\frac{\sqrt{a}-\sqrt{a+b}\,\text{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{b}}\Big]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^2-$
$225\,a^5\,\text{ArcTan}\Big[\frac{\sqrt{a}+\sqrt{a+b}\,\text{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{b}}\Big]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^2+$
$19\,200\,a^{5/2}\,b^{5/2}\,\text{Cos}[e]\,\text{Cos}[f\,x]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^2-$
$20\,352\,a^{9/2}\,b^{5/2}\,\text{Cos}[e+f\,x]\,\text{Cos}[4\,(e+f\,x)]-$
$115\,712\,a^{7/2}\,b^{7/2}\,\text{Cos}[e+f\,x]\,\text{Cos}[4\,(e+f\,x)]-$
$129\,024\,a^{5/2}\,b^{9/2}\,\text{Cos}[e+f\,x]\,\text{Cos}[4\,(e+f\,x)]+2048\,a^{9/2}\,b^{5/2}\,\text{Cos}[e+f\,x]\,\text{Cos}[6\,(e+f\,x)]+$

$4608\,a^{7/2}\,b^{7/2}\,\text{Cos}[e+f x]\,\text{Cos}[6\,(e+f x)] - 384\,a^{9/2}\,b^{5/2}\,\text{Cos}[e+f x]\,\text{Cos}[8\,(e+f x)] - 19200\,a^{5/2}\,b^{5/2}\,(a+2 b+a\,\text{Cos}[2\,(e+f x)])^2\,\text{Sin}[e]\,\text{Sin}[f x] - 32496\,a^{9/2}\,b^{5/2}\,\text{Csc}[e+f x]\,\text{Sin}[4\,(e+f x)] - 252080\,a^{7/2}\,b^{7/2}\,\text{Csc}[e+f x]\,\text{Sin}[4\,(e+f x)] - 577024\,a^{5/2}\,b^{9/2}\,\text{Csc}[e+f x]\,\text{Sin}[4\,(e+f x)] - 403200\,a^{3/2}\,b^{11/2}\,\text{Csc}[e+f x]\,\text{Sin}[4\,(e+f x)]\Big)$

Problem 55: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 154 leaves, 6 steps):

$$\frac{5\sqrt{b}\,(3 a+7 b)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{b}}\right]}{8\,a^{9/2}\,f} - \frac{(a+3 b)\,\text{Cos}[e+f x]}{a^4\,f} + \frac{\text{Cos}[e+f x]^3}{3\,a^3\,f} + \frac{b^2\,(a+b)\,\text{Cos}[e+f x]}{4\,a^4\,f\,\left(b+a\,\text{Cos}[e+f x]^2\right)^2} - \frac{b\,(9 a+13 b)\,\text{Cos}[e+f x]}{8\,a^4\,f\,\left(b+a\,\text{Cos}[e+f x]^2\right)}$$

Result (type 3, 1392 leaves):

$$\left(3\left(-\frac{3\,\text{ArcTan}\left[\frac{\sqrt{a}-\sqrt{a+b}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{b}}\right]}{\sqrt{a}} - \frac{3\,\text{ArcTan}\left[\frac{\sqrt{a}+\sqrt{a+b}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{b}}\right]}{\sqrt{a}} - \frac{2\sqrt{b}\,\text{Cos}[e+f x]\,(3 a+10 b+3 a\,\text{Cos}[2\,(e+f x)])}{(a+2 b+a\,\text{Cos}[2\,(e+f x)])^2}\right)(a+2 b+a\,\text{Cos}[2 e+2 f x])^3\,\text{Sec}[e+f x]^6\right) \Big/ \left(8192\,b^{5/2}\,f\,\left(a+b\,\text{Sec}[e+f x]^2\right)^3\right) + \frac{1}{2048\,a^{3/2}\,b^{5/2}\,f\,\left(a+b\,\text{Sec}[e+f x]^2\right)^3}$$

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

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

$$\left(2\sqrt{a}\,\sqrt{b}\,\text{Cos}[e+f x]\,\left(3 a^2+6 a b+8 b^2+a\,(3 a-4 b)\,\text{Cos}[2\,(e+f x)]\right)\right) \Big/ \left((a+2 b+a\,\text{Cos}[2\,(e+f x)])^2\right)\;(a+2 b+a\,\text{Cos}[2 e+2 f x])^3\,\text{Sec}[e+f x]^6 -$$

$$\frac{1}{49152\,a^{9/2}\,b^{5/2}\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3}\Bigg(-3\left(3\,a^4-40\,a^3\,b+720\,a^2\,b^2+6720\,a\,b^3+8960\,b^4\right)$$

$$\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}-\mathrm{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f\,x}{2}\Big]+$$

$$\text{Cos}[e]\,\Big(\sqrt{a}-\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\,\text{Tan}\Big[\frac{f\,x}{2}\Big]\Big)\Big)\Big]-$$

$$3\left(3\,a^4-40\,a^3\,b+720\,a^2\,b^2+6720\,a\,b^3+8960\,b^4\right)\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}$$

$$\Big(\Big(-\sqrt{a}+\mathrm{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f\,x}{2}\Big]+$$

$$\text{Cos}[e]\,\Big(\sqrt{a}+\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\,\text{Tan}\Big[\frac{f\,x}{2}\Big]\Big)\Big)\Big]-$$

$$\Big(2\,\sqrt{a}\,\sqrt{b}\,\text{Cos}[e+f\,x]\,\big(9\,a^5-90\,a^4\,b-10144\,a^3\,b^2-48672\,a^2\,b^3-85120\,a\,b^4-$$

$$53760\,b^5+a\left(9\,a^4-120\,a^3\,b-12432\,a^2\,b^2-47936\,a\,b^3-44800\,b^4\right)\,\text{Cos}\left[2\,(e+f\,x)\right]-$$

$$128\,a^2\,b^2\,(15\,a+28\,b)\,\text{Cos}\left[4\,(e+f\,x)\right]+128\,a^3\,b^2\,\text{Cos}\left[6\,(e+f\,x)\right]\big)\Big)\Big/$$

$$\left(a+2\,b+a\,\text{Cos}\left[2\,(e+f\,x)\right]\right)^2\Bigg)\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^3\,\text{Sec}[e+f\,x]^6-$$

$$\frac{1}{16384\,a^{7/2}\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3}\,3\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^3$$

$$\text{Sec}[e+f\,x]^6$$

$$\Bigg(\frac{1}{b^{5/2}}3\,\left(a^3-8\,a^2\,b+80\,a\,b^2+320\,b^3\right)$$

$$\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}-\mathrm{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f\,x}{2}\Big]+$$

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

$$3\,\left(a^3-8\,a^2\,b+80\,a\,b^2+320\,b^3\right)\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}+\mathrm{i}\,\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\Big)$$

$$\text{Sin}[e]\,\text{Tan}\Big[\frac{f\,x}{2}\Big]+\text{Cos}[e]\,\Big(\sqrt{a}+\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\,\text{Tan}\Big[\frac{f\,x}{2}\Big]\Big)\Big)\Big]-$$

$$512\,\sqrt{a}\,\text{Cos}[e]\,\text{Cos}[f\,x]+\frac{8\,\sqrt{a}\,\left(a^3+24\,a^2\,b+80\,a\,b^2+64\,b^3\right)\,\text{Cos}[e+f\,x]}{b\,\left(a+2\,b+a\,\text{Cos}\left[2\,(e+f\,x)\right]\right)^2}+$$

$$\frac{2\,\sqrt{a}\,\left(3\,a^3-24\,a^2\,b-400\,a\,b^2-576\,b^3\right)\,\text{Cos}[e+f\,x]}{b^2\,\left(a+2\,b+a\,\text{Cos}\left[2\,(e+f\,x)\right]\right)}+512\,\sqrt{a}\,\text{Sin}[e]\,\text{Sin}[f\,x]\Bigg)$$

Problem 56: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

$$\frac{15\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{b}}\right]}{8 a^{7/2} f}-\frac{15\,\text{Cos}[e+f x]}{8 a^3 f}+\frac{\text{Cos}[e+f x]^5}{4 a f \left(b+a\,\text{Cos}[e+f x]^2\right)^2}+\frac{5\,\text{Cos}[e+f x]^3}{8 a^2 f \left(b+a\,\text{Cos}[e+f x]^2\right)}$$

Result (type 3, 656 leaves):

$$\frac{1}{4096\, a^{7/2} b^{5/2} f \left(a+b\,\text{Sec}[e+f x]^2\right)^3}\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)^3 \text{Sec}[e+f x]^6$$
$$\left(15 \left(a^3+64 b^3\right) \text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(-\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\right)\text{Sin}[e]\,\text{Tan}\left[\frac{f x}{2}\right]+\right.\right.\right.$$
$$\left.\left.\text{Cos}[e]\left(\sqrt{a}-\sqrt{a+b}\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\left[\frac{f x}{2}\right]\right)\right)\right]+$$
$$15 \left(a^3+64 b^3\right) \text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(-\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\right)\text{Sin}[e]\,\text{Tan}\left[\frac{f x}{2}\right]+\right.\right.$$
$$\left.\left.\text{Cos}[e]\left(\sqrt{a}+\sqrt{a+b}\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\left[\frac{f x}{2}\right]\right)\right)\right]+$$
$$\frac{1}{\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)^2}\sqrt{a}\left(24 a^4\sqrt{b}\,\text{Cos}[e+f x]-24 a^3 b^{3/2}\,\text{Cos}[e+f x]-\right.$$
$$144 a^2 b^{5/2}\,\text{Cos}[e+f x]+512 b^{9/2}\,\text{Cos}[e+f x]-72 a^3 b^{3/2}\,\text{Cos}[e+f x]\,\text{Cos}[2 (e+f x)]-$$
$$24 a^3\sqrt{b}\,\text{Cos}[e+f x]\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)+72 a^2 b^{3/2}\,\text{Cos}[e+f x]$$
$$\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)-1152 b^{7/2}\,\text{Cos}[e+f x]\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)-$$
$$15 a^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{a}-\sqrt{a+b}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{b}}\right]\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)^2-$$
$$15 a^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{a}+\sqrt{a+b}\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]}{\sqrt{b}}\right]\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)^2-$$
$$512 b^{5/2}\,\text{Cos}[e]\,\text{Cos}[f x]\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)^2+512 b^{5/2}$$
$$\left.\left.\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)^2 \text{Sin}[e]\,\text{Sin}[f x]+6 a^4\sqrt{b}\,\text{Csc}[e+f x]\,\text{Sin}[4 (e+f x)]\right)\right)$$

Problem 57: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 154 leaves, 6 steps):

$$\frac{\sqrt{b}\,\left(15\,a^2+10\,a\,b+3\,b^2\right)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{b}}\right]}{8\,a^{5/2}\,(a+b)^3\,f}-\frac{\text{ArcTanh}[\text{Cos}[e+f\,x]]}{(a+b)^3\,f}-\frac{b\,\text{Cos}[e+f\,x]^3}{4\,a\,(a+b)\,f\,\left(b+a\,\text{Cos}[e+f\,x]^2\right)^2}-\frac{b\,(7\,a+3\,b)\,\text{Cos}[e+f\,x]}{8\,a^2\,(a+b)^2\,f\,\left(b+a\,\text{Cos}[e+f\,x]^2\right)}$$

Result (type 3, 447 leaves):

$$\frac{1}{64\,(a+b)^3\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3}\,\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)\,\text{Sec}[e+f\,x]^5$$
$$\left(\frac{8\,b^2\,(a+b)^2}{a^2}-\frac{2\,b\,(a+b)\,(9\,a+5\,b)\,\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)}{a^2}+\frac{1}{a^{5/2}}\right.$$
$$\sqrt{b}\,\left(15\,a^2+10\,a\,b+3\,b^2\right)\,\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(-\sqrt{a}-i\,\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^2}\right)\right.\right.$$
$$\left.\left.\text{Sin}[e]\,\text{Tan}\left[\frac{f\,x}{2}\right]+\text{Cos}[e]\,\left(\sqrt{a}-\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^2}\,\text{Tan}\left[\frac{f\,x}{2}\right]\right)\right)\right]$$
$$\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)^2\,\text{Sec}[e+f\,x]+\frac{1}{a^{5/2}}\sqrt{b}\,\left(15\,a^2+10\,a\,b+3\,b^2\right)$$
$$\text{ArcTan}\left[\frac{1}{\sqrt{b}}\left(\left(-\sqrt{a}+i\,\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^2}\right)\,\text{Sin}[e]\,\text{Tan}\left[\frac{f\,x}{2}\right]+\right.\right.$$
$$\left.\left.\text{Cos}[e]\,\left(\sqrt{a}+\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^2}\,\text{Tan}\left[\frac{f\,x}{2}\right]\right)\right)\right]\,\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)^2$$
$$\text{Sec}[e+f\,x]-8\,\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)^2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Sec}[e+f\,x]+$$
$$\left.8\,\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)^2\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\,\text{Sec}[e+f\,x]\right)$$

Problem 58: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 213 leaves, 7 steps):

$$\frac{\sqrt{b}\,\left(15\,a^2-10\,a\,b-b^2\right)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Cos}[e+f\,x]}{\sqrt{b}}\right]}{8\,a^{3/2}\,(a+b)^4\,f}-\frac{(a-5\,b)\,\text{ArcTanh}[\text{Cos}[e+f\,x]]}{2\,(a+b)^4\,f}-\frac{(2\,a-b)\,b\,\text{Cos}[e+f\,x]}{4\,a\,(a+b)^2\,f\,\left(b+a\,\text{Cos}[e+f\,x]^2\right)^2}+\frac{\left(4\,a^2-9\,a\,b-b^2\right)\,\text{Cos}[e+f\,x]}{8\,a\,(a+b)^3\,f\,\left(b+a\,\text{Cos}[e+f\,x]^2\right)}-\frac{\text{Cos}[e+f\,x]\,\text{Cot}[e+f\,x]^2}{2\,(a+b)\,f\,\left(b+a\,\text{Cos}[e+f\,x]^2\right)^2}$$

Result (type 3, 532 leaves):

$$\frac{1}{64\,(a+b)^4 f\,\left(a+b\,\text{Sec}[e+f x]^2\right)^3}\,\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)$$
$$\text{Sec}[e+f x]^5\left(\frac{8 b^2\,(a+b)^2}{a}-\frac{2 b\,(a+b)\,(9 a+b)\,\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)}{a}-\frac{1}{a^{3/2}}\right.$$
$$\sqrt{b}\,\left(-15 a^2+10 a b+b^2\right)\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}-\mathrm{i}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\Big)$$
$$\text{Sin}[e]\,\text{Tan}\Big[\frac{f x}{2}\Big]+\text{Cos}[e]\,\Big(\sqrt{a}-\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f x}{2}\Big]\Big)\Big)\Big]$$
$$\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)^2\text{Sec}[e+f x]-\frac{1}{a^{3/2}}\sqrt{b}\,\left(-15 a^2+10 a b+b^2\right)$$
$$\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}+\mathrm{i}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f x}{2}\Big]+$$
$$\text{Cos}[e]\,\Big(\sqrt{a}+\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f x}{2}\Big]\Big)\Big)\Big]\,\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)^2$$
$$\text{Sec}[e+f x]-(a+b)\,\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)^2\text{Csc}\Big[\frac{1}{2}\,(e+f x)\Big]^2\text{Sec}[e+f x]-$$
$$4\,(a-5 b)\,\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)^2\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(e+f x)\Big]\Big]\,\text{Sec}[e+f x]+$$
$$4\,(a-5 b)\,\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)^2\text{Log}\Big[\text{Sin}\Big[\frac{1}{2}\,(e+f x)\Big]\Big]\,\text{Sec}[e+f x]+$$
$$\left.(a+b)\,\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)^2\text{Sec}\Big[\frac{1}{2}\,(e+f x)\Big]^2\text{Sec}[e+f x]\right)$$

Problem 59: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 257 leaves, 8 steps):

$$\frac{3\sqrt{b}\,\left(5 a^2-10 a b+b^2\right)\,\text{ArcTan}\Big[\frac{\sqrt{a}\,\text{Cos}[e+f x]}{\sqrt{b}}\Big]}{8\sqrt{a}\,(a+b)^5 f}-\frac{3\,\left(a^2-10 a b+5 b^2\right)\,\text{ArcTanh}[\text{Cos}[e+f x]]}{8\,(a+b)^5 f}+$$
$$\frac{\left(a^2-9 a b+2 b^2\right)\,\text{Cos}[e+f x]}{8\,(a+b)^3 f\,\left(b+a\,\text{Cos}[e+f x]^2\right)^2}+\frac{3\,\left(a^2-6 a b+b^2\right)\,\text{Cos}[e+f x]}{8\,(a+b)^4 f\,\left(b+a\,\text{Cos}[e+f x]^2\right)}-$$
$$\frac{(a-7 b)\,\text{Cot}[e+f x]\,\text{Csc}[e+f x]}{8\,(a+b)^2 f\,\left(b+a\,\text{Cos}[e+f x]^2\right)^2}-\frac{\text{Cot}[e+f x]^3\,\text{Csc}[e+f x]}{4\,(a+b)\,f\,\left(b+a\,\text{Cos}[e+f x]^2\right)^2}$$

Result (type 3, 549 leaves):

$$\frac{1}{1024\,(a+b)^5 f\,(a+b\,\text{Sec}[e+f x]^2)^3}\,(a+2b+a\,\text{Cos}[2(e+f x)])\Bigg(\frac{1}{\sqrt{a}}48\sqrt{b}\,(5a^2-10ab+b^2)\,\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}-i\sqrt{a+b}\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f x}{2}\Big]+\text{Cos}[e]\Big(\sqrt{a}-\sqrt{a+b}\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f x}{2}\Big]\Big)\Big)\Big]$$
$$(a+2b+a\,\text{Cos}[2(e+f x)])^2+\frac{1}{\sqrt{a}}48\sqrt{b}\,(5a^2-10ab+b^2)$$
$$\text{ArcTan}\Big[\frac{1}{\sqrt{b}}\Big(\Big(-\sqrt{a}+i\sqrt{a+b}\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\Big)\,\text{Sin}[e]\,\text{Tan}\Big[\frac{f x}{2}\Big]+\text{Cos}[e]\Big(\sqrt{a}+\sqrt{a+b}\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}\Big[\frac{f x}{2}\Big]\Big)\Big)\Big]\,(a+2b+a\,\text{Cos}[2(e+f x)])^2-$$
$$2(a+b)\,\big(30a^3+112a^2b+182ab^2-140b^3+(35a^3+78a^2b-93ab^2+224b^3)\,\text{Cos}[2(e+f x)]+2(a^3-8a^2b+53ab^2-10b^3)\,\text{Cos}[4(e+f x)]-3a^3\,\text{Cos}[6(e+f x)]+18a^2b\,\text{Cos}[6(e+f x)]-3ab^2\,\text{Cos}[6(e+f x)]\big)\,\text{Cot}[e+f x]\,\text{Csc}[e+f x]^3-$$
$$48(a^2-10ab+5b^2)\,(a+2b+a\,\text{Cos}[2(e+f x)])^2\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}(e+f x)\Big]\Big]+$$
$$48(a^2-10ab+5b^2)\,(a+2b+a\,\text{Cos}[2(e+f x)])^2\,\text{Log}\Big[\text{Sin}\Big[\frac{1}{2}(e+f x)\Big]\Big]\Bigg)\,\text{Sec}[e+f x]^6$$

Problem 60: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sin}[e+f x]^6}{(a+b\,\text{Sec}[e+f x]^2)^3}\,dx$$

Optimal (type 3, 314 leaves, 9 steps):

$$\frac{5(a+2b)(a^2+16ab+16b^2)\,x}{16a^6}-\frac{5\sqrt{b}\sqrt{a+b}\,(a+4b)(3a+4b)\,\text{ArcTan}\Big[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\Big]}{8a^6 f}-$$
$$\frac{(33a^2+110ab+80b^2)\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]}{48a^3 f\,(a+b+b\,\text{Tan}[e+f x]^2)^2}+$$
$$\frac{(9a+10b)\,\text{Cos}[e+f x]^3\,\text{Sin}[e+f x]}{24a^2 f\,(a+b+b\,\text{Tan}[e+f x]^2)^2}+\frac{\text{Cos}[e+f x]^3\,\text{Sin}[e+f x]^3}{6af\,(a+b+b\,\text{Tan}[e+f x]^2)^2}-$$
$$\frac{5b(9a^2+32ab+24b^2)\,\text{Tan}[e+f x]}{48a^4 f\,(a+b+b\,\text{Tan}[e+f x]^2)^2}-\frac{5b(5a^2+20ab+16b^2)\,\text{Tan}[e+f x]}{16a^5 f\,(a+b+b\,\text{Tan}[e+f x]^2)}$$

Result (type 3, 2057 leaves):

$$\Bigg(5\,(a+2b+a\,\text{Cos}[2e+2f x])^3\,\text{Sec}[e+f x]^6\,\Bigg(\frac{(3a^2+8ab+8b^2)\,\text{ArcTan}\Big[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\Big]}{(a+b)^{5/2}}-$$
$$\Big(a\sqrt{b}\,(3a^2+16ab+16b^2+3a(a+2b)\,\text{Cos}[2(e+f x)])\,\text{Sin}[2(e+f x)]\Big)\Big/$$

$$\left(\left(a+b\right)^2\left(a+2b+a\,\text{Cos}\left[2\left(e+fx\right)\right]\right)^2\right)\Bigg)\Bigg)\Bigg/\left(65536\,b^{5/2}f\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)+$$

$$\frac{1}{2048\left(a+b\,\text{Sec}[e+fx]^2\right)^3}\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Sec}[e+fx]^6$$

$$\Bigg(\frac{32\left(7a^3+54a^2b+120ab^2+80b^3\right)x}{a^6}-$$

$$\frac{1}{\left(a+b\right)^2}\left(-3a^8+64a^7b-2240a^6b^2-53760a^5b^3-313600a^4b^4-802816a^3b^5-1032192a^2b^6-\right.$$

$$\left.655360ab^7-163840b^8\right)\Bigg(\Bigg(\text{ArcTan}\Big[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}-\right.$$

$$\left.\frac{i\,\text{Sin}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}\right)\left(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+\right.$$

$$\left.a\,\text{Sin}[2e+fx]\right)\Big]\text{Cos}[2e]\Bigg)\Bigg/\left(64a^6b^2\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}\right)-$$

$$\Bigg(i\,\text{ArcTan}\Big[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}-\right.$$

$$\left.\frac{i\,\text{Sin}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}\right)\left(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+\right.$$

$$\left.a\,\text{Sin}[2e+fx]\right)\Big]\text{Sin}[2e]\Bigg)\Bigg/\left(64a^6b^2\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}\right)\Bigg)-$$

$$\frac{1}{16a^6b\left(a+b\right)f\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^2}\text{Sec}[2e]\left(a^7\,\text{Sin}[2e]+74a^6b\,\text{Sin}[2e]+\right.$$

$$984a^5b^2\,\text{Sin}[2e]+5264a^4b^3\,\text{Sin}[2e]+14080a^3b^4\,\text{Sin}[2e]+$$

$$19968a^2b^5\,\text{Sin}[2e]+14336ab^6\,\text{Sin}[2e]+4096b^7\,\text{Sin}[2e]-a^7\,\text{Sin}[2fx]-$$

$$72a^6b\,\text{Sin}[2fx]-840a^5b^2\,\text{Sin}[2fx]-3584a^4b^3\,\text{Sin}[2fx]-$$

$$\left.6912a^3b^4\,\text{Sin}[2fx]-6144a^2b^5\,\text{Sin}[2fx]-2048ab^6\,\text{Sin}[2fx]\right)-$$

$$\frac{1}{64a^6b^2\left(a+b\right)^2f\left(a+2b+a\,\text{Cos}[2e+2fx]\right)}\text{Sec}[2e]$$

$$\left(3a^8\,\text{Sin}[2e]-64a^7b\,\text{Sin}[2e]-4480a^6b^2\,\text{Sin}[2e]-45696a^5b^3\,\text{Sin}[2e]-\right.$$

$$196928a^4b^4\,\text{Sin}[2e]-438272a^3b^5\,\text{Sin}[2e]-528384a^2b^6\,\text{Sin}[2e]-$$

$$327680ab^7\,\text{Sin}[2e]-81920b^8\,\text{Sin}[2e]-3a^8\,\text{Sin}[2fx]+66a^7b\,\text{Sin}[2fx]+$$

$$4056a^6b^2\,\text{Sin}[2fx]+33936a^5b^3\,\text{Sin}[2fx]+111360a^4b^4\,\text{Sin}[2fx]+$$

$$\left.173568a^3b^5\,\text{Sin}[2fx]+129024a^2b^6\,\text{Sin}[2fx]+36864ab^7\,\text{Sin}[2fx]\right)-$$

$$\left(7a^2+32ab+32b^2\right)\left(-\frac{6\,i\,\text{Cos}[2e+2fx]}{a^5f}+\frac{6\,\text{Sin}[2e+2fx]}{a^5f}\right)-$$

$$\left(7a^2+32ab+32b^2\right)\left(\frac{6\,i\,\text{Cos}[2e+2fx]}{a^5f}+\frac{6\,\text{Sin}[2e+2fx]}{a^5f}\right)-$$

$$\left(a+2b\right)\left(-\frac{6\,i\,\text{Cos}[4e+4fx]}{a^4f}-\frac{6\,\text{Sin}[4e+4fx]}{a^4f}\right)-$$

$$\left(a+2b\right)\left(\frac{6\,i\,\text{Cos}[4e+4fx]}{a^4f}-\frac{6\,\text{Sin}[4e+4fx]}{a^4f}\right)-$$

$$\left.\frac{4\,\text{Sin}[6\,e+6\,f\,x]}{3\,a^3\,f}\right)-$$

$$\Bigg(15\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^3\,\text{Sec}[e+f\,x]^6$$
$$\Bigg(-\Bigg(\Bigg(6\,a^2\,\text{ArcTan}\Big[\left(\text{Sec}[f\,x]\,\left(\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]\right)\,\left(-\left(a+2\,b\right)\,\text{Sin}[f\,x]+a\,\text{Sin}[2\,e+f\,x]\right)\right)\Big/$$
$$\left(2\,\sqrt{a+b}\,\sqrt{b\,\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^4}\right)\Big]$$
$$\left(\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]\right)\Bigg)\Big/\left(\sqrt{a+b}\,\sqrt{b\,\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^4}\right)\Bigg)+$$
$$\Big(a\,\text{Sec}[2\,e]\,\Big(\left(-9\,a^4-16\,a^3\,b+48\,a^2\,b^2+128\,a\,b^3+64\,b^4\right)\,\text{Sin}[2\,f\,x]+a\,\big(-3\,a^3+2\,a^2\,b+24\,a\,b^2+16\,b^3\big)\,\text{Sin}\left[2\,\left(e+2\,f\,x\right)\right]+\left(3\,a^4-64\,a^2\,b^2-128\,a\,b^3-64\,b^4\right)\,\text{Sin}[4\,e+2\,f\,x]\Big)+$$
$$\left(9\,a^5+18\,a^4\,b-64\,a^3\,b^2-256\,a^2\,b^3-320\,a\,b^4-128\,b^5\right)\,\text{Tan}[2\,e]\Big)\Big/$$
$$\left(a^2\,\left(a+2\,b+a\,\text{Cos}\left[2\,\left(e+f\,x\right)\right]\right)^2\right)\Bigg)\Bigg)\Big/$$
$$\left(262144\,b^2\,\left(a+b\right)^2\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\right)+$$

$$\frac{1}{65536\,a^4\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3}\,3$$
$$\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^3$$
$$\text{Sec}[e+f\,x]^6$$
$$\Bigg(-1536\,\left(a+2\,b\right)\,x-$$
$$\Bigg(3\,\left(a^6-8\,a^5\,b+120\,a^4\,b^2+1280\,a^3\,b^3+3200\,a^2\,b^4+3072\,a\,b^5+1024\,b^6\right)$$
$$\text{ArcTan}\Big[\left(\text{Sec}[f\,x]\,\left(\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]\right)\,\left(-\left(a+2\,b\right)\,\text{Sin}[f\,x]+a\,\text{Sin}[2\,e+f\,x]\right)\right)\Big/$$
$$\left(2\,\sqrt{a+b}\,\sqrt{b\,\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^4}\right)\Big]$$
$$\left(\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]\right)\Bigg)\Big/\left(b^2\,\left(a+b\right)^{5/2}\,f\,\sqrt{b\,\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^4}\right)+$$
$$\left(4\,\left(a^4+32\,a^3\,b+160\,a^2\,b^2+256\,a\,b^3+128\,b^4\right)\,\text{Sec}[2\,e]\,\left(\left(a+2\,b\right)\,\text{Sin}[2\,e]-a\,\text{Sin}[2\,f\,x]\right)\right)\Big/$$
$$\left(b\,\left(a+b\right)\,f\,\left(a+2\,b+a\,\text{Cos}\left[2\,\left(e+f\,x\right)\right]\right)^2\right)+\frac{256\,a\,\text{Sin}\left[2\,\left(e+f\,x\right)\right]}{f}+$$
$$\Big(a\,\left(-3\,a^5+26\,a^4\,b+736\,a^3\,b^2+2624\,a^2\,b^3+3200\,a\,b^4+1280\,b^5\right)\,\text{Sec}[2\,e]\,\text{Sin}[2\,f\,x]+$$
$$\left(3\,a^6-24\,a^5\,b-920\,a^4\,b^2-4864\,a^3\,b^3-10112\,a^2\,b^4-9216\,a\,b^5-3072\,b^6\right)\,\text{Tan}[2\,e]\Big)\Big/$$
$$\left(b^2\,\left(a+b\right)^2\,f\,\left(a+2\,b+a\,\text{Cos}\left[2\,\left(e+f\,x\right)\right]\right)\right)\Bigg)$$

Problem 61: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 238 leaves, 8 steps):

$$\frac{3\left(a^2+12 a b+16 b^2\right) x}{8 a^5}-\frac{3 \sqrt{b}\left(5 a^2+20 a b+16 b^2\right) \operatorname{ArcTan}\left[\frac{\sqrt{b} \operatorname{Tan}[e+f x]}{\sqrt{a+b}}\right]}{8 a^5 \sqrt{a+b} f}-\frac{(5 a+8 b) \operatorname{Cos}[e+f x] \operatorname{Sin}[e+f x]}{8 a^2 f\left(a+b+b \operatorname{Tan}[e+f x]^2\right)^2}+\frac{\operatorname{Cos}[e+f x]^3 \operatorname{Sin}[e+f x]}{4 a f\left(a+b+b \operatorname{Tan}[e+f x]^2\right)^2}-\frac{b(7 a+12 b) \operatorname{Tan}[e+f x]}{8 a^3 f\left(a+b+b \operatorname{Tan}[e+f x]^2\right)^2}-\frac{3 b(a+2 b) \operatorname{Tan}[e+f x]}{2 a^4 f\left(a+b+b \operatorname{Tan}[e+f x]^2\right)}$$

Result (type 3, 3109 leaves):

$$\Bigg(3\,(a+2 b+a \operatorname{Cos}[2 e+2 f x])^3 \operatorname{Sec}[e+f x]^6\Bigg(\frac{\left(3 a^2+8 a b+8 b^2\right) \operatorname{ArcTan}\left[\frac{\sqrt{b} \operatorname{Tan}[e+f x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}-\left(a \sqrt{b}\left(3 a^2+16 a b+16 b^2+3 a(a+2 b) \operatorname{Cos}[2(e+f x)]\right) \operatorname{Sin}[2(e+f x)]\right)\Big/\left((a+b)^2\left(a+2 b+a \operatorname{Cos}[2(e+f x)]\right)^2\right)\Bigg)\Bigg)\Big/\left(16384\, b^{5/2} f\left(a+b \operatorname{Sec}[e+f x]^2\right)^3\right)+$$

$$\Bigg((a+2 b+a \operatorname{Cos}[2 e+2 f x])^3 \operatorname{Sec}[e+f x]^6\Bigg(-\frac{3 a(a+2 b) \operatorname{ArcTan}\left[\frac{\sqrt{b} \operatorname{Tan}[e+f x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}+\left(\sqrt{b}\left(3 a^3+14 a^2 b+24 a b^2+16 b^3+a\left(3 a^2+4 a b+4 b^2\right) \operatorname{Cos}[2(e+f x)]\right) \operatorname{Sin}[2(e+f x)]\right)\Big/\left((a+b)^2\left(a+2 b+a \operatorname{Cos}[2(e+f x)]\right)^2\right)\Bigg)\Bigg)\Big/$$

$$\left(16384\, b^{5/2} f\left(a+b \operatorname{Sec}[e+f x]^2\right)^3\right)-\frac{1}{512\left(a+b \operatorname{Sec}[e+f x]^2\right)^3}$$

$$3\,(a+2 b+a \operatorname{Cos}[2 e+2 f x])^3 \operatorname{Sec}[e+f x]^6$$

$$\Bigg(\frac{1}{(a+b)^2}\left(3 a^5-10 a^4 b+80 a^3 b^2+480 a^2 b^3+640 a b^4+256 b^5\right)\Bigg(\Bigg(\operatorname{ArcTan}\Bigg[\operatorname{Sec}[f x]$$

$$\left(\frac{\operatorname{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-\mathrm{i}\, b \operatorname{Sin}[4 e]}}-\frac{\mathrm{i} \operatorname{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-\mathrm{i}\, b \operatorname{Sin}[4 e]}}\right)$$

$$(-a \operatorname{Sin}[f x]-2 b \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x])\Bigg] \operatorname{Cos}[2 e]\Bigg)\Big/$$

$$\left(64 a^3 b^2 \sqrt{a+b}\, f \sqrt{b \operatorname{Cos}[4 e]-\mathrm{i}\, b \operatorname{Sin}[4 e]}\right)-\Bigg(\mathrm{i} \operatorname{ArcTan}\Bigg[\operatorname{Sec}[f x]$$

$$\left(\frac{\operatorname{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-\mathrm{i}\, b \operatorname{Sin}[4 e]}}-\frac{\mathrm{i} \operatorname{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-\mathrm{i}\, b \operatorname{Sin}[4 e]}}\right)$$

$$(-a \operatorname{Sin}[f x]-2 b \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x])\Bigg] \operatorname{Sin}[2 e]\Bigg)\Big/\Big(64 a^3 b^2 \sqrt{a+b}\, f$$

$\sqrt{b\,\text{Cos}[4\,e]-\text{i}\,b\,\text{Sin}[4\,e]}\Big)\Big)+\frac{1}{128\,a^3\,b^2\,(a+b)^2\,f\,(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x])^2}$

$\text{Sec}[2\,e]\,\big(768\,a^4\,b^2\,f\,x\,\text{Cos}[2\,e]+3584\,a^3\,b^3\,f\,x\,\text{Cos}[2\,e]+6912\,a^2\,b^4\,f\,x\,\text{Cos}[2\,e]+$
$6144\,a\,b^5\,f\,x\,\text{Cos}[2\,e]+2048\,b^6\,f\,x\,\text{Cos}[2\,e]+512\,a^4\,b^2\,f\,x\,\text{Cos}[2\,f\,x]+$
$2048\,a^3\,b^3\,f\,x\,\text{Cos}[2\,f\,x]+2560\,a^2\,b^4\,f\,x\,\text{Cos}[2\,f\,x]+1024\,a\,b^5\,f\,x\,\text{Cos}[2\,f\,x]+$
$512\,a^4\,b^2\,f\,x\,\text{Cos}[4\,e+2\,f\,x]+2048\,a^3\,b^3\,f\,x\,\text{Cos}[4\,e+2\,f\,x]+2560\,a^2\,b^4\,f\,x\,\text{Cos}[4\,e+2\,f\,x]+$
$1024\,a\,b^5\,f\,x\,\text{Cos}[4\,e+2\,f\,x]+128\,a^4\,b^2\,f\,x\,\text{Cos}[2\,e+4\,f\,x]+256\,a^3\,b^3\,f\,x\,\text{Cos}[2\,e+4\,f\,x]+$
$128\,a^2\,b^4\,f\,x\,\text{Cos}[2\,e+4\,f\,x]+128\,a^4\,b^2\,f\,x\,\text{Cos}[6\,e+4\,f\,x]+256\,a^3\,b^3\,f\,x\,\text{Cos}[6\,e+4\,f\,x]+$
$128\,a^2\,b^4\,f\,x\,\text{Cos}[6\,e+4\,f\,x]-9\,a^6\,\text{Sin}[2\,e]+12\,a^5\,b\,\text{Sin}[2\,e]+684\,a^4\,b^2\,\text{Sin}[2\,e]+$
$2880\,a^3\,b^3\,\text{Sin}[2\,e]+5280\,a^2\,b^4\,\text{Sin}[2\,e]+4608\,a\,b^5\,\text{Sin}[2\,e]+1536\,b^6\,\text{Sin}[2\,e]+$
$9\,a^6\,\text{Sin}[2\,f\,x]-14\,a^5\,b\,\text{Sin}[2\,f\,x]-608\,a^4\,b^2\,\text{Sin}[2\,f\,x]-2112\,a^3\,b^3\,\text{Sin}[2\,f\,x]-$
$2560\,a^2\,b^4\,\text{Sin}[2\,f\,x]-1024\,a\,b^5\,\text{Sin}[2\,f\,x]-3\,a^6\,\text{Sin}[4\,e+2\,f\,x]+10\,a^5\,b\,\text{Sin}[4\,e+2\,f\,x]+$
$304\,a^4\,b^2\,\text{Sin}[4\,e+2\,f\,x]+1056\,a^3\,b^3\,\text{Sin}[4\,e+2\,f\,x]+1280\,a^2\,b^4\,\text{Sin}[4\,e+2\,f\,x]+$
$512\,a\,b^5\,\text{Sin}[4\,e+2\,f\,x]+3\,a^6\,\text{Sin}[2\,e+4\,f\,x]-12\,a^5\,b\,\text{Sin}[2\,e+4\,f\,x]-$
$204\,a^4\,b^2\,\text{Sin}[2\,e+4\,f\,x]-384\,a^3\,b^3\,\text{Sin}[2\,e+4\,f\,x]-192\,a^2\,b^4\,\text{Sin}[2\,e+4\,f\,x]\big)\Big)+$

$\frac{1}{512\,(a+b\,\text{Sec}[e+f\,x]^2)^3}\,(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x])^3$
$\text{Sec}[e+f\,x]^6$
$\Big(\frac{12\,(7\,a^2+32\,a\,b+32\,b^2)\,x}{a^5}+$

$\frac{1}{(a+b)^2}\,(a^7-14\,a^6\,b+336\,a^5\,b^2+5600\,a^4\,b^3+22\,400\,a^3\,b^4+37\,632\,a^2\,b^5+28\,672\,a\,b^6+8192\,b^7)$

$\Big(\Big(\Big(3\,\text{ArcTan}\Big[\text{Sec}[f\,x]\,\Big(\frac{\text{Cos}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4\,e]-\text{i}\,b\,\text{Sin}[4\,e]}}-$
$\frac{\text{i}\,\text{Sin}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4\,e]-\text{i}\,b\,\text{Sin}[4\,e]}}\Big)\,(-a\,\text{Sin}[f\,x]-2\,b\,\text{Sin}[f\,x]+$
$a\,\text{Sin}[2\,e+f\,x])\Big]\,\text{Cos}[2\,e]\Big)\Big/\Big(64\,a^5\,b^2\,\sqrt{a+b}\,f\,\sqrt{b\,\text{Cos}[4\,e]-\text{i}\,b\,\text{Sin}[4\,e]}\Big)-$

$\Big(3\,\text{i}\,\text{ArcTan}\Big[\text{Sec}[f\,x]\,\Big(\frac{\text{Cos}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4\,e]-\text{i}\,b\,\text{Sin}[4\,e]}}-$
$\frac{\text{i}\,\text{Sin}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4\,e]-\text{i}\,b\,\text{Sin}[4\,e]}}\Big)\,(-a\,\text{Sin}[f\,x]-2\,b\,\text{Sin}[f\,x]+$
$a\,\text{Sin}[2\,e+f\,x])\Big]\,\text{Sin}[2\,e]\Big)\Big/\Big(64\,a^5\,b^2\,\sqrt{a+b}\,f\,\sqrt{b\,\text{Cos}[4\,e]-\text{i}\,b\,\text{Sin}[4\,e]}\Big)\Big)+$

$\big(\text{Sec}[2\,e]\,\big(-a^6\,\text{Sin}[2\,e]-52\,a^5\,b\,\text{Sin}[2\,e]-500\,a^4\,b^2\,\text{Sin}[2\,e]-1920\,a^3\,b^3\,\text{Sin}[2\,e]-3520$
$a^2\,b^4\,\text{Sin}[2\,e]-3072\,a\,b^5\,\text{Sin}[2\,e]-1024\,b^6\,\text{Sin}[2\,e]+a^6\,\text{Sin}[2\,f\,x]+50\,a^5\,b\,\text{Sin}[2\,f\,x]+$
$400\,a^4\,b^2\,\text{Sin}[2\,f\,x]+1120\,a^3\,b^3\,\text{Sin}[2\,f\,x]+1280\,a^2\,b^4\,\text{Sin}[2\,f\,x]+512\,a\,b^5\,\text{Sin}[2\,f\,x]\big)\big)\Big/$
$\big(16\,a^5\,b\,(a+b)\,f\,(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x])^2\big)+$

$\frac{1}{64\,a^5\,b^2\,(a+b)^2\,f\,(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x])}$
$\text{Sec}[2\,e]\,\big(-3\,a^7\,\text{Sin}[2\,e]+42\,a^6\,b\,\text{Sin}[2\,e]+2192\,a^5\,b^2\,\text{Sin}[2\,e]+16\,480\,a^4\,b^3\,\text{Sin}[2\,e]+$

$$51200 a^3 b^4 \text{Sin}[2 e] + 77824 a^2 b^5 \text{Sin}[2 e] + 57344 a b^6 \text{Sin}[2 e] + 16384 b^7 \text{Sin}[2 e] +$$
$$3 a^7 \text{Sin}[2 f x] - 44 a^6 b \text{Sin}[2 f x] - 1900 a^5 b^2 \text{Sin}[2 f x] - 10880 a^4 b^3 \text{Sin}[2 f x] -$$
$$23360 a^3 b^4 \text{Sin}[2 f x] - 21504 a^2 b^5 \text{Sin}[2 f x] - 7168 a b^6 \text{Sin}[2 f x]\Big) +$$
$$(a + 2 b) \left(-\frac{12 i \text{Cos}[2 e + 2 f x]}{a^4 f} - \frac{12 \text{Sin}[2 e + 2 f x]}{a^4 f}\right) +$$
$$(a + 2 b) \left(\frac{12 i \text{Cos}[2 e + 2 f x]}{a^4 f} - \frac{12 \text{Sin}[2 e + 2 f x]}{a^4 f}\right) +$$
$$\left.\frac{2 \text{Sin}[4 e + 4 f x]}{a^3 f}\right) -$$
$$\Big(\left(a + 2 b + a \text{Cos}[2 e + 2 f x]\right)^3 \text{Sec}[e + f x]^6$$
$$\Big(-\Big(\Big(6 a^2 \text{ArcTan}\Big[\left(\text{Sec}[f x] \left(\text{Cos}[2 e] - i \text{Sin}[2 e]\right) \left(-(a + 2 b) \text{Sin}[f x] + a \text{Sin}[2 e + f x]\right)\right) \Big/$$
$$\left(2 \sqrt{a + b} \sqrt{b \left(\text{Cos}[e] - i \text{Sin}[e]\right)^4}\right)\Big]$$
$$\left(\text{Cos}[2 e] - i \text{Sin}[2 e]\right)\Big) \Big/ \left(\sqrt{a + b} \sqrt{b \left(\text{Cos}[e] - i \text{Sin}[e]\right)^4}\right)\Big) +$$
$$\Big(a \text{Sec}[2 e] \Big(\left(-9 a^4 - 16 a^3 b + 48 a^2 b^2 + 128 a b^3 + 64 b^4\right) \text{Sin}[2 f x] + a \Big(-3 a^3 + 2 a^2 b + 24 a$$
$$b^2 + 16 b^3\Big) \text{Sin}\left[2 (e + 2 f x)\right] + \left(3 a^4 - 64 a^2 b^2 - 128 a b^3 - 64 b^4\right) \text{Sin}[4 e + 2 f x]\Big) +$$
$$\left(9 a^5 + 18 a^4 b - 64 a^3 b^2 - 256 a^2 b^3 - 320 a b^4 - 128 b^5\right) \text{Tan}[2 e]\Big) \Big/$$
$$\left(a^2 \left(a + 2 b + a \text{Cos}\left[2 (e + f x)\right]\right)^2\right)\Big)\Big) \Big/$$
$$\left(8192 b^2 (a + b)^2 f \left(a + b \text{Sec}[e + f x]^2\right)^3\right) + \frac{1}{16384 a^4 \left(a + b \text{Sec}[e + f x]^2\right)^3}$$
$$\left(a + 2 b + a \text{Cos}[2 e + 2 f x]\right)^3$$
$$\text{Sec}[e + f x]^6$$
$$\Big(-1536 (a + 2 b) x -$$
$$\Big(3 \left(a^6 - 8 a^5 b + 120 a^4 b^2 + 1280 a^3 b^3 + 3200 a^2 b^4 + 3072 a b^5 + 1024 b^6\right)$$
$$\text{ArcTan}\Big[\left(\text{Sec}[f x] \left(\text{Cos}[2 e] - i \text{Sin}[2 e]\right) \left(-(a + 2 b) \text{Sin}[f x] + a \text{Sin}[2 e + f x]\right)\right) \Big/$$
$$\left(2 \sqrt{a + b} \sqrt{b \left(\text{Cos}[e] - i \text{Sin}[e]\right)^4}\right)\Big]$$
$$\left(\text{Cos}[2 e] - i \text{Sin}[2 e]\right)\Big) \Big/ \left(b^2 (a + b)^{5/2} f \sqrt{b \left(\text{Cos}[e] - i \text{Sin}[e]\right)^4}\right) +$$
$$\left(4 \left(a^4 + 32 a^3 b + 160 a^2 b^2 + 256 a b^3 + 128 b^4\right) \text{Sec}[2 e] \left((a + 2 b) \text{Sin}[2 e] - a \text{Sin}[2 f x]\right)\right) \Big/$$
$$\left(b (a + b) f \left(a + 2 b + a \text{Cos}\left[2 (e + f x)\right]\right)^2\right) + \frac{256 a \text{Sin}\left[2 (e + f x)\right]}{f} +$$
$$\Big(a \left(-3 a^5 + 26 a^4 b + 736 a^3 b^2 + 2624 a^2 b^3 + 3200 a b^4 + 1280 b^5\right) \text{Sec}[2 e] \text{Sin}[2 f x] +$$
$$\left(3 a^6 - 24 a^5 b - 920 a^4 b^2 - 4864 a^3 b^3 - 10112 a^2 b^4 - 9216 a b^5 - 3072 b^6\right) \text{Tan}[2 e]\Big) \Big/$$
$$\left(b^2 (a + b)^2 f \left(a + 2 b + a \text{Cos}\left[2 (e + f x)\right]\right)\right)\Big)$$

Problem 62: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

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

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

$$\frac{(a+6 b)\, x}{2 a^4}-\frac{\sqrt{b}\,\left(15 a^2+40 a b+24 b^2\right)\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{8 a^4 (a+b)^{3/2} f}-\frac{\text{Cos}[e+f x]\,\text{Sin}[e+f x]}{2 a f\left(a+b+b\,\text{Tan}[e+f x]^2\right)^2}-\frac{3 b\,\text{Tan}[e+f x]}{4 a^2 f\left(a+b+b\,\text{Tan}[e+f x]^2\right)^2}-\frac{b\,(11 a+12 b)\,\text{Tan}[e+f x]}{8 a^3 (a+b) f\left(a+b+b\,\text{Tan}[e+f x]^2\right)}$$

Result (type 3, 2515 leaves):

$$\left(5\left(a+2 b+a\,\text{Cos}[2 e+2 f x]\right)^3 \text{Sec}[e+f x]^6\left(\frac{\left(3 a^2+8 a b+8 b^2\right)\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}-\left(a\sqrt{b}\left(3 a^2+16 a b+16 b^2+3 a (a+2 b)\,\text{Cos}[2 (e+f x)]\right)\text{Sin}[2 (e+f x)]\right)\Big/\left((a+b)^2\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)^2\right)\right)\right)\Big/\left(8192\, b^{5/2} f\left(a+b\,\text{Sec}[e+f x]^2\right)^3\right)+$$

$$\left(\left(a+2 b+a\,\text{Cos}[2 e+2 f x]\right)^3 \text{Sec}[e+f x]^6\left(-\frac{3 a (a+2 b)\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}+\left(\sqrt{b}\left(3 a^3+14 a^2 b+24 a b^2+16 b^3+a\left(3 a^2+4 a b+4 b^2\right)\text{Cos}[2 (e+f x)]\right)\text{Sin}[2 (e+f x)]\right)\Big/\left((a+b)^2\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)^2\right)\right)\right)\Big/$$

$$\left(2048\, b^{5/2} f\left(a+b\,\text{Sec}[e+f x]^2\right)^3\right)+\frac{1}{128\left(a+b\,\text{Sec}[e+f x]^2\right)^3}$$

$$\left(a+2 b+a\,\text{Cos}[2 e+2 f x]\right)^3 \text{Sec}[e+f x]^6$$

$$\left(\frac{24 (a+2 b)\, x}{a^4}-\frac{1}{(a+b)^2}\left(a^6-8 a^5 b+120 a^4 b^2+1280 a^3 b^3+3200 a^2 b^4+3072 a b^5+1024 b^6\right)\right.$$

$$\left(-\left(\left(3\,\text{ArcTan}\left[\text{Sec}[f x]\left(\frac{\text{Cos}[2 e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4 e]-i\, b\,\text{Sin}[4 e]}}-\frac{i\,\text{Sin}[2 e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4 e]-i\, b\,\text{Sin}[4 e]}}\right)\left(-a\,\text{Sin}[f x]-2 b\,\text{Sin}[f x]+a\,\text{Sin}[2 e+f x]\right)\right]\text{Cos}[2 e]\right)\Big/\left(64 a^4 b^2\sqrt{a+b}\, f\sqrt{b\,\text{Cos}[4 e]-i\, b\,\text{Sin}[4 e]}\right)\right)+\right.$$

$$\left(3\, i\,\text{ArcTan}\left[\text{Sec}[f x]\left(\frac{\text{Cos}[2 e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4 e]-i\, b\,\text{Sin}[4 e]}}-\right.\right.\right.$$

$$\left.\left.\left.\frac{i \operatorname{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}\right)\left(-a \operatorname{Sin}[f x]-2 b \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x]\right)\right] \operatorname{Sin}[2 e]\right) \Big/ \left(64 a^4 b^2 \sqrt{a+b}\, f \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}\right)\right)-$$

$$\left(\operatorname{Sec}[2 e]\left(a^5 \operatorname{Sin}[2 e]+34 a^4 b \operatorname{Sin}[2 e]+224 a^3 b^2 \operatorname{Sin}[2 e]+576 a^2 b^3 \operatorname{Sin}[2 e]+640 a b^4 \operatorname{Sin}[2 e]+256 b^5 \operatorname{Sin}[2 e]-a^5 \operatorname{Sin}[2 f x]-32 a^4 b \operatorname{Sin}[2 f x]-160 a^3 b^2 \operatorname{Sin}[2 f x]-256 a^2 b^3 \operatorname{Sin}[2 f x]-128 a b^4 \operatorname{Sin}[2 f x]\right)\right) \Big/$$

$$\left(16 a^4 b\,(a+b)\, f\,(a+2 b+a \operatorname{Cos}[2 e+2 f x])^2\right)-$$

$$\left(\operatorname{Sec}[2 e]\left(3 a^6 \operatorname{Sin}[2 e]-24 a^5 b \operatorname{Sin}[2 e]-920 a^4 b^2 \operatorname{Sin}[2 e]-4864 a^3 b^3 \operatorname{Sin}[2 e]-10112 a^2 b^4 \operatorname{Sin}[2 e]-9216 a b^5 \operatorname{Sin}[2 e]-3072 b^6 \operatorname{Sin}[2 e]-3 a^6 \operatorname{Sin}[2 f x]+26 a^5 b \operatorname{Sin}[2 f x]+736 a^4 b^2 \operatorname{Sin}[2 f x]+2624 a^3 b^3 \operatorname{Sin}[2 f x]+3200 a^2 b^4 \operatorname{Sin}[2 f x]+1280 a b^5 \operatorname{Sin}[2 f x]\right)\right) \Big/$$

$$\left.\left(64 a^4 b^2\,(a+b)^2 f\,(a+2 b+a \operatorname{Cos}[2 e+2 f x])\right)-\frac{4 \operatorname{Sin}[2 e+2 f x]}{a^3 f}\right)+$$

$$\frac{1}{32\left(a+b \operatorname{Sec}[e+f x]^2\right)^3}(a+2 b+a \operatorname{Cos}[2 e+2 f x])^3 \operatorname{Sec}[e+f x]^6$$

$$\left(-\frac{1}{(a+b)^2}\left(3 a^5-10 a^4 b+80 a^3 b^2+480 a^2 b^3+640 a b^4+256 b^5\right)\right.$$

$$\left(\left(\left(\operatorname{ArcTan}\left[\operatorname{Sec}[f x]\left(\frac{\operatorname{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}-\frac{i \operatorname{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}\right)\left(-a \operatorname{Sin}[f x]-2 b \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x]\right)\right] \operatorname{Cos}[2 e]\right) \Big/ \left(64 a^3 b^2 \sqrt{a+b}\, f \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}\right)-\right.\right.$$

$$\left(i \operatorname{ArcTan}\left[\operatorname{Sec}[f x]\left(\frac{\operatorname{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}-\frac{i \operatorname{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}\right)\left(-a \operatorname{Sin}[f x]-2 b \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x]\right)\right] \operatorname{Sin}[2 e]\right) \Big/ \left.\left(64 a^3 b^2 \sqrt{a+b}\, f \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}\right)\right)-$$

$$\frac{1}{128 a^3 b^2 (a+b)^2 f\,(a+2 b+a \operatorname{Cos}[2 e+2 f x])^2} \operatorname{Sec}[2 e]\left(768 a^4 b^2 f x \operatorname{Cos}[2 e]+3584 a^3 b^3 f x \operatorname{Cos}[2 e]+6912 a^2 b^4 f x \operatorname{Cos}[2 e]+6144 a b^5 f x \operatorname{Cos}[2 e]+2048 b^6 f x \operatorname{Cos}[2 e]+512 a^4 b^2 f x \operatorname{Cos}[2 f x]+2048 a^3 b^3 f x \operatorname{Cos}[2 f x]+2560 a^2 b^4 f x \operatorname{Cos}[2 f x]+1024 a b^5 f x \operatorname{Cos}[2 f x]+512 a^4 b^2 f x \operatorname{Cos}[4 e+2 f x]+2048 a^3 b^3 f x \operatorname{Cos}[4 e+2 f x]+2560 a^2 b^4 f x \operatorname{Cos}[4 e+2 f x]+1024 a b^5 f x \operatorname{Cos}[4 e+2 f x]+128 a^4 b^2 f x \operatorname{Cos}[2 e+4 f x]+256 a^3 b^3 f x \operatorname{Cos}[2 e+4 f x]+128 a^2 b^4 f x \operatorname{Cos}[2 e+4 f x]+128 a^4 b^2 f x \operatorname{Cos}[6 e+4 f x]+256 a^3 b^3 f x \operatorname{Cos}[6 e+4 f x]+128 a^2 b^4 f x \operatorname{Cos}[6 e+4 f x]-9 a^6 \operatorname{Sin}[2 e]+12 a^5 b \operatorname{Sin}[2 e]+684 a^4 b^2 \operatorname{Sin}[2 e]+2880 a^3 b^3 \operatorname{Sin}[2 e]+5280 a^2 b^4 \operatorname{Sin}[2 e]+4608 a b^5 \operatorname{Sin}[2 e]+1536 b^6 \operatorname{Sin}[2 e]+9 a^6 \operatorname{Sin}[2 f x]-14 a^5 b \operatorname{Sin}[2 f x]-608 a^4 b^2 \operatorname{Sin}[2 f x]-2112 a^3 b^3 \operatorname{Sin}[2 f x]-2560 a^2 b^4 \operatorname{Sin}[2 f x]-\right.$$

$$1024\,a\,b^5\,\text{Sin}[2\,f\,x] - 3\,a^6\,\text{Sin}[4\,e+2\,f\,x] + 10\,a^5\,b\,\text{Sin}[4\,e+2\,f\,x] + 304\,a^4\,b^2\,\text{Sin}[4\,e+2\,f\,x] + 1056\,a^3\,b^3\,\text{Sin}[4\,e+2\,f\,x] + 1280\,a^2\,b^4\,\text{Sin}[4\,e+2\,f\,x] + 512\,a\,b^5\,\text{Sin}[4\,e+2\,f\,x] + 3\,a^6\,\text{Sin}[2\,e+4\,f\,x] - 12\,a^5\,b\,\text{Sin}[2\,e+4\,f\,x] - 204\,a^4\,b^2\,\text{Sin}[2\,e+4\,f\,x] - 384\,a^3\,b^3\,\text{Sin}[2\,e+4\,f\,x] - 192\,a^2\,b^4\,\text{Sin}[2\,e+4\,f\,x]\Big)\Bigg) -$$

$$\Bigg(\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^3\,\text{Sec}[e+f\,x]^6\,\Bigg(-\Bigg(\Bigg(6\,a^2\,\text{ArcTan}\Big[\left(\text{Sec}[f\,x]\,\left(\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]\right)\,\left(-\left(a+2\,b\right)\,\text{Sin}[f\,x]+a\,\text{Sin}[2\,e+f\,x]\right)\right)\Big/\left(2\,\sqrt{a+b}\,\sqrt{b\,\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^4}\right)\Big]\,\left(\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]\right)\Bigg)\Big/\left(\sqrt{a+b}\,\sqrt{b\,\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^4}\right)\Bigg) + \left(a\,\text{Sec}[2\,e]\,\left(\left(-9\,a^4-16\,a^3\,b+48\,a^2\,b^2+128\,a\,b^3+64\,b^4\right)\,\text{Sin}[2\,f\,x]+a\,\left(-3\,a^3+2\,a^2\,b+24\,a\,b^2+16\,b^3\right)\,\text{Sin}\left[2\,\left(e+2\,f\,x\right)\right]+\left(3\,a^4-64\,a^2\,b^2-128\,a\,b^3-64\,b^4\right)\,\text{Sin}[4\,e+2\,f\,x]\right)+\left(9\,a^5+18\,a^4\,b-64\,a^3\,b^2-256\,a^2\,b^3-320\,a\,b^4-128\,b^5\right)\,\text{Tan}[2\,e]\right)\Big/\left(a^2\,\left(a+2\,b+a\,\text{Cos}\left[2\,\left(e+f\,x\right)\right]\right)^2\right)\Bigg)\Bigg)\Big/\left(4096\,b^2\,\left(a+b\right)^2\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\right)$$

Problem 63: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 144 leaves, 6 steps):

$$\frac{x}{a^3} - \frac{\sqrt{b}\,\left(15\,a^2+20\,a\,b+8\,b^2\right)\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f\,x]}{\sqrt{a+b}}\right]}{8\,a^3\,\left(a+b\right)^{5/2}\,f} - \frac{b\,\text{Tan}[e+f\,x]}{4\,a\,\left(a+b\right)\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^2} - \frac{b\,\left(7\,a+4\,b\right)\,\text{Tan}[e+f\,x]}{8\,a^2\,\left(a+b\right)^2\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)}$$

Result (type 3, 627 leaves):

$$\frac{x\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Sec}[e+fx]^6}{8a^3\left(a+b\,\text{Sec}[e+fx]^2\right)^3}+\left(\left(15a^2+20ab+8b^2\right)\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Sec}[e+fx]^6\left(\left(b\,\text{ArcTan}\left[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}-\frac{i\,\text{Sin}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}\right)\left(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]\right)\right]\text{Cos}[2e]\right)\Big/\left(64a^3\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}\right)-\left(i\,b\,\text{ArcTan}\left[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}-\frac{i\,\text{Sin}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}\right)\left(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]\right)\right]\text{Sin}[2e]\right)\Big/\left(64a^3\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}\right)\right)\right)\Big/\left(\left(a+b\right)^2\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)+\left(\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^2\text{Sec}[e+fx]^6\left(9a^2b\,\text{Sin}[2e]+28ab^2\,\text{Sin}[2e]+16b^3\,\text{Sin}[2e]-9a^2b\,\text{Sin}[2fx]-6ab^2\,\text{Sin}[2fx]\right)\right)\Big/\left(64a^3\left(a+b\right)^2f\left(a+b\,\text{Sec}[e+fx]^2\right)^3\left(\text{Cos}[e]-\text{Sin}[e]\right)\left(\text{Cos}[e]+\text{Sin}[e]\right)\right)+\left(\left(a+2b+a\,\text{Cos}[2e+2fx]\right)\text{Sec}[e+fx]^6\left(-ab^2\,\text{Sin}[2e]-2b^3\,\text{Sin}[2e]+ab^2\,\text{Sin}[2fx]\right)\right)\Big/\left(16a^3\left(a+b\right)f\left(a+b\,\text{Sec}[e+fx]^2\right)^3\left(\text{Cos}[e]-\text{Sin}[e]\right)\left(\text{Cos}[e]+\text{Sin}[e]\right)\right)$$

Problem 64: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Csc}[e+fx]^2}{\left(a+b\,\text{Sec}[e+fx]^2\right)^3}\,dx$$

Optimal (type 3, 124 leaves, 5 steps):

$$-\frac{15\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b}}\right]}{8\left(a+b\right)^{7/2}f}-\frac{15\,\text{Cot}[e+fx]}{8\left(a+b\right)^3f}+\frac{\text{Cot}[e+fx]}{4\left(a+b\right)f\left(a+b+b\,\text{Tan}[e+fx]^2\right)^2}+\frac{5\,\text{Cot}[e+fx]}{8\left(a+b\right)^2f\left(a+b+b\,\text{Tan}[e+fx]^2\right)}$$

Result (type 3, 987 leaves):

$$\left(\left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^3 \operatorname{Sec}[e+f x]^6\left(\left(15 b \operatorname{ArcTan}\left[\operatorname{Sec}[f x]\left(\frac{\operatorname{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}-\frac{i \operatorname{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}\right)\left(-a \operatorname{Sin}[f x]-2 b \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x]\right)\right] \operatorname{Cos}[2 e]\right) \Big/ \left(64 \sqrt{a+b}\, f \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}\right)-\left(15 i b \operatorname{ArcTan}\left[\operatorname{Sec}[f x]\left(\frac{\operatorname{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}-\frac{i \operatorname{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}\right)\left(-a \operatorname{Sin}[f x]-2 b \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x]\right)\right] \operatorname{Sin}[2 e]\right) \Big/ \left(64 \sqrt{a+b}\, f \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}\right)\right)\right) \Big/ \left((a+b)^3\left(a+b \operatorname{Sec}[e+f x]^2\right)^3\right)+\frac{1}{512 a^2 (a+b)^3 f\left(a+b \operatorname{Sec}[e+f x]^2\right)^3}$$

$$\left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right) \operatorname{Csc}[e] \operatorname{Csc}[e+f x] \operatorname{Sec}[2 e] \operatorname{Sec}[e+f x]^6$$

$$\left(-32 a^4 \operatorname{Sin}[f x]-64 a^3 b \operatorname{Sin}[f x]+22 a^2 b^2 \operatorname{Sin}[f x]+80 a b^3 \operatorname{Sin}[f x]+16 b^4 \operatorname{Sin}[f x]+32 a^4 \operatorname{Sin}[3 f x]+46 a^3 b \operatorname{Sin}[3 f x]-54 a^2 b^2 \operatorname{Sin}[3 f x]-8 a b^3 \operatorname{Sin}[3 f x]-48 a^4 \operatorname{Sin}[2 e-f x]-128 a^3 b \operatorname{Sin}[2 e-f x]-106 a^2 b^2 \operatorname{Sin}[2 e-f x]+80 a b^3 \operatorname{Sin}[2 e-f x]+16 b^4 \operatorname{Sin}[2 e-f x]+48 a^4 \operatorname{Sin}[2 e+f x]+146 a^3 b \operatorname{Sin}[2 e+f x]+182 a^2 b^2 \operatorname{Sin}[2 e+f x]+80 a b^3 \operatorname{Sin}[2 e+f x]+16 b^4 \operatorname{Sin}[2 e+f x]-32 a^4 \operatorname{Sin}[4 e+f x]-82 a^3 b \operatorname{Sin}[4 e+f x]-54 a^2 b^2 \operatorname{Sin}[4 e+f x]-80 a b^3 \operatorname{Sin}[4 e+f x]-16 b^4 \operatorname{Sin}[4 e+f x]-8 a^4 \operatorname{Sin}[2 e+3 f x]+18 a^3 b \operatorname{Sin}[2 e+3 f x]+54 a^2 b^2 \operatorname{Sin}[2 e+3 f x]+8 a b^3 \operatorname{Sin}[2 e+3 f x]+32 a^4 \operatorname{Sin}[4 e+3 f x]+73 a^3 b \operatorname{Sin}[4 e+3 f x]+24 a^2 b^2 \operatorname{Sin}[4 e+3 f x]+8 a b^3 \operatorname{Sin}[4 e+3 f x]-8 a^4 \operatorname{Sin}[6 e+3 f x]-9 a^3 b \operatorname{Sin}[6 e+3 f x]-24 a^2 b^2 \operatorname{Sin}[6 e+3 f x]-8 a b^3 \operatorname{Sin}[6 e+3 f x]+8 a^4 \operatorname{Sin}[2 e+5 f x]-9 a^3 b \operatorname{Sin}[2 e+5 f x]-2 a^2 b^2 \operatorname{Sin}[2 e+5 f x]+9 a^3 b \operatorname{Sin}[4 e+5 f x]+2 a^2 b^2 \operatorname{Sin}[4 e+5 f x]+8 a^4 \operatorname{Sin}[6 e+5 f x]\right)$$

Problem 65: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Csc}[e+f x]^4}{\left(a+b \operatorname{Sec}[e+f x]^2\right)^3}\, dx$$

Optimal (type 3, 164 leaves, 6 steps):

$$-\frac{5\,(3\,a-4\,b)\,\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f\,x]}{\sqrt{a+b}}\right]}{8\,(a+b)^{9/2}\,f}-\frac{(a-2\,b)\,\text{Cot}[e+f\,x]}{(a+b)^4\,f}-\frac{\text{Cot}[e+f\,x]^3}{3\,(a+b)^3\,f}-\frac{a\,b\,\text{Tan}[e+f\,x]}{4\,(a+b)^3\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^2}-\frac{(7\,a-4\,b)\,b\,\text{Tan}[e+f\,x]}{8\,(a+b)^4\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)}$$

Result (type 3, 1234 leaves) :

$$\left((3 a-4 b)\ (a+2 b+a \operatorname{Cos}[2 e+2 f x])^3 \operatorname{Sec}[e+f x]^6\left(\left(5 b \operatorname{ArcTan}\left[\operatorname{Sec}[f x]\left(\frac{\operatorname{Cos}[2 e]}{2 \sqrt{a+b}\ \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}-\frac{i \operatorname{Sin}[2 e]}{2 \sqrt{a+b}\ \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}\right)(-a \operatorname{Sin}[f x]-2 b \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x])\right] \operatorname{Cos}[2 e]\right) \Big/ \left(64 \sqrt{a+b}\ f \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}\right)-\left(5 i b \operatorname{ArcTan}\left[\operatorname{Sec}[f x]\left(\frac{\operatorname{Cos}[2 e]}{2 \sqrt{a+b}\ \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}-\frac{i \operatorname{Sin}[2 e]}{2 \sqrt{a+b}\ \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}\right)(-a \operatorname{Sin}[f x]-2 b \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x])\right] \operatorname{Sin}[2 e]\right) \Big/ \left(64 \sqrt{a+b}\ f \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}\right)\right)\right) \Big/ \left((a+b)^4 \left(a+b \operatorname{Sec}[e+f x]^2\right)^3\right)+\frac{1}{6144 a\ (a+b)^4 f \left(a+b \operatorname{Sec}[e+f x]^2\right)^3}$$

$$(a+2 b+a \operatorname{Cos}[2 e+2 f x]) \operatorname{Csc}[e] \operatorname{Csc}[e+f x]^3 \operatorname{Sec}[2 e] \operatorname{Sec}[e+f x]^6$$

$$(-176 a^4 \operatorname{Sin}[f x]-488 a^3 b \operatorname{Sin}[f x]-252 a^2 b^2 \operatorname{Sin}[f x]-504 a b^3 \operatorname{Sin}[f x]-144 b^4 \operatorname{Sin}[f x]+96 a^4 \operatorname{Sin}[3 f x]+71 a^3 b \operatorname{Sin}[3 f x]-344 a^2 b^2 \operatorname{Sin}[3 f x]+1208 a b^3 \operatorname{Sin}[3 f x]-48 b^4 \operatorname{Sin}[3 f x]-224 a^4 \operatorname{Sin}[2 e-f x]-576 a^3 b \operatorname{Sin}[2 e-f x]-124 a^2 b^2 \operatorname{Sin}[2 e-f x]+2184 a b^3 \operatorname{Sin}[2 e-f x]-144 b^4 \operatorname{Sin}[2 e-f x]+224 a^4 \operatorname{Sin}[2 e+f x]+657 a^3 b \operatorname{Sin}[2 e+f x]+538 a^2 b^2 \operatorname{Sin}[2 e+f x]-984 a b^3 \operatorname{Sin}[2 e+f x]-144 b^4 \operatorname{Sin}[2 e+f x]-176 a^4 \operatorname{Sin}[4 e+f x]-569 a^3 b \operatorname{Sin}[4 e+f x]-666 a^2 b^2 \operatorname{Sin}[4 e+f x]-1704 a b^3 \operatorname{Sin}[4 e+f x]+144 b^4 \operatorname{Sin}[4 e+f x]-48 a^4 \operatorname{Sin}[2 e+3 f x]-111 a^3 b \operatorname{Sin}[2 e+3 f x]-360 a^2 b^2 \operatorname{Sin}[2 e+3 f x]-312 a b^3 \operatorname{Sin}[2 e+3 f x]+48 b^4 \operatorname{Sin}[2 e+3 f x]+96 a^4 \operatorname{Sin}[4 e+3 f x]+152 a^3 b \operatorname{Sin}[4 e+3 f x]-146 a^2 b^2 \operatorname{Sin}[4 e+3 f x]+728 a b^3 \operatorname{Sin}[4 e+3 f x]+48 b^4 \operatorname{Sin}[4 e+3 f x]-48 a^4 \operatorname{Sin}[6 e+3 f x]-192 a^3 b \operatorname{Sin}[6 e+3 f x]-558 a^2 b^2 \operatorname{Sin}[6 e+3 f x]+168 a b^3 \operatorname{Sin}[6 e+3 f x]-48 b^4 \operatorname{Sin}[6 e+3 f x]-16 a^4 \operatorname{Sin}[2 e+5 f x]+598 a^2 b^2 \operatorname{Sin}[2 e+5 f x]-48 a b^3 \operatorname{Sin}[2 e+5 f x]-72 a^3 b \operatorname{Sin}[4 e+5 f x]-150 a^2 b^2 \operatorname{Sin}[4 e+5 f x]+48 a b^3 \operatorname{Sin}[4 e+5 f x]-16 a^4 \operatorname{Sin}[6 e+5 f x]-27 a^3 b \operatorname{Sin}[6 e+5 f x]+388 a^2 b^2 \operatorname{Sin}[6 e+5 f x]-45 a^3 b \operatorname{Sin}[8 e+5 f x]+60 a^2 b^2 \operatorname{Sin}[8 e+5 f x]-16 a^4 \operatorname{Sin}[4 e+7 f x]+83 a^3 b \operatorname{Sin}[4 e+7 f x]-6 a^2 b^2 \operatorname{Sin}[4 e+7 f x]-27 a^3 b \operatorname{Sin}[6 e+7 f x]+6 a^2 b^2 \operatorname{Sin}[6 e+7 f x]-16 a^4 \operatorname{Sin}[8 e+7 f x]+56 a^3 b \operatorname{Sin}[8 e+7 f x])$$

Problem 66: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Csc}[e+f x]^6}{\left(a+b \,\text{Sec}[e+f x]^2\right)^3}\,dx$$

Optimal (type 3, 242 leaves, 7 steps):

$$-\frac{\sqrt{b}\,\left(15 a^2-40 a b+8 b^2\right) \text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{8 (a+b)^{11/2} f}-\frac{\left(5 a^2-20 a b+2 b^2\right) \text{Cot}[e+f x]}{5 (a+b)^5 f}-\frac{(10 a+b) \text{Cot}[e+f x]^3}{15 (a+b)^4 f}-\frac{\text{Cot}[e+f x]^5}{5 (a+b) f \left(a+b+b \,\text{Tan}[e+f x]^2\right)^2}-\frac{b \left(5 a^2+4 b^2\right) \text{Tan}[e+f x]}{20 (a+b)^4 f \left(a+b+b \,\text{Tan}[e+f x]^2\right)^2}-\frac{b \left(35 a^2-40 a b+24 b^2\right) \text{Tan}[e+f x]}{40 (a+b)^5 f \left(a+b+b \,\text{Tan}[e+f x]^2\right)}$$

Result (type 3, 908 leaves):

$$\left(\left(-4\,a\,\text{Cos}[e]+11\,b\,\text{Cos}[e]\right)\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^3\,\text{Csc}[e]\,\text{Csc}[e+f\,x]^2\,\text{Sec}[e+f\,x]^6\right)\Big/\left(120\,(a+b)^4\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\right)-\frac{\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^3\,\text{Cot}[e]\,\text{Csc}[e+f\,x]^4\,\text{Sec}[e+f\,x]^6}{40\,(a+b)^3\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3}+$$

$$\Bigg(\left(15\,a^2-40\,a\,b+8\,b^2\right)\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^3\,\text{Sec}[e+f\,x]^6\,\Bigg(\Bigg(b\,\text{ArcTan}\Big[\text{Sec}[f\,x]\left(\frac{\text{Cos}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4\,e]-\mathrm{i}\,b\,\text{Sin}[4\,e]}}-\frac{\mathrm{i}\,\text{Sin}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4\,e]-\mathrm{i}\,b\,\text{Sin}[4\,e]}}\right)\left(-a\,\text{Sin}[f\,x]-2\,b\,\text{Sin}[f\,x]+a\,\text{Sin}[2\,e+f\,x]\right)\Big]\,\text{Cos}[2\,e]\Bigg)\Big/\left(64\,\sqrt{a+b}\,f\,\sqrt{b\,\text{Cos}[4\,e]-\mathrm{i}\,b\,\text{Sin}[4\,e]}\right)-\Bigg(\mathrm{i}\,b\,\text{ArcTan}\Big[\text{Sec}[f\,x]\left(\frac{\text{Cos}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4\,e]-\mathrm{i}\,b\,\text{Sin}[4\,e]}}-\frac{\mathrm{i}\,\text{Sin}[2\,e]}{2\,\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4\,e]-\mathrm{i}\,b\,\text{Sin}[4\,e]}}\right)\left(-a\,\text{Sin}[f\,x]-2\,b\,\text{Sin}[f\,x]+a\,\text{Sin}[2\,e+f\,x]\right)\Big]\,\text{Sin}[2\,e]\Bigg)\Big/\left(64\,\sqrt{a+b}\,f\,\sqrt{b\,\text{Cos}[4\,e]-\mathrm{i}\,b\,\text{Sin}[4\,e]}\right)\Bigg)\Bigg)\Big/\left((a+b)^5\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\right)+$$

$$\left(\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^3\,\text{Csc}[e]\,\text{Csc}[e+f\,x]^5\,\text{Sec}[e+f\,x]^6\,\text{Sin}[f\,x]\right)\Big/\left(40\,(a+b)^3\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\right)+$$

$$\left(\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^3\,\text{Csc}[e]\,\text{Csc}[e+f\,x]^3\,\text{Sec}[e+f\,x]^6\left(4\,a\,\text{Sin}[f\,x]-11\,b\,\text{Sin}[f\,x]\right)\right)\Big/\left(120\,(a+b)^4\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\right)+$$

$$\left(\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^3\,\text{Csc}[e]\,\text{Csc}[e+f\,x]\,\text{Sec}[e+f\,x]^6\left(8\,a^2\,\text{Sin}[f\,x]-59\,a\,b\,\text{Sin}[f\,x]+23\,b^2\,\text{Sin}[f\,x]\right)\right)\Big/\left(120\,(a+b)^5\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\right)+$$

$$\left(\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)\,\text{Sec}[2\,e]\,\text{Sec}[e+f\,x]^6\left(-a\,b^2\,\text{Sin}[2\,e]-2\,b^3\,\text{Sin}[2\,e]+a\,b^2\,\text{Sin}[2\,f\,x]\right)\right)\Big/\left(16\,(a+b)^4\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\right)+$$

$$\left(\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2\,\text{Sec}[2\,e]\,\text{Sec}[e+f\,x]^6\left(9\,a^2\,b\,\text{Sin}[2\,e]+16\,a\,b^2\,\text{Sin}[2\,e]-8\,b^3\,\text{Sin}[2\,e]-9\,a^2\,b\,\text{Sin}[2\,f\,x]+6\,a\,b^2\,\text{Sin}[2\,f\,x]\right)\right)\Big/\left(64\,(a+b)^5\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\right)$$

Problem 67: Unable to integrate problem.

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

Optimal (type 3, 139 leaves, 6 steps):

$$\frac{\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Sec}[e+f x]}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\right]}{f}-\frac{\text{Cos}[e+f x]\,\sqrt{a+b\,\text{Sec}[e+f x]^2}}{f}+\frac{2\,(5\,a+b)\,\text{Cos}[e+f x]^3\,\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}{15\,a^2\,f}-\frac{\text{Cos}[e+f x]^5\,\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}{5\,a\,f}$$

Result (type 8, 27 leaves):

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

Problem 68: Unable to integrate problem.

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

Optimal (type 3, 100 leaves, 5 steps):

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

Result (type 8, 27 leaves):

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

Problem 69: Unable to integrate problem.

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

Optimal (type 3, 66 leaves, 4 steps):

$$\frac{\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Sec}[e+f x]}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\right]}{f}-\frac{\text{Cos}[e+f x]\,\sqrt{a+b\,\text{Sec}[e+f x]^2}}{f}$$

Result (type 8, 25 leaves):

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

Problem 71: Unable to integrate problem.

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

Optimal (type 3, 124 leaves, 7 steps):

$$\frac{\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Sec}[e+f x]}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\right]}{f}-\frac{(a+2 b)\,\text{ArcTanh}\left[\frac{\sqrt{a+b}\,\text{Sec}[e+f x]}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\right]}{2\sqrt{a+b}\,f}-\frac{\text{Cot}[e+f x]\,\text{Csc}[e+f x]\,\sqrt{a+b\,\text{Sec}[e+f x]^2}}{2 f}$$

Result (type 8, 27 leaves):

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

Problem 72: Unable to integrate problem.

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

Optimal (type 3, 183 leaves, 8 steps):

$$\frac{\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Sec}[e+f x]}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\right]}{f}-\frac{\left(3 a^2+12 a b+8 b^2\right)\text{ArcTanh}\left[\frac{\sqrt{a+b}\,\text{Sec}[e+f x]}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\right]}{8 (a+b)^{3/2} f}-\frac{(3 a+4 b)\,\text{Cot}[e+f x]\,\text{Csc}[e+f x]\,\sqrt{a+b\,\text{Sec}[e+f x]^2}}{8 (a+b) f}-\frac{\text{Cot}[e+f x]\,\text{Csc}[e+f x]^3\,\sqrt{a+b\,\text{Sec}[e+f x]^2}}{4 f}$$

Result (type 8, 27 leaves):

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

Problem 73: Unable to integrate problem.

$$\int \sqrt{a+b\,\text{Sec}[e+f x]^2}\,\text{Sin}[e+f x]^6\,dx$$

Optimal (type 3, 240 leaves, 9 steps):

$$\frac{\left(5 a^3-15 a^2 b-5 a b^2-b^3\right) \text{ArcTan}\left[\frac{\sqrt{a} \text{ Tan}[e+f x]}{\sqrt{a+b+b \text{ Tan}[e+f x]^2}}\right]}{16 a^{5/2} f}+\frac{\sqrt{b} \text{ ArcTanh}\left[\frac{\sqrt{b} \text{ Tan}[e+f x]}{\sqrt{a+b+b \text{ Tan}[e+f x]^2}}\right]}{f}-\frac{(a-b) (5 a+b) \text{Cos}[e+f x] \text{Sin}[e+f x] \sqrt{a+b+b \text{Tan}[e+f x]^2}}{16 a^2 f}-\frac{(5 a-b) \text{Cos}[e+f x] \text{Sin}[e+f x]^3 \sqrt{a+b+b \text{Tan}[e+f x]^2}}{24 a f}-\frac{\text{Cos}[e+f x] \text{Sin}[e+f x]^5 \sqrt{a+b+b \text{Tan}[e+f x]^2}}{6 f}$$

Result (type 8, 27 leaves) :

$$\int \sqrt{a+b \text{Sec}[e+f x]^2} \text{ Sin}[e+f x]^6 \, dx$$

Problem 74: Unable to integrate problem.

$$\int \sqrt{a+b \text{Sec}[e+f x]^2} \text{ Sin}[e+f x]^4 \, dx$$

Optimal (type 3, 181 leaves, 8 steps) :

$$\frac{\left(3 a^2-6 a b-b^2\right) \text{ArcTan}\left[\frac{\sqrt{a} \text{ Tan}[e+f x]}{\sqrt{a+b+b \text{ Tan}[e+f x]^2}}\right]}{8 a^{3/2} f}+\frac{\sqrt{b} \text{ ArcTanh}\left[\frac{\sqrt{b} \text{ Tan}[e+f x]}{\sqrt{a+b+b \text{ Tan}[e+f x]^2}}\right]}{f}-\frac{(3 a-b) \text{Cos}[e+f x] \text{Sin}[e+f x] \sqrt{a+b+b \text{Tan}[e+f x]^2}}{8 a f}-\frac{\text{Cos}[e+f x] \text{Sin}[e+f x]^3 \sqrt{a+b+b \text{Tan}[e+f x]^2}}{4 f}$$

Result (type 8, 27 leaves) :

$$\int \sqrt{a+b \text{Sec}[e+f x]^2} \text{ Sin}[e+f x]^4 \, dx$$

Problem 75: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 123 leaves, 7 steps) :

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

Result (type 3, 432 leaves):

$$\frac{1}{4\sqrt{2}\,f\sqrt{a+2b+a\,\text{Cos}[2e+2fx]}}\,e^{-i(e+fx)}\sqrt{4b+a\,e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}\;\text{Cos}[e+fx]\left(i\left(-1+e^{2i(e+fx)}\right)+\left(2e^{2i(e+fx)}\left(2afx-2bfx-i(a-b)\,\text{Log}\left[a+2b+a\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]+i(a-b)\,\text{Log}\left[a+a\,e^{2i(e+fx)}+2b\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]-4\sqrt{a}\sqrt{b}\,\text{Log}\left[\left(\left(-\sqrt{b}\left(-1+e^{2i(e+fx)}\right)+i\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right)f\right)\Big/\left(2b\left(1+e^{2i(e+fx)}\right)\right)\right]\right)\right)\Big/\left(\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right)\right)\sqrt{a+b\,\text{Sec}[e+fx]^2}$$

Problem 76: Unable to integrate problem.

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

Optimal (type 3, 79 leaves, 6 steps):

$$\frac{\sqrt{a}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{f}+\frac{\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{f}$$

Result (type 8, 18 leaves):

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

Problem 77: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 68 leaves, 4 steps):

$$\frac{\sqrt{b}\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\mathrm{Tan}[e+f x]}{\sqrt{a+b+b\,\mathrm{Tan}[e+f x]^2}}\right]}{f}-\frac{\mathrm{Cot}[e+f x]\,\sqrt{a+b+b\,\mathrm{Tan}[e+f x]^2}}{f}$$

Result (type 3, 285 leaves):

$$-\left(\left(\left(1+e^{2 i (e+f x)}\right)\sqrt{4 b+a\,e^{-2 i (e+f x)}\left(1+e^{2 i (e+f x)}\right)^2}\left(i\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}+\sqrt{b}\left(-1+e^{2 i (e+f x)}\right)\right.\right.\right.$$
$$\left.\mathrm{Log}\left[\frac{1}{1+e^{2 i (e+f x)}}\left(-4\sqrt{b}\left(-1+e^{2 i (e+f x)}\right) f+4 i\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}\,f\right)\right]\right)$$
$$\left.\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}\right)\Bigg/\left(\sqrt{2}\left(-1+e^{2 i (e+f x)}\right)\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}\right.$$
$$\left.\left.f\sqrt{a+2 b+a\,\mathrm{Cos}[2 (e+f x)]}\right)\right)$$

Problem 78: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Csc}[e+f x]^4\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}\,dx$$

Optimal (type 3, 105 leaves, 5 steps):

$$\frac{\sqrt{b}\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\mathrm{Tan}[e+f x]}{\sqrt{a+b+b\,\mathrm{Tan}[e+f x]^2}}\right]}{f}-$$
$$\frac{\mathrm{Cot}[e+f x]\,\sqrt{a+b+b\,\mathrm{Tan}[e+f x]^2}}{f}-\frac{\mathrm{Cot}[e+f x]^3\left(a+b+b\,\mathrm{Tan}[e+f x]^2\right)^{3/2}}{3 (a+b) f}$$

Result (type 3, 309 leaves):

$$\left(\sqrt{2}\, e^{i (e+f x)} \sqrt{4 b + a e^{-2 i (e+f x)} \left(1 + e^{2 i (e+f x)}\right)^2}\, \text{Cos}[e+f x]\right.$$

$$\left(-\left(\left(i \left(2 a \left(1 - 4 e^{2 i (e+f x)} + e^{4 i (e+f x)}\right) + b \left(3 - 10 e^{2 i (e+f x)} + 3 e^{4 i (e+f x)}\right)\right)\right)\right/$$

$$\left.\left(\left(a+b\right) \left(-1 + e^{2 i (e+f x)}\right)^3\right)\right) - \frac{3 \sqrt{b}\, \text{Log}\left[\frac{-4 \sqrt{b} \left(-1+e^{2 i (e+f x)}\right) f + 4 i \sqrt{4 b e^{2 i (e+f x)} + a \left(1+e^{2 i (e+f x)}\right)^2}\, f}{1+e^{2 i (e+f x)}}\right]}{\sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}}\Bigg)$$

$$\left.\sqrt{a + b\, \text{Sec}[e+f x]^2}\right) \Big/ \left(3 f \sqrt{a + 2 b + a\, \text{Cos}[2 e + 2 f x]}\right)$$

Problem 79: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Csc}[e+f x]^6 \sqrt{a + b\, \text{Sec}[e+f x]^2}\, dx$$

Optimal (type 3, 149 leaves, 6 steps):

$$\frac{\sqrt{b}\, \text{ArcTanh}\left[\frac{\sqrt{b}\, \text{Tan}[e+f x]}{\sqrt{a+b+b\, \text{Tan}[e+f x]^2}}\right]}{f} - \frac{\text{Cot}[e+f x] \sqrt{a+b+b\, \text{Tan}[e+f x]^2}}{f} - \frac{2 \left(5 a + 4 b\right) \text{Cot}[e+f x]^3 \left(a+b+b\, \text{Tan}[e+f x]^2\right)^{3/2}}{15 \left(a+b\right)^2 f} - \frac{\text{Cot}[e+f x]^5 \left(a+b+b\, \text{Tan}[e+f x]^2\right)^{3/2}}{5 \left(a+b\right) f}$$

Result (type 3, 422 leaves):

$$\frac{1}{15 f \sqrt{a+2 b+a \operatorname{Cos}[2 e+2 f x]}} \sqrt{2}\, e^{i (e+f x)} \sqrt{4 b+a e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2} \operatorname{Cos}[e+f x] \left(-\left(\left(i \left(8 a^2 \left(1-6 e^{2 i (e+f x)}+16 e^{4 i (e+f x)}-6 e^{6 i (e+f x)}+e^{8 i (e+f x)}\right)+b^2 \left(15-80 e^{2 i (e+f x)}+178 e^{4 i (e+f x)}-80 e^{6 i (e+f x)}+15 e^{8 i (e+f x)}\right)+a b \left(25-136 e^{2 i (e+f x)}+318 e^{4 i (e+f x)}-136 e^{6 i (e+f x)}+25 e^{8 i (e+f x)}\right)\right)\right) \Big/ \left((a+b)^2 \left(-1+e^{2 i (e+f x)}\right)^5\right)\right)-\frac{15 \sqrt{b} \operatorname{Log}\left[\frac{-4 \sqrt{b} \left(-1+e^{2 i (e+f x)}\right) f+4 i \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2} f}{1+e^{2 i (e+f x)}}\right]}{\sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}}\right) \sqrt{a+b \operatorname{Sec}[e+f x]^2}$$

Problem 80: Unable to integrate problem.

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

Optimal (type 3, 196 leaves, 7 steps):

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

Result (type 8, 27 leaves):

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

Problem 81: Unable to integrate problem.

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

Optimal (type 3, 162 leaves, 6 steps):

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

Result (type 8, 27 leaves):

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

Problem 82: Unable to integrate problem.

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

Optimal (type 3, 100 leaves, 5 steps):

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

Result (type 8, 25 leaves):

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

Problem 83: Unable to integrate problem.

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

Optimal (type 3, 122 leaves, 7 steps):

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

Result (type 8, 25 leaves):

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

Problem 84: Unable to integrate problem.

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

Optimal (type 3, 161 leaves, 8 steps):

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

Result (type 8, 27 leaves):

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

Problem 85: Unable to integrate problem.

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

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

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

Result (type 8, 27 leaves):

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

Problem 86: Unable to integrate problem.

$$\int \left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}\,\text{Sin}[e+f x]^6\,dx$$

Optimal (type 3, 298 leaves, 10 steps):

$$\frac{\left(5 a^3-45 a^2 b+15 a b^2+b^3\right) \text{ArcTan}\left[\frac{\sqrt{a} \text{ Tan}[e+f x]}{\sqrt{a+b+b \text{ Tan}[e+f x]^2}}\right]}{16 a^{3/2} f}+\frac{(3 a-5 b) \sqrt{b} \text{ ArcTanh}\left[\frac{\sqrt{b} \text{ Tan}[e+f x]}{\sqrt{a+b+b \text{ Tan}[e+f x]^2}}\right]}{2 f}-\frac{\left(5 a^2-26 a b+b^2\right) \text{Tan}[e+f x] \sqrt{a+b+b \text{ Tan}[e+f x]^2}}{16 a f}+\frac{1}{48 a f}\left(5 a^2-40 a b+3 b^2\right) \text{Sin}[e+f x]^2 \text{Tan}[e+f x] \sqrt{a+b+b \text{ Tan}[e+f x]^2}+\frac{(5 a-3 b) \text{Sin}[e+f x]^4 \text{Tan}[e+f x] \sqrt{a+b+b \text{ Tan}[e+f x]^2}}{24 f}-\frac{\text{Cos}[e+f x] \text{Sin}[e+f x]^5 \left(a+b+b \text{ Tan}[e+f x]^2\right)^{3/2}}{6 f}$$

Result (type 8, 27 leaves):

$$\int \left(a+b \text{ Sec}[e+f x]^2\right)^{3/2} \text{Sin}[e+f x]^6 \, dx$$

Problem 87: Unable to integrate problem.

$$\int \left(a+b \text{ Sec}[e+f x]^2\right)^{3/2} \text{Sin}[e+f x]^4 \, dx$$

Optimal (type 3, 217 leaves, 9 steps):

$$\frac{3 \left(a^2-6 a b+b^2\right) \text{ArcTan}\left[\frac{\sqrt{a} \text{ Tan}[e+f x]}{\sqrt{a+b+b \text{ Tan}[e+f x]^2}}\right]}{8 \sqrt{a} f}+\frac{3 (a-b) \sqrt{b} \text{ ArcTanh}\left[\frac{\sqrt{b} \text{ Tan}[e+f x]}{\sqrt{a+b+b \text{ Tan}[e+f x]^2}}\right]}{2 f}-\frac{3 (a-3 b) \text{Tan}[e+f x] \sqrt{a+b+b \text{ Tan}[e+f x]^2}}{8 f}+\frac{3 (a-b) \text{Sin}[e+f x]^2 \text{Tan}[e+f x] \sqrt{a+b+b \text{ Tan}[e+f x]^2}}{8 f}-\frac{\text{Cos}[e+f x] \text{Sin}[e+f x]^3 \left(a+b+b \text{ Tan}[e+f x]^2\right)^{3/2}}{4 f}$$

Result (type 8, 27 leaves):

$$\int \left(a+b \text{ Sec}[e+f x]^2\right)^{3/2} \text{Sin}[e+f x]^4 \, dx$$

Problem 88: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 161 leaves, 8 steps):

$$\frac{\sqrt{a}\,(a-3b)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{2f}+\frac{(3a-b)\,\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{2f}+$$
$$\frac{b\,\text{Tan}[e+fx]\,\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}{f}-\frac{\text{Cos}[e+fx]\,\text{Sin}[e+fx]\,\left(a+b+b\,\text{Tan}[e+fx]^2\right)^{3/2}}{2f}$$

Result (type 3, 493 leaves):

$$\frac{1}{2\sqrt{2}\,f\,(a+2b+a\,\text{Cos}[2e+2fx])^{3/2}}\,e^{-i(e+fx)}\sqrt{4b+a\,e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}$$
$$\text{Cos}[e+fx]^3\left(\frac{i\left(-1+e^{2i(e+fx)}\right)\left(-4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2\right)}{\left(1+e^{2i(e+fx)}\right)^2}+\right.$$
$$\left(2e^{2i(e+fx)}\left(2\sqrt{a}\,(a-3b)\,fx-i\sqrt{a}\,(a-3b)\right.\right.$$
$$\text{Log}\left[a+2b+a\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]+i\sqrt{a}\,(a-3b)$$
$$\text{Log}\left[a+a\,e^{2i(e+fx)}+2b\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]+$$
$$2\sqrt{b}\,(-3a+b)\,\text{Log}\left[\left(\left(\sqrt{b}\left(-1+e^{2i(e+fx)}\right)-i\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right)f\right)\Big/\right.$$
$$\left.\left.\left.\left(b\,(-3a+b)\left(1+e^{2i(e+fx)}\right)\right)\right]\right)\right)\Big/$$
$$\left.\left(\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right)\right)\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}$$

Problem 89: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}dx$$

Optimal (type 3, 118 leaves, 7 steps):

$$\frac{a^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{f}+$$
$$\frac{\sqrt{b}\,(3a+b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{2f}+\frac{b\,\text{Tan}[e+fx]\,\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}{2f}$$

Result (type 3, 527 leaves):

$$\frac{1}{f\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^{3/2}}\sqrt{2}\,e^{i(e+fx)}\sqrt{4b+a\,e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}$$
$$\text{Cos}[e+fx]^3\left(-\frac{i\,b\left(-1+e^{2i(e+fx)}\right)}{\left(1+e^{2i(e+fx)}\right)^2}+\frac{1}{\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}}\right.$$
$$\left(2a^{3/2}fx-i\,a^{3/2}\,\text{Log}\left[a+2b+a\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]+\right.$$
$$i\,a^{3/2}\,\text{Log}\left[a+a\,e^{2i(e+fx)}+2b\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]-$$
$$3a\sqrt{b}\,\text{Log}\left[\left(-2\sqrt{b}\left(-1+e^{2i(e+fx)}\right)f+2i\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\,f\right)\Big/\right.$$
$$\left.\left(b\left(3a+b\right)\left(1+e^{2i(e+fx)}\right)\right)\right]-$$
$$b^{3/2}\,\text{Log}\left[\left(-2\sqrt{b}\left(-1+e^{2i(e+fx)}\right)f+2i\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\,f\right)\Big/\right.$$
$$\left.\left.\left.\left(b\left(3a+b\right)\left(1+e^{2i(e+fx)}\right)\right)\right]\right)\right)\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}$$

Problem 90: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Csc}[e+fx]^2\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}dx$$

Optimal (type 3, 105 leaves, 5 steps):

$$\frac{3\sqrt{b}\,(a+b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{2f}+\frac{3b\,\text{Tan}[e+fx]\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}{2f}-\frac{\text{Cot}[e+fx]\left(a+b+b\,\text{Tan}[e+fx]^2\right)^{3/2}}{f}$$

Result (type 3, 310 leaves):

$$\left(\sqrt{2}\, e^{i (e+f x)} \sqrt{4 b + a e^{-2 i (e+f x)} \left(1 + e^{2 i (e+f x)}\right)^2}\right.$$

$$\text{Cos}[e + f x]^3 \left(-\frac{i \left(2 a \left(1 + e^{2 i (e+f x)}\right)^2 + b \left(3 + 2 e^{2 i (e+f x)} + 3 e^{4 i (e+f x)}\right)\right)}{\left(-1 + e^{2 i (e+f x)}\right) \left(1 + e^{2 i (e+f x)}\right)^2} - \right.$$

$$\left(3 \sqrt{b} (a + b) \text{Log}\left[\frac{1}{1 + e^{2 i (e+f x)}} \left(-4 \sqrt{b} \left(-1 + e^{2 i (e+f x)}\right) f + \right.\right.\right.$$

$$\left.\left.\left.\left. 4 i \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\, f\right)\right]\right) \Big/ \left(\sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right)$$

$$\left.\left(a + b\, \text{Sec}[e + f x]^2\right)^{3/2}\right) \Big/ \left(f \left(a + 2 b + a\, \text{Cos}[2 e + 2 f x]\right)^{3/2}\right)$$

Problem 91: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Csc}[e + f x]^4 \left(a + b\, \text{Sec}[e + f x]^2\right)^{3/2} dx$$

Optimal (type 3, 172 leaves, 6 steps):

$$\frac{\sqrt{b} (3 a + 5 b) \text{ArcTanh}\left[\frac{\sqrt{b}\, \text{Tan}[e+f x]}{\sqrt{a+b+b \text{Tan}[e+f x]^2}}\right]}{2 f} + \frac{b (3 a + 5 b) \text{Tan}[e + f x] \sqrt{a + b + b\, \text{Tan}[e + f x]^2}}{2 (a + b) f} -$$

$$\frac{(3 a + 5 b) \text{Cot}[e + f x] \left(a + b + b\, \text{Tan}[e + f x]^2\right)^{3/2}}{3 (a + b) f} - \frac{\text{Cot}[e + f x]^3 \left(a + b + b\, \text{Tan}[e + f x]^2\right)^{5/2}}{3 (a + b) f}$$

Result (type 3, 369 leaves):

$$\left(\sqrt{2}\, e^{i (e+f x)} \sqrt{4 b + a e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2}\right.$$
$$\cos[e+f x]^3 \left(-\left(\left(i \left(4 a \left(1+e^{2 i (e+f x)}\right)^2 \left(1-4 e^{2 i (e+f x)}+e^{4 i (e+f x)}\right)+\right.\right.\right.\right.$$
$$\left.\left.\left. b \left(15-20 e^{2 i (e+f x)}-22 e^{4 i (e+f x)}-20 e^{6 i (e+f x)}+15 e^{8 i (e+f x)}\right)\right)\right) \Big/$$
$$\left(\left(-1+e^{2 i (e+f x)}\right)^3 \left(1+e^{2 i (e+f x)}\right)^2\right)\right) - \left(3 \sqrt{b}\, (3 a+5 b) \operatorname{Log}\left[\frac{1}{1+e^{2 i (e+f x)}}\right.\right.$$
$$\left.\left.\left.\left(-4 \sqrt{b} \left(-1+e^{2 i (e+f x)}\right) f + 4 i \sqrt{4 b e^{2 i (e+f x)} + a \left(1+e^{2 i (e+f x)}\right)^2}\, f\right)\right]\right) \Big/$$
$$\left.\left(\sqrt{4 b e^{2 i (e+f x)} + a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right) \left(a+b \sec[e+f x]^2\right)^{3/2}\right) \Big/$$
$$\left(3 f \left(a+2 b+a \cos[2 e+2 f x]\right)^{3/2}\right)$$

Problem 92: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \csc[e+f x]^6 \left(a+b \sec[e+f x]^2\right)^{3/2} dx$$

Optimal (type 3, 209 leaves, 7 steps):

$$\frac{\sqrt{b}\, (3 a+7 b) \operatorname{ArcTanh}\left[\frac{\sqrt{b} \tan[e+f x]}{\sqrt{a+b+b \tan[e+f x]^2}}\right]}{2 f} + \frac{b (3 a+7 b) \tan[e+f x] \sqrt{a+b+b \tan[e+f x]^2}}{2 (a+b) f} -$$
$$\frac{(3 a+7 b) \cot[e+f x] \left(a+b+b \tan[e+f x]^2\right)^{3/2}}{3 (a+b) f} -$$
$$\frac{2 \cot[e+f x]^3 \left(a+b+b \tan[e+f x]^2\right)^{5/2}}{3 (a+b) f} - \frac{\cot[e+f x]^5 \left(a+b+b \tan[e+f x]^2\right)^{5/2}}{5 (a+b) f}$$

Result (type 3, 512 leaves):

$$\frac{1}{15 f \left(a+2 b+a \operatorname{Cos}[2 (e+f x)]\right)^{3/2}} \sqrt{2}\, e^{i (e+f x)} \sqrt{4 b+a e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2} \operatorname{Cos}[e+f x]^3 \left(-\frac{1}{(a+b) \left(-1+e^{2 i (e+f x)}\right)^5 \left(1+e^{2 i (e+f x)}\right)^2} i \left(16 a^2 \left(1+e^{2 i (e+f x)}\right)^2 \left(1-6 e^{2 i (e+f x)}+16 e^{4 i (e+f x)}-6 e^{6 i (e+f x)}+e^{8 i (e+f x)}\right)+b^2 \left(105-350 e^{2 i (e+f x)}+231 e^{4 i (e+f x)}+412 e^{6 i (e+f x)}+231 e^{8 i (e+f x)}-350 e^{10 i (e+f x)}+105 e^{12 i (e+f x)}\right)+a b \left(115-402 e^{2 i (e+f x)}+317 e^{4 i (e+f x)}+708 e^{6 i (e+f x)}+317 e^{8 i (e+f x)}-402 e^{10 i (e+f x)}+115 e^{12 i (e+f x)}\right)\right)-\left(15 \sqrt{b} (3 a+7 b) \operatorname{Log}\left[\frac{1}{1+e^{2 i (e+f x)}} \left(-4 \sqrt{b} \left(-1+e^{2 i (e+f x)}\right) f+4 i \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2} f\right)\right]\right) \Big/ \left(\sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right) \left(a+b \operatorname{Sec}[e+f x]^2\right)^{3/2}$$

Problem 96: Unable to integrate problem.

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

Optimal (type 3, 43 leaves, 3 steps):

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

Result (type 8, 25 leaves):

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

Problem 97: Unable to integrate problem.

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

Optimal (type 3, 87 leaves, 5 steps):

$$-\frac{a \operatorname{ArcTanh}\left[\frac{\sqrt{a+b} \operatorname{Sec}[e+f x]}{\sqrt{a+b \operatorname{Sec}[e+f x]^2}}\right]}{2 (a+b)^{3/2} f}-\frac{\operatorname{Cot}[e+f x] \operatorname{Csc}[e+f x] \sqrt{a+b \operatorname{Sec}[e+f x]^2}}{2 (a+b) f}$$

Result (type 8, 27 leaves):

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

Problem 98: Unable to integrate problem.

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

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

$$-\frac{3 a^2\,\mathrm{ArcTanh}\left[\frac{\sqrt{a+b}\,\mathrm{Sec}[e+f x]}{\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}}\right]}{8\,(a+b)^{5/2} f}-\frac{(5 a+2 b)\,\mathrm{Cot}[e+f x]\,\mathrm{Csc}[e+f x]\,\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}}{8\,(a+b)^2 f}-\frac{\mathrm{Cot}[e+f x]^3\,\mathrm{Csc}[e+f x]\,\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}}{4\,(a+b)\,f}$$

Result (type 8, 27 leaves):

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

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

$$\int \frac{\mathrm{Sin}[e+f x]^6}{\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}}\,dx$$

Optimal (type 3, 193 leaves, 7 steps):

$$\frac{5\,(a+b)^3\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[e+f x]}{\sqrt{a+b+b\,\mathrm{Tan}[e+f x]^2}}\right]}{16\,a^{7/2} f}-\frac{1}{48\,a^3 f}\Bigg((33 a^2+40 a b+15 b^2)\,\mathrm{Cos}[e+f x]\,\mathrm{Sin}[e+f x]\,\sqrt{a+b+b\,\mathrm{Tan}[e+f x]^2}+\frac{(9 a+5 b)\,\mathrm{Cos}[e+f x]^3\,\mathrm{Sin}[e+f x]\,\sqrt{a+b+b\,\mathrm{Tan}[e+f x]^2}}{24\,a^2 f}+\frac{\mathrm{Cos}[e+f x]^3\,\mathrm{Sin}[e+f x]^3\,\sqrt{a+b+b\,\mathrm{Tan}[e+f x]^2}}{6\,a\,f}$$

Result (type 3, 2258 leaves):

$$\frac{5\,\mathrm{ArcTan}\left[\frac{\sqrt{2}\,\sqrt{a}\,\mathrm{Sin}[e+f x]}{\sqrt{a+2 b+a\,\mathrm{Cos}[2\,(e+f x)]}}\right]\sqrt{a+2 b+a\,\mathrm{Cos}[2 e+2 f x]}\,\mathrm{Sec}[e+f x]}{64\sqrt{2}\,\sqrt{a}\,f\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}}-$$

$$\frac{1}{1536\sqrt{2}\,a^{7/2}\,f\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}}\,e^{-i\,(13 e+5 f x)}\sqrt{4 b+a\,e^{-2 i\,(e+f x)}\left(1+e^{2 i\,(e+f x)}\right)^2}$$

$$\sqrt{a+2 b+a\,\mathrm{Cos}[2 e+2 f x]}\,\Bigg(\left(1+e^{14 i e}\right)\Bigg(i\sqrt{a}\,\Big(-60 b^2 e^{4 i f x}\left(-e^{12 i e}+e^{2 i f x}\right)+$$
$$10 a b\,e^{2 i f x}\left(-e^{10 i e}-6 e^{4 i f x}+6 e^{2 i\,(6 e+f x)}+e^{2 i\,(e+3 f x)}\right)+$$
$$a^2\left(2 e^{8 i e}-11 e^{6 i f x}+11 e^{4 i\,(3 e+f x)}-5 e^{2 i\,(5 e+f x)}+5 e^{2 i\,(e+4 f x)}-2 e^{2 i\,(2 e+5 f x)}\right)\Big)-$$
$$\Bigg(6\left(a^3+12 a^2 b+30 a b^2+20 b^3\right)e^{6 i f x}\Bigg(-i\,\mathrm{Log}\Big[e^{-2 i e}\Big(a+2 b+a\,e^{2 i\,(e+f x)}+$$
$$\sqrt{a}\sqrt{4 b\,e^{2 i\,(e+f x)}+a\left(1+e^{2 i\,(e+f x)}\right)^2}\Big)\Big]+e^{14 i e}\Bigg(2 f x+i\,\mathrm{Log}\Big[e^{-2 i e}\Big(a+$$
$$a\,e^{2 i\,(e+f x)}+2 b\,e^{2 i\,(e+f x)}+\sqrt{a}\sqrt{4 b\,e^{2 i\,(e+f x)}+a\left(1+e^{2 i\,(e+f x)}\right)^2}\Big)\Big]\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\left(\sqrt{4 b\,e^{2 i\,(e+f x)}+a\left(1+e^{2 i\,(e+f x)}\right)^2}\right)\Bigg)+\left(-1+e^{14 i e}\right)\Bigg(-i\sqrt{a}$$
$$\Big(60 b^2 e^{4 i f x}\left(e^{12 i e}+e^{2 i f x}\right)-10 a b\,e^{2 i f x}\left(e^{10 i e}-6 e^{4 i f x}-6 e^{2 i\,(6 e+f x)}+e^{2 i\,(e+3 f x)}\right)+$$
$$a^2\left(2 e^{8 i e}+11 e^{6 i f x}+11 e^{4 i\,(3 e+f x)}-5 e^{2 i\,(5 e+f x)}-5 e^{2 i\,(e+4 f x)}+2 e^{2 i\,(2 e+5 f x)}\right)\Big)+$$
$$\Bigg(6\left(a^3+12 a^2 b+30 a b^2+20 b^3\right)e^{6 i f x}\Bigg(i\,\mathrm{Log}\Big[e^{-2 i e}\Big(a+2 b+a\,e^{2 i\,(e+f x)}+$$
$$\sqrt{a}\sqrt{4 b\,e^{2 i\,(e+f x)}+a\left(1+e^{2 i\,(e+f x)}\right)^2}\Big)\Big]+e^{14 i e}\Bigg(2 f x+i\,\mathrm{Log}\Big[e^{-2 i e}\Big(a+$$
$$a\,e^{2 i\,(e+f x)}+2 b\,e^{2 i\,(e+f x)}+\sqrt{a}\sqrt{4 b\,e^{2 i\,(e+f x)}+a\left(1+e^{2 i\,(e+f x)}\right)^2}\Big)\Big]\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\left(\sqrt{4 b\,e^{2 i\,(e+f x)}+a\left(1+e^{2 i\,(e+f x)}\right)^2}\right)\Bigg)\Bigg)\,\mathrm{Sec}[e+f x]+$$

$$\frac{1}{128\sqrt{2}\,a^{3/2}\sqrt{4 b\,e^{2 i\,(e+f x)}+a\left(1+e^{2 i\,(e+f x)}\right)^2}\,f\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}}$$
$$9$$
$$i$$
$$e^{-i\,(e+f x)}$$
$$\sqrt{4 b+a\,e^{-2 i\,(e+f x)}\left(1+e^{2 i\,(e+f x)}\right)^2}$$
$$\sqrt{a+2 b+a\,\mathrm{Cos}[2 e+2 f x]}$$
$$\Bigg(-\sqrt{a}\sqrt{4 b\,e^{2 i\,(e+f x)}+a\left(1+e^{2 i\,(e+f x)}\right)^2}+$$
$$\sqrt{a}\,e^{2 i\,(e+f x)}\sqrt{4 b\,e^{2 i\,(e+f x)}+a\left(1+e^{2 i\,(e+f x)}\right)^2}-$$

$$2\,i\,a\,e^{2\,i\,(e+f\,x)}\,f\,x-4\,i\,b\,e^{2\,i\,(e+f\,x)}\,f\,x-(a+2\,b)\,e^{2\,i\,(e+f\,x)}\,\text{Log}\left[e^{-2\,i\,e}\left(a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]+(a+2\,b)\,e^{2\,i\,(e+f\,x)}\,\text{Log}\left[e^{-2\,i\,e}\left(a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]\Bigg)$$

$$\text{Sec}[e+f\,x]+\frac{1}{256\,\sqrt{2}\,a^{5/2}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}$$

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

$$\Bigg(i\,a^{3/2}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}-3\,i\,a^{3/2}\,e^{2\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}-6\,i\,\sqrt{a}\,b\,e^{2\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}+3\,i\,a^{3/2}\,e^{4\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}+6\,i\,\sqrt{a}\,b\,e^{4\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}-i\,a^{3/2}\,e^{6\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}+4\,a^2\,e^{4\,i\,(e+f\,x)}\,f\,x+24\,a\,b\,e^{4\,i\,(e+f\,x)}\,f\,x+24\,b^2\,e^{4\,i\,(e+f\,x)}\,f\,x-2\,i\,\left(a^2+6\,a\,b+6\,b^2\right)\,e^{4\,i\,(e+f\,x)}\,\text{Log}\left[e^{-2\,i\,e}\left(a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]+2\,i\,\left(a^2+6\,a\,b+6\,b^2\right)\,e^{4\,i\,(e+f\,x)}\,\text{Log}\left[e^{-2\,i\,e}\left(a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]\Bigg)\,\text{Sec}[e+f\,x]$$

Problem 100: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 135 leaves, 6 steps):

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

Result (type 3, 1286 leaves):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{2}\,\sqrt{a}\,\text{Sin}[e+f x]}{\sqrt{a+2 b+a \text{Cos}[2 (e+f x)]}}\right] \sqrt{a+2 b+a \text{Cos}[2 e+2 f x]}\; \text{Sec}[e+f x]}{8 \sqrt{2}\, \sqrt{a}\, f \sqrt{a+b \text{Sec}[e+f x]^2}}+$$

$$\frac{1}{32 \sqrt{2}\, a^{3/2} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\; f \sqrt{a+b \text{Sec}[e+f x]^2}}$$

$$3\, i\, e^{-i (e+f x)} \sqrt{4 b+a\, e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2}\; \sqrt{a+2 b+a \text{Cos}[2 e+2 f x]}$$

$$\Bigg(-\sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}+\sqrt{a}\, e^{2 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}-$$

$$2\, i\, a\, e^{2 i (e+f x)} f x-4\, i\, b\, e^{2 i (e+f x)} f x-(a+2 b)\, e^{2 i (e+f x)} \text{Log}\Big[$$

$$e^{-2 i e} \left(a+2 b+a\, e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\Big]+(a+2 b)\, e^{2 i (e+f x)}$$

$$\text{Log}\Big[e^{-2 i e} \left(a+a\, e^{2 i (e+f x)}+2 b\, e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\Big]\Bigg)$$

$$\text{Sec}[e+f x]+\frac{1}{64 \sqrt{2}\, a^{5/2} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\; f \sqrt{a+b \text{Sec}[e+f x]^2}}$$

$$e^{-3 i (e+f x)} \sqrt{4 b+a\, e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2}\; \sqrt{a+2 b+a \text{Cos}[2 e+2 f x]}$$

$$\Bigg(i\, a^{3/2} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}-3\, i\, a^{3/2} e^{2 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}-$$

$$6\, i \sqrt{a}\, b\, e^{2 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}+3\, i\, a^{3/2} e^{4 i (e+f x)}$$

$$\sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}+6\, i \sqrt{a}\, b\, e^{4 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}-$$

$$i\, a^{3/2} e^{6 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}+4 a^2 e^{4 i (e+f x)} f x+$$

$$24 a b\, e^{4 i (e+f x)} f x+24 b^2 e^{4 i (e+f x)} f x-2\, i \left(a^2+6 a b+6 b^2\right) e^{4 i (e+f x)}$$

$$\text{Log}\Big[e^{-2 i e} \left(a+2 b+a\, e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\Big]+$$

$$2\, i \left(a^2+6 a b+6 b^2\right) e^{4 i (e+f x)} \text{Log}\Big[$$

$$e^{-2 i e} \left(a+a\, e^{2 i (e+f x)}+2 b\, e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\Big]\Bigg)\, \text{Sec}[e+f x]$$

Problem 101: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 558 leaves):

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

$$i\,e^{-i (e+f x)}\sqrt{4 b+a\,e^{-2 i (e+f x)}\left(1+e^{2 i (e+f x)}\right)^2}\,\sqrt{a+2 b+a\,\text{Cos}[2 e+2 f x]}$$

$$\Bigg(-\sqrt{a}\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}+\sqrt{a}\,e^{2 i (e+f x)}\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}-$$

$$2\,i\,a\,e^{2 i (e+f x)}\,f x-4\,i\,b\,e^{2 i (e+f x)}\,f x-(a+2 b)\,e^{2 i (e+f x)}\,\text{Log}\Big[e^{-2 i e}$$

$$\left(a+2 b+a\,e^{2 i (e+f x)}+\sqrt{a}\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}\right)\Big]+(a+2 b)\,e^{2 i (e+f x)}\,\text{Log}\Big[$$

$$e^{-2 i e}\left(a+a\,e^{2 i (e+f x)}+2 b\,e^{2 i (e+f x)}+\sqrt{a}\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}\right)\Big]\Bigg)\,\text{Sec}[e+f x]$$

Problem 102: Unable to integrate problem.

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

Optimal (type 3, 39 leaves, 3 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{\sqrt{a}\,f}$$

Result (type 8, 18 leaves):

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

Problem 109: Unable to integrate problem.

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

Optimal (type 3, 80 leaves, 4 steps):

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

Result (type 8, 25 leaves):

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

Problem 110: Unable to integrate problem.

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

Optimal (type 3, 126 leaves, 6 steps):

$$-\frac{(a - 2 b) \operatorname{ArcTanh}\left[\frac{\sqrt{a+b}\ \operatorname{Sec}[e+f x]}{\sqrt{a+b \operatorname{Sec}[e+f x]^2}}\right]}{2 (a+b)^{5/2} f} - \frac{\operatorname{Cot}[e + f x] \operatorname{Csc}[e + f x]}{2 (a + b) f \sqrt{a + b \operatorname{Sec}[e + f x]^2}} - \frac{3 b \operatorname{Sec}[e + f x]}{2 (a + b)^2 f \sqrt{a + b \operatorname{Sec}[e + f x]^2}}$$

Result (type 8, 27 leaves):

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

Problem 111: Unable to integrate problem.

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

Optimal (type 3, 177 leaves, 7 steps):

$$-\frac{3\,a\,(a-4\,b)\,\text{ArcTanh}\left[\frac{\sqrt{a+b}\,\text{Sec}[e+f\,x]}{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}\right]}{8\,(a+b)^{7/2}\,f}-\frac{5\,a\,\text{Cot}[e+f\,x]\,\text{Csc}[e+f\,x]}{8\,(a+b)^2\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}-\frac{\text{Cot}[e+f\,x]^3\,\text{Csc}[e+f\,x]}{4\,(a+b)\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}-\frac{(13\,a-2\,b)\,b\,\text{Sec}[e+f\,x]}{8\,(a+b)^3\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}$$

Result (type 8, 27 leaves):

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

Problem 112: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sin}[e+f\,x]^6}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}\,dx$$

Optimal (type 3, 242 leaves, 8 steps):

$$\frac{5\,(a+b)^2\,(a+7\,b)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{16\,a^{9/2}\,f}-\frac{(a+b)\,(33\,a+35\,b)\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]}{48\,a^3\,f\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}+\frac{(9\,a+7\,b)\,\text{Cos}[e+f\,x]^3\,\text{Sin}[e+f\,x]}{24\,a^2\,f\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}+\frac{\text{Cos}[e+f\,x]^3\,\text{Sin}[e+f\,x]^3}{6\,a\,f\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}-\frac{b\,\left(81\,a^2+190\,a\,b+105\,b^2\right)\,\text{Tan}[e+f\,x]}{48\,a^4\,f\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}$$

Result (type 3, 3051 leaves):

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

$$\left(i\,a^{7/2}+i\,a^{5/2}\,b-5\,i\,a^{7/2}\,e^{2\,i\,(e+f\,x)}-15\,i\,a^{5/2}\,b\,e^{2\,i\,(e+f\,x)}-10\,i\,a^{3/2}\,b^2\,e^{2\,i\,(e+f\,x)}-\right.$$

$$13\,i\,a^{7/2}\,e^{4\,i\,(e+f\,x)}-104\,i\,a^{5/2}\,b\,e^{4\,i\,(e+f\,x)}-210\,i\,a^{3/2}\,b^2\,e^{4\,i\,(e+f\,x)}-120\,i\,\sqrt{a}\,b^3\,e^{4\,i\,(e+f\,x)}+$$
$$13\,i\,a^{7/2}\,e^{6\,i\,(e+f\,x)}+104\,i\,a^{5/2}\,b\,e^{6\,i\,(e+f\,x)}+210\,i\,a^{3/2}\,b^2\,e^{6\,i\,(e+f\,x)}+120\,i\,\sqrt{a}\,b^3\,e^{6\,i\,(e+f\,x)}+$$
$$5\,i\,a^{7/2}\,e^{8\,i\,(e+f\,x)}+15\,i\,a^{5/2}\,b\,e^{8\,i\,(e+f\,x)}+10\,i\,a^{3/2}\,b^2\,e^{8\,i\,(e+f\,x)}-i\,a^{7/2}\,e^{10\,i\,(e+f\,x)}-$$

$$i\,a^{5/2}\,b\,e^{10\,i\,(e+f\,x)}+24\,a^3\,e^{4\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,f\,x+$$

$$144\,a^2\,b\,e^{4\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,f\,x+$$

$$240\,a\,b^2\,e^{4\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,f\,x+$$

$$120\, b^3\, e^{4 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\, f x -$$

$$12\, i \left(a^3 + 6 a^2 b + 10 a b^2 + 5 b^3\right) e^{4 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}$$

$$\text{Log}\left[e^{-2 i e} \left(a + 2 b + a\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] +$$

$$12\, i \left(a^3 + 6 a^2 b + 10 a b^2 + 5 b^3\right) e^{4 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}$$

$$\text{Log}\left[e^{-2 i e} \left(a + a\, e^{2 i (e+f x)} + 2 b\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right]\Bigg)$$

$$\text{Sec}[e + f x]^3\Bigg) \Big/ \left(512 \sqrt{2}\, a^{7/2} (a + b) \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)\right.$$

$$\left. f \left(a + b\, \text{Sec}[e + f x]^2\right)^{3/2}\right) +$$

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

$$\Bigg(-2 a^{9/2} - 2 a^{7/2} b + 7 a^{9/2} e^{2 i (e+f x)} + 21 a^{7/2} b\, e^{2 i (e+f x)} + 14 a^{5/2} b^2 e^{2 i (e+f x)} -$$

$$27 a^{9/2} e^{4 i (e+f x)} - 167 a^{7/2} b\, e^{4 i (e+f x)} - 280 a^{5/2} b^2 e^{4 i (e+f x)} - 140 a^{3/2} b^3 e^{4 i (e+f x)} -$$
$$63 a^{9/2} e^{6 i (e+f x)} - 790 a^{7/2} b\, e^{6 i (e+f x)} - 2830 a^{5/2} b^2 e^{6 i (e+f x)} - 3780 a^{3/2} b^3 e^{6 i (e+f x)} -$$
$$1680 \sqrt{a}\, b^4 e^{6 i (e+f x)} + 63 a^{9/2} e^{8 i (e+f x)} + 790 a^{7/2} b\, e^{8 i (e+f x)} + 2830 a^{5/2} b^2 e^{8 i (e+f x)} +$$
$$3780 a^{3/2} b^3 e^{8 i (e+f x)} + 1680 \sqrt{a}\, b^4 e^{8 i (e+f x)} + 27 a^{9/2} e^{10 i (e+f x)} +$$
$$167 a^{7/2} b\, e^{10 i (e+f x)} + 280 a^{5/2} b^2 e^{10 i (e+f x)} + 140 a^{3/2} b^3 e^{10 i (e+f x)} -$$
$$7 a^{9/2} e^{12 i (e+f x)} - 21 a^{7/2} b\, e^{12 i (e+f x)} - 14 a^{5/2} b^2 e^{12 i (e+f x)} + 2 a^{9/2} e^{14 i (e+f x)} +$$

$$2 a^{7/2} b\, e^{14 i (e+f x)} - 120\, i\, a^4 e^{6 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\, f x -$$

$$1200\, i\, a^3 b\, e^{6 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\, f x -$$

$$3600\, i\, a^2 b^2 e^{6 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\, f x -$$

$$4200\, i\, a b^3 e^{6 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\, f x -$$

$$1680\, i\, b^4 e^{6 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\, f x -$$

$$60 \left(a^4 + 10 a^3 b + 30 a^2 b^2 + 35 a b^3 + 14 b^4\right) e^{6 i (e+f x)} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}$$

$$\text{Log}\left[e^{-2 i e} \left(a + 2 b + a\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] +$$

$$60 \left(a^4+10 a^3 b+30 a^2 b^2+35 a b^3+14 b^4\right) e^{6 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}$$

$$\left.\left.\text{Log}\left[e^{-2 i e} \left(a+a e^{2 i (e+f x)}+2 b e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right]\right)\right.$$

$$\left.\text{Sec}[e+f x]^3\right) \Big/ \left(1536 \sqrt{2}\, a^{9/2} (a+b) \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)\right.$$

$$\left.f \left(a+b\, \text{Sec}[e+f x]^2\right)^{3/2}\right) -$$

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

$$\left(-3 i a^{3/2} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}-4 i \sqrt{a}\, b \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}+\right.$$

$$3 i a^{3/2} e^{2 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}+$$

$$4 i \sqrt{a}\, b e^{2 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}+4 a^2 f x+4 a b f x+$$

$$8 a^2 e^{2 i (e+f x)} f x+24 a b e^{2 i (e+f x)} f x+16 b^2 e^{2 i (e+f x)} f x+4 a^2 e^{4 i (e+f x)} f x+$$

$$4 a b e^{4 i (e+f x)} f x-2 i (a+b) \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)$$

$$\text{Log}\left[e^{-2 i e} \left(a+2 b+a e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right]+$$

$$2 i (a+b) \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)$$

$$\left.\left.\text{Log}\left[e^{-2 i e} \left(a+a e^{2 i (e+f x)}+2 b e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right]\right)\right.$$

$$\left.\text{Sec}[e+f x]^3\right) \Big/ \left(64 \sqrt{2}\, a^{3/2} (a+b) \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^{3/2}\right.$$

$$\left.f \left(a+b\, \text{Sec}[e+f x]^2\right)^{3/2}\right)+$$

$$\frac{3 \left(a+2 b+a \text{Cos}[2 e+2 f x]\right)^{3/2} \text{Sec}[e+f x]^2 \text{Tan}[e+f x]}{256 (a+b) f \sqrt{a+2 b+a \text{Cos}[2 (e+f x)]} \left(a+b\, \text{Sec}[e+f x]^2\right)^{3/2}}$$

Problem 113: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

$$\frac{3\,(a+b)\,(a+5\,b)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{8\,a^{7/2}\,f}-\frac{5\,(a+b)\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]}{8\,a^2\,f\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}+$$
$$\frac{\text{Cos}[e+f\,x]^3\,\text{Sin}[e+f\,x]}{4\,a\,f\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}-\frac{b\,(13\,a+15\,b)\,\text{Tan}[e+f\,x]}{8\,a^3\,f\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}$$

Result (type 3, 2543 leaves):

$$\left(i\,e^{-i\,(e+f\,x)}\,\sqrt{4\,b+a\,e^{-2\,i\,(e+f\,x)}\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^{3/2}\right.$$
$$\left(-2\,a^{5/2}-2\,a^{3/2}\,b-7\,a^{5/2}\,e^{2\,i\,(e+f\,x)}-30\,a^{3/2}\,b\,e^{2\,i\,(e+f\,x)}-24\,\sqrt{a}\,b^2\,e^{2\,i\,(e+f\,x)}+\right.$$
$$7\,a^{5/2}\,e^{4\,i\,(e+f\,x)}+30\,a^{3/2}\,b\,e^{4\,i\,(e+f\,x)}+24\,\sqrt{a}\,b^2\,e^{4\,i\,(e+f\,x)}+2\,a^{5/2}\,e^{6\,i\,(e+f\,x)}+$$
$$2\,a^{3/2}\,b\,e^{6\,i\,(e+f\,x)}-12\,i\,a^2\,e^{2\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,f\,x-$$
$$36\,i\,a\,b\,e^{2\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,f\,x-$$
$$24\,i\,b^2\,e^{2\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,f\,x-$$
$$6\,\left(a^2+3\,a\,b+2\,b^2\right)\,e^{2\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}$$
$$\text{Log}\left[e^{-2\,i\,e}\,\left(a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]+$$
$$6\,\left(a^2+3\,a\,b+2\,b^2\right)\,e^{2\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}$$
$$\left.\text{Log}\left[e^{-2\,i\,e}\,\left(a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]\right)$$
$$\left.\text{Sec}[e+f\,x]^3\right)\Big/\left(128\,\sqrt{2}\,a^{5/2}\,(a+b)\,\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)\right.$$
$$\left.f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\right)+$$
$$\left(e^{-3\,i\,(e+f\,x)}\,\sqrt{4\,b+a\,e^{-2\,i\,(e+f\,x)}\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^{3/2}\right.$$
$$\left(i\,a^{7/2}+i\,a^{5/2}\,b-5\,i\,a^{7/2}\,e^{2\,i\,(e+f\,x)}-15\,i\,a^{5/2}\,b\,e^{2\,i\,(e+f\,x)}-10\,i\,a^{3/2}\,b^2\,e^{2\,i\,(e+f\,x)}-\right.$$
$$13\,i\,a^{7/2}\,e^{4\,i\,(e+f\,x)}-104\,i\,a^{5/2}\,b\,e^{4\,i\,(e+f\,x)}-210\,i\,a^{3/2}\,b^2\,e^{4\,i\,(e+f\,x)}-120\,i\,\sqrt{a}\,b^3\,e^{4\,i\,(e+f\,x)}+$$
$$13\,i\,a^{7/2}\,e^{6\,i\,(e+f\,x)}+104\,i\,a^{5/2}\,b\,e^{6\,i\,(e+f\,x)}+210\,i\,a^{3/2}\,b^2\,e^{6\,i\,(e+f\,x)}+120\,i\,\sqrt{a}\,b^3\,e^{6\,i\,(e+f\,x)}+$$
$$5\,i\,a^{7/2}\,e^{8\,i\,(e+f\,x)}+15\,i\,a^{5/2}\,b\,e^{8\,i\,(e+f\,x)}+10\,i\,a^{3/2}\,b^2\,e^{8\,i\,(e+f\,x)}-i\,a^{7/2}\,e^{10\,i\,(e+f\,x)}-$$

$$\begin{aligned}
&i\, a^{5/2}\, b\, e^{10 i (e+f x)} + 24 a^3 e^{4 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\, f x + \\
&144 a^2 b\, e^{4 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\, f x + \\
&240 a b^2 e^{4 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\, f x + \\
&120 b^3 e^{4 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\, f x - \\
&12 i \left(a^3 + 6 a^2 b + 10 a b^2 + 5 b^3\right) e^{4 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2} \\
&\quad \mathrm{Log}\left[e^{-2 i e} \left(a + 2 b + a e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] + \\
&12 i \left(a^3 + 6 a^2 b + 10 a b^2 + 5 b^3\right) e^{4 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2} \\
&\quad \mathrm{Log}\left[e^{-2 i e} \left(a + a e^{2 i (e+f x)} + 2 b e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right]\Bigg) \\
&\mathrm{Sec}[e + f x]^3\Bigg) \Bigg/ \left(128 \sqrt{2}\, a^{7/2} (a + b) \left(4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)\right. \\
&\left. f \left(a + b\, \mathrm{Sec}[e + f x]^2\right)^{3/2}\right) - \\
&\Bigg(3 e^{i (e+f x)} \sqrt{4 b + a e^{-2 i (e+f x)} \left(1 + e^{2 i (e+f x)}\right)^2}\, \left(a + 2 b + a\, \mathrm{Cos}[2 e + 2 f x]\right)^{3/2} \\
&\Bigg(-3 i a^{3/2} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2} - 4 i \sqrt{a}\, b \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2} + \\
&3 i a^{3/2} e^{2 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2} + \\
&4 i \sqrt{a}\, b\, e^{2 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2} + 4 a^2 f x + 4 a b f x + \\
&8 a^2 e^{2 i (e+f x)} f x + 24 a b\, e^{2 i (e+f x)} f x + 16 b^2 e^{2 i (e+f x)} f x + 4 a^2 e^{4 i (e+f x)} f x + \\
&4 a b\, e^{4 i (e+f x)} f x - 2 i (a + b) \left(4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right) \\
&\quad \mathrm{Log}\left[e^{-2 i e} \left(a + 2 b + a e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] + \\
&2 i (a + b) \left(4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right) \\
&\quad \mathrm{Log}\left[e^{-2 i e} \left(a + a e^{2 i (e+f x)} + 2 b e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right]\Bigg) \\
&\mathrm{Sec}[e + f x]^3\Bigg) \Bigg/ \left(128 \sqrt{2}\, a^{3/2} (a + b) \left(4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}\right.
\end{aligned}$$

$$f\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\Big)+\frac{3\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^{3/2}\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]}{128\,(a+b)\,f\,\sqrt{a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]}\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}$$

Problem 114: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 121 leaves, 6 steps):

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

Result (type 3, 1522 leaves):

$$\Bigg(i\,e^{-i\,(e+f\,x)}\,\sqrt{4\,b+a\,e^{-2\,i\,(e+f\,x)}\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^{3/2}$$
$$\Big(-2\,a^{5/2}-2\,a^{3/2}\,b-7\,a^{5/2}\,e^{2\,i\,(e+f\,x)}-30\,a^{3/2}\,b\,e^{2\,i\,(e+f\,x)}-24\,\sqrt{a}\,b^2\,e^{2\,i\,(e+f\,x)}+$$
$$7\,a^{5/2}\,e^{4\,i\,(e+f\,x)}+30\,a^{3/2}\,b\,e^{4\,i\,(e+f\,x)}+24\,\sqrt{a}\,b^2\,e^{4\,i\,(e+f\,x)}+2\,a^{5/2}\,e^{6\,i\,(e+f\,x)}+$$
$$2\,a^{3/2}\,b\,e^{6\,i\,(e+f\,x)}-12\,i\,a^2\,e^{2\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,f\,x-$$
$$36\,i\,a\,b\,e^{2\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,f\,x-$$
$$24\,i\,b^2\,e^{2\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,f\,x-$$
$$6\left(a^2+3\,a\,b+2\,b^2\right)e^{2\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]+$$
$$6\left(a^2+3\,a\,b+2\,b^2\right)e^{2\,i\,(e+f\,x)}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]\Big)$$
$$\text{Sec}[e+f\,x]^3\Bigg)\Big/\left(32\,\sqrt{2}\,a^{5/2}\,(a+b)\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)\right.$$
$$f\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\Big)-$$

$$\left(e^{i (e+f x)} \sqrt{4 b+a e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2} \left(a+2 b+a \text{Cos}[2 e+2 f x]\right)^{3/2} \left(-3 i a^{3/2} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}-4 i \sqrt{a} b \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}+3 i a^{3/2} e^{2 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}+4 i \sqrt{a} b e^{2 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}+4 a^2 f x+4 a b f x+8 a^2 e^{2 i (e+f x)} f x+24 a b e^{2 i (e+f x)} f x+16 b^2 e^{2 i (e+f x)} f x+4 a^2 e^{4 i (e+f x)} f x+4 a b e^{4 i (e+f x)} f x-2 i (a+b) \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right) \text{Log}\left[e^{-2 i e} \left(a+2 b+a e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right]+2 i (a+b) \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right) \text{Log}\left[e^{-2 i e} \left(a+a e^{2 i (e+f x)}+2 b e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right]\right) \text{Sec}[e+f x]^3\right) \Big/ \left(32 \sqrt{2} a^{3/2} (a+b) \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^{3/2} f \left(a+b \text{Sec}[e+f x]^2\right)^{3/2}\right)+\frac{\left(a+2 b+a \text{Cos}[2 e+2 f x]\right)^{3/2} \text{Sec}[e+f x]^2 \text{Tan}[e+f x]}{16 (a+b) f \sqrt{a+2 b+a \text{Cos}[2 (e+f x)]} \left(a+b \text{Sec}[e+f x]^2\right)^{3/2}}$$

Problem 115: Unable to integrate problem.

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

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

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

Result (type 8, 18 leaves):

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

Problem 122: Unable to integrate problem.

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

Optimal (type 3, 127 leaves, 6 steps):

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

Result (type 8, 25 leaves):

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

Problem 123: Unable to integrate problem.

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

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

$$-\frac{(a-4 b) \,\text{ArcTanh}\left[\frac{\sqrt{a+b}\ \text{Sec}[e+f x]}{\sqrt{a+b \,\text{Sec}[e+f x]^2}}\right]}{2 (a+b)^{7/2} f}-\frac{\text{Cot}[e+f x] \,\text{Csc}[e+f x]}{2 (a+b) f \left(a+b \,\text{Sec}[e+f x]^2\right)^{3/2}}-\frac{5 b \,\text{Sec}[e+f x]}{6 (a+b)^2 f \left(a+b \,\text{Sec}[e+f x]^2\right)^{3/2}}-\frac{(13 a-2 b) \,b \,\text{Sec}[e+f x]}{6 a (a+b)^3 f \sqrt{a+b \,\text{Sec}[e+f x]^2}}$$

Result (type 8, 27 leaves):

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

Problem 124: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 234 leaves, 8 steps):

$$-\frac{\left(3 a^2-24 a b+8 b^2\right) \text{ArcTanh}\left[\frac{\sqrt{a+b}\ \text{Sec}[e+f x]}{\sqrt{a+b \text{Sec}[e+f x]^2}}\right]}{8 (a+b)^{9/2} f}-\frac{(5 a-2 b) \text{Cot}[e+f x] \text{Csc}[e+f x]}{8 (a+b)^2 f \left(a+b \text{Sec}[e+f x]^2\right)^{3/2}}-\frac{\text{Cot}[e+f x]^3 \text{Csc}[e+f x]}{4 (a+b) f \left(a+b \text{Sec}[e+f x]^2\right)^{3/2}}-\frac{(23 a-12 b) b \text{Sec}[e+f x]}{24 (a+b)^3 f \left(a+b \text{Sec}[e+f x]^2\right)^{3/2}}-\frac{5 (11 a-10 b) b \text{Sec}[e+f x]}{24 (a+b)^4 f \sqrt{a+b \text{Sec}[e+f x]^2}}$$

Result (type 6, 1709 leaves):

$$-\left(\left(7 a \text{AppellF1}\left[\frac{5}{2},-2,\frac{5}{2},\frac{7}{2},\text{Csc}[e+f x]^2,\frac{(a+b) \text{Csc}[e+f x]^2}{a}\right] \text{Cot}[e+f x]^4 \text{Csc}[e+f x]^3\right)\right/$$
$$\left(20 \sqrt{2} f \left(a+b \text{Sec}[e+f x]^2\right)^{5/2} \left(a+b-a \text{Sin}[e+f x]^2\right)^{5/2}\right.$$
$$\left(5 (a+b) \text{AppellF1}\left[\frac{7}{2},-2,\frac{7}{2},\frac{9}{2},\text{Csc}[e+f x]^2,\frac{(a+b) \text{Csc}[e+f x]^2}{a}\right]-\right.$$
$$4 a \text{AppellF1}\left[\frac{7}{2},-1,\frac{5}{2},\frac{9}{2},\text{Csc}[e+f x]^2,\frac{(a+b) \text{Csc}[e+f x]^2}{a}\right]+$$
$$\left.7 a \text{AppellF1}\left[\frac{5}{2},-2,\frac{5}{2},\frac{7}{2},\text{Csc}[e+f x]^2,\frac{(a+b) \text{Csc}[e+f x]^2}{a}\right] \text{Sin}[e+f x]^2\right)$$
$$\left(-\left(\left(7 a^2 \text{AppellF1}\left[\frac{5}{2},-2,\frac{5}{2},\frac{7}{2},\text{Csc}[e+f x]^2,\frac{(a+b) \text{Csc}[e+f x]^2}{a}\right]\right.\right.\right.$$
$$\left.\text{Cos}[e+f x]^4 \text{Cot}[e+f x]\right) \Big/ \left(4 \sqrt{2} \left(a+b-a \text{Sin}[e+f x]^2\right)^{7/2}\right.$$
$$\left(5 (a+b) \text{AppellF1}\left[\frac{7}{2},-2,\frac{7}{2},\frac{9}{2},\text{Csc}[e+f x]^2,\frac{(a+b) \text{Csc}[e+f x]^2}{a}\right]-\right.$$
$$4 a \text{AppellF1}\left[\frac{7}{2},-1,\frac{5}{2},\frac{9}{2},\text{Csc}[e+f x]^2,\frac{(a+b) \text{Csc}[e+f x]^2}{a}\right]+$$
$$\left.\left.\left.7 a \text{AppellF1}\left[\frac{5}{2},-2,\frac{5}{2},\frac{7}{2},\text{Csc}[e+f x]^2,\frac{(a+b) \text{Csc}[e+f x]^2}{a}\right] \text{Sin}[e+f x]^2\right)\right)\right)+$$
$$\left(7 a \text{AppellF1}\left[\frac{5}{2},-2,\frac{5}{2},\frac{7}{2},\text{Csc}[e+f x]^2,\frac{(a+b) \text{Csc}[e+f x]^2}{a}\right] \text{Cos}[e+f x]^2\right.$$
$$\left.\text{Cot}[e+f x]\right) \Big/ \left(10 \sqrt{2} \left(a+b-a \text{Sin}[e+f x]^2\right)^{5/2}\right.$$
$$\left(5 (a+b) \text{AppellF1}\left[\frac{7}{2},-2,\frac{7}{2},\frac{9}{2},\text{Csc}[e+f x]^2,\frac{(a+b) \text{Csc}[e+f x]^2}{a}\right]-\right.$$
$$4 a \text{AppellF1}\left[\frac{7}{2},-1,\frac{5}{2},\frac{9}{2},\text{Csc}[e+f x]^2,\frac{(a+b) \text{Csc}[e+f x]^2}{a}\right]+$$
$$\left.\left.7 a \text{AppellF1}\left[\frac{5}{2},-2,\frac{5}{2},\frac{7}{2},\text{Csc}[e+f x]^2,\frac{(a+b) \text{Csc}[e+f x]^2}{a}\right] \text{Sin}[e+f x]^2\right)\right)+$$

$$\left(7\, a\, \text{AppellF1}\left[\frac{5}{2}, -2, \frac{5}{2}, \frac{7}{2}, \text{Csc}[e+f x]^2, \frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right] \text{Cot}[e+f x]^3\right) \Big/$$

$$\left(10 \sqrt{2}\, \left(a+b-a\, \text{Sin}[e+f x]^2\right)^{5/2}\right.$$

$$\left(5\, (a+b)\, \text{AppellF1}\left[\frac{7}{2}, -2, \frac{7}{2}, \frac{9}{2}, \text{Csc}[e+f x]^2, \frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right] - \right.$$

$$4\, a\, \text{AppellF1}\left[\frac{7}{2}, -1, \frac{5}{2}, \frac{9}{2}, \text{Csc}[e+f x]^2, \frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right] +$$

$$\left.\left.7\, a\, \text{AppellF1}\left[\frac{5}{2}, -2, \frac{5}{2}, \frac{7}{2}, \text{Csc}[e+f x]^2, \frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right] \text{Sin}[e+f x]^2\right)\right) -$$

$$\left(7\, a\, \text{Cos}[e+f x]^2\, \text{Cot}[e+f x]^2\, \left(-\frac{1}{7\, a} 25\, (a+b)\, f\, \text{AppellF1}\left[\frac{7}{2}, -2, \frac{7}{2}, \frac{9}{2},\right.\right.\right.$$

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

$$\frac{20}{7} f\, \text{AppellF1}\left[\frac{7}{2}, -1, \frac{5}{2}, \frac{9}{2}, \text{Csc}[e+f x]^2, \frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right]$$

$$\left.\left.\text{Cot}[e+f x]\, \text{Csc}[e+f x]^2\right)\right) \Big/ \left(20 \sqrt{2}\, f\, \left(a+b-a\, \text{Sin}[e+f x]^2\right)^{5/2}\right.$$

$$\left(5\, (a+b)\, \text{AppellF1}\left[\frac{7}{2}, -2, \frac{7}{2}, \frac{9}{2}, \text{Csc}[e+f x]^2, \frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right] - \right.$$

$$4\, a\, \text{AppellF1}\left[\frac{7}{2}, -1, \frac{5}{2}, \frac{9}{2}, \text{Csc}[e+f x]^2, \frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right] +$$

$$\left.\left.7\, a\, \text{AppellF1}\left[\frac{5}{2}, -2, \frac{5}{2}, \frac{7}{2}, \text{Csc}[e+f x]^2, \frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right] \text{Sin}[e+f x]^2\right)\right) +$$

$$\left(7\, a\, \text{AppellF1}\left[\frac{5}{2}, -2, \frac{5}{2}, \frac{7}{2}, \text{Csc}[e+f x]^2, \frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right] \text{Cos}[e+f x]^2\right.$$

$$\text{Cot}[e+f x]^2\, \left(5\, (a+b)\, \left(-\frac{1}{9\, a} 49\, (a+b)\, f\, \text{AppellF1}\left[\frac{9}{2}, -2, \frac{9}{2}, \frac{11}{2}, \text{Csc}[e+f x]^2,\right.\right.\right.$$

$$\left.\frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right] \text{Cot}[e+f x]\, \text{Csc}[e+f x]^2 + \frac{28}{9} f\, \text{AppellF1}\left[\frac{9}{2}, -1, \frac{7}{2},\right.$$

$$\left.\left.\frac{11}{2}, \text{Csc}[e+f x]^2, \frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right] \text{Cot}[e+f x]\, \text{Csc}[e+f x]^2\right) -$$

$$4\, a\, \left(-\frac{1}{9\, a} 35\, (a+b)\, f\, \text{AppellF1}\left[\frac{9}{2}, -1, \frac{7}{2}, \frac{11}{2}, \text{Csc}[e+f x]^2, \frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right]\right.$$

$$\text{Cot}[e+f x]\, \text{Csc}[e+f x]^2 + \frac{14}{9} f\, \text{Cot}[e+f x]\, \text{Csc}[e+f x]^2$$

$$\left.\text{Hypergeometric2F1}\left[\frac{5}{2}, \frac{9}{2}, \frac{11}{2}, \frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right]\right) + 14\, a\, f\, \text{AppellF1}\left[\frac{5}{2},\right.$$

$$\left.-2, \frac{5}{2}, \frac{7}{2}, \text{Csc}[e+f x]^2, \frac{(a+b)\, \text{Csc}[e+f x]^2}{a}\right] \text{Cos}[e+f x]\, \text{Sin}[e+f x] +$$

$$7\,a\left(-\frac{1}{7\,a}25\,(a+b)\,f\,\text{AppellF1}\left[\frac{7}{2},-2,\frac{7}{2},\frac{9}{2},\text{Csc}[e+f\,x]^2,\frac{(a+b)\,\text{Csc}[e+f\,x]^2}{a}\right]\right.$$
$$\text{Cot}[e+f\,x]\,\text{Csc}[e+f\,x]^2+\frac{20}{7}\,f\,\text{AppellF1}\left[\frac{7}{2},-1,\frac{5}{2},\frac{9}{2},\text{Csc}[e+f\,x]^2,\right.$$
$$\left.\left.\frac{(a+b)\,\text{Csc}[e+f\,x]^2}{a}\right]\text{Cot}[e+f\,x]\,\text{Csc}[e+f\,x]^2\right)\text{Sin}[e+f\,x]^2\Big)\Big)\Big/$$
$$\left(20\,\sqrt{2}\,f\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\left(5\,(a+b)\,\text{AppellF1}\left[\frac{7}{2},-2,\frac{7}{2},\frac{9}{2},\right.\right.\right.$$
$$\left.\text{Csc}[e+f\,x]^2,\frac{(a+b)\,\text{Csc}[e+f\,x]^2}{a}\right]-4\,a\,\text{AppellF1}\left[\frac{7}{2},-1,\frac{5}{2},\right.$$
$$\left.\frac{9}{2},\text{Csc}[e+f\,x]^2,\frac{(a+b)\,\text{Csc}[e+f\,x]^2}{a}\right]+7\,a\,\text{AppellF1}\left[\frac{5}{2},-2,\right.$$
$$\left.\left.\left.\left.\frac{5}{2},\frac{7}{2},\text{Csc}[e+f\,x]^2,\frac{(a+b)\,\text{Csc}[e+f\,x]^2}{a}\right]\text{Sin}[e+f\,x]^2\right)^2\right)\right)\Big)$$

Problem 125: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Sin}[e+f\,x]^6}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}\,dx$$

Optimal (type 3, 288 leaves, 9 steps):

$$\frac{5\,(a+b)\,\left(a^2+14\,a\,b+21\,b^2\right)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{16\,a^{11/2}\,f}-$$
$$\frac{(a+b)\,(11\,a+21\,b)\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]}{16\,a^3\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^{3/2}}+$$
$$\frac{3\,(a+b)\,\text{Cos}[e+f\,x]^3\,\text{Sin}[e+f\,x]}{8\,a^2\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^{3/2}}+\frac{\text{Cos}[e+f\,x]^3\,\text{Sin}[e+f\,x]^3}{6\,a\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^{3/2}}-$$
$$\frac{7\,b\,(a+b)\,(7\,a+15\,b)\,\text{Tan}[e+f\,x]}{48\,a^4\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^{3/2}}-\frac{b\,\left(113\,a^2+420\,a\,b+315\,b^2\right)\,\text{Tan}[e+f\,x]}{48\,a^5\,f\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}$$

Result (type 1, 1 leaves):

???

Problem 126: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sin}[e+f\,x]^4}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}\,dx$$

Optimal (type 3, 227 leaves, 8 steps):

$$\frac{\left(3 a^2+30 a b+35 b^2\right) \text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[e+f x]}{\sqrt{a+b+b \text{Tan}[e+f x]^2}}\right]}{8 a^{9/2} f}-\frac{(5 a+7 b) \text{Cos}[e+f x] \text{Sin}[e+f x]}{8 a^2 f \left(a+b+b \text{Tan}[e+f x]^2\right)^{3/2}}+\frac{\text{Cos}[e+f x]^3 \text{Sin}[e+f x]}{4 a f \left(a+b+b \text{Tan}[e+f x]^2\right)^{3/2}}-\frac{b (23 a+35 b) \text{Tan}[e+f x]}{24 a^3 f \left(a+b+b \text{Tan}[e+f x]^2\right)^{3/2}}-\frac{5 b (11 a+21 b) \text{Tan}[e+f x]}{24 a^4 f \sqrt{a+b+b \text{Tan}[e+f x]^2}}$$

Result (type 3, 6006 leaves) :

$$\frac{1}{256 \left(a+b \text{Sec}[e+f x]^2\right)^{5/2}}(a+2 b+a \text{Cos}[2 e+2 f x])^{5/2} \left(-\frac{1}{24 \sqrt{2}\ a^4 b^2 (a+b)^2 \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^2 f}\right.$$
$$i e^{-i (17 e+3 f x)} \left(-1+e^{18 i e}\right) \sqrt{4 b+a e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2}$$
$$\left(-13440 b^7 e^{4 i e+6 i f x} \left(e^{16 i e}+e^{2 i f x}\right)+a^7 e^{4 i f x} \left(1+e^{18 i e}\right) \left(1+e^{2 i (e+f x)}\right)^3-\right.$$
$$6 a^6 b e^{4 i f x} \left(1+e^{18 i e}\right) \left(3+8 e^{2 i (e+f x)}+8 e^{4 i (e+f x)}+3 e^{6 i (e+f x)}\right)-2240 a b^6 e^{2 i (e+2 f x)}$$
$$\left(2 e^{16 i e}+3 e^{2 i f x}+2 e^{4 i e+6 i f x}+3 e^{4 i (5 e+f x)}+21 e^{2 i (9 e+f x)}+21 e^{2 i (e+2 f x)}\right)-$$
$$24 a^2 b^5 e^{2 i f x} \left(7 e^{16 i e}+35 e^{2 i f x}+2710 e^{4 i e+6 i f x}+840 e^{22 i e+6 i f x}+560 e^{6 i e+8 i f x}+\right.$$
$$\left.35 e^{8 i (3 e+f x)}+2710 e^{4 i (5 e+f x)}+560 e^{2 i (9 e+f x)}+840 e^{2 i (e+2 f x)}+7 e^{2 i (4 e+5 f x)}\right)-$$
$$4 a^4 b^3 \left(-6 e^{14 i e}+430 e^{4 i f x}+3987 e^{20 i e+6 i f x}+2610 e^{22 i e+8 i f x}+84 e^{2 i (8 e+f x)}+\right.$$
$$3987 e^{4 i (e+2 f x)}+1684 e^{2 i (9 e+2 f x)}+2610 e^{2 i (e+3 f x)}+84 e^{4 i (2 e+3 f x)}+$$
$$\left.1684 e^{2 i (3 e+5 f x)}+430 e^{2 i (12 e+5 f x)}-6 e^{2 i (5 e+7 f x)}\right)-6 a^5 b^2 \left(-2 e^{14 i e}+80 e^{4 i f x}+\right.$$
$$407 e^{20 i e+6 i f x}+318 e^{22 i e+8 i f x}+14 e^{2 i (8 e+f x)}+407 e^{4 i (e+2 f x)}+191 e^{2 i (9 e+2 f x)}+$$
$$\left.318 e^{2 i (e+3 f x)}+14 e^{4 i (2 e+3 f x)}+191 e^{2 i (3 e+5 f x)}+80 e^{2 i (12 e+5 f x)}-2 e^{2 i (5 e+7 f x)}\right)-$$
$$12 a^3 b^4 \left(-e^{14 i e}+175 e^{4 i f x}+3750 e^{20 i e+6 i f x}+1835 e^{22 i e+8 i f x}+\right.$$
$$35 e^{2 i (8 e+f x)}+3750 e^{4 i (e+2 f x)}+1214 e^{2 i (9 e+2 f x)}+1835 e^{2 i (e+3 f x)}+$$
$$\left.\left.35 e^{4 i (2 e+3 f x)}+1214 e^{2 i (3 e+5 f x)}+175 e^{2 i (12 e+5 f x)}-e^{2 i (5 e+7 f x)}\right)\right)+$$
$$\frac{1}{24 \sqrt{2}\ a^4 b^2 (a+b)^2 \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^2 f} i e^{-i (17 e+3 f x)}$$
$$\left(1+e^{18 i e}\right) \sqrt{4 b+a e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2}$$
$$\left(13440 b^7 e^{4 i e+6 i f x} \left(-e^{16 i e}+e^{2 i f x}\right)+a^7 e^{4 i f x} \left(-1+e^{18 i e}\right) \left(1+e^{2 i (e+f x)}\right)^3-\right.$$
$$6 a^6 b e^{4 i f x} \left(-1+e^{18 i e}\right) \left(3+8 e^{2 i (e+f x)}+8 e^{4 i (e+f x)}+3 e^{6 i (e+f x)}\right)+2240 a b^6 e^{2 i (e+2 f x)}$$
$$\left(-2 e^{16 i e}+3 e^{2 i f x}+2 e^{4 i e+6 i f x}-3 e^{4 i (5 e+f x)}-21 e^{2 i (9 e+f x)}+21 e^{2 i (e+2 f x)}\right)+$$
$$24 a^2 b^5 e^{2 i f x} \left(-7 e^{16 i e}+35 e^{2 i f x}+2710 e^{4 i e+6 i f x}-840 e^{22 i e+6 i f x}+560 e^{6 i e+8 i f x}-\right.$$
$$\left.35 e^{8 i (3 e+f x)}-2710 e^{4 i (5 e+f x)}-560 e^{2 i (9 e+f x)}+840 e^{2 i (e+2 f x)}+7 e^{2 i (4 e+5 f x)}\right)-$$
$$12 a^3 b^4 \left(-e^{14 i e}-175 e^{4 i f x}+3750 e^{20 i e+6 i f x}+1835 e^{22 i e+8 i f x}+35 e^{2 i (8 e+f x)}-\right.$$
$$3750 e^{4 i (e+2 f x)}+1214 e^{2 i (9 e+2 f x)}-1835 e^{2 i (e+3 f x)}-35 e^{4 i (2 e+3 f x)}-$$
$$\left.1214 e^{2 i (3 e+5 f x)}+175 e^{2 i (12 e+5 f x)}+e^{2 i (5 e+7 f x)}\right)-6 a^5 b^2 \left(-2 e^{14 i e}-80 e^{4 i f x}+\right.$$
$$407 e^{20 i e+6 i f x}+318 e^{22 i e+8 i f x}+14 e^{2 i (8 e+f x)}-407 e^{4 i (e+2 f x)}+191 e^{2 i (9 e+2 f x)}-$$
$$\left.318 e^{2 i (e+3 f x)}-14 e^{4 i (2 e+3 f x)}-191 e^{2 i (3 e+5 f x)}+80 e^{2 i (12 e+5 f x)}+2 e^{2 i (5 e+7 f x)}\right)-$$

$$4 a^4 b^3 \left(-6 e^{14 i e} - 430 e^{4 i f x} + 3987 e^{20 i e+6 i f x} + 2610 e^{22 i e+8 i f x} + 84 e^{2 i (8 e+f x)} - 3987 e^{4 i (e+2 f x)} + 1684 e^{2 i (9 e+2 f x)} - 2610 e^{2 i (e+3 f x)} - 84 e^{4 i (2 e+3 f x)} - 1684 e^{2 i (3 e+5 f x)} + 430 e^{2 i (12 e+5 f x)} + 6 e^{2 i (5 e+7 f x)}\right)\Big) +$$

$$\Bigg(5 \left(3 a^2 + 14 a b + 14 b^2\right) e^{i (-17 e+f x)} \left(1 + e^{18 i e}\right) \sqrt{4 b + a e^{-2 i (e+f x)} \left(1 + e^{2 i (e+f x)}\right)^2} \left(-i \operatorname{Log}\left[e^{-2 i e} \left(a + 2 b + a e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] + e^{18 i e} \left(2 f x + i \operatorname{Log}\left[e^{-2 i e} \left(a + a e^{2 i (e+f x)} + 2 b e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right]\right)\right)\Bigg) \Big/$$

$$\left(\sqrt{2}\, a^{9/2} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\, f\right) - \Bigg(5 \left(3 a^2 + 14 a b + 14 b^2\right) e^{i (-17 e+f x)} \left(-1 + e^{18 i e}\right) \sqrt{4 b + a e^{-2 i (e+f x)} \left(1 + e^{2 i (e+f x)}\right)^2} \left(i \operatorname{Log}\left[e^{-2 i e} \left(a + 2 b + a e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] + e^{18 i e} \left(2 f x + i \operatorname{Log}\left[e^{-2 i e} \left(a + a e^{2 i (e+f x)} + 2 b e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right]\right)\right)\Bigg) \Big/$$

$$\left(\sqrt{2}\, a^{9/2} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\, f\right)\Bigg) \operatorname{Sec}[e + f x]^5 -$$

$$\Bigg(i e^{i (e+f x)} \sqrt{4 b + a e^{-2 i (e+f x)} \left(1 + e^{2 i (e+f x)}\right)^2} \left(a + 2 b + a \operatorname{Cos}[2 e + 2 f x]\right)^{5/2} \Big(-25 a^{7/2} - 58 a^{5/2} b - 32 a^{3/2} b^2 - 15 a^{7/2} e^{2 i (e+f x)} - 108 a^{5/2} b e^{2 i (e+f x)} - 192 a^{3/2} b^2 e^{2 i (e+f x)} - 96 \sqrt{a}\, b^3 e^{2 i (e+f x)} + 15 a^{7/2} e^{4 i (e+f x)} + 108 a^{5/2} b e^{4 i (e+f x)} + 192 a^{3/2} b^2 e^{4 i (e+f x)} + 96 \sqrt{a}\, b^3 e^{4 i (e+f x)} + 25 a^{7/2} e^{6 i (e+f x)} +$$

$$58\,a^{5/2}\,b\,e^{6\,i\,(e+f\,x)}+32\,a^{3/2}\,b^2\,e^{6\,i\,(e+f\,x)}-$$
$$24\,i\,a^2\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}f\,x-$$
$$48\,i\,a\,b\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}f\,x-$$
$$24\,i\,b^2\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}f\,x-$$
$$12\,a^2\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]-$$
$$24\,a\,b\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]-$$
$$12\,b^2\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]+$$
$$12\,a^2\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]+$$
$$24\,a\,b\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]+$$
$$12\,b^2\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]\Bigg)$$
$$\text{Sec}[e+f\,x]^5\Bigg)\Big/\left(384\,\sqrt{2}\,a^{5/2}\,(a+b)^2\right.$$
$$\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^2$$
$$f$$
$$\left.\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}\right)-$$
$$\Bigg(i\,e^{-i\,(e+f\,x)}\,\sqrt{4\,b+a\,e^{-2\,i\,(e+f\,x)}\left(1+e^{2\,i\,(e+f\,x)}\right)^2}$$
$$\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^{5/2}$$
$$\Big(-12\,a^{9/2}-24\,a^{7/2}\,b-12\,a^{5/2}\,b^2-113\,a^{9/2}\,e^{2\,i\,(e+f\,x)}-$$
$$532\,a^{7/2}\,b\,e^{2\,i\,(e+f\,x)}-740\,a^{5/2}\,b^2\,e^{2\,i\,(e+f\,x)}-$$
$$320\,a^{3/2}\,b^3\,e^{2\,i\,(e+f\,x)}-87\,a^{9/2}\,e^{4\,i\,(e+f\,x)}-690\,a^{7/2}\,b\,e^{4\,i\,(e+f\,x)}-$$
$$2040\,a^{5/2}\,b^2\,e^{4\,i\,(e+f\,x)}-2400\,a^{3/2}\,b^3\,e^{4\,i\,(e+f\,x)}-$$

$960\sqrt{a}\, b^4\, e^{4 i (e+f x)} + 87\, a^{9/2}\, e^{6 i (e+f x)} + 690\, a^{7/2}\, b\, e^{6 i (e+f x)} +$
$2040\, a^{5/2}\, b^2\, e^{6 i (e+f x)} + 2400\, a^{3/2}\, b^3\, e^{6 i (e+f x)} +$
$960\sqrt{a}\, b^4\, e^{6 i (e+f x)} + 113\, a^{9/2}\, e^{8 i (e+f x)} + 532\, a^{7/2}\, b\, e^{8 i (e+f x)} +$
$740\, a^{5/2}\, b^2\, e^{8 i (e+f x)} + 320\, a^{3/2}\, b^3\, e^{8 i (e+f x)} +$
$12\, a^{9/2}\, e^{10 i (e+f x)} + 24\, a^{7/2}\, b\, e^{10 i (e+f x)} + 12\, a^{5/2}\, b^2\, e^{10 i (e+f x)} -$
$120\, i\, a^3\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2} f x -$
$480\, i\, a^2\, b\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2} f x -$
$600\, i\, a\, b^2\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2} f x -$
$240\, i\, b^3\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2} f x -$
$60\, a^3\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$
$\text{Log}\left[e^{-2 i e} \left(a + 2 b + a\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] -$
$240\, a^2\, b\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$
$\text{Log}\left[e^{-2 i e} \left(a + 2 b + a\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] -$
$300\, a\, b^2\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$
$\text{Log}\left[e^{-2 i e} \left(a + 2 b + a\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] -$
$120\, b^3\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$
$\text{Log}\left[e^{-2 i e} \left(a + 2 b + a\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] +$
$60\, a^3\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$
$\text{Log}\left[e^{-2 i e} \left(a + a\, e^{2 i (e+f x)} + 2 b\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] +$
$240\, a^2\, b\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$
$\text{Log}\left[e^{-2 i e} \left(a + a\, e^{2 i (e+f x)} + 2 b\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] +$
$300\, a\, b^2\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$
$\text{Log}\left[e^{-2 i e} \left(a + a\, e^{2 i (e+f x)} + 2 b\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] +$
$120\, b^3\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$
$\text{Log}\left[e^{-2 i e} \left(a + a\, e^{2 i (e+f x)} + 2 b\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right]\Bigg)$

$$\text{Sec}[e+f x]^5\Big) \Big/ \left(1536 \sqrt{2}\, a^{7/2}\, (a+b)^2 \left(4 b\, e^{2 i (e+f x)} + a \left(1+e^{2 i (e+f x)}\right)^2\right)^2\right.$$
$$f$$
$$\left.\left(a + b\,\text{Sec}[e+f x]^2\right)^{5/2}\right) +$$
$$\Big(\big(2 a + 3 b + a\,\text{Cos}\big[2\,(e+f x)\big]\big)\,\left(a + 2 b + a\,\text{Cos}[2 e + 2 f x]\right)^{5/2}$$
$$\text{Sec}[e+f x]^4$$
$$\text{Tan}[e+f x]\Big) \Big/ \Big(256$$
$$(a+b)^2$$
$$f$$
$$\left(a + 2 b + a\,\text{Cos}\big[2\,(e+f x)\big]\right)^{3/2}$$
$$\left(a + b\,\text{Sec}[e+f x]^2\right)^{5/2}\Big) -$$
$$\Big(\big(b + (3 a + 2 b)\,\text{Cos}\big[2\,(e+f x)\big]\big)\,\left(a + 2 b + a\,\text{Cos}[2 e + 2 f x]\right)^{5/2}$$
$$\text{Sec}[e+f x]^4$$
$$\text{Tan}[e+f x]\Big) \Big/ \Big(384$$
$$(a+b)^2$$
$$f$$
$$\left(a + 2 b + a\,\text{Cos}\big[2\,(e+f x)\big]\right)^{3/2}$$
$$\left(a + b\,\text{Sec}[e+f x]^2\right)^{5/2}\Big)$$

Problem 127: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 167 leaves, 7 steps):

$$\frac{(a+5 b)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{2 a^{7/2} f} - \frac{\text{Cos}[e+f x]\,\text{Sin}[e+f x]}{2 a f \left(a+b+b\,\text{Tan}[e+f x]^2\right)^{3/2}} - \frac{5 b\,\text{Tan}[e+f x]}{6 a^2 f \left(a+b+b\,\text{Tan}[e+f x]^2\right)^{3/2}} - \frac{b\,(13 a+15 b)\,\text{Tan}[e+f x]}{6 a^3 (a+b) f \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}$$

Result (type 3, 3247 leaves):

$$-\Bigg(\Bigg(\Bigg(i\, e^{i (e+f x)} \sqrt{4 b + a\, e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2}\, \left(a + 2 b + a\,\text{Cos}[2 e + 2 f x]\right)^{5/2}$$
$$\Big(-25 a^{7/2} - 58 a^{5/2} b - 32 a^{3/2} b^2 - 15 a^{7/2} e^{2 i (e+f x)} - 108 a^{5/2} b\, e^{2 i (e+f x)} -$$
$$192 a^{3/2} b^2 e^{2 i (e+f x)} - 96 \sqrt{a}\, b^3 e^{2 i (e+f x)} + 15 a^{7/2} e^{4 i (e+f x)} + 108 a^{5/2} b\, e^{4 i (e+f x)} +$$
$$192 a^{3/2} b^2 e^{4 i (e+f x)} + 96 \sqrt{a}\, b^3 e^{4 i (e+f x)} + 25 a^{7/2} e^{6 i (e+f x)} + 58 a^{5/2} b\, e^{6 i (e+f x)} +$$
$$32 a^{3/2} b^2 e^{6 i (e+f x)} - 24 i a^2 \left(4 b\, e^{2 i (e+f x)} + a \left(1+e^{2 i (e+f x)}\right)^2\right)^{3/2} f x -$$

$$48\,i\,a\,b\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}f\,x-$$
$$24\,i\,b^2\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}f\,x-12\,a^2\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]-$$
$$24\,a\,b\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]-$$
$$12\,b^2\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]+$$
$$12\,a^2\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]+$$
$$24\,a\,b\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]+$$
$$12\,b^2\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2\,i\,e}\left(a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right]\Bigg)$$
$$\text{Sec}[e+f\,x]^5\Bigg)\Bigg/\left(128\,\sqrt{2}\,a^{5/2}\,(a+b)^2\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^2\right.$$
$$\left.f\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}\right)+$$
$$\Bigg(i\,e^{-i\,(e+f\,x)}\,\sqrt{4\,b+a\,e^{-2\,i\,(e+f\,x)}\left(1+e^{2\,i\,(e+f\,x)}\right)^2}$$
$$\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^{5/2}$$
$$\Big(-12\,a^{9/2}-24\,a^{7/2}\,b-12\,a^{5/2}\,b^2-113\,a^{9/2}\,e^{2\,i\,(e+f\,x)}-532\,a^{7/2}\,b\,e^{2\,i\,(e+f\,x)}-$$
$$740\,a^{5/2}\,b^2\,e^{2\,i\,(e+f\,x)}-320\,a^{3/2}\,b^3\,e^{2\,i\,(e+f\,x)}-87\,a^{9/2}\,e^{4\,i\,(e+f\,x)}-$$
$$690\,a^{7/2}\,b\,e^{4\,i\,(e+f\,x)}-2040\,a^{5/2}\,b^2\,e^{4\,i\,(e+f\,x)}-2400\,a^{3/2}\,b^3\,e^{4\,i\,(e+f\,x)}-$$
$$960\,\sqrt{a}\,b^4\,e^{4\,i\,(e+f\,x)}+87\,a^{9/2}\,e^{6\,i\,(e+f\,x)}+690\,a^{7/2}\,b\,e^{6\,i\,(e+f\,x)}+$$
$$2040\,a^{5/2}\,b^2\,e^{6\,i\,(e+f\,x)}+2400\,a^{3/2}\,b^3\,e^{6\,i\,(e+f\,x)}+960\,\sqrt{a}\,b^4\,e^{6\,i\,(e+f\,x)}+$$
$$113\,a^{9/2}\,e^{8\,i\,(e+f\,x)}+532\,a^{7/2}\,b\,e^{8\,i\,(e+f\,x)}+740\,a^{5/2}\,b^2\,e^{8\,i\,(e+f\,x)}+$$
$$320\,a^{3/2}\,b^3\,e^{8\,i\,(e+f\,x)}+12\,a^{9/2}\,e^{10\,i\,(e+f\,x)}+24\,a^{7/2}\,b\,e^{10\,i\,(e+f\,x)}+$$
$$12\,a^{5/2}\,b^2\,e^{10\,i\,(e+f\,x)}-120\,i\,a^3\,e^{2\,i\,(e+f\,x)}\left(4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2\right)^{3/2}f\,x-$$

$$480\, i\, a^2 b\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2} f x -$$
$$600\, i\, a b^2 e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2} f x -$$
$$240\, i\, b^3 e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2} f x -$$
$$60 a^3 e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2 i e} \left(a + 2 b + a\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] -$$
$$240 a^2 b\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2 i e} \left(a + 2 b + a\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] -$$
$$300 a b^2 e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2 i e} \left(a + 2 b + a\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] -$$
$$120 b^3 e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2 i e} \left(a + 2 b + a\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] +$$
$$60 a^3 e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2 i e} \left(a + a\, e^{2 i (e+f x)} + 2 b\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] +$$
$$240 a^2 b\, e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2 i e} \left(a + a\, e^{2 i (e+f x)} + 2 b\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] +$$
$$300 a b^2 e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2 i e} \left(a + a\, e^{2 i (e+f x)} + 2 b\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right] +$$
$$120 b^3 e^{2 i (e+f x)} \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^{3/2}$$
$$\text{Log}\left[e^{-2 i e} \left(a + a\, e^{2 i (e+f x)} + 2 b\, e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right]\Bigg)$$
$$\text{Sec}[e + f x]^5\Bigg) \Big/ \left(384 \sqrt{2}\, a^{7/2} (a + b)^2 \left(4 b\, e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)^2\right.$$
$$\left. f \left(a + b\, \text{Sec}[e + f x]^2\right)^{5/2}\right) +$$
$$\Big(5 \left(2 a + 3 b + a \text{Cos}[2 (e + f x)]\right) \left(a + 2 b + a \text{Cos}[2 e + 2 f x]\right)^{5/2}$$
$$\text{Sec}[e + f x]^4 \text{Tan}[e + f x]\Big) \Big/$$
$$\left(384 (a + b)^2 f \left(a + 2 b + a \text{Cos}[2 (e + f x)]\right)^{3/2}\right)$$

$$\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^{5/2}\Big) -$$
$$\Big(\left(b+(3\,a+2\,b)\,\mathrm{Cos}[2\,(e+f\,x)]\right)\,\left(a+2\,b+a\,\mathrm{Cos}[2\,e+2\,f\,x]\right)^{5/2}$$
$$\mathrm{Sec}[e+f\,x]^4\,\mathrm{Tan}[e+f\,x]\Big)\Big/$$
$$\left(384\,(a+b)^2\,f\,\left(a+2\,b+a\,\mathrm{Cos}[2\,(e+f\,x)]\right)^{3/2}\,\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^{5/2}\right)$$

Problem 128: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

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

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

Result (type 6, 1927 leaves):

$$\left(3\,(a+b)\,\mathrm{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\mathrm{Sin}[e+f\,x]^2,\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}\right]\,\mathrm{Cos}[e+f\,x]^4\,\mathrm{Sin}[e+f\,x]\right)\Big/$$
$$\Bigg(4\,\sqrt{2}\,f\,\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^{5/2}\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)^{5/2}$$
$$\Big(3\,(a+b)\,\mathrm{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\mathrm{Sin}[e+f\,x]^2,\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}\right]+$$
$$\Big(5\,a\,\mathrm{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\mathrm{Sin}[e+f\,x]^2,\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}\right]-$$
$$4\,(a+b)\,\mathrm{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\mathrm{Sin}[e+f\,x]^2,\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}\right]\Big)\,\mathrm{Sin}[e+f\,x]^2\Big)$$
$$\Bigg(\Big(15\,a\,(a+b)\,\mathrm{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\mathrm{Sin}[e+f\,x]^2,\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}\right]$$
$$\mathrm{Cos}[e+f\,x]^5\,\mathrm{Sin}[e+f\,x]^2\Big)\Big/\Big(4\,\sqrt{2}\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)^{7/2}$$
$$\Big(3\,(a+b)\,\mathrm{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\mathrm{Sin}[e+f\,x]^2,\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}\right]+$$

$$\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\Bigg)\Bigg)+$$

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

$$\Bigg(4\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\Bigg)\Bigg)-$$

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

$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\Bigg)\Bigg)+$$

$$\Bigg(3\,(a+b)\,\text{Cos}[e+f\,x]^4\,\text{Sin}[e+f\,x]\,\Bigg(\frac{1}{3\,(a+b)}5\,a\,f\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{4}{3}f\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\Bigg)\Bigg)\Big/$$

$$\Bigg(4\sqrt{2}\,f\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\Bigg)\Bigg)-$$

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

$$\text{Sin}[e+f x]\left(2 f\left(5 a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]-\right.\right.$$

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

$$\text{Cos}[e+f x]\,\text{Sin}[e+f x]+3(a+b)\left(\frac{1}{3(a+b)}5 a f\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\right.\right.$$

$$\left.\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]-\frac{4}{3}f$$

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

$$\text{Sin}[e+f x]^2\left(5 a\left(\frac{1}{5(a+b)}21 a f\,\text{AppellF1}\left[\frac{5}{2},-2,\frac{9}{2},\frac{7}{2},\text{Sin}[e+f x]^2,\right.\right.\right.$$

$$\left.\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]-\frac{12}{5}f\,\text{AppellF1}\left[\frac{5}{2},-1,\frac{7}{2},\right.$$

$$\left.\left.\frac{7}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]\right)-4(a+b)$$

$$\left(\frac{1}{a+b}3 a f\,\text{AppellF1}\left[\frac{5}{2},-1,\frac{7}{2},\frac{7}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\right.$$

$$\text{Sin}[e+f x]-\left(6(a+b)^3 f\,\text{Cot}[e+f x]\,\text{Csc}[e+f x]^4\left(-1+\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right)^2\right.$$

$$\left(\frac{\sqrt{a}\,\text{ArcSin}\left[\frac{\sqrt{a}\,\text{Sin}[e+f x]}{\sqrt{a+b}}\right]\text{Sin}[e+f x]}{\sqrt{a+b}\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}+\frac{a^2\,\text{Sin}[e+f x]^4}{3(a+b)^2\left(-1+\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right)^2}+\right.$$

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

$$\left(4\sqrt{2}\,f\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)^{5/2}\left(3\,(a+b)\,\mathrm{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\mathrm{Sin}[e+f\,x]^2,\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}\right]+\left(5\,a\,\mathrm{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\mathrm{Sin}[e+f\,x]^2,\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}\right]-4\,(a+b)\,\mathrm{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\mathrm{Sin}[e+f\,x]^2,\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}\right]\right)\mathrm{Sin}[e+f\,x]^2\right)^2\right)\right)$$

Problem 132: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 123 leaves, ? steps):

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

Result (type 6, 3356 leaves):

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

$$\left(f\,(1+m)\,\left((a+b)\,(3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2},\frac{2+m}{2},-p,\frac{3+m}{2},-\mathrm{Tan}[e+f\,x]^2,-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b}\right]-\left(-2\,b\,p\,\mathrm{AppellF1}\left[\frac{3+m}{2},\frac{2+m}{2},1-p,\frac{5+m}{2},-\mathrm{Tan}[e+f\,x]^2,-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b}\right]+(a+b)\,(2+m)\,\mathrm{AppellF1}\left[\frac{3+m}{2},\frac{4+m}{2},-p,\frac{5+m}{2},-\mathrm{Tan}[e+f\,x]^2,-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b}\right]\right)\mathrm{Tan}[e+f\,x]^2\right)\right.$$

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

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

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

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

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

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

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

$$\left.\left.\text{Tan}[e+f x]^2\right)\right)+\left((a+b)\,(3+m)\,\text{Cos}[e+f x]\,\left(a+2\,b+a\,\text{Cos}\left[2\,(e+f x)\right]\right)^p\right.$$

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

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

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

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

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

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

$$(a+b)\,(2+m)\,\text{AppellF1}\left[\frac{3+m}{2},\frac{4+m}{2},-p,\frac{5+m}{2},\right.$$

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

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

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

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

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

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

$$(a+b)\,(2+m)\,\text{AppellF1}\left[\frac{3+m}{2},\frac{4+m}{2},-p,\frac{5+m}{2},\right.$$

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

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

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

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

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

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

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

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

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

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

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

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

$$\left.1-p,1+\frac{5+m}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)+$$

$$(a+b)\,(2+m)\,\Bigg(\Bigg(2 b\,(3+m)\,p\,\text{AppellF1}\left[1+\frac{3+m}{2},\frac{4+m}{2},1-p,1+\frac{5+m}{2},\right.$$

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

$$\left((a+b)\,(5+m)\right)-\frac{1}{5+m}(3+m)\,(4+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},1+\frac{4+m}{2},-p,\right.$$

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

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

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

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

$$\left.\left.\left.\frac{4+m}{2},\ -p,\ \frac{5+m}{2},\ -\mathrm{Tan}[e+f x]^2,\ -\frac{b\,\mathrm{Tan}[e+f x]^2}{a+b}\right]\right)\mathrm{Tan}[e+f x]^2\right)^2\right)\right)\right)$$

Problem 136: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 77 leaves, 3 steps):

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

Result (type 6, 4417 leaves):

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

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

$$\Bigg(b\,(-1+2p)\,\text{AppellF1}\Big[-\frac{1}{2}-p,-\frac{1}{2},-p,\frac{1}{2}-p,-\text{Cot}[e+f x]^2,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\Big]\,(1+\text{Tan}[e+f x]^2)\Bigg)\Bigg/\Bigg((1+2p)\,\Bigg(-2\,(a+b)\,p\,\text{AppellF1}\Big[\frac{1}{2}-p,-\frac{1}{2},1-p,\frac{3}{2}-p,-\text{Cot}[e+f x]^2,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\Big]-b\,\text{AppellF1}\Big[\frac{1}{2}-p,\frac{1}{2},-p,\frac{3}{2}-p,-\text{Cot}[e+f x]^2,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\Big]+b\,(-1+2p)\,\text{AppellF1}\Big[-\frac{1}{2}-p,-\frac{1}{2},-p,\frac{1}{2}-p,-\text{Cot}[e+f x]^2,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\Big]\,\text{Tan}[e+f x]^2\Bigg)\Bigg)\Bigg)+$$

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

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

$$\Bigg(b\,(-1+2p)\,\text{AppellF1}\Big[-\frac{1}{2}-p,-\frac{1}{2},-p,\frac{1}{2}-p,-\text{Cot}[e+f x]^2,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\Big]\,(1+\text{Tan}[e+f x]^2)\Bigg)\Bigg/\Bigg((1+2p)\,\Bigg(-2\,(a+b)\,p\,\text{AppellF1}\Big[\frac{1}{2}-p,-\frac{1}{2},1-p,\frac{3}{2}-p,-\text{Cot}[e+f x]^2,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\Big]-b\,\text{AppellF1}\Big[\frac{1}{2}-p,\frac{1}{2},-p,\frac{3}{2}-p,-\text{Cot}[e+f x]^2,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\Big]+b\,(-1+2p)\,\text{AppellF1}\Big[-\frac{1}{2}-p,-\frac{1}{2},-p,\frac{1}{2}-p,-\text{Cot}[e+f x]^2,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\Big]\,\text{Tan}[e+f x]^2\Bigg)\Bigg)\Bigg)+$$

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

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

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

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

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

$$-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\Big]+b\,(-1+2p)\,\text{AppellF1}\Big[-\frac{1}{2}-p,-\frac{1}{2},-p,\frac{1}{2}-p,-\text{Cot}[e+f x]^2,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\Big]\,\text{Tan}[e+f x]^2\Big)\Big)+$$

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

$$\Bigg((1+2p)\,\Bigg(-2\,(a+b)\,p\,\text{AppellF1}\Big[\frac{1}{2}-p,-\frac{1}{2},1-p,\frac{3}{2}-p,-\text{Cot}[e+f x]^2,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\Big]-b\,\text{AppellF1}\Big[\frac{1}{2}-p,\frac{1}{2},-p,\frac{3}{2}-p,-\text{Cot}[e+f x]^2,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\Big]+b\,(-1+2p)\,\text{AppellF1}\Big[-\frac{1}{2}-p,-\frac{1}{2},-p,\frac{1}{2}-p,-\text{Cot}[e+f x]^2,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\Big]\,\text{Tan}[e+f x]^2\Bigg)\Bigg)-$$

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

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

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

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

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

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

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

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

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

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

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

Problem 137: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 81 leaves, 3 steps):

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

Result (type 6, 2081 leaves):

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

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

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

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

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

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

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

$$-\text{Cot}[e+f x]^2,\ -\frac{(a+b)\ \text{Cot}[e+f x]^2}{b}\Big]\ \text{Tan}[e+f x]^2\Bigg)\Bigg)\Bigg)\Bigg)+$$

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

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

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

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

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

$$\frac{3}{2}-p,\ -\text{Cot}[e+f x]^2,\ -\frac{(a+b)\ \text{Cot}[e+f x]^2}{b}\Big]\ \text{Tan}[e+f x]^2\Bigg)\Bigg)\Bigg)-$$

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

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

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

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

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

$$\frac{3}{2}-p,\ -\text{Cot}[e+f x]^2,\ -\frac{(a+b)\ \text{Cot}[e+f x]^2}{b}\Big]\ \text{Tan}[e+f x]^2\Bigg)\Bigg)\Bigg)+$$

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

$$(a+2b+a\,\text{Cos}[2(e+fx)])^p\,(\text{Sec}[e+fx]^2)^{\frac{1}{2}+p}$$

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

$$\left.2-p,\frac{7}{2}-p,-\text{Cot}[e+fx]^2,-\frac{(a+b)\,\text{Cot}[e+fx]^2}{b}\right]\text{Cot}[e+fx]$$

$$\text{Csc}[e+fx]^2-\frac{1}{\frac{5}{2}-p}\left(\frac{3}{2}-p\right)\text{AppellF1}\left[\frac{5}{2}-p,\frac{1}{2},1-p,\frac{7}{2}-p,\right.$$

$$\left.\left.-\text{Cot}[e+fx]^2,-\frac{(a+b)\,\text{Cot}[e+fx]^2}{b}\right]\text{Cot}[e+fx]\,\text{Csc}[e+fx]^2\right)+$$

$$b\left(-\frac{1}{b\left(\frac{5}{2}-p\right)}2(a+b)\left(\frac{3}{2}-p\right)p\,\text{AppellF1}\left[\frac{5}{2}-p,\frac{1}{2},1-p,\frac{7}{2}-p,-\text{Cot}[e+fx]^2,\right.\right.$$

$$\left.-\frac{(a+b)\,\text{Cot}[e+fx]^2}{b}\right]\text{Cot}[e+fx]\,\text{Csc}[e+fx]^2+\frac{1}{\frac{5}{2}-p}\left(\frac{3}{2}-p\right)$$

$$\text{AppellF1}\left[\frac{5}{2}-p,\frac{3}{2},-p,\frac{7}{2}-p,-\text{Cot}[e+fx]^2,-\frac{(a+b)\,\text{Cot}[e+fx]^2}{b}\right]$$

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

$$\left.-\text{Cot}[e+fx]^2,-\frac{(a+b)\,\text{Cot}[e+fx]^2}{b}\right]\text{Sec}[e+fx]^2\,\text{Tan}[e+fx]+(3-2p)$$

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

$$\left.-\text{Cot}[e+fx]^2,-\frac{(a+b)\,\text{Cot}[e+fx]^2}{b}\right]\text{Cot}[e+fx]\,\text{Csc}[e+fx]^2-$$

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

$$\left.\left.\left.\left.\left.-\frac{(a+b)\,\text{Cot}[e+fx]^2}{b}\right]\text{Cot}[e+fx]\,\text{Csc}[e+fx]^2\right)\text{Tan}[e+fx]^2\right)\right)\right)\Big/$$

$$\left(\left(-1+2p\right)\left(2(a+b)\,p\,\text{AppellF1}\left[\frac{3}{2}-p,-\frac{1}{2},1-p,\frac{5}{2}-p,-\text{Cot}[e+fx]^2,\right.\right.\right.$$

$$\left.-\frac{(a+b)\,\text{Cot}[e+fx]^2}{b}\right]+b\left(\text{AppellF1}\left[\frac{3}{2}-p,\frac{1}{2},-p,\frac{5}{2}-p,-\text{Cot}[e+fx]^2,\right.\right.$$

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

$$-\text{Cot}[e+f x]^2,\ -\frac{(a+b)\ \text{Cot}[e+f x]^2}{b}\Big]\ \text{Tan}[e+f x]^2\Big)\Big)^2\Big)\Big)\Big)\Big)$$

Problem 138: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 88 leaves, 3 steps):

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

Result (type 6, 5878 leaves):

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

$$\Bigg(f\Bigg(3\times 2^{1+p}\,(a+b)\,(-3+p)\,\mathrm{Sec}[e+f x]^2\,\mathrm{Tan}[e+f x]^2\,\left(1+\mathrm{Tan}[e+f x]^2\right)^{-4+p}$$

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

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

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

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

$$\mathrm{AppellF1}\Big[\frac{3}{2},3,-p,\frac{5}{2},-\mathrm{Tan}[e+f x]^2,-\frac{b\,\mathrm{Tan}[e+f x]^2}{a+b}\Big]\Bigg)\mathrm{Tan}[e+f x]^2\Bigg)+$$

$$\mathrm{AppellF1}\Big[\frac{1}{2},3,-p,\frac{3}{2},-\mathrm{Tan}[e+f x]^2,-\frac{b\,\mathrm{Tan}[e+f x]^2}{a+b}\Big]\Big/$$

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

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

$$\mathrm{AppellF1}\Big[\frac{3}{2},4,-p,\frac{5}{2},-\mathrm{Tan}[e+f x]^2,-\frac{b\,\mathrm{Tan}[e+f x]^2}{a+b}\Big]\Bigg)\mathrm{Tan}[e+f x]^2\Bigg)-$$

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

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

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

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

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

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

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

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

$$\mathrm{AppellF1}\Big[\frac{3}{2},3,-p,\frac{5}{2},-\mathrm{Tan}[e+f x]^2,-\frac{b\,\mathrm{Tan}[e+f x]^2}{a+b}\Big]\Bigg)\mathrm{Tan}[e+f x]^2\Bigg)+$$

$$\mathrm{AppellF1}\Big[\frac{1}{2},3,-p,\frac{3}{2},-\mathrm{Tan}[e+f x]^2,-\frac{b\,\mathrm{Tan}[e+f x]^2}{a+b}\Big]\Big/$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{2}{3}\,\text{AppellF1}\left[\frac{3}{2},\,-p,\,2,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\right.$$

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

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

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

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

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

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

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

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

$$\left.\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{4}{3}\,\text{AppellF1}\left[\right.$$

$$\left.\left.\frac{3}{2},\,3,\,-p,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$

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

$$\left.-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{12}{5}\,\text{AppellF1}\left[\frac{5}{2},\,3,\,1-p,\right.$$

$$\left.\left.\frac{7}{2},\,-\text{Tan}[e+f\,x]^2,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$

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

$$\left.-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{18}{5}\,\text{AppellF1}\left[\frac{5}{2},\,4,\,-p,\right.$$

$$\left.\left.\left.\left.\left.\frac{7}{2},\,-\text{Tan}[e+f\,x]^2,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\right)\right)\Big/$$

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

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

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

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

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

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

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

$$\left.\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-2\,\text{AppellF1}\left[\right.$$

$$\left.\left.\frac{3}{2},4,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)+$$

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

$$\left.-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{18}{5}\,\text{AppellF1}\left[\frac{5}{2},4,1-p,\right.$$

$$\left.\left.\frac{7}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)-$$

$$3\,(a+b)\left(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\left[\frac{5}{2},4,1-p,\frac{7}{2},-\text{Tan}[e+f x]^2,\right.\right.$$

$$\left.-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{24}{5}\,\text{AppellF1}\left[\frac{5}{2},5,-p,\right.$$

$$\left.\left.\left.\left.\left.\frac{7}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\right)\right)\right)\right)\Big/$$

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

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

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

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

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

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

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

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

$$-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)+2\,\text{Tan}[e+f x]^2$$
$$\Bigg(-b\,p\,\Bigg(-\frac{6}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,1-p,\,2,\,\frac{7}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]$$
$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\Big[\frac{5}{2},\,2-p,\,1,$$
$$\frac{7}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)+$$
$$(a+b)\,\Bigg(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\Big[\frac{5}{2},\,1-p,\,2,\,\frac{7}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},$$
$$-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{12}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,-p,\,3,$$
$$\frac{7}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$
$$\Bigg(-3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},\,-p,\,1,\,\frac{3}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]+$$
$$2\,\Bigg(-b\,p\,\text{AppellF1}\Big[\frac{3}{2},\,1-p,\,1,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]+(a+b)$$
$$\text{AppellF1}\Big[\frac{3}{2},\,-p,\,2,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)^2\Bigg)\Bigg)\Bigg)$$

Problem 139: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 88 leaves, 3 steps):

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

Result (type 6, 3781 leaves):

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\left.\left.\left.\left.\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\right)-$$

$$6\,a\,(a+b)\,p\,\left(a+2b+a\,\text{Cos}[2\,(e+f x)]\right)^{-1+p}\left(\text{Sec}[e+f x]^2\right)^{-2+p}\text{Sin}[2\,(e+f x)]$$

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

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

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

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

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

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

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

$$\frac{3}{2}, -p, 2, \frac{5}{2}, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\Big]\Big)\,\text{Tan}[e+f x]^2\Big)\Big) +$$

$$6\,(a+b)\,(-2+p)\,(a+2 b+a\,\text{Cos}[2\,(e+f x)])^p\,(\text{Sec}[e+f x]^2)^{-2+p}\,\text{Tan}[e+f x]^2$$

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

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

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

$$\text{AppellF1}\Big[\frac{3}{2}, 3, -p, \frac{5}{2}, -\text{Tan}[e+f x]^2, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\Big)\,\text{Tan}[e+f x]^2\Big) +$$

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

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

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

$$\frac{3}{2}, -p, 2, \frac{5}{2}, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\Big]\Big)\,\text{Tan}[e+f x]^2\Big)\Big) +$$

$$3\,(a+b)\,(a+2 b+a\,\text{Cos}[2\,(e+f x)])^p\,(\text{Sec}[e+f x]^2)^{-2+p}\,\text{Tan}[e+f x]$$

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

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x] - \frac{4}{3}\,\text{AppellF1}\Big[\frac{3}{2}, 3, -p, \frac{5}{2},$$

$$-\text{Tan}[e+f x]^2, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)\Big/$$

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

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

$$\text{AppellF1}\Big[\frac{3}{2}, 3, -p, \frac{5}{2}, -\text{Tan}[e+f x]^2, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\Big)\,\text{Tan}[e+f x]^2\Big) +$$

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

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

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

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

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

$$-\text{Tan}[e+f x]^2\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]-\frac{2}{3}\ \text{AppellF1}\Big[\frac{3}{2},\ -p,\ 2,$$

$$\frac{5}{2},\ -\frac{b\ \text{Tan}[e+f x]^2}{a+b},\ -\text{Tan}[e+f x]^2\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]\Big)\Big)\Big/$$

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

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

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

$$\Big(\text{AppellF1}\Big[\frac{1}{2},\ 2,\ -p,\ \frac{3}{2},\ -\text{Tan}[e+f x]^2,\ -\frac{b\ \text{Tan}[e+f x]^2}{a+b}\Big]$$

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

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

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

$$\frac{5}{2},\ -\text{Tan}[e+f x]^2,\ -\frac{b\ \text{Tan}[e+f x]^2}{a+b}\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]-\frac{4}{3}\ \text{AppellF1}\Big[$$

$$\frac{3}{2},\ 3,\ -p,\ \frac{5}{2},\ -\text{Tan}[e+f x]^2,\ -\frac{b\ \text{Tan}[e+f x]^2}{a+b}\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]\Big)+$$

$$2\ \text{Tan}[e+f x]^2\ \Big(-b\ p\ \Big(-\frac{1}{5\ (a+b)}6\ b\ (1-p)\ \text{AppellF1}\Big[\frac{5}{2},\ 2,\ 2-p,\ \frac{7}{2},\ -\text{Tan}[e+f x]^2,$$

$$-\frac{b\ \text{Tan}[e+f x]^2}{a+b}\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]-\frac{12}{5}\ \text{AppellF1}\Big[\frac{5}{2},\ 3,\ 1-p,$$

$$\frac{7}{2},\ -\text{Tan}[e+f x]^2,\ -\frac{b\ \text{Tan}[e+f x]^2}{a+b}\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]\Big)+$$

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

$$-\frac{b\ \text{Tan}[e+f x]^2}{a+b}\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]-\frac{18}{5}\ \text{AppellF1}\Big[\frac{5}{2},\ 4,\ -p,$$

$$\frac{7}{2},\ -\text{Tan}[e+f x]^2,\ -\frac{b\ \text{Tan}[e+f x]^2}{a+b}\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]\Big)\Big)\Big)\Big)\Big/$$

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

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

$$\text{AppellF1}\Big[\frac{3}{2},\ 3,\ -p,\ \frac{5}{2},\ -\text{Tan}[e+f x]^2,\ -\frac{b\ \text{Tan}[e+f x]^2}{a+b}\Big]\Big)\ \text{Tan}[e+f x]^2\Big)^2-$$

$$\Big(\text{AppellF1}\Big[\frac{1}{2},\ -p,\ 1,\ \frac{3}{2},\ -\frac{b\ \text{Tan}[e+f x]^2}{a+b},\ -\text{Tan}[e+f x]^2\Big]\ \text{Sec}[e+f x]^2$$

$$\left(4\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+3\,(a+b)\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{2}{3}\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+2\,\text{Tan}[e+f\,x]^2\left(b\,p\left(-\frac{6}{5}\text{AppellF1}\left[\frac{5}{2},1-p,2,\frac{7}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\left[\frac{5}{2},2-p,1,\frac{7}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)-(a+b)\left(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\left[\frac{5}{2},1-p,2,\frac{7}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{12}{5}\text{AppellF1}\left[\frac{5}{2},-p,3,\frac{7}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\right)\Bigg/$$

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

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

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

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

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

Result (type 6, 2137 leaves):

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$-\text{Tan}[e+f x]^2\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]-\frac{12}{5}\ \text{AppellF1}\Big[\frac{5}{2},\ -p,\ 3,\ \frac{7}{2},\ -\frac{b\ \text{Tan}[e+f x]^2}{a+b},\ -\text{Tan}[e+f x]^2\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]\Big)\Big)\Big)\Big)\Big/$$

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

Problem 152: Result more than twice size of optimal antiderivative.

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

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

$$\frac{(6 a+5 b)\ \text{ArcTanh}[\text{Sin}[e+f x]]}{16 f}+\frac{(6 a+5 b)\ \text{Sec}[e+f x]\ \text{Tan}[e+f x]}{16 f}+\frac{(6 a+5 b)\ \text{Sec}[e+f x]^3\ \text{Tan}[e+f x]}{24 f}+\frac{b\ \text{Sec}[e+f x]^5\ \text{Tan}[e+f x]}{6 f}$$

Result (type 3, 445 leaves):

$$-\frac{3 a\ \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{8 f}-\frac{5 b\ \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{16 f}+\frac{3 a\ \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{8 f}+\frac{5 b\ \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{16 f}+$$
$$\frac{b}{48 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+\frac{a}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}+\frac{b}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}+\frac{3 a}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}+$$
$$\frac{5 b}{32 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}-\frac{b}{48 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-\frac{a}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}-\frac{b}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}-$$
$$\frac{3 a}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}-\frac{5 b}{32 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}$$

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

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

Optimal (type 3, 24 leaves, 2 steps):

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

Result (type 3, 92 leaves):

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

Problem 165: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 165 leaves, 6 steps):

$$\frac{\left(48 a^2+80 a b+35 b^2\right) \text{ArcTanh}[\text{Sin}[e+f x]]}{128 f}+\frac{\left(48 a^2+80 a b+35 b^2\right) \text{Sec}[e+f x]\,\text{Tan}[e+f x]}{128 f}+\frac{\left(48 a^2+80 a b+35 b^2\right) \text{Sec}[e+f x]^3\,\text{Tan}[e+f x]}{192 f}+\frac{b\,(10 a+7 b)\,\text{Sec}[e+f x]^5\,\text{Tan}[e+f x]}{48 f}+\frac{b\,\text{Sec}[e+f x]^7\,\left(a+b-a\,\text{Sin}[e+f x]^2\right) \text{Tan}[e+f x]}{8 f}$$

Result (type 3, 803 leaves):

$$-\frac{3 a^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{8 f}-\frac{5 a b \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{8 f}-\frac{35 b^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{128 f}+\frac{3 a^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{8 f}+\frac{5 a b \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{8 f}+\frac{35 b^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{128 f}+\frac{b^2}{128 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^8}+\frac{a b}{24 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+\frac{5 b^2}{192 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+\frac{a^2}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}+\frac{a b}{8 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}+\frac{15 b^2}{256 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}+\frac{3 a^2}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}+\frac{5 a b}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}+\frac{35 b^2}{256 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}-\frac{b^2}{128 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^8}-\frac{a b}{24 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-\frac{5 b^2}{192 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-\frac{a^2}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}-\frac{a b}{8 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}-\frac{15 b^2}{256 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}-\frac{3 a^2}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}-\frac{5 a b}{16 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}-\frac{35 b^2}{256 f\left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}$$

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

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

Optimal (type 3, 129 leaves, 5 steps):

$$\frac{\left(8 a^2+12 a b+5 b^2\right) \text{ArcTanh}[\text{Sin}[e+f x]]}{16 f}+\frac{\left(8 a^2+12 a b+5 b^2\right) \text{Sec}[e+f x] \,\text{Tan}[e+f x]}{16 f}+\frac{b (8 a+5 b) \,\text{Sec}[e+f x]^3 \,\text{Tan}[e+f x]}{24 f}+\frac{b \,\text{Sec}[e+f x]^5 \left(a+b-a \,\text{Sin}[e+f x]^2\right) \text{Tan}[e+f x]}{6 f}$$

Result (type 3, 601 leaves):

$$-\frac{a^2 \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 f}-\frac{3 a b \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{4 f}-\frac{5 b^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{16 f}+\frac{a^2 \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 f}+\frac{3 a b \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{4 f}+\frac{5 b^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{16 f}+\frac{b^2}{48 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}+\frac{a b}{8 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}+\frac{b^2}{16 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}+\frac{a^2}{4 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}+\frac{3 a b}{8 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}+\frac{5 b^2}{32 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]-\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}-\frac{b^2}{48 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^6}-\frac{a b}{8 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}-\frac{b^2}{16 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^4}-\frac{a^2}{4 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}-\frac{3 a b}{8 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}-\frac{5 b^2}{32 f \left(\text{Cos}\left[\frac{1}{2}(e+f x)\right]+\text{Sin}\left[\frac{1}{2}(e+f x)\right]\right)^2}$$

Problem 169: Result more than twice size of optimal antiderivative.

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

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

$$\frac{b^2 \text{ArcTanh}[\text{Sin}[e+f x]]}{f}+\frac{a (a+2 b) \text{Sin}[e+f x]}{f}-\frac{a^2 \text{Sin}[e+f x]^3}{3 f}$$

Result (type 3, 134 leaves):

$$-\frac{b^2 \text{Log}\left[\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right]}{f}+\frac{b^2 \text{Log}\left[\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right]}{f}+\frac{2 a b \text{Cos}[f x] \text{Sin}[e]}{f}+\frac{2 a b \text{Cos}[e] \text{Sin}[f x]}{f}+\frac{3 a^2 \text{Sin}[e+f x]}{4 f}+\frac{a^2 \text{Sin}[3 (e+f x)]}{12 f}$$

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

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

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

$$\frac{(a+b)^2 \operatorname{Sin}[e+f x]}{f}-\frac{2 a (a+b) \operatorname{Sin}[e+f x]^3}{3 f}+\frac{a^2 \operatorname{Sin}[e+f x]^5}{5 f}$$

Result (type 3, 111 leaves):

$$\frac{b^2 \operatorname{Cos}[f x] \operatorname{Sin}[e]}{f}+\frac{b^2 \operatorname{Cos}[e] \operatorname{Sin}[f x]}{f}+\frac{5 a^2 \operatorname{Sin}[e+f x]}{8 f}+\frac{3 a b \operatorname{Sin}[e+f x]}{2 f}+\frac{5 a^2 \operatorname{Sin}[3 (e+f x)]}{48 f}+\frac{a b \operatorname{Sin}[3 (e+f x)]}{6 f}+\frac{a^2 \operatorname{Sin}[5 (e+f x)]}{80 f}$$

Problem 171: Result more than twice size of optimal antiderivative.

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

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

$$\frac{(a+b)^2 \operatorname{Tan}[e+f x]}{f}+\frac{2 (a+b) (a+2 b) \operatorname{Tan}[e+f x]^3}{3 f}+\frac{\left(a^2+6 a b+6 b^2\right) \operatorname{Tan}[e+f x]^5}{5 f}+\frac{2 b (a+2 b) \operatorname{Tan}[e+f x]^7}{7 f}+\frac{b^2 \operatorname{Tan}[e+f x]^9}{9 f}$$

Result (type 3, 261 leaves):

$$\frac{8 a^2 \operatorname{Tan}[e+f x]}{15 f}+\frac{32 a b \operatorname{Tan}[e+f x]}{35 f}+\frac{128 b^2 \operatorname{Tan}[e+f x]}{315 f}+\frac{4 a^2 \operatorname{Sec}[e+f x]^2 \operatorname{Tan}[e+f x]}{15 f}+\frac{16 a b \operatorname{Sec}[e+f x]^2 \operatorname{Tan}[e+f x]}{35 f}+\frac{64 b^2 \operatorname{Sec}[e+f x]^2 \operatorname{Tan}[e+f x]}{315 f}+\frac{a^2 \operatorname{Sec}[e+f x]^4 \operatorname{Tan}[e+f x]}{5 f}+\frac{12 a b \operatorname{Sec}[e+f x]^4 \operatorname{Tan}[e+f x]}{35 f}+\frac{16 b^2 \operatorname{Sec}[e+f x]^4 \operatorname{Tan}[e+f x]}{105 f}+\frac{2 a b \operatorname{Sec}[e+f x]^6 \operatorname{Tan}[e+f x]}{7 f}+\frac{8 b^2 \operatorname{Sec}[e+f x]^6 \operatorname{Tan}[e+f x]}{63 f}+\frac{b^2 \operatorname{Sec}[e+f x]^8 \operatorname{Tan}[e+f x]}{9 f}$$

Problem 172: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 80 leaves, 3 steps):

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

Result (type 3, 190 leaves):

$$\frac{2 a^2 \operatorname{Tan}[e+f x]}{3 f}+\frac{16 a b \operatorname{Tan}[e+f x]}{15 f}+\frac{16 b^2 \operatorname{Tan}[e+f x]}{35 f}+\frac{a^2 \operatorname{Sec}[e+f x]^2 \operatorname{Tan}[e+f x]}{3 f}+\frac{8 a b \operatorname{Sec}[e+f x]^2 \operatorname{Tan}[e+f x]}{15 f}+\frac{8 b^2 \operatorname{Sec}[e+f x]^2 \operatorname{Tan}[e+f x]}{35 f}+\frac{2 a b \operatorname{Sec}[e+f x]^4 \operatorname{Tan}[e+f x]}{5 f}+\frac{6 b^2 \operatorname{Sec}[e+f x]^4 \operatorname{Tan}[e+f x]}{35 f}+\frac{b^2 \operatorname{Sec}[e+f x]^6 \operatorname{Tan}[e+f x]}{7 f}$$

Problem 173: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 116 leaves):

$$\frac{a^2 \text{Tan}[e+f x]}{f}+\frac{4 a b \text{Tan}[e+f x]}{3 f}+\frac{8 b^2 \text{Tan}[e+f x]}{15 f}+\frac{2 a b \text{Sec}[e+f x]^2 \text{Tan}[e+f x]}{3 f}+\frac{4 b^2 \text{Sec}[e+f x]^2 \text{Tan}[e+f x]}{15 f}+\frac{b^2 \text{Sec}[e+f x]^4 \text{Tan}[e+f x]}{5 f}$$

Problem 174: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 106 leaves):

$$\left(4 \left(b+a \text{Cos}[e+f x]^2\right)^2 \text{Sec}[e+f x]^3 \left(3 a^2 f x \text{Cos}[e+f x]^3+b^2 \text{Sec}[e] \text{Sin}[f x]+2 b (3 a+b) \text{Cos}[e+f x]^2 \text{Sec}[e] \text{Sin}[f x]+b^2 \text{Cos}[e+f x] \text{Tan}[e]\right)\right) \Big/ \left(3 f (a+2 b+a \text{Cos}[2 (e+f x)])^2\right)$$

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

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

Optimal (type 3, 73 leaves, 4 steps):

$$a^3 x+\frac{b \left(3 a^2+3 a b+b^2\right) \text{Tan}[c+d x]}{d}+\frac{b^2 (3 a+2 b) \text{Tan}[c+d x]^3}{3 d}+\frac{b^3 \text{Tan}[c+d x]^5}{5 d}$$

Result (type 3, 268 leaves):

$$\frac{1}{480 d} \text{Sec}[c] \text{Sec}[c+d x]^5 \left(150 a^3 d x \text{Cos}[d x]+150 a^3 d x \text{Cos}[2 c+d x]+75 a^3 d x \text{Cos}[2 c+3 d x]+75 a^3 d x \text{Cos}[4 c+3 d x]+15 a^3 d x \text{Cos}[4 c+5 d x]+15 a^3 d x \text{Cos}[6 c+5 d x]+540 a^2 b \text{Sin}[d x]+420 a b^2 \text{Sin}[d x]+160 b^3 \text{Sin}[d x]-360 a^2 b \text{Sin}[2 c+d x]-180 a b^2 \text{Sin}[2 c+d x]+360 a^2 b \text{Sin}[2 c+3 d x]+300 a b^2 \text{Sin}[2 c+3 d x]+80 b^3 \text{Sin}[2 c+3 d x]-90 a^2 b \text{Sin}[4 c+3 d x]+90 a^2 b \text{Sin}[4 c+5 d x]+60 a b^2 \text{Sin}[4 c+5 d x]+16 b^3 \text{Sin}[4 c+5 d x]\right)$$

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

$$\int \left(a + b \operatorname{Sec}[c + d x]^2\right)^4 dx$$

Optimal (type 3, 111 leaves, 4 steps):

$$a^4 x + \frac{b (2 a + b) \left(2 a^2 + 2 a b + b^2\right) \operatorname{Tan}[c + d x]}{d} + \frac{b^2 \left(6 a^2 + 8 a b + 3 b^2\right) \operatorname{Tan}[c + d x]^3}{3 d} + \frac{b^3 (4 a + 3 b) \operatorname{Tan}[c + d x]^5}{5 d} + \frac{b^4 \operatorname{Tan}[c + d x]^7}{7 d}$$

Result (type 3, 455 leaves):

$$\frac{1}{13440 d} \operatorname{Sec}[c] \operatorname{Sec}[c + d x]^7 \left(3675 a^4 d x \operatorname{Cos}[d x] + 3675 a^4 d x \operatorname{Cos}[2 c + d x] + 2205 a^4 d x \operatorname{Cos}[2 c + 3 d x] + 2205 a^4 d x \operatorname{Cos}[4 c + 3 d x] + 735 a^4 d x \operatorname{Cos}[4 c + 5 d x] + 735 a^4 d x \operatorname{Cos}[6 c + 5 d x] + 105 a^4 d x \operatorname{Cos}[6 c + 7 d x] + 105 a^4 d x \operatorname{Cos}[8 c + 7 d x] + 16800 a^3 b \operatorname{Sin}[d x] + 18480 a^2 b^2 \operatorname{Sin}[d x] + 11200 a b^3 \operatorname{Sin}[d x] + 3360 b^4 \operatorname{Sin}[d x] - 12600 a^3 b \operatorname{Sin}[2 c + d x] - 10920 a^2 b^2 \operatorname{Sin}[2 c + d x] - 4480 a b^3 \operatorname{Sin}[2 c + d x] + 12600 a^3 b \operatorname{Sin}[2 c + 3 d x] + 15120 a^2 b^2 \operatorname{Sin}[2 c + 3 d x] + 9408 a b^3 \operatorname{Sin}[2 c + 3 d x] + 2016 b^4 \operatorname{Sin}[2 c + 3 d x] - 5040 a^3 b \operatorname{Sin}[4 c + 3 d x] - 2520 a^2 b^2 \operatorname{Sin}[4 c + 3 d x] + 5040 a^3 b \operatorname{Sin}[4 c + 5 d x] + 5880 a^2 b^2 \operatorname{Sin}[4 c + 5 d x] + 3136 a b^3 \operatorname{Sin}[4 c + 5 d x] + 672 b^4 \operatorname{Sin}[4 c + 5 d x] - 840 a^3 b \operatorname{Sin}[6 c + 5 d x] + 840 a^3 b \operatorname{Sin}[6 c + 7 d x] + 840 a^2 b^2 \operatorname{Sin}[6 c + 7 d x] + 448 a b^3 \operatorname{Sin}[6 c + 7 d x] + 96 b^4 \operatorname{Sin}[6 c + 7 d x]\right)$$

Problem 180: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 86 leaves, 5 steps):

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

Result (type 3, 2519 leaves):

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

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

$$2\,i\,a\,\text{Sin}[2e]+2\,i\,b\,\text{Sin}[2e]+2\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[f x]+2\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[2e+f x]\Big]\,\text{Sec}[e+f x]^2\,\text{Sin}[e]\Big)\Big/\Big(8\,b^2\sqrt{a+b}\,f\,\left(a+b\,\text{Sec}[e+f x]^2\right)\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\Big)+\frac{\left(a+2b+a\,\text{Cos}[2e+2f x]\right)\text{Sec}[e+f x]^2}{8\,b\,f\left(a+b\,\text{Sec}[e+f x]^2\right)\left(\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)^2}-\frac{\left(a+2b+a\,\text{Cos}[2e+2f x]\right)\text{Sec}[e+f x]^2}{8\,b\,f\left(a+b\,\text{Sec}[e+f x]^2\right)\left(\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)^2}$$

Problem 181: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

$$\frac{\text{ArcTanh}[\text{Sin}[e+f x]]}{b\,f}-\frac{\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Sin}[e+f x]}{\sqrt{a+b}}\right]}{b\sqrt{a+b}\,f}$$

Result (type 3, 1022 leaves):

$$\begin{aligned}
&\frac{1}{8\, b \sqrt{a+b}\; f \,(a+b\, \text{Sec}[e+f x]^2)\, \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}} \\
&(a+2 b+a\, \text{Cos}[2\,(e+f x)])\, \text{Sec}[e+f x]^2\, \Big(-\sqrt{a}\, \text{Cos}[e] \\
&\quad \text{Log}\big[a+2\,(a+b)\, \text{Cos}[2 e]-a\, \text{Cos}[2\,(e+f x)]-2\, i\, a\, \text{Sin}[2 e]-2\, i\, b\, \text{Sin}[2 e]+2 \sqrt{a}\, \sqrt{a+b} \\
&\qquad \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\, \text{Sin}[f x]+2 \sqrt{a}\, \sqrt{a+b}\, \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\, \text{Sin}[2 e+f x]\big]+ \\
&\quad \sqrt{a}\, \text{Cos}[e]\, \text{Log}\big[-a-2\,(a+b)\, \text{Cos}[2 e]+a\, \text{Cos}[2\,(e+f x)]+2\, i\, a\, \text{Sin}[2 e]+ \\
&\qquad 2\, i\, b\, \text{Sin}[2 e]+2 \sqrt{a}\, \sqrt{a+b}\, \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\, \text{Sin}[f x]+ \\
&\qquad 2 \sqrt{a}\, \sqrt{a+b}\, \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\, \text{Sin}[2 e+f x]\big]- \\
&\quad 2\, i \sqrt{a}\, \text{ArcTan}\Big[\Big(2\, \text{Sin}[e]\, \Big(i\, a+i\, b+i\,(a+b)\, \text{Cos}[2 e]+\sqrt{a}\, \sqrt{a+b}\, \text{Cos}[f x] \\
&\qquad\qquad \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}-\sqrt{a}\, \sqrt{a+b}\, \text{Cos}[2 e+f x]\, \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}+ \\
&\qquad\qquad a\, \text{Sin}[2 e]+b\, \text{Sin}[2 e]-i \sqrt{a}\, \sqrt{a+b}\, \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\, \text{Sin}[f x]- \\
&\qquad\qquad i \sqrt{a}\, \sqrt{a+b}\, \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\, \text{Sin}[2 e+f x]\Big)\Big)\Big/ \\
&\qquad\quad \big(i\,(a+3 b)\, \text{Cos}[e]+i\,(a+b)\, \text{Cos}[3 e]+i\, a\, \text{Cos}[e+2 f x]+i\, a\, \text{Cos}[3 e+2 f x]+ \\
&\qquad\qquad 3\, a\, \text{Sin}[e]+b\, \text{Sin}[e]+a\, \text{Sin}[3 e]+b\, \text{Sin}[3 e]+a\, \text{Sin}[e+2 f x]-a\, \text{Sin}[3 e+2 f x]\big)\Big] \\
&\quad (\text{Cos}[e]-i\, \text{Sin}[e])-4 \sqrt{a+b}\, \text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(e+f x)\Big]-\text{Sin}\Big[\frac{1}{2}\,(e+f x)\Big]\Big] \\
&\quad \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}+ \\
&\quad 4 \sqrt{a+b}\, \text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(e+f x)\Big]+\text{Sin}\Big[\frac{1}{2}\,(e+f x)\Big]\Big]\, \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}+ \\
&\quad i \sqrt{a}\, \text{Log}\big[a+2\,(a+b)\, \text{Cos}[2 e]-a\, \text{Cos}[2\,(e+f x)]-2\, i\, a\, \text{Sin}[2 e]- \\
&\qquad 2\, i\, b\, \text{Sin}[2 e]+2 \sqrt{a}\, \sqrt{a+b}\, \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\, \text{Sin}[f x]+ \\
&\qquad 2 \sqrt{a}\, \sqrt{a+b}\, \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\, \text{Sin}[2 e+f x]\big]\, \text{Sin}[e]- \\
&\quad i \sqrt{a}\, \text{Log}\big[-a-2\,(a+b)\, \text{Cos}[2 e]+a\, \text{Cos}[2\,(e+f x)]+2\, i\, a\, \text{Sin}[2 e]+ \\
&\qquad 2\, i\, b\, \text{Sin}[2 e]+2 \sqrt{a}\, \sqrt{a+b}\, \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\, \text{Sin}[f x]+ \\
&\qquad 2 \sqrt{a}\, \sqrt{a+b}\, \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2}\, \text{Sin}[2 e+f x]\big]\, \text{Sin}[e]+ \\
&\quad 2 \sqrt{a}\, \text{ArcTan}\Big[\big((a+b)\, \text{Sin}[e]\big)\Big/\Big((a+b)\, \text{Cos}[e]-\sqrt{a}\, \sqrt{a+b}\, \sqrt{(\text{Cos}[e]-i\, \text{Sin}[e])^2} \\
&\qquad\quad (\text{Cos}[2 e]+i\, \text{Sin}[2 e])\, \text{Sin}[e+f x]\Big)\Big]\, (i\, \text{Cos}[e]+\text{Sin}[e])\Big)
\end{aligned}$$

Problem 182: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 36 leaves, 2 steps):

$$\frac{\text{ArcTanh}\Big[\frac{\sqrt{a}\, \text{Sin}[e+f x]}{\sqrt{a+b}}\Big]}{\sqrt{a}\, \sqrt{a+b}\, f}$$

Result (type 3, 653 leaves):

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

Problem 183: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[e+f x]}{a+b\,\text{Sec}[e+f x]^2}\,dx$$

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

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

Result (type 3, 941 leaves):

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

$$(a+2 b+a\,\text{Cos}[2 (e+f x)])\,\text{Sec}[e+f x]^2$$

$$\Big(-b\,\text{Cos}[e]\,\text{Log}\Big[a+2 (a+b)\,\text{Cos}[2 e]-a\,\text{Cos}[2 (e+f x)]-2\,\mathrm{i}\,a\,\text{Sin}[2 e]-2\,\mathrm{i}\,b\,\text{Sin}[2 e]+$$

$$2 \sqrt{a} \sqrt{a+b} \sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[f x]+$$

$$2 \sqrt{a} \sqrt{a+b} \sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[2 e+f x]\Big]+b\,\text{Cos}[e]$$

$$\text{Log}\Big[-a-2 (a+b)\,\text{Cos}[2 e]+a\,\text{Cos}[2 (e+f x)]+2\,\mathrm{i}\,a\,\text{Sin}[2 e]+2\,\mathrm{i}\,b\,\text{Sin}[2 e]+2 \sqrt{a} \sqrt{a+b}$$

$$\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[f x]+2 \sqrt{a} \sqrt{a+b} \sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[2 e+f x]\Big]+$$

$$\mathrm{i}\,b\,\text{Log}\Big[a+2 (a+b)\,\text{Cos}[2 e]-a\,\text{Cos}[2 (e+f x)]-2\,\mathrm{i}\,a\,\text{Sin}[2 e]-2\,\mathrm{i}\,b\,\text{Sin}[2 e]+2 \sqrt{a} \sqrt{a+b}$$

$$\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[f x]+2 \sqrt{a} \sqrt{a+b} \sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[2 e+f x]\Big]$$

$$\text{Sin}[e]-\mathrm{i}\,b\,\text{Log}\Big[-a-2 (a+b)\,\text{Cos}[2 e]+a\,\text{Cos}[2 (e+f x)]+2\,\mathrm{i}\,a\,\text{Sin}[2 e]+$$

$$2\,\mathrm{i}\,b\,\text{Sin}[2 e]+2 \sqrt{a} \sqrt{a+b} \sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[f x]+$$

$$2 \sqrt{a} \sqrt{a+b} \sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[2 e+f x]\Big]\,\text{Sin}[e]+$$

$$2 b\,\text{ArcTan}\Big[\big((a+b)\,\text{Sin}[e]\big)\Big/\Big((a+b)\,\text{Cos}[e]-\sqrt{a} \sqrt{a+b} \sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}$$

$$(\text{Cos}[2 e]+\mathrm{i}\,\text{Sin}[2 e])\,\text{Sin}[e+f x]\Big)\Big]\,(\mathrm{i}\,\text{Cos}[e]+\text{Sin}[e])+$$

$$\text{ArcTan}\Big[\Big(2\,\text{Sin}[e]\,\Big(\mathrm{i}\,a+\mathrm{i}\,b+\mathrm{i}\,(a+b)\,\text{Cos}[2 e]+\sqrt{a} \sqrt{a+b}\,\text{Cos}[f x] \sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}-$$

$$\sqrt{a} \sqrt{a+b}\,\text{Cos}[2 e+f x] \sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}+a\,\text{Sin}[2 e]+$$

$$b\,\text{Sin}[2 e]-\mathrm{i} \sqrt{a} \sqrt{a+b} \sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[f x]-$$

$$\mathrm{i} \sqrt{a} \sqrt{a+b} \sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[2 e+f x]\Big)\Big)\Big/$$

$$\big(\mathrm{i}\,(a+3 b)\,\text{Cos}[e]+\mathrm{i}\,(a+b)\,\text{Cos}[3 e]+\mathrm{i}\,a\,\text{Cos}[e+2 f x]+\mathrm{i}\,a\,\text{Cos}[3 e+2 f x]+$$

$$3 a\,\text{Sin}[e]+b\,\text{Sin}[e]+a\,\text{Sin}[3 e]+b\,\text{Sin}[3 e]+a\,\text{Sin}[e+2 f x]-a\,\text{Sin}[3 e+2 f x]\big)\Big]$$

$$(-2\,\mathrm{i}\,b\,\text{Cos}[e]-2 b\,\text{Sin}[e])+4 \sqrt{a} \sqrt{a+b} \sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[e+f x]\Big)$$

Problem 186: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[e+f x]^6}{a+b\,\text{Sec}[e+f x]^2}\,dx$$

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

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

Result (type 3, 224 leaves):

$$\Big(\left(a+2b+a\,\text{Cos}[2(e+fx)]\right)\text{Sec}[e+fx]^2\Big(-3a^2\,\text{ArcTan}\Big[\left(\text{Sec}[fx]\left(\text{Cos}[2e]-i\,\text{Sin}[2e]\right)\left(-(a+2b)\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]\right)\right)\Big/\left(2\sqrt{a+b}\sqrt{b\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^4}\right)\Big]\left(\text{Cos}[2e]-i\,\text{Sin}[2e]\right)+\sqrt{a+b}\,\text{Sec}[e+fx]\sqrt{b\left(i\,\text{Cos}[e]+\text{Sin}[e]\right)^4}\left(\text{Sec}[e]\left(-3a+2b+b\,\text{Sec}[e+fx]^2\right)\text{Sin}[fx]+b\,\text{Sec}[e+fx]\,\text{Tan}[e]\right)\Big)\Big)\Big/\left(6b^2\sqrt{a+b}\,f\left(a+b\,\text{Sec}[e+fx]^2\right)\sqrt{b\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^4}\right)$$

Problem 187: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[e+fx]^4}{a+b\,\text{Sec}[e+fx]^2}\,dx$$

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

$$-\frac{a\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b}}\right]}{b^{3/2}\sqrt{a+b}\,f}+\frac{\text{Tan}[e+fx]}{b\,f}$$

Result (type 3, 192 leaves):

$$\Big(\left(a+2b+a\,\text{Cos}[2(e+fx)]\right)\text{Sec}[e+fx]^2\Big(a\,\text{ArcTan}\Big[\left(\text{Sec}[fx]\left(\text{Cos}[2e]-i\,\text{Sin}[2e]\right)\left(-(a+2b)\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]\right)\right)\Big/\left(2\sqrt{a+b}\sqrt{b\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^4}\right)\Big]\left(\text{Cos}[2e]-i\,\text{Sin}[2e]\right)+\sqrt{a+b}\,\text{Sec}[e]\,\text{Sec}[e+fx]\sqrt{b\left(i\,\text{Cos}[e]+\text{Sin}[e]\right)^4}\,\text{Sin}[fx]\Big)\Big)\Big/\left(2b\sqrt{a+b}\,f\left(a+b\,\text{Sec}[e+fx]^2\right)\sqrt{b\left(\text{Cos}[e]-i\,\text{Sin}[e]\right)^4}\right)$$

Problem 189: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{1}{a+b\,\text{Sec}[e+fx]^2}\,dx$$

Optimal (type 3, 45 leaves, 3 steps):

$$\frac{x}{a}+\frac{\sqrt{b}\,\text{ArcTan}\left[\frac{\sqrt{a+b}\,\text{Cot}[e+fx]}{\sqrt{b}}\right]}{a\sqrt{a+b}\,f}$$

Result (type 3, 182 leaves):

$\Big(\big(a+2b+a\,\text{Cos}[2(e+fx)]\big)\,\text{Sec}[e+fx]^2\,\Big(\sqrt{a+b}\,f\,x\,\sqrt{b\,(\text{Cos}[e]-i\,\text{Sin}[e])^4}+b\,\text{ArcTan}\Big[\big(\text{Sec}[fx]\,(\text{Cos}[2e]-i\,\text{Sin}[2e])\,(-(a+2b)\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx])\big)\Big/\Big(2\sqrt{a+b}\,\sqrt{b\,(\text{Cos}[e]-i\,\text{Sin}[e])^4}\Big)\Big]\,(\text{Cos}[2e]-i\,\text{Sin}[2e])\Big)\Big)\Big/\Big(2a\sqrt{a+b}\,f\,\big(a+b\,\text{Sec}[e+fx]^2\big)\sqrt{b\,(\text{Cos}[e]-i\,\text{Sin}[e])^4}\Big)$

Problem 193: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[e+fx]^5}{\left(a+b\,\text{Sec}[e+fx]^2\right)^2}\,dx$$

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

$$\frac{\text{ArcTanh}[\text{Sin}[e+fx]]}{b^2 f}-\frac{\sqrt{a}\,(2a+3b)\,\text{ArcTanh}\Big[\frac{\sqrt{a}\,\text{Sin}[e+fx]}{\sqrt{a+b}}\Big]}{2b^2(a+b)^{3/2}f}-\frac{a\,\text{Sin}[e+fx]}{2b(a+b)f\left(a+b-a\,\text{Sin}[e+fx]^2\right)}$$

Result (type 3, 2333 leaves):

$-\Big(\Big(\big(a+2b+a\,\text{Cos}[2e+2fx]\big)^2\,\text{Log}\Big[\text{Cos}\Big[\frac{e}{2}+\frac{fx}{2}\Big]-\text{Sin}\Big[\frac{e}{2}+\frac{fx}{2}\Big]\Big]\,\text{Sec}[e+fx]^4\Big)\Big/\Big(4b^2f\big(a+b\,\text{Sec}[e+fx]^2\big)^2\Big)\Big)+$
$\Big(\big(a+2b+a\,\text{Cos}[2e+2fx]\big)^2\,\text{Log}\Big[\text{Cos}\Big[\frac{e}{2}+\frac{fx}{2}\Big]+\text{Sin}\Big[\frac{e}{2}+\frac{fx}{2}\Big]\Big]\,\text{Sec}[e+fx]^4\Big)\Big/\Big(4b^2f\big(a+b\,\text{Sec}[e+fx]^2\big)^2\Big)+$
$\frac{1}{(a+b)\,\big(a+b\,\text{Sec}[e+fx]^2\big)^2}\,(-2a^2-3ab)\,\big(a+2b+a\,\text{Cos}[2e+2fx]\big)^2$
$\text{Sec}[e+fx]^4\,\Big(\Big(i\,\text{ArcTan}\Big[\Big(-i\,a\,\text{Cos}[e]-i\,b\,\text{Cos}[e]+i\,a\,\text{Cos}[3e]+i\,b\,\text{Cos}[3e]+$
$a\,\text{Sin}[e]+b\,\text{Sin}[e]-\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[e-fx]\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}+$
$\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[3e+fx]\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}+a\,\text{Sin}[3e]+b\,\text{Sin}[3e]-i\sqrt{a}$
$\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[e-fx]-2i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}$
$\text{Sin}[e+fx]+i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[3e+fx]\Big)\Big/\Big(a\,\text{Cos}[e]+3b$
$\text{Cos}[e]+a\,\text{Cos}[3e]+b\,\text{Cos}[3e]+a\,\text{Cos}[e+2fx]+a\,\text{Cos}[3e+2fx]-3i\,a\,\text{Sin}[e]-$
$i\,b\,\text{Sin}[e]-i\,a\,\text{Sin}[3e]-i\,b\,\text{Sin}[3e]-i\,a\,\text{Sin}[e+2fx]+i\,a\,\text{Sin}[3e+2fx]\Big)\Big]$
$\text{Cos}[e]\Big)\Big/\Big(16\sqrt{a}\,b^2\sqrt{a+b}\,f\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\Big)+$
$\Big(\text{ArcTan}\Big[\Big(-i\,a\,\text{Cos}[e]-i\,b\,\text{Cos}[e]+i\,a\,\text{Cos}[3e]+i\,b\,\text{Cos}[3e]+a\,\text{Sin}[e]+$
$b\,\text{Sin}[e]-\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[e-fx]\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}+$
$\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[3e+fx]\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}+a\,\text{Sin}[3e]+b\,\text{Sin}[3e]-i\sqrt{a}$
$\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[e-fx]-2i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}$
$\text{Sin}[e+fx]+i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[3e+fx]\Big)\Big/\Big(a\,\text{Cos}[e]+3b$
$\text{Cos}[e]+a\,\text{Cos}[3e]+b\,\text{Cos}[3e]+a\,\text{Cos}[e+2fx]+a\,\text{Cos}[3e+2fx]-3i\,a\,\text{Sin}[e]-$
$i\,b\,\text{Sin}[e]-i\,a\,\text{Sin}[3e]-i\,b\,\text{Sin}[3e]-i\,a\,\text{Sin}[e+2fx]+i\,a\,\text{Sin}[3e+2fx]\Big)\Big]$

$$\text{Sin}[e]\Big)\Big/\Big(16\sqrt{a}\,b^2\sqrt{a+b}\,f\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\Big)\Big)+$$

$$\frac{1}{(a+b)\left(a+b\,\text{Sec}[e+fx]^2\right)^2}(2a+3b)\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^2$$

$$\text{Sec}[e+fx]^4$$

$$\Big(\Big(\sqrt{a}\,\text{ArcTanh}\Big[\big(2(a+b)\,\text{Sin}[e]\big)\Big/$$

$$\Big(-2\,\mathrm{i}\,a\,\text{Cos}[e]-2\,\mathrm{i}\,b\,\text{Cos}[e]-\sqrt{a}\sqrt{a+b}\,\text{Cos}[e-fx]\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}+\sqrt{a}$$

$$\sqrt{a+b}\,\text{Cos}[3e+fx]\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}-\mathrm{i}\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}$$

$$\text{Sin}[e-fx]+\mathrm{i}\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\,\text{Sin}[3e+fx]\Big)\Big]\,\text{Cos}[e]\Big)\Big/$$

$$\Big(16\,b^2\sqrt{a+b}\,f\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\Big)-\Big(\mathrm{i}\sqrt{a}\,\text{ArcTanh}\Big[\big(2(a+b)\,\text{Sin}[e]\big)\Big/$$

$$\Big(-2\,\mathrm{i}\,a\,\text{Cos}[e]-2\,\mathrm{i}\,b\,\text{Cos}[e]-\sqrt{a}\sqrt{a+b}\,\text{Cos}[e-fx]\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}+\sqrt{a}$$

$$\sqrt{a+b}\,\text{Cos}[3e+fx]\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}-\mathrm{i}\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}$$

$$\text{Sin}[e-fx]+\mathrm{i}\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\,\text{Sin}[3e+fx]\Big)\Big]\,\text{Sin}[e]\Big)\Big/$$

$$\Big(16\,b^2\sqrt{a+b}\,f\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\Big)\Big)+\frac{1}{(a+b)\left(a+b\,\text{Sec}[e+fx]^2\right)^2}$$

$$\left(-2a^2-3ab\right)\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^2$$

$$\text{Sec}[e+fx]^4$$

$$\Big(\Big(\text{Cos}[e]\,\text{Log}\Big[a+2a\,\text{Cos}[2e]+2b\,\text{Cos}[2e]-a\,\text{Cos}[2e+2fx]-2\,\mathrm{i}\,a\,\text{Sin}[2e]-$$

$$2\,\mathrm{i}\,b\,\text{Sin}[2e]+2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\,\text{Sin}[fx]+$$

$$2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\,\text{Sin}[2e+fx]\Big]\Big)\Big/$$

$$\Big(32\sqrt{a}\,b^2\sqrt{a+b}\,f\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\Big)-$$

$$\Big(\mathrm{i}\,\text{Log}\Big[a+2a\,\text{Cos}[2e]+2b\,\text{Cos}[2e]-a\,\text{Cos}[2e+2fx]-2\,\mathrm{i}\,a\,\text{Sin}[2e]-$$

$$2\,\mathrm{i}\,b\,\text{Sin}[2e]+2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\,\text{Sin}[fx]+$$

$$2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\,\text{Sin}[2e+fx]\Big]\,\text{Sin}[e]\Big)\Big/$$

$$\Big(32\sqrt{a}\,b^2\sqrt{a+b}\,f\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\Big)\Big)+$$

$$\frac{1}{(a+b)\left(a+b\,\text{Sec}[e+fx]^2\right)^2}(2a+3b)$$

$$\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^2$$

$$\text{Sec}[e+fx]^4$$

$$\Big(\Big(\sqrt{a}\,\text{Cos}[e]\,\text{Log}\Big[-a-2a\,\text{Cos}[2e]-2b\,\text{Cos}[2e]+a\,\text{Cos}[2e+2fx]+2\,\mathrm{i}\,a\,\text{Sin}[2e]+$$

$$2\,\mathrm{i}\,b\,\text{Sin}[2e]+2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\,\text{Sin}[fx]+2\sqrt{a}\sqrt{a+b}$$

$$\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\,\text{Sin}[2e+fx]\Big]\Big)\Big/\Big(32\,b^2\sqrt{a+b}\,f\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\Big)-$$

$$\Big(\mathrm{i}\sqrt{a}\,\text{Log}\Big[-a-2a\,\text{Cos}[2e]-2b\,\text{Cos}[2e]+a\,\text{Cos}[2e+2fx]+2\,\mathrm{i}\,a\,\text{Sin}[2e]+$$

$$2\,\mathrm{i}\,b\,\text{Sin}[2e]+2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\,\text{Sin}[fx]+$$

$$2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\,\text{Sin}[2e+fx]\Big]$$

$$\text{Sin}[e]\Big)\Big/\Big(32\,b^2\sqrt{a+b}\,f\sqrt{\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e]}\Big)\Big)-$$

$$\frac{a\left(a+2b+a\,\text{Cos}[2e+2fx]\right)\text{Sec}[e+fx]^3\,\text{Tan}[e+fx]}{4b(a+b)f\left(a+b\,\text{Sec}[e+fx]^2\right)^2}$$

Problem 194: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

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

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

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

Result (type 3, 798 leaves):

$$\frac{1}{32\sqrt{a}\,(a+b)^{3/2} f\,\left(a+b\,\text{Sec}[e+f x]^2\right)^2\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}}\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)\text{Sec}[e+f x]^3\left(-2\,i\,\text{ArcTan}\left[\left((a+b)\,\text{Sin}[e]\right)\Big/\left((a+b)\,\text{Cos}[e]-\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,(\text{Cos}[2 e]+i\,\text{Sin}[2 e])\,\text{Sin}[e+f x]\right)\right]\right.$$
$$\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)\text{Sec}[e+f x]\,(\text{Cos}[e]-i\,\text{Sin}[e])+$$
$$\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)\text{Log}\left[a+2\,(a+b)\,\text{Cos}[2 e]-a\,\text{Cos}[2\,(e+f x)]-\right.$$
$$2\,i\,a\,\text{Sin}[2 e]-2\,i\,b\,\text{Sin}[2 e]+2\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Sin}[f x]+$$
$$\left.2\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Sin}[2 e+f x]\right]\text{Sec}[e+f x]\,(\text{Cos}[e]-i\,\text{Sin}[e])-$$
$$\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)\text{Log}\left[-a-2\,(a+b)\,\text{Cos}[2 e]+a\,\text{Cos}[2\,(e+f x)]+\right.$$
$$2\,i\,a\,\text{Sin}[2 e]+2\,i\,b\,\text{Sin}[2 e]+2\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Sin}[f x]+$$
$$\left.2\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Sin}[2 e+f x]\right]\text{Sec}[e+f x]\,(\text{Cos}[e]-i\,\text{Sin}[e])+$$
$$2\,\text{ArcTan}\left[\left(2\,\text{Sin}[e]\left(i\,a+i\,b+i\,(a+b)\,\text{Cos}[2 e]+\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[f x]\right.\right.\right.$$
$$\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}-\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[2 e+f x]\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}+$$
$$a\,\text{Sin}[2 e]+b\,\text{Sin}[2 e]-i\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Sin}[f x]-$$
$$\left.\left.i\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Sin}[2 e+f x]\right)\right)\Big/$$
$$\left(i\,(a+3 b)\,\text{Cos}[e]+i\,(a+b)\,\text{Cos}[3 e]+i\,a\,\text{Cos}[e+2 f x]+i\,a\,\text{Cos}[3 e+2 f x]+\right.$$
$$\left.\left.3\,a\,\text{Sin}[e]+b\,\text{Sin}[e]+a\,\text{Sin}[3 e]+b\,\text{Sin}[3 e]+a\,\text{Sin}[e+2 f x]-a\,\text{Sin}[3 e+2 f x]\right)\right]$$
$$\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)\text{Sec}[e+f x]\,(i\,\text{Cos}[e]+\text{Sin}[e])+$$
$$\left.8\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-i\,\text{Sin}[e])^2}\,\text{Tan}[e+f x]\right)$$

Problem 195: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 819 leaves):

$$\frac{1}{32\,a^{3/2}\,(a+b)^{3/2}\,f\,\left(a+b\,\text{Sec}[e+f x]^2\right)^2\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}}$$
$$\left(a+2b+a\,\text{Cos}[2(e+f x)]\right)\text{Sec}[e+f x]^3\left(-2\,\mathrm{i}\,(2a+b)\,\text{ArcTan}\left[\left((a+b)\,\text{Sin}[e]\right)\middle/\right.\right.$$
$$\left.\left((a+b)\,\text{Cos}[e]-\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,(\text{Cos}[2e]+\mathrm{i}\,\text{Sin}[2e])\,\text{Sin}[e+f x]\right)\right]$$
$$\left(a+2b+a\,\text{Cos}[2(e+f x)]\right)\text{Sec}[e+f x]\,(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])+$$
$$(2a+b)\left(a+2b+a\,\text{Cos}[2(e+f x)]\right)\text{Log}\Big[a+2(a+b)\,\text{Cos}[2e]-a\,\text{Cos}[2(e+f x)]-$$
$$2\,\mathrm{i}\,a\,\text{Sin}[2e]-2\,\mathrm{i}\,b\,\text{Sin}[2e]+2\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[f x]+$$
$$2\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[2e+f x]\Big]\,\text{Sec}[e+f x]\,(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])-$$
$$(2a+b)\left(a+2b+a\,\text{Cos}[2(e+f x)]\right)\text{Log}\Big[-a-2(a+b)\,\text{Cos}[2e]+a\,\text{Cos}[2(e+f x)]+$$
$$2\,\mathrm{i}\,a\,\text{Sin}[2e]+2\,\mathrm{i}\,b\,\text{Sin}[2e]+2\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[f x]+$$
$$2\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[2e+f x]\Big]\,\text{Sec}[e+f x]\,(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])+$$
$$2\,(2a+b)\,\text{ArcTan}\Big[\Big(2\,\text{Sin}[e]\,\Big(\mathrm{i}\,a+\mathrm{i}\,b+\mathrm{i}\,(a+b)\,\text{Cos}[2e]+\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[f x]$$
$$\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}-\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[2e+f x]\,\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}+$$
$$a\,\text{Sin}[2e]+b\,\text{Sin}[2e]-\mathrm{i}\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[f x]-$$
$$\mathrm{i}\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Sin}[2e+f x]\Big)\Big)\Big/$$
$$\Big(\mathrm{i}\,(a+3b)\,\text{Cos}[e]+\mathrm{i}\,(a+b)\,\text{Cos}[3e]+\mathrm{i}\,a\,\text{Cos}[e+2 f x]+\mathrm{i}\,a\,\text{Cos}[3e+2 f x]+$$
$$3\,a\,\text{Sin}[e]+b\,\text{Sin}[e]+a\,\text{Sin}[3e]+b\,\text{Sin}[3e]+a\,\text{Sin}[e+2 f x]-a\,\text{Sin}[3e+2 f x]\Big)\Big]$$
$$\left(a+2b+a\,\text{Cos}[2(e+f x)]\right)\text{Sec}[e+f x]\,(\mathrm{i}\,\text{Cos}[e]+\text{Sin}[e])-$$
$$\left.8\sqrt{a}\,b\,\sqrt{a+b}\,\sqrt{(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^2}\,\text{Tan}[e+f x]\right)$$

Problem 196: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 101 leaves, 5 steps):

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

Result (type 3, 945 leaves):

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

$$\left(a+2 b+a\,\text{Cos}\left[2 (e+f x)\right]\right)\text{Sec}[e+f x]^3$$

$$\Bigg(-2\,\mathrm{i}\, b\,(4 a+3 b)\,\text{ArcTan}\Bigg[\Bigg(2\,\text{Sin}[e]\,\Big(\mathrm{i}\, a+\mathrm{i}\, b+\mathrm{i}\,(a+b)\,\text{Cos}[2 e]+\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[f x]$$

$$\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}-\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[2 e+f x]\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}+$$

$$a\,\text{Sin}[2 e]+b\,\text{Sin}[2 e]-\mathrm{i}\sqrt{a}\,\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\,\text{Sin}[f x]-$$

$$\mathrm{i}\sqrt{a}\,\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\,\text{Sin}[2 e+f x]\Big)\Bigg)\Bigg/$$

$$\Big(\mathrm{i}\,(a+3 b)\,\text{Cos}[e]+\mathrm{i}\,(a+b)\,\text{Cos}[3 e]+\mathrm{i}\, a\,\text{Cos}[e+2 f x]+\mathrm{i}\, a\,\text{Cos}[3 e+2 f x]+$$

$$3 a\,\text{Sin}[e]+b\,\text{Sin}[e]+a\,\text{Sin}[3 e]+b\,\text{Sin}[3 e]+a\,\text{Sin}[e+2 f x]-a\,\text{Sin}[3 e+2 f x]\Big)\Bigg]$$

$$\left(a+2 b+a\,\text{Cos}\left[2 (e+f x)\right]\right)\text{Sec}[e+f x]\,\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)-$$

$$b\,(4 a+3 b)\,\left(a+2 b+a\,\text{Cos}\left[2 (e+f x)\right]\right)$$

$$\text{Log}\Big[a+2\,(a+b)\,\text{Cos}[2 e]-a\,\text{Cos}\left[2 (e+f x)\right]-2\,\mathrm{i}\, a\,\text{Sin}[2 e]-$$

$$2\,\mathrm{i}\, b\,\text{Sin}[2 e]+2\sqrt{a}\,\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\,\text{Sin}[f x]+$$

$$2\sqrt{a}\,\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\,\text{Sin}[2 e+f x]\Big]\,\text{Sec}[e+f x]\,\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)+$$

$$b\,(4 a+3 b)\,\left(a+2 b+a\,\text{Cos}\left[2 (e+f x)\right]\right)\text{Log}\Big[-a-2\,(a+b)\,\text{Cos}[2 e]+a\,\text{Cos}\left[2 (e+f x)\right]+$$

$$2\,\mathrm{i}\, a\,\text{Sin}[2 e]+2\,\mathrm{i}\, b\,\text{Sin}[2 e]+2\sqrt{a}\,\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\,\text{Sin}[f x]+$$

$$2\sqrt{a}\,\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\,\text{Sin}[2 e+f x]\Big]\,\text{Sec}[e+f x]\,\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)+$$

$$8\sqrt{a}\,(a+b)^{3/2}\,\text{Cos}[f x]\,\left(a+2 b+a\,\text{Cos}\left[2 (e+f x)\right]\right)\text{Sec}[e+f x]$$

$$\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\,\text{Sin}[e]+2 b\,(4 a+3 b)\,\text{ArcTan}\Big[\left((a+b)\,\text{Sin}[e]\right)\Big/$$

$$\left((a+b)\,\text{Cos}[e]-\sqrt{a}\,\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\,\left(\text{Cos}[2 e]+\mathrm{i}\,\text{Sin}[2 e]\right)\text{Sin}[e+f x]\right)\Big]$$

$$\left(a+2 b+a\,\text{Cos}\left[2 (e+f x)\right]\right)\text{Sec}[e+f x]\,\left(\mathrm{i}\,\text{Cos}[e]+\text{Sin}[e]\right)+$$

$$8\sqrt{a}\,(a+b)^{3/2}\,\text{Cos}[e]\,\left(a+2 b+a\,\text{Cos}\left[2 (e+f x)\right]\right)\text{Sec}[e+f x]$$

$$\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\,\text{Sin}[f x]+$$

$$8\sqrt{a}\, b^2\sqrt{a+b}\,\sqrt{\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^2}\,\text{Tan}[e+f x]\Bigg)$$

Problem 199: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 100 leaves, 5 steps):

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

Result (type 3, 248 leaves):

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

Problem 201: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 73 leaves, 3 steps):

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

Result (type 3, 211 leaves):

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

Problem 202: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 92 leaves, 5 steps):

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

Result (type 3, 240 leaves):

$$\Big((a+2b+a\,\text{Cos}[2(e+fx)])\,\text{Sec}[e+fx]^4\Big(2x(a+2b+a\,\text{Cos}[2(e+fx)])+\Big(b(3a+2b)\,\text{ArcTan}\Big[(\text{Sec}[fx](\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e])(-(a+2b)\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]))\Big/\Big(2\sqrt{a+b}\sqrt{b(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^4}\Big)\Big](a+2b+a\,\text{Cos}[2(e+fx)])(\text{Cos}[2e]-\mathrm{i}\,\text{Sin}[2e])\Big)\Big/\Big((a+b)^{3/2}f\sqrt{b(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e])^4}\Big)+\frac{b((a+2b)\,\text{Sin}[2e]-a\,\text{Sin}[2fx])}{(a+b)f(\text{Cos}[e]-\text{Sin}[e])(\text{Cos}[e]+\text{Sin}[e])}\Big)\Big)\Big/\Big(8a^2\left(a+b\,\text{Sec}[e+fx]^2\right)^2\Big)$$

Problem 205: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[e+fx]^6}{\left(a+b\,\text{Sec}[e+fx]^2\right)^2}\,dx$$

Optimal (type 3, 278 leaves, 8 steps):

$$\frac{(5a^3-12a^2b+24ab^2-64b^3)\,x}{16a^5}+\frac{b^{7/2}(9a+8b)\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b}}\right]}{2a^5(a+b)^{3/2}f}+\frac{(15a^2-26ab+48b^2)\,\text{Cos}[e+fx]\,\text{Sin}[e+fx]}{48a^3f\left(a+b+b\,\text{Tan}[e+fx]^2\right)}+\frac{(5a-8b)\,\text{Cos}[e+fx]^3\,\text{Sin}[e+fx]}{24a^2f\left(a+b+b\,\text{Tan}[e+fx]^2\right)}+\frac{\text{Cos}[e+fx]^5\,\text{Sin}[e+fx]}{6af\left(a+b+b\,\text{Tan}[e+fx]^2\right)}+\frac{b(5a^3-7a^2b+12ab^2+32b^3)\,\text{Tan}[e+fx]}{16a^4(a+b)f\left(a+b+b\,\text{Tan}[e+fx]^2\right)}$$

Result (type 3, 921 leaves):

$$\Big(\left(5 a^3-12 a^2 b+24 a b^2-64 b^3\right) x \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^2 \operatorname{Sec}[e+f x]^4\Big) \Big/ \left(64 a^5 \left(a+b \operatorname{Sec}[e+f x]^2\right)^2\right)+$$

$$\Big(\left(15 a^2-32 a b+48 b^2\right) \operatorname{Cos}[2 f x] \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^2 \operatorname{Sec}[e+f x]^4 \operatorname{Sin}[2 e]\Big) \Big/ \left(256 a^4 f \left(a+b \operatorname{Sec}[e+f x]^2\right)^2\right)+$$

$$\Big((3 a-4 b) \operatorname{Cos}[4 f x] \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^2 \operatorname{Sec}[e+f x]^4 \operatorname{Sin}[4 e]\Big) \Big/ \left(256 a^3 f \left(a+b \operatorname{Sec}[e+f x]^2\right)^2\right)+$$

$$\Bigg((9 a+8 b) \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^2 \operatorname{Sec}[e+f x]^4 \Bigg(-\Bigg(\Bigg(b^4 \operatorname{ArcTan}\Big[\operatorname{Sec}[f x] \left(\frac{\operatorname{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}-\frac{i \operatorname{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}\right) \left(-a \operatorname{Sin}[f x]-2 b \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x]\right)\Big] \operatorname{Cos}[2 e]\Bigg) \Bigg/ \left(8 a^5 \sqrt{a+b} f \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}\right)\Bigg)+\Bigg(i b^4 \operatorname{ArcTan}\Big[\operatorname{Sec}[f x] \left(\frac{\operatorname{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}-\frac{i \operatorname{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}\right) \left(-a \operatorname{Sin}[f x]-2 b \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x]\right)\Big] \operatorname{Sin}[2 e]\Bigg) \Bigg/ \left(8 a^5 \sqrt{a+b} f \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}\right)\Bigg)\Bigg) \Bigg/ \left((a+b) \left(a+b \operatorname{Sec}[e+f x]^2\right)^2\right)+$$

$$\frac{\operatorname{Cos}[6 f x] \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^2 \operatorname{Sec}[e+f x]^4 \operatorname{Sin}[6 e]}{768 a^2 f \left(a+b \operatorname{Sec}[e+f x]^2\right)^2}+$$

$$\Big(\left(15 a^2-32 a b+48 b^2\right) \operatorname{Cos}[2 e] \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^2 \operatorname{Sec}[e+f x]^4 \operatorname{Sin}[2 f x]\Big) \Big/ \left(256 a^4 f \left(a+b \operatorname{Sec}[e+f x]^2\right)^2\right)+$$

$$\Big(\left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right) \operatorname{Sec}[e+f x]^4 \left(-a b^4 \operatorname{Sin}[2 e]-2 b^5 \operatorname{Sin}[2 e]+a b^4 \operatorname{Sin}[2 f x]\right)\Big) \Big/ \left(8 a^5 (a+b) f \left(a+b \operatorname{Sec}[e+f x]^2\right)^2 \left(\operatorname{Cos}[e]-\operatorname{Sin}[e]\right) \left(\operatorname{Cos}[e]+\operatorname{Sin}[e]\right)\right)+$$

$$\Big((3 a-4 b) \operatorname{Cos}[4 e] \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^2 \operatorname{Sec}[e+f x]^4 \operatorname{Sin}[4 f x]\Big) \Big/ \left(256 a^3 f \left(a+b \operatorname{Sec}[e+f x]^2\right)^2\right)+$$

$$\frac{\operatorname{Cos}[6 e] \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^2 \operatorname{Sec}[e+f x]^4 \operatorname{Sin}[6 f x]}{768 a^2 f \left(a+b \operatorname{Sec}[e+f x]^2\right)^2}$$

Problem 206: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Sec}[e+f x]^5}{\left(a+b \operatorname{Sec}[e+f x]^2\right)^3} \, dx$$

Optimal (type 3, 108 leaves, 4 steps):

$$\frac{3\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Sin}[e+f x]}{\sqrt{a+b}}\right]}{8\sqrt{a}\,(a+b)^{5/2} f}+\frac{\mathrm{Sin}[e+f x]}{4\,(a+b)\,f\left(a+b-a\,\mathrm{Sin}[e+f x]^2\right)^2}+\frac{3\,\mathrm{Sin}[e+f x]}{8\,(a+b)^2 f\left(a+b-a\,\mathrm{Sin}[e+f x]^2\right)}$$

Result (type 3, 2171 leaves):

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

$$\left(a+2b+a\,\mathrm{Cos}[2e+2f x]\right)^3\mathrm{Sec}[e+f x]^6\left(\left(3\,i\,\mathrm{ArcTan}\left[\left(-i\,a\,\mathrm{Cos}[e]-i\,b\,\mathrm{Cos}[e]+i\,a\,\mathrm{Cos}[3e]+\right.\right.\right.\right.$$

$$i\,b\,\mathrm{Cos}[3e]+a\,\mathrm{Sin}[e]+b\,\mathrm{Sin}[e]-\sqrt{a}\,\sqrt{a+b}\,\mathrm{Cos}[e-f x]\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}+$$

$$\sqrt{a}\,\sqrt{a+b}\,\mathrm{Cos}[3e+f x]\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}+a\,\mathrm{Sin}[3e]+$$

$$b\,\mathrm{Sin}[3e]-i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}\,\mathrm{Sin}[e-f x]-$$

$$2i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}\,\mathrm{Sin}[e+f x]+$$

$$\left.i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}\,\mathrm{Sin}[3e+f x]\right)\Big/\left(a\,\mathrm{Cos}[e]+3b\,\mathrm{Cos}[e]+\right.$$

$$a\,\mathrm{Cos}[3e]+b\,\mathrm{Cos}[3e]+a\,\mathrm{Cos}[e+2f x]+a\,\mathrm{Cos}[3e+2f x]-3i\,a\,\mathrm{Sin}[e]-$$

$$\left.\left.i\,b\,\mathrm{Sin}[e]-i\,a\,\mathrm{Sin}[3e]-i\,b\,\mathrm{Sin}[3e]-i\,a\,\mathrm{Sin}[e+2f x]+i\,a\,\mathrm{Sin}[3e+2f x]\right)\right]$$

$$\left.\mathrm{Cos}[e]\right)\Big/\left(128\sqrt{a}\,\sqrt{a+b}\,f\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}\right)+$$

$$\left(3\,\mathrm{ArcTan}\left[\left(-i\,a\,\mathrm{Cos}[e]-i\,b\,\mathrm{Cos}[e]+i\,a\,\mathrm{Cos}[3e]+i\,b\,\mathrm{Cos}[3e]+a\,\mathrm{Sin}[e]+\right.\right.\right.$$

$$b\,\mathrm{Sin}[e]-\sqrt{a}\,\sqrt{a+b}\,\mathrm{Cos}[e-f x]\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}+$$

$$\sqrt{a}\,\sqrt{a+b}\,\mathrm{Cos}[3e+f x]\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}+a\,\mathrm{Sin}[3e]+$$

$$b\,\mathrm{Sin}[3e]-i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}\,\mathrm{Sin}[e-f x]-$$

$$2i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}\,\mathrm{Sin}[e+f x]+$$

$$\left.i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}\,\mathrm{Sin}[3e+f x]\right)\Big/\left(a\,\mathrm{Cos}[e]+3b\,\mathrm{Cos}[e]+\right.$$

$$a\,\mathrm{Cos}[3e]+b\,\mathrm{Cos}[3e]+a\,\mathrm{Cos}[e+2f x]+a\,\mathrm{Cos}[3e+2f x]-3i\,a\,\mathrm{Sin}[e]-$$

$$\left.\left.i\,b\,\mathrm{Sin}[e]-i\,a\,\mathrm{Sin}[3e]-i\,b\,\mathrm{Sin}[3e]-i\,a\,\mathrm{Sin}[e+2f x]+i\,a\,\mathrm{Sin}[3e+2f x]\right)\right]$$

$$\left.\left.\mathrm{Sin}[e]\right)\Big/\left(128\sqrt{a}\,\sqrt{a+b}\,f\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}\right)\right)+$$

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

$$\mathrm{Sec}[e+f x]^6$$

$$\left(-\left(\left(3\,\mathrm{ArcTanh}\left[\left(2\,(a+b)\,\mathrm{Sin}[e]\right)\Big/\left(-2i\,a\,\mathrm{Cos}[e]-2i\,b\,\mathrm{Cos}[e]-\right.\right.\right.\right.\right.$$

$$\sqrt{a}\,\sqrt{a+b}\,\mathrm{Cos}[e-f x]\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}+\sqrt{a}\,\sqrt{a+b}\,\mathrm{Cos}[3e+f x]$$

$$\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}-i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}\,\mathrm{Sin}[e-f x]+$$

$$\left.\left.\left.i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}\,\mathrm{Sin}[3e+f x]\right)\right]\mathrm{Cos}[e]\right)\Big/$$

$$\left.\left(128\sqrt{a}\,\sqrt{a+b}\,f\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}\right)\right)+\left(3\,i\,\mathrm{ArcTanh}\left[\left(2\,(a+b)\,\mathrm{Sin}[e]\right)\Big/\right.\right.$$

$$\left(-2i\,a\,\mathrm{Cos}[e]-2i\,b\,\mathrm{Cos}[e]-\sqrt{a}\,\sqrt{a+b}\,\mathrm{Cos}[e-f x]\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}+\sqrt{a}\right.$$

$$\sqrt{a+b}\,\mathrm{Cos}[3e+f x]\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}-i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}$$

$$\left.\left.\mathrm{Sin}[e-f x]+i\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}\,\mathrm{Sin}[3e+f x]\right)\right]$$

$$\left.\left.\mathrm{Sin}[e]\right)\Big/\left(128\sqrt{a}\,\sqrt{a+b}\,f\sqrt{\mathrm{Cos}[2e]-i\,\mathrm{Sin}[2e]}\right)\right)+$$

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

$$\mathrm{Sec}[e+f x]^6 \left(\left(3\,\mathrm{Cos}[e]\,\mathrm{Log}\left[a+2 a\,\mathrm{Cos}[2 e]+2 b\,\mathrm{Cos}[2 e]-a\,\mathrm{Cos}[2 e+2 f x]-2 i a\,\mathrm{Sin}[2 e]-2 i b\,\mathrm{Sin}[2 e]+2\sqrt{a}\sqrt{a+b}\sqrt{\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]}\,\mathrm{Sin}[f x]+2\sqrt{a}\sqrt{a+b}\sqrt{\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]}\,\mathrm{Sin}[2 e+f x]\right]\right)\Big/\left(256\sqrt{a}\sqrt{a+b}\,f\sqrt{\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]}\right)-\left(3 i\,\mathrm{Log}\left[a+2 a\,\mathrm{Cos}[2 e]+2 b\,\mathrm{Cos}[2 e]-a\,\mathrm{Cos}[2 e+2 f x]-2 i a\,\mathrm{Sin}[2 e]-2 i b\,\mathrm{Sin}[2 e]+2\sqrt{a}\sqrt{a+b}\sqrt{\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]}\,\mathrm{Sin}[f x]+2\sqrt{a}\sqrt{a+b}\sqrt{\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]}\,\mathrm{Sin}[2 e+f x]\right]\mathrm{Sin}[e]\right)\Big/\left(256\sqrt{a}\sqrt{a+b}\,f\sqrt{\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]}\right)\right)+$$

$$\frac{1}{(a+b)^2\left(a+b\,\mathrm{Sec}[e+f x]^2\right)^3}(a+2 b+a\,\mathrm{Cos}[2 e+2 f x])^3\,\mathrm{Sec}[e+f x]^6\left(-\left(\left(3\,\mathrm{Cos}[e]\,\mathrm{Log}\left[-a-2 a\,\mathrm{Cos}[2 e]-2 b\,\mathrm{Cos}[2 e]+a\,\mathrm{Cos}[2 e+2 f x]+2 i a\,\mathrm{Sin}[2 e]+2 i b\,\mathrm{Sin}[2 e]+2\sqrt{a}\sqrt{a+b}\sqrt{\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]}\,\mathrm{Sin}[f x]+2\sqrt{a}\sqrt{a+b}\sqrt{\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]}\,\mathrm{Sin}[2 e+f x]\right]\right)\Big/\left(256\sqrt{a}\sqrt{a+b}\,f\sqrt{\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]}\right)\right)+\left(3 i\,\mathrm{Log}\left[-a-2 a\,\mathrm{Cos}[2 e]-2 b\,\mathrm{Cos}[2 e]+a\,\mathrm{Cos}[2 e+2 f x]+2 i a\,\mathrm{Sin}[2 e]+2 i b\,\mathrm{Sin}[2 e]+2\sqrt{a}\sqrt{a+b}\sqrt{\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]}\,\mathrm{Sin}[f x]+2\sqrt{a}\sqrt{a+b}\sqrt{\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]}\,\mathrm{Sin}[2 e+f x]\right]\mathrm{Sin}[e]\right)\Big/\left(256\sqrt{a}\sqrt{a+b}\,f\sqrt{\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]}\right)\right)+$$

$$\frac{(a+2 b+a\,\mathrm{Cos}[2 e+2 f x])\,\mathrm{Sec}[e+f x]^5\,\mathrm{Tan}[e+f x]}{8 (a+b) f \left(a+b\,\mathrm{Sec}[e+f x]^2\right)^3}+\frac{3 (a+2 b+a\,\mathrm{Cos}[2 e+2 f x])^2\,\mathrm{Sec}[e+f x]^5\,\mathrm{Tan}[e+f x]}{32 (a+b)^2 f \left(a+b\,\mathrm{Sec}[e+f x]^2\right)^3}$$

Problem 207: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

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

$$\frac{(4 a+b)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Sin}[e+f x]}{\sqrt{a+b}}\right]}{8 a^{3/2} (a+b)^{5/2} f}-\frac{b\,\mathrm{Sin}[e+f x]}{4 a (a+b) f \left(a+b-a\,\mathrm{Sin}[e+f x]^2\right)^2}+\frac{(4 a+b)\,\mathrm{Sin}[e+f x]}{8 a (a+b)^2 f \left(a+b-a\,\mathrm{Sin}[e+f x]^2\right)}$$

Result (type 3, 2214 leaves):

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

$$\text{Sec}[e+f\,x]^6\,\Bigg(\Bigg(\mathrm{i}\,\text{ArcTan}\Big[\Big(-\mathrm{i}\,a\,\text{Cos}[e]-\mathrm{i}\,b\,\text{Cos}[e]+\mathrm{i}\,a\,\text{Cos}[3\,e]+\mathrm{i}\,b\,\text{Cos}[3\,e]+$$
$$a\,\text{Sin}[e]+b\,\text{Sin}[e]-\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[e-f\,x]\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}+$$
$$\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[3\,e+f\,x]\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}+a\,\text{Sin}[3\,e]+$$
$$b\,\text{Sin}[3\,e]-\mathrm{i}\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\,\text{Sin}[e-f\,x]-$$
$$2\,\mathrm{i}\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\,\text{Sin}[e+f\,x]+$$
$$\mathrm{i}\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\,\text{Sin}[3\,e+f\,x]\Big)\Big/\Big(a\,\text{Cos}[e]+3\,b\,\text{Cos}[e]+$$
$$a\,\text{Cos}[3\,e]+b\,\text{Cos}[3\,e]+a\,\text{Cos}[e+2\,f\,x]+a\,\text{Cos}[3\,e+2\,f\,x]-3\,\mathrm{i}\,a\,\text{Sin}[e]-$$
$$\mathrm{i}\,b\,\text{Sin}[e]-\mathrm{i}\,a\,\text{Sin}[3\,e]-\mathrm{i}\,b\,\text{Sin}[3\,e]-\mathrm{i}\,a\,\text{Sin}[e+2\,f\,x]+\mathrm{i}\,a\,\text{Sin}[3\,e+2\,f\,x]\Big)\Big]$$
$$\text{Cos}[e]\Bigg)\Big/\left(128\,a^{3/2}\,\sqrt{a+b}\,f\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\right)+$$
$$\Bigg(\text{ArcTan}\Big[\Big(-\mathrm{i}\,a\,\text{Cos}[e]-\mathrm{i}\,b\,\text{Cos}[e]+\mathrm{i}\,a\,\text{Cos}[3\,e]+\mathrm{i}\,b\,\text{Cos}[3\,e]+a\,\text{Sin}[e]+$$
$$b\,\text{Sin}[e]-\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[e-f\,x]\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}+$$
$$\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[3\,e+f\,x]\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}+a\,\text{Sin}[3\,e]+$$
$$b\,\text{Sin}[3\,e]-\mathrm{i}\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\,\text{Sin}[e-f\,x]-$$
$$2\,\mathrm{i}\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\,\text{Sin}[e+f\,x]+$$
$$\mathrm{i}\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\,\text{Sin}[3\,e+f\,x]\Big)\Big/\Big(a\,\text{Cos}[e]+3\,b\,\text{Cos}[e]+$$
$$a\,\text{Cos}[3\,e]+b\,\text{Cos}[3\,e]+a\,\text{Cos}[e+2\,f\,x]+a\,\text{Cos}[3\,e+2\,f\,x]-3\,\mathrm{i}\,a\,\text{Sin}[e]-$$
$$\mathrm{i}\,b\,\text{Sin}[e]-\mathrm{i}\,a\,\text{Sin}[3\,e]-\mathrm{i}\,b\,\text{Sin}[3\,e]-\mathrm{i}\,a\,\text{Sin}[e+2\,f\,x]+\mathrm{i}\,a\,\text{Sin}[3\,e+2\,f\,x]\Big)\Big]$$
$$\text{Sin}[e]\Bigg)\Big/\left(128\,a^{3/2}\,\sqrt{a+b}\,f\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\right)\Bigg)+$$

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

$$\text{Sec}[$$
$$e+f\,x]^6$$
$$\Bigg(\Bigg(\text{ArcTanh}\Big[\Big(2\,(a+b)\,\text{Sin}[e]\Big)\Big/\Big(-2\,\mathrm{i}\,a\,\text{Cos}[e]-2\,\mathrm{i}\,b\,\text{Cos}[e]-$$
$$\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[e-f\,x]\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}+\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[3\,e+f\,x]$$
$$\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}-\mathrm{i}\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\,\text{Sin}[e-f\,x]+$$
$$\mathrm{i}\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\,\text{Sin}[3\,e+f\,x]\Big)\Big]\,\text{Cos}[e]\Bigg)\Big/$$
$$\left(128\,a^{3/2}\,\sqrt{a+b}\,f\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\right)-\Bigg(\mathrm{i}\,\text{ArcTanh}\Big[\Big(2\,(a+b)\,\text{Sin}[e]\Big)\Big/$$
$$\Big(-2\,\mathrm{i}\,a\,\text{Cos}[e]-2\,\mathrm{i}\,b\,\text{Cos}[e]-\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[e-f\,x]\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}+\sqrt{a}$$
$$\sqrt{a+b}\,\text{Cos}[3\,e+f\,x]\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}-\mathrm{i}\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}$$
$$\text{Sin}[e-f\,x]+\mathrm{i}\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\,\text{Sin}[3\,e+f\,x]\Big)\Big]$$
$$\text{Sin}[e]\Bigg)\Big/\left(128\,a^{3/2}\,\sqrt{a+b}\,f\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\right)\Bigg)+$$

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

$$\text{Sec}[e+f\,x]^6$$
$$\Bigg(\Bigg(\text{Cos}[e]\,\text{Log}\Big[a+2\,a\,\text{Cos}[2\,e]+2\,b\,\text{Cos}[2\,e]-a\,\text{Cos}[2\,e+2\,f\,x]-2\,\mathrm{i}\,a\,\text{Sin}[2\,e]-$$
$$2\,\mathrm{i}\,b\,\text{Sin}[2\,e]+2\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\,\text{Sin}[f\,x]+$$
$$2\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\,\text{Sin}[2\,e+f\,x]\Big]\Bigg)\Big/$$
$$\left(256\,a^{3/2}\,\sqrt{a+b}\,f\,\sqrt{\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]}\right)-$$
$$\Big(\mathrm{i}\,\text{Log}\Big[a+2\,a\,\text{Cos}[2\,e]+2\,b\,\text{Cos}[2\,e]-a\,\text{Cos}[2\,e+2\,f\,x]-2\,\mathrm{i}\,a\,\text{Sin}[2\,e]-$$

$$2\,i\,b\,\mathrm{Sin}[2\,e]+2\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2\,e]-i\,\mathrm{Sin}[2\,e]}\,\,\mathrm{Sin}[f\,x]+$$
$$2\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2\,e]-i\,\mathrm{Sin}[2\,e]}\,\,\mathrm{Sin}[2\,e+f\,x]\Big]\,\mathrm{Sin}[e]\Big)\Big/$$
$$\left(256\,a^{3/2}\,\sqrt{a+b}\,\,f\,\sqrt{\mathrm{Cos}[2\,e]-i\,\mathrm{Sin}[2\,e]}\,\right)\Big)+$$

$$\frac{1}{(a+b)^2\,\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^3}\,(-4\,a-b)\,\left(a+2\,b+a\,\mathrm{Cos}[2\,e+2\,f\,x]\right)^3$$
$$\mathrm{Sec}[e+f\,x]^6$$
$$\Big(\Big(\mathrm{Cos}[e]\,\mathrm{Log}\Big[-a-2\,a\,\mathrm{Cos}[2\,e]-2\,b\,\mathrm{Cos}[2\,e]+a\,\mathrm{Cos}[2\,e+2\,f\,x]+2\,i\,a\,\mathrm{Sin}[2\,e]+$$
$$2\,i\,b\,\mathrm{Sin}[2\,e]+2\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2\,e]-i\,\mathrm{Sin}[2\,e]}\,\,\mathrm{Sin}[f\,x]+$$
$$2\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2\,e]-i\,\mathrm{Sin}[2\,e]}\,\,\mathrm{Sin}[2\,e+f\,x]\Big]\Big)\Big/$$
$$\left(256\,a^{3/2}\,\sqrt{a+b}\,\,f\,\sqrt{\mathrm{Cos}[2\,e]-i\,\mathrm{Sin}[2\,e]}\,\right)-$$
$$\Big(i\,\mathrm{Log}\Big[-a-2\,a\,\mathrm{Cos}[2\,e]-2\,b\,\mathrm{Cos}[2\,e]+a\,\mathrm{Cos}[2\,e+2\,f\,x]+2\,i\,a\,\mathrm{Sin}[2\,e]+$$
$$2\,i\,b\,\mathrm{Sin}[2\,e]+2\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2\,e]-i\,\mathrm{Sin}[2\,e]}\,\,\mathrm{Sin}[f\,x]+$$
$$2\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\mathrm{Cos}[2\,e]-i\,\mathrm{Sin}[2\,e]}\,\,\mathrm{Sin}[2\,e+f\,x]\Big]\,\mathrm{Sin}[e]\Big)\Big/$$
$$\left(256\,a^{3/2}\,\sqrt{a+b}\,\,f\,\sqrt{\mathrm{Cos}[2\,e]-i\,\mathrm{Sin}[2\,e]}\,\right)\Big)+$$
$$\Big(\left(a+2\,b+a\,\mathrm{Cos}[2\,e+2\,f\,x]\right)^2\,\mathrm{Sec}[e+f\,x]^6$$
$$\left(4\,a\,\mathrm{Sin}[e+f\,x]+b\,\mathrm{Sin}[e+f\,x]\right)\Big)\Big/\Big(32$$
$$a$$
$$(a+b)^2$$
$$f$$
$$\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^3\Big)-$$
$$\frac{b\,\left(a+2\,b+a\,\mathrm{Cos}[2\,e+2\,f\,x]\right)\,\mathrm{Sec}[e+f\,x]^5\,\mathrm{Tan}[e+f\,x]}{8\,a\,(a+b)\,f\,\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^3}$$

Problem 208: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 144 leaves, 4 steps):

$$\frac{\left(8\,a^2+8\,a\,b+3\,b^2\right)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a}\,\mathrm{Sin}[e+f\,x]}{\sqrt{a+b}}\right]}{8\,a^{5/2}\,(a+b)^{5/2}\,f}-$$
$$\frac{b\,\mathrm{Cos}[e+f\,x]^2\,\mathrm{Sin}[e+f\,x]}{4\,a\,(a+b)\,f\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)^2}-\frac{3\,b\,(2\,a+b)\,\mathrm{Sin}[e+f\,x]}{8\,a^2\,(a+b)^2\,f\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)}$$

Result (type 3, 2256 leaves):

$$\frac{1}{(a+b)^2\,\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^3}\,\left(8\,a^2+8\,a\,b+3\,b^2\right)\,\left(a+2\,b+a\,\mathrm{Cos}[2\,e+2\,f\,x]\right)^3$$
$$\mathrm{Sec}[e+f\,x]^6\,\Big(\Big(i\,\mathrm{ArcTan}\Big[\Big(-i\,a\,\mathrm{Cos}[e]-i\,b\,\mathrm{Cos}[e]+i\,a\,\mathrm{Cos}[3\,e]+i\,b\,\mathrm{Cos}[3\,e]+$$
$$a\,\mathrm{Sin}[e]+b\,\mathrm{Sin}[e]-\sqrt{a}\,\sqrt{a+b}\,\,\mathrm{Cos}[e-f\,x]\,\sqrt{\mathrm{Cos}[2\,e]-i\,\mathrm{Sin}[2\,e]}\,+$$

$$\sqrt{a}\ \sqrt{a+b}\ \text{Cos}[3 e+f x]\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ +a\ \text{Sin}[3 e]+ b\ \text{Sin}[3 e]-i \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[e-f x]- 2 i \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[e+f x]+ i \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[3 e+f x]\Big) \Big/ \Big(a\ \text{Cos}[e]+3 b\ \text{Cos}[e]+ a\ \text{Cos}[3 e]+b\ \text{Cos}[3 e]+a\ \text{Cos}[e+2 f x]+a\ \text{Cos}[3 e+2 f x]-3 i\ a\ \text{Sin}[e]- i\ b\ \text{Sin}[e]-i\ a\ \text{Sin}[3 e]-i\ b\ \text{Sin}[3 e]-i\ a\ \text{Sin}[e+2 f x]+i\ a\ \text{Sin}[3 e+2 f x]\Big)\Big] \text{Cos}[e]\Big) \Big/ \Big(128\ a^{5/2} \sqrt{a+b}\ f \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\Big)+$$

$$\Big(\text{ArcTan}\Big[\Big(-i\ a\ \text{Cos}[e]-i\ b\ \text{Cos}[e]+i\ a\ \text{Cos}[3 e]+i\ b\ \text{Cos}[3 e]+a\ \text{Sin}[e]+ b\ \text{Sin}[e]-\sqrt{a}\ \sqrt{a+b}\ \text{Cos}[e-f x]\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ + \sqrt{a}\ \sqrt{a+b}\ \text{Cos}[3 e+f x]\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ +a\ \text{Sin}[3 e]+b\ \text{Sin}[3 e]-i \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[e-f x]-2 i \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[e+f x]+i \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[3 e+f x]\Big) \Big/ \Big(a\ \text{Cos}[e]+3 b\ \text{Cos}[e]+a\ \text{Cos}[3 e]+b\ \text{Cos}[3 e]+a\ \text{Cos}[e+2 f x]+ a\ \text{Cos}[3 e+2 f x]-3 i\ a\ \text{Sin}[e]-i\ b\ \text{Sin}[e]-i\ a\ \text{Sin}[3 e]- i\ b\ \text{Sin}[3 e]-i\ a\ \text{Sin}[e+2 f x]+i\ a\ \text{Sin}[3 e+2 f x]\Big)\Big] \text{Sin}[e]\Big) \Big/ \Big(128\ a^{5/2} \sqrt{a+b}\ f \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\Big)\Big)+\frac{1}{(a+b)^2 \left(a+b\ \text{Sec}[e+f x]^2\right)^3}$$

$$\left(-8 a^2-8 a b-3 b^2\right) (a+2 b+a\ \text{Cos}[2 e+2 f x])^3\ \text{Sec}[e+f x]^6$$

$$\Big(\Big(\text{ArcTanh}\Big[\big(2 (a+b) \text{Sin}[e]\big) \Big/ \Big(-2 i\ a\ \text{Cos}[e]-2 i\ b\ \text{Cos}[e]- \sqrt{a}\ \sqrt{a+b}\ \text{Cos}[e-f x]\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ +\sqrt{a}\ \sqrt{a+b}\ \text{Cos}[3 e+f x] \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ -i \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[e-f x]+ i \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[3 e+f x]\Big)\Big] \text{Cos}[e]\Big) \Big/ \Big(128\ a^{5/2} \sqrt{a+b}\ f \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\Big)-\Big(i\ \text{ArcTanh}\Big[\big(2 (a+b) \text{Sin}[e]\big) \Big/ \Big(-2 i\ a\ \text{Cos}[e]-2 i\ b\ \text{Cos}[e]-\sqrt{a}\ \sqrt{a+b}\ \text{Cos}[e-f x]\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ +\sqrt{a}\ \sqrt{a+b}\ \text{Cos}[3 e+f x]\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ -i \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[e-f x]+i \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[3 e+f x]\Big)\Big] \text{Sin}[e]\Big) \Big/ \Big(128\ a^{5/2} \sqrt{a+b}\ f \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\Big)\Big)+$$

$$\frac{1}{(a+b)^2 \left(a+b\ \text{Sec}[e+f x]^2\right)^3} \left(8 a^2+8 a b+3 b^2\right) (a+2 b+a\ \text{Cos}[2 e+2 f x])^3\ \text{Sec}[e+f x]^6$$

$$\Big(\Big(\text{Cos}[e]\ \text{Log}\Big[a+2 a\ \text{Cos}[2 e]+2 b\ \text{Cos}[2 e]-a\ \text{Cos}[2 e+2 f x]-2 i\ a\ \text{Sin}[2 e]- 2 i\ b\ \text{Sin}[2 e]+2 \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[f x]+ 2 \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[2 e+f x]\Big]\Big) \Big/ \Big(256\ a^{5/2} \sqrt{a+b}\ f \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\Big)- \Big(i\ \text{Log}\Big[a+2 a\ \text{Cos}[2 e]+2 b\ \text{Cos}[2 e]-a\ \text{Cos}[2 e+2 f x]-2 i\ a\ \text{Sin}[2 e]- 2 i\ b\ \text{Sin}[2 e]+2 \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[f x]+ 2 \sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2 e]-i\ \text{Sin}[2 e]}\ \text{Sin}[2 e+f x]\Big] \text{Sin}[e]\Big) \Big/$$

$$\left(256\,a^{5/2}\,\sqrt{a+b}\;f\,\sqrt{\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]}\,\right)\Big)+$$

$$\frac{1}{(a+b)^2\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3}\Big(-8\,a^2-8\,a\,b-3\,b^2\Big)\,(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x])^3\,\text{Sec}[e+f\,x]^6$$

$$\Bigg(\Big(\text{Cos}[e]\,\text{Log}\Big[-a-2\,a\,\text{Cos}[2\,e]-2\,b\,\text{Cos}[2\,e]+a\,\text{Cos}[2\,e+2\,f\,x]+2\,i\,a\,\text{Sin}[2\,e]+2\,i\,b\,\text{Sin}[2\,e]+2\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]}\,\text{Sin}[f\,x]+2\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]}\,\text{Sin}[2\,e+f\,x]\Big]\Big)\Big/\left(256\,a^{5/2}\,\sqrt{a+b}\;f\,\sqrt{\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]}\right)-$$

$$\Big(i\,\text{Log}\Big[-a-2\,a\,\text{Cos}[2\,e]-2\,b\,\text{Cos}[2\,e]+a\,\text{Cos}[2\,e+2\,f\,x]+2\,i\,a\,\text{Sin}[2\,e]+2\,i\,b\,\text{Sin}[2\,e]+2\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]}\,\text{Sin}[f\,x]+2\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]}\,\text{Sin}[2\,e+f\,x]\Big]\,\text{Sin}[e]\Big)\Big/\left(256\,a^{5/2}\,\sqrt{a+b}\;f\,\sqrt{\text{Cos}[2\,e]-i\,\text{Sin}[2\,e]}\right)\Bigg)+$$

$$\Big((a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x])^2\,\text{Sec}[e+f\,x]^6\,(-8\,a\,b\,\text{Sin}[e+f\,x]-5\,b^2\,\text{Sin}[e+f\,x])\Big)\Big/\Big(32\,a^2\,(a+b)^2\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\Big)+$$

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

Problem 209: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 156 leaves, 6 steps):

$$-\frac{3\,b\,\left(4\,(a+b)^2+(2\,a+b)^2\right)\,\text{ArcTanh}\left[\frac{\sqrt{a}\,\text{Sin}[e+f\,x]}{\sqrt{a+b}}\right]}{8\,a^{7/2}\,(a+b)^{5/2}\,f}+\frac{\text{Sin}[e+f\,x]}{a^3\,f}-\frac{b^3\,\text{Sin}[e+f\,x]}{4\,a^3\,(a+b)\,f\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^2}+\frac{3\,b^2\,(4\,a+3\,b)\,\text{Sin}[e+f\,x]}{8\,a^3\,(a+b)^2\,f\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)}$$

Result (type 3, 2382 leaves):

$$\frac{\text{Cos}[f\,x]\,(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x])^3\,\text{Sec}[e+f\,x]^6\,\text{Sin}[e]}{8\,a^3\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3}+$$

$$\frac{1}{(a+b)^2\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3}\left(8\,a^2\,b+12\,a\,b^2+5\,b^3\right)\,(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x])^3\,\text{Sec}[e+f\,x]^6$$

$$\left(-\left(\left(3\,i\,\text{ArcTan}\left[\left(-i\,a\,\text{Cos}[e]-i\,b\,\text{Cos}[e]+i\,a\,\text{Cos}[3e]+i\,b\,\text{Cos}[3e]+a\,\text{Sin}[e]+b\,\text{Sin}[e]-\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[e-f x]\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}+\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[3e+f x]\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}+a\,\text{Sin}[3e]+b\,\text{Sin}[3e]-i\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[e-f x]-2\,i\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[e+f x]+i\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[3e+f x]\right)\Big/\left(a\,\text{Cos}[e]+3\,b\,\text{Cos}[e]+a\,\text{Cos}[3e]+b\,\text{Cos}[3e]+a\,\text{Cos}[e+2 f x]+a\,\text{Cos}[3e+2 f x]-3\,i\,a\,\text{Sin}[e]-i\,b\,\text{Sin}[e]-i\,a\,\text{Sin}[3e]-i\,b\,\text{Sin}[3e]-i\,a\,\text{Sin}[e+2 f x]+i\,a\,\text{Sin}[3e+2 f x]\right)\right]\,\text{Cos}[e]\right)\Big/\left(128\,a^{7/2}\,\sqrt{a+b}\,f\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\right)\right)-$$

$$\left(3\,\text{ArcTan}\left[\left(-i\,a\,\text{Cos}[e]-i\,b\,\text{Cos}[e]+i\,a\,\text{Cos}[3e]+i\,b\,\text{Cos}[3e]+a\,\text{Sin}[e]+b\,\text{Sin}[e]-\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[e-f x]\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}+\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[3e+f x]\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}+a\,\text{Sin}[3e]+b\,\text{Sin}[3e]-i\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[e-f x]-2\,i\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[e+f x]+i\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[3e+f x]\right)\Big/\left(a\,\text{Cos}[e]+3\,b\,\text{Cos}[e]+a\,\text{Cos}[3e]+b\,\text{Cos}[3e]+a\,\text{Cos}[e+2 f x]+a\,\text{Cos}[3e+2 f x]-3\,i\,a\,\text{Sin}[e]-i\,b\,\text{Sin}[e]-i\,a\,\text{Sin}[3e]-i\,b\,\text{Sin}[3e]-i\,a\,\text{Sin}[e+2 f x]+i\,a\,\text{Sin}[3e+2 f x]\right)\right]\,\text{Sin}[e]\right)\Big/$$

$$\left(128\,a^{7/2}\,\sqrt{a+b}\,f\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\right)\Big)+\frac{1}{(a+b)^2\,\left(a+b\,\text{Sec}[e+f x]^2\right)^3}\left(8\,a^2\,b+12\,a\,b^2+5\,b^3\right)\left(a+2\,b+a\,\text{Cos}[2e+2 f x]\right)^3\,\text{Sec}[e+f x]^6$$

$$\left(\left(3\,\text{ArcTanh}\left[\left(2\,(a+b)\,\text{Sin}[e]\right)\Big/\left(-2\,i\,a\,\text{Cos}[e]-2\,i\,b\,\text{Cos}[e]-\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[e-f x]\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}+\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[3e+f x]\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}-i\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[e-f x]+i\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[3e+f x]\right)\right]\,\text{Cos}[e]\right)\Big/$$

$$\left(128\,a^{7/2}\,\sqrt{a+b}\,f\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\right)-\left(3\,i\,\text{ArcTanh}\left[\left(2\,(a+b)\,\text{Sin}[e]\right)\Big/\left(-2\,i\,a\,\text{Cos}[e]-2\,i\,b\,\text{Cos}[e]-\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[e-f x]\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}+\sqrt{a}\,\sqrt{a+b}\,\text{Cos}[3e+f x]\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}-i\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[e-f x]+i\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[3e+f x]\right)\right]$$

$$\text{Sin}[e]\right)\Big/\left(128\,a^{7/2}\,\sqrt{a+b}\,f\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\right)\Big)+$$

$$\frac{1}{(a+b)^2\,\left(a+b\,\text{Sec}[e+f x]^2\right)^3}\left(8\,a^2\,b+12\,a\,b^2+5\,b^3\right)\left(a+2\,b+a\,\text{Cos}[2e+2 f x]\right)^3\,\text{Sec}[e+f x]^6$$

$$\left(-\left(\left(3\,\text{Cos}[e]\,\text{Log}\left[a+2\,a\,\text{Cos}[2e]+2\,b\,\text{Cos}[2e]-a\,\text{Cos}[2e+2 f x]-2\,i\,a\,\text{Sin}[2e]-2\,i\,b\,\text{Sin}[2e]+2\,\sqrt{a}\,\sqrt{a+b}\,\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[f x]+\right.\right.\right.\right.$$

$$2\sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2e]-\text{i}\,\text{Sin}[2e]}\ \text{Sin}[2e+fx]\big]\Big)\Big/$$

$$\left(256\,a^{7/2}\sqrt{a+b}\ f\sqrt{\text{Cos}[2e]-\text{i}\,\text{Sin}[2e]}\right)\Big)+$$

$$\Big(3\,\text{i}\,\text{Log}\big[a+2a\,\text{Cos}[2e]+2b\,\text{Cos}[2e]-a\,\text{Cos}[2e+2fx]-2\,\text{i}\,a\,\text{Sin}[2e]-$$

$$2\,\text{i}\,b\,\text{Sin}[2e]+2\sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2e]-\text{i}\,\text{Sin}[2e]}\ \text{Sin}[fx]+$$

$$2\sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2e]-\text{i}\,\text{Sin}[2e]}\ \text{Sin}[2e+fx]\big]\,\text{Sin}[e]\Big)\Big/$$

$$\left(256\,a^{7/2}\sqrt{a+b}\ f\sqrt{\text{Cos}[2e]-\text{i}\,\text{Sin}[2e]}\right)\Big)+$$

$$\frac{1}{(a+b)^2\left(a+b\,\text{Sec}[e+fx]^2\right)^3}\Big(8a^2b+12ab^2+$$

$$5b^3\Big)$$

$$\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3$$

$$\text{Sec}[e+fx]^6$$

$$\Big(\Big(3\,\text{Cos}[e]\,\text{Log}\big[-a-2a\,\text{Cos}[2e]-2b\,\text{Cos}[2e]+a\,\text{Cos}[2e+2fx]+2\,\text{i}\,a\,\text{Sin}[2e]+$$

$$2\,\text{i}\,b\,\text{Sin}[2e]+2\sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2e]-\text{i}\,\text{Sin}[2e]}\ \text{Sin}[fx]+$$

$$2\sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2e]-\text{i}\,\text{Sin}[2e]}\ \text{Sin}[2e+fx]\big]\Big)\Big/$$

$$\left(256\,a^{7/2}\sqrt{a+b}\ f\sqrt{\text{Cos}[2e]-\text{i}\,\text{Sin}[2e]}\right)-$$

$$\Big(3\,\text{i}\,\text{Log}\big[-a-2a\,\text{Cos}[2e]-2b\,\text{Cos}[2e]+a\,\text{Cos}[2e+2fx]+2\,\text{i}\,a\,\text{Sin}[2e]+$$

$$2\,\text{i}\,b\,\text{Sin}[2e]+2\sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2e]-\text{i}\,\text{Sin}[2e]}\ \text{Sin}[fx]+$$

$$2\sqrt{a}\ \sqrt{a+b}\ \sqrt{\text{Cos}[2e]-\text{i}\,\text{Sin}[2e]}\ \text{Sin}[2e+fx]\big]\,\text{Sin}[e]\Big)\Big/$$

$$\left(256\,a^{7/2}\sqrt{a+b}\ f\sqrt{\text{Cos}[2e]-\text{i}\,\text{Sin}[2e]}\right)\Big)+$$

$$\frac{\text{Cos}[e]\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Sec}[e+fx]^6\,\text{Sin}[fx]}{8a^3f\left(a+b\,\text{Sec}[e+fx]^2\right)^3}+$$

$$\Big(3$$

$$\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^2$$

$$\text{Sec}[e+fx]^6$$

$$\left(4ab^2\,\text{Sin}[e+fx]+3b^3\,\text{Sin}[e+fx]\right)\Big)\Big/\Big(32$$

$$a^3$$

$$(a+b)^2$$

$$f$$

$$\left(a+b\,\text{Sec}[e+fx]^2\right)^3\Big)-$$

$$\frac{b^3\left(a+2b+a\,\text{Cos}[2e+2fx]\right)\text{Sec}[e+fx]^5\,\text{Tan}[e+fx]}{8a^3(a+b)f\left(a+b\,\text{Sec}[e+fx]^2\right)^3}$$

Problem 211: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[e+fx]^5}{\left(a+b\,\text{Sec}[e+fx]^2\right)^3}\,dx$$

Optimal (type 3, 214 leaves, 6 steps):

$$-\frac{b^3\left(80 a^2+140 a b+63 b^2\right) \text{ArcTanh}\left[\frac{\sqrt{a}\, \text{Sin}[e+f x]}{\sqrt{a+b}}\right]}{8 a^{11/2} (a+b)^{5/2} f}+\frac{\left(a^2-3 a b+6 b^2\right) \text{Sin}[e+f x]}{a^5 f}-\frac{(2 a-3 b) \text{Sin}[e+f x]^3}{3 a^4 f}+\frac{\text{Sin}[e+f x]^5}{5 a^3 f}-\frac{b^5 \text{Sin}[e+f x]}{4 a^5 (a+b) f \left(a+b-a \text{Sin}[e+f x]^2\right)^2}+\frac{b^4 (20 a+17 b) \text{Sin}[e+f x]}{8 a^5 (a+b)^2 f \left(a+b-a \text{Sin}[e+f x]^2\right)}$$

Result (type 3, 2670 leaves):

$$\left(\left(5 a^2-18 a b+48 b^2\right) \text{Cos}[f x] \left(a+2 b+a \text{Cos}[2 e+2 f x]\right)^3 \text{Sec}[e+f x]^6 \text{Sin}[e]\right) \Big/ \left(64 a^5 f \left(a+b \text{Sec}[e+f x]^2\right)^3\right)+$$

$$\frac{1}{(a+b)^2 \left(a+b \text{Sec}[e+f x]^2\right)^3}\left(-80 a^2 b^3-140 a b^4-63 b^5\right) \left(a+2 b+a \text{Cos}[2 e+2 f x]\right)^3$$

$$\text{Sec}[e+f x]^6 \left(\left(i \text{ArcTan}\left[\left(-i a \text{Cos}[e]-i b \text{Cos}[e]+i a \text{Cos}[3 e]+i b \text{Cos}[3 e]+a \text{Sin}[e]+b \text{Sin}[e]-\sqrt{a} \sqrt{a+b} \text{Cos}[e-f x] \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]}+\sqrt{a} \sqrt{a+b} \text{Cos}[3 e+f x] \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]}+a \text{Sin}[3 e]+b \text{Sin}[3 e]-i \sqrt{a} \sqrt{a+b} \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]} \text{Sin}[e-f x]-2 i \sqrt{a} \sqrt{a+b} \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]} \text{Sin}[e+f x]+i \sqrt{a} \sqrt{a+b} \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]} \text{Sin}[3 e+f x]\right) \Big/ \left(a \text{Cos}[e]+3 b \text{Cos}[e]+a \text{Cos}[3 e]+b \text{Cos}[3 e]+a \text{Cos}[e+2 f x]+a \text{Cos}[3 e+2 f x]-3 i a \text{Sin}[e]-i b \text{Sin}[e]-i a \text{Sin}[3 e]-i b \text{Sin}[3 e]-i a \text{Sin}[e+2 f x]+i a \text{Sin}[3 e+2 f x]\right)\right] \text{Cos}[e]\right) \Big/ \left(128 a^{11/2} \sqrt{a+b}\, f \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]}\right)+$$

$$\left(\text{ArcTan}\left[\left(-i a \text{Cos}[e]-i b \text{Cos}[e]+i a \text{Cos}[3 e]+i b \text{Cos}[3 e]+a \text{Sin}[e]+b \text{Sin}[e]-\sqrt{a} \sqrt{a+b} \text{Cos}[e-f x] \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]}+\sqrt{a} \sqrt{a+b} \text{Cos}[3 e+f x] \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]}+a \text{Sin}[3 e]+b \text{Sin}[3 e]-i \sqrt{a} \sqrt{a+b} \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]} \text{Sin}[e-f x]-2 i \sqrt{a} \sqrt{a+b} \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]} \text{Sin}[e+f x]+i \sqrt{a} \sqrt{a+b} \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]} \text{Sin}[3 e+f x]\right) \Big/ \left(a \text{Cos}[e]+3 b \text{Cos}[e]+a \text{Cos}[3 e]+b \text{Cos}[3 e]+a \text{Cos}[e+2 f x]+a \text{Cos}[3 e+2 f x]-3 i a \text{Sin}[e]-i b \text{Sin}[e]-i a \text{Sin}[3 e]-i b \text{Sin}[3 e]-i a \text{Sin}[e+2 f x]+i a \text{Sin}[3 e+2 f x]\right)\right] \text{Sin}[e]\right) \Big/ \left(128 a^{11/2} \sqrt{a+b}\, f \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]}\right)\right)+$$

$$\frac{1}{(a+b)^2 \left(a+b \text{Sec}[e+f x]^2\right)^3}\left(80 a^2 b^3+140 a b^4+63 b^5\right) \left(a+2 b+a \text{Cos}[2 e+2 f x]\right)^3 \text{Sec}[e+f x]^6$$

$$\left(\left(\text{ArcTanh}\left[(2 (a+b) \text{Sin}[e]) \Big/ \left(-2 i a \text{Cos}[e]-2 i b \text{Cos}[e]-\sqrt{a} \sqrt{a+b} \text{Cos}[e-f x] \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]}+\sqrt{a} \sqrt{a+b} \text{Cos}[3 e+f x] \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]}-i \sqrt{a} \sqrt{a+b} \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]} \text{Sin}[e-f x]+i \sqrt{a} \sqrt{a+b} \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]} \text{Sin}[3 e+f x]\right)\right] \text{Cos}[e]\right) \Big/ \right.$$

$$\left(128 a^{11/2} \sqrt{a+b}\, f \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]}\right)-\left(i \text{ArcTanh}\left[(2 (a+b) \text{Sin}[e]) \Big/ \right.\right.$$

$$\left(-2 i a \text{Cos}[e]-2 i b \text{Cos}[e]-\sqrt{a} \sqrt{a+b} \text{Cos}[e-f x] \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]}+\sqrt{a} \sqrt{a+b} \text{Cos}[3 e+f x] \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]}-i \sqrt{a} \sqrt{a+b} \sqrt{\text{Cos}[2 e]-i \text{Sin}[2 e]}\right.$$

$\text{Sin}[e-f x]+i\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[3e+f x]\Big)\Big]\,\text{Sin}[e]\Big)\Big/$

$\left(128\,a^{11/2}\sqrt{a+b}\,f\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\right)\Big)+\frac{1}{(a+b)^2\left(a+b\,\text{Sec}[e+f x]^2\right)^3}$

$\left(-80 a^2 b^3-140 a b^4-63 b^5\right)\left(a+2b+a\,\text{Cos}[2e+2f x]\right)^3$

$\text{Sec}[e+f x]^6$

$\Big(\Big(\text{Cos}[e]\,\text{Log}\Big[a+2a\,\text{Cos}[2e]+2b\,\text{Cos}[2e]-a\,\text{Cos}[2e+2f x]-2i\,a\,\text{Sin}[2e]-$

$2i\,b\,\text{Sin}[2e]+2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[f x]+$

$2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[2e+f x]\Big]\Big)\Big/$

$\left(256\,a^{11/2}\sqrt{a+b}\,f\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\right)-$

$\Big(i\,\text{Log}\Big[a+2a\,\text{Cos}[2e]+2b\,\text{Cos}[2e]-a\,\text{Cos}[2e+2f x]-2i\,a\,\text{Sin}[2e]-$

$2i\,b\,\text{Sin}[2e]+2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[f x]+$

$2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[2e+f x]\Big]\,\text{Sin}[e]\Big)\Big/$

$\left(256\,a^{11/2}\sqrt{a+b}\,f\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\right)\Big)+$

$\frac{1}{(a+b)^2\left(a+b\,\text{Sec}[e+f x]^2\right)^3}\left(80 a^2 b^3+140 a b^4+63 b^5\right)$

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

$\text{Sec}[e+f x]^6$

$\Big(\Big(\text{Cos}[e]\,\text{Log}\Big[-a-2a\,\text{Cos}[2e]-2b\,\text{Cos}[2e]+a\,\text{Cos}[2e+2f x]+2i\,a\,\text{Sin}[2e]+2i\,b\,\text{Sin}[2e]+$

$2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[f x]+2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}$

$\text{Sin}[2e+f x]\Big]\Big)\Big/\left(256\,a^{11/2}\sqrt{a+b}\,f\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\right)-$

$\Big(i\,\text{Log}\Big[-a-2a\,\text{Cos}[2e]-2b\,\text{Cos}[2e]+a\,\text{Cos}[2e+2f x]+2i\,a\,\text{Sin}[2e]+$

$2i\,b\,\text{Sin}[2e]+2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[f x]+$

$2\sqrt{a}\sqrt{a+b}\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\,\text{Sin}[2e+f x]\Big]\,\text{Sin}[e]\Big)\Big/$

$\left(256\,a^{11/2}\sqrt{a+b}\,f\sqrt{\text{Cos}[2e]-i\,\text{Sin}[2e]}\right)\Big)+$

$\Big((5a-12b)\,\text{Cos}[3f x]\left(a+2b+a\,\text{Cos}[2e+2f x]\right)^3$

$\text{Sec}[e+f x]^6$

$\text{Sin}[3e]\Big)\Big/\Big(384$

a^4

f

$\left(a+b\,\text{Sec}[e+f x]^2\right)^3\Big)+$

$$\frac{\text{Cos}[5f x]\left(a+2b+a\,\text{Cos}[2e+2f x]\right)^3\text{Sec}[e+f x]^6\,\text{Sin}[5e]}{640\,a^3 f\left(a+b\,\text{Sec}[e+f x]^2\right)^3}+$$

$\Big(\left(5a^2-18ab+48b^2\right)$

$\text{Cos}[e]$

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

$\text{Sec}[e+f x]^6$

$\text{Sin}[f x]\Big)\Big/\Big(64$

a^5

f

$\left(a+b\,\text{Sec}[e+f x]^2\right)^3\Big)+$

$$\left(\left(5\,a-12\,b\right)\,\text{Cos}[3\,e]\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^3\,\text{Sec}[e+f\,x]^6\,\text{Sin}[3\,f\,x]\right)\Big/\left(384\,a^4\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\right)+\frac{\text{Cos}[5\,e]\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^3\,\text{Sec}[e+f\,x]^6\,\text{Sin}[5\,f\,x]}{640\,a^3\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3}+$$

$$\left(\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^2\,\text{Sec}[e+f\,x]^6\,\left(20\,a\,b^4\,\text{Sin}[e+f\,x]+17\,b^5\,\text{Sin}[e+f\,x]\right)\right)\Big/\left(32\,a^5\,\left(a+b\right)^2\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\right)-\frac{b^5\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)\,\text{Sec}[e+f\,x]^5\,\text{Tan}[e+f\,x]}{8\,a^5\,\left(a+b\right)\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3}$$

Problem 213: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[e+f\,x]^4}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3}\,dx$$

Optimal (type 3, 123 leaves, 4 steps):

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

Result (type 3, 539 leaves):

$$\left((-a-4b)\,(a+2b+a\,\text{Cos}[2e+2fx])^3\,\text{Sec}[e+fx]^6\left(\left(\text{ArcTan}\left[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}-\frac{i\,\text{Sin}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}\right)(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx])\right]\text{Cos}[2e]\right)\Big/\left(64\,b\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}\right)-\left(i\,\text{ArcTan}\left[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}-\frac{i\,\text{Sin}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}\right)(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx])\right]\text{Sin}[2e]\right)\Big/\left(64\,b\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}\right)\right)\right)\Big/$$
$$\left((a+b)^2\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)+\left((a+2b+a\,\text{Cos}[2e+2fx])\,\text{Sec}[e+fx]^6\,(-a\,\text{Sin}[2e]-2b\,\text{Sin}[2e]+a\,\text{Sin}[2fx])\right)\Big/\left(16\,a\,(a+b)\,f\left(a+b\,\text{Sec}[e+fx]^2\right)^3(\text{Cos}[e]-\text{Sin}[e])(\text{Cos}[e]+\text{Sin}[e])\right)+$$
$$\left((a+2b+a\,\text{Cos}[2e+2fx])^2\,\text{Sec}[e+fx]^6\,(a\,\text{Sin}[2e]+4b\,\text{Sin}[2e]-a\,\text{Sin}[2fx]+2b\,\text{Sin}[2fx])\right)\Big/\left(64\,b\,(a+b)^2\,f\left(a+b\,\text{Sec}[e+fx]^2\right)^3(\text{Cos}[e]-\text{Sin}[e])(\text{Cos}[e]+\text{Sin}[e])\right)$$

Problem 214: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[e+fx]^2}{\left(a+b\,\text{Sec}[e+fx]^2\right)^3}\,dx$$

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

$$\frac{3\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b}}\right]}{8\sqrt{b}\,(a+b)^{5/2}\,f}+\frac{\text{Tan}[e+fx]}{4\,(a+b)\,f\left(a+b+b\,\text{Tan}[e+fx]^2\right)^2}+\frac{3\,\text{Tan}[e+fx]}{8\,(a+b)^2\,f\left(a+b+b\,\text{Tan}[e+fx]^2\right)}$$

Result (type 3, 265 leaves):

$$\left(\left(a+2b+a\,\text{Cos}\left[2\,(e+f\,x)\right]\right)\text{Sec}[e+f\,x]^6\right.$$
$$\left(-\left(\left(3\,\text{ArcTan}\left[\left(\text{Sec}[f\,x]\,\left(\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]\right)\,\left(-(a+2b)\,\text{Sin}[f\,x]+a\,\text{Sin}[2\,e+f\,x]\right)\right)\right/\right.\right.\right.$$
$$\left.\left.\left(2\sqrt{a+b}\,\sqrt{b\,\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^4}\right)\right]\,\left(a+2b+a\,\text{Cos}\left[2\,(e+f\,x)\right]\right)^2$$
$$\left.\left(\text{Cos}[2\,e]-\mathrm{i}\,\text{Sin}[2\,e]\right)\right)\Big/\left(\sqrt{a+b}\,\sqrt{b\,\left(\text{Cos}[e]-\mathrm{i}\,\text{Sin}[e]\right)^4}\right)\Bigg)+$$
$$\frac{4\,b\,(a+b)\,\text{Sec}[2\,e]\,\left((a+2b)\,\text{Sin}[2\,e]-a\,\text{Sin}[2\,f\,x]\right)}{a^2}+\frac{1}{a^2}\left(a+2b+a\,\text{Cos}\left[2\,(e+f\,x)\right]\right)$$
$$\left.\left.\text{Sec}[2\,e]\,\left(-\left(5a^2+16\,a\,b+8\,b^2\right)\text{Sin}[2\,e]+a\,(5\,a+2\,b)\,\text{Sin}[2\,f\,x]\right)\right)\right)\Big/$$
$$\left(64\,(a+b)^2\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\right)$$

Problem 215: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 144 leaves, 6 steps):

$$\frac{x}{a^3}-\frac{\sqrt{b}\,\left(15\,a^2+20\,a\,b+8\,b^2\right)\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f\,x]}{\sqrt{a+b}}\right]}{8\,a^3\,(a+b)^{5/2}\,f}-$$
$$\frac{b\,\text{Tan}[e+f\,x]}{4\,a\,(a+b)\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^2}-\frac{b\,(7\,a+4\,b)\,\text{Tan}[e+f\,x]}{8\,a^2\,(a+b)^2\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)}$$

Result (type 3, 627 leaves):

$$\frac{x\,(a+2b+a\,\mathrm{Cos}[2e+2fx])^3\,\mathrm{Sec}[e+fx]^6}{8a^3\,(a+b\,\mathrm{Sec}[e+fx]^2)^3}+$$
$$\Bigg(\Big((15a^2+20ab+8b^2)\,(a+2b+a\,\mathrm{Cos}[2e+2fx])^3\,\mathrm{Sec}[e+fx]^6\,\Big(\Big(b\,\mathrm{ArcTan}\Big[\mathrm{Sec}[fx]\left(\frac{\mathrm{Cos}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}}-\frac{i\,\mathrm{Sin}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}}\right)$$
$$(-a\,\mathrm{Sin}[fx]-2b\,\mathrm{Sin}[fx]+a\,\mathrm{Sin}[2e+fx])\Big]\,\mathrm{Cos}[2e]\Big)\Big/$$
$$\left(64a^3\sqrt{a+b}\,f\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}\right)-\Big(i\,b\,\mathrm{ArcTan}\Big[\mathrm{Sec}[fx]\left(\frac{\mathrm{Cos}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}}-\frac{i\,\mathrm{Sin}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}}\right)$$
$$(-a\,\mathrm{Sin}[fx]-2b\,\mathrm{Sin}[fx]+a\,\mathrm{Sin}[2e+fx])\Big]\,\mathrm{Sin}[2e]\Big)\Big/$$
$$\left(64a^3\sqrt{a+b}\,f\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}\right)\Big)\Big)\Big/\left((a+b)^2\,(a+b\,\mathrm{Sec}[e+fx]^2)^3\right)+$$
$$\Big((a+2b+a\,\mathrm{Cos}[2e+2fx])^2\,\mathrm{Sec}[e+fx]^6\,(9a^2b\,\mathrm{Sin}[2e]+28ab^2\,\mathrm{Sin}[2e]+16b^3\,\mathrm{Sin}[2e]-9a^2b\,\mathrm{Sin}[2fx]-6ab^2\,\mathrm{Sin}[2fx])\Big)\Big/$$
$$\left(64a^3\,(a+b)^2\,f\,(a+b\,\mathrm{Sec}[e+fx]^2)^3\,(\mathrm{Cos}[e]-\mathrm{Sin}[e])\,(\mathrm{Cos}[e]+\mathrm{Sin}[e])\right)+$$
$$\Big((a+2b+a\,\mathrm{Cos}[2e+2fx])\,\mathrm{Sec}[e+fx]^6\,(-ab^2\,\mathrm{Sin}[2e]-2b^3\,\mathrm{Sin}[2e]+ab^2\,\mathrm{Sin}[2fx])\Big)\Big/$$
$$\left(16a^3\,(a+b)\,f\,(a+b\,\mathrm{Sec}[e+fx]^2)^3\,(\mathrm{Cos}[e]-\mathrm{Sin}[e])\,(\mathrm{Cos}[e]+\mathrm{Sin}[e])\right)$$

Problem 217: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Cos}[e+fx]^4}{(a+b\,\mathrm{Sec}[e+fx]^2)^3}\,dx$$

Optimal (type 3, 269 leaves, 8 steps):

$$\frac{3\,(a^2-4ab+16b^2)\,x}{8a^5}-\frac{3b^{5/2}\,(21a^2+36ab+16b^2)\,\mathrm{ArcTan}\left[\frac{\sqrt{b}\,\mathrm{Tan}[e+fx]}{\sqrt{a+b}}\right]}{8a^5\,(a+b)^{5/2}\,f}+$$
$$\frac{(3a-8b)\,\mathrm{Cos}[e+fx]\,\mathrm{Sin}[e+fx]}{8a^2f\,(a+b+b\,\mathrm{Tan}[e+fx]^2)^2}+\frac{\mathrm{Cos}[e+fx]^3\,\mathrm{Sin}[e+fx]}{4af\,(a+b+b\,\mathrm{Tan}[e+fx]^2)^2}+$$
$$\frac{b\,(3a^2-7ab-12b^2)\,\mathrm{Tan}[e+fx]}{8a^3\,(a+b)\,f\,(a+b+b\,\mathrm{Tan}[e+fx]^2)^2}+\frac{3b\,(a+2b)\,(a^2-4ab-4b^2)\,\mathrm{Tan}[e+fx]}{8a^4\,(a+b)^2\,f\,(a+b+b\,\mathrm{Tan}[e+fx]^2)}$$

Result (type 3, 1430 leaves):

$$\left(\left(21 a^2+36 a b+16 b^2\right) \left(a+2 b+a \cos[2 e+2 f x]\right)^3 \sec[e+f x]^6 \left(\left(3 b^3 \text{ArcTan}\left[\sec[f x] \left(\frac{\cos[2 e]}{2 \sqrt{a+b} \sqrt{b \cos[4 e]-i b \sin[4 e]}}-\frac{i \sin[2 e]}{2 \sqrt{a+b} \sqrt{b \cos[4 e]-i b \sin[4 e]}}\right) \left(-a \sin[f x]-2 b \sin[f x]+a \sin[2 e+f x]\right)\right] \cos[2 e]\right) \Big/ \left(64 a^5 \sqrt{a+b} f \sqrt{b \cos[4 e]-i b \sin[4 e]}\right)-\left(3 i b^3 \text{ArcTan}\left[\sec[f x] \left(\frac{\cos[2 e]}{2 \sqrt{a+b} \sqrt{b \cos[4 e]-i b \sin[4 e]}}-\frac{i \sin[2 e]}{2 \sqrt{a+b} \sqrt{b \cos[4 e]-i b \sin[4 e]}}\right) \left(-a \sin[f x]-2 b \sin[f x]+a \sin[2 e+f x]\right)\right] \sin[2 e]\right) \Big/ \left(64 a^5 \sqrt{a+b} f \sqrt{b \cos[4 e]-i b \sin[4 e]}\right)\right)\right) \Big/ \left((a+b)^2 \left(a+b \sec[e+f x]^2\right)^3\right)+\frac{1}{2048 a^5 (a+b)^2 f \left(a+b \sec[e+f x]^2\right)^3}$$

$$\left(a+2 b+a \cos[2 e+2 f x]\right) \sec[2 e] \sec[e+f x]^6$$

$$\left(144 a^6 f x \cos[2 e]+96 a^5 b f x \cos[2 e]+912 a^4 b^2 f x \cos[2 e]+6720 a^3 b^3 f x \cos[2 e]+16512 a^2 b^4 f x \cos[2 e]+16896 a b^5 f x \cos[2 e]+6144 b^6 f x \cos[2 e]+96 a^6 f x \cos[2 f x]+480 a^4 b^2 f x \cos[2 f x]+4416 a^3 b^3 f x \cos[2 f x]+6912 a^2 b^4 f x \cos[2 f x]+3072 a b^5 f x \cos[2 f x]+96 a^6 f x \cos[4 e+2 f x]+480 a^4 b^2 f x \cos[4 e+2 f x]+4416 a^3 b^3 f x \cos[4 e+2 f x]+6912 a^2 b^4 f x \cos[4 e+2 f x]+3072 a b^5 f x \cos[4 e+2 f x]+24 a^6 f x \cos[2 e+4 f x]-48 a^5 b f x \cos[2 e+4 f x]+216 a^4 b^2 f x \cos[2 e+4 f x]+672 a^3 b^3 f x \cos[2 e+4 f x]+384 a^2 b^4 f x \cos[2 e+4 f x]+24 a^6 f x \cos[6 e+4 f x]-48 a^5 b f x \cos[6 e+4 f x]+216 a^4 b^2 f x \cos[6 e+4 f x]+672 a^3 b^3 f x \cos[6 e+4 f x]+384 a^2 b^4 f x \cos[6 e+4 f x]+816 a^3 b^3 \sin[2 e]+2848 a^2 b^4 \sin[2 e]+3968 a b^5 \sin[2 e]+1792 b^6 \sin[2 e]+44 a^6 \sin[2 f x]+104 a^5 b \sin[2 f x]-180 a^4 b^2 \sin[2 f x]-1696 a^3 b^3 \sin[2 f x]-3264 a^2 b^4 \sin[2 f x]-1664 a b^5 \sin[2 f x]+44 a^6 \sin[4 e+2 f x]+104 a^5 b \sin[4 e+2 f x]-180 a^4 b^2 \sin[4 e+2 f x]-608 a^3 b^3 \sin[4 e+2 f x]-192 a^2 b^4 \sin[4 e+2 f x]+128 a b^5 \sin[4 e+2 f x]+38 a^6 \sin[2 e+4 f x]+60 a^5 b \sin[2 e+4 f x]-170 a^4 b^2 \sin[2 e+4 f x]-640 a^3 b^3 \sin[2 e+4 f x]-400 a^2 b^4 \sin[2 e+4 f x]+38 a^6 \sin[6 e+4 f x]+60 a^5 b \sin[6 e+4 f x]-170 a^4 b^2 \sin[6 e+4 f x]-368 a^3 b^3 \sin[6 e+4 f x]-176 a^2 b^4 \sin[6 e+4 f x]+12 a^6 \sin[4 e+6 f x]+8 a^5 b \sin[4 e+6 f x]-20 a^4 b^2 \sin[4 e+6 f x]-16 a^3 b^3 \sin[4 e+6 f x]+12 a^6 \sin[8 e+6 f x]+8 a^5 b \sin[8 e+6 f x]-20 a^4 b^2 \sin[8 e+6 f x]-16 a^3 b^3 \sin[8 e+6 f x]+a^6 \sin[6 e+8 f x]+2 a^5 b \sin[6 e+8 f x]+a^4 b^2 \sin[6 e+8 f x]+a^6 \sin[10 e+8 f x]+2 a^5 b \sin[10 e+8 f x]+a^4 b^2 \sin[10 e+8 f x]\right)$$

Problem 218: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]^6}{\left(a+b\,\text{Sec}[e+f x]^2\right)^3}\,dx$$

Optimal (type 3, 352 leaves, 9 steps):

$$\frac{\left(5 a^3-18 a^2 b+48 a b^2-160 b^3\right) x}{16 a^6}+\frac{b^{7/2}\left(99 a^2+176 a b+80 b^2\right) \text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{8 a^6 (a+b)^{5/2} f}+$$
$$\frac{\left(15 a^2-34 a b+80 b^2\right) \text{Cos}[e+f x] \text{Sin}[e+f x]}{48 a^3 f \left(a+b+b \text{Tan}[e+f x]^2\right)^2}+\frac{5 (a-2 b) \text{Cos}[e+f x]^3 \text{Sin}[e+f x]}{24 a^2 f \left(a+b+b \text{Tan}[e+f x]^2\right)^2}+$$
$$\frac{\text{Cos}[e+f x]^5 \text{Sin}[e+f x]}{6 a f \left(a+b+b \text{Tan}[e+f x]^2\right)^2}+\frac{b \left(15 a^3-29 a^2 b+64 a b^2+120 b^3\right) \text{Tan}[e+f x]}{48 a^4 (a+b) f \left(a+b+b \text{Tan}[e+f x]^2\right)^2}+$$
$$\frac{b \left(5 a^4-8 a^3 b+17 a^2 b^2+116 a b^3+80 b^4\right) \text{Tan}[e+f x]}{16 a^5 (a+b)^2 f \left(a+b+b \text{Tan}[e+f x]^2\right)}$$

Result (type 3, 1770 leaves):

$$\Bigg(\left(99 a^2+176 a b+80 b^2\right) (a+2 b+a \text{Cos}[2 e+2 f x])^3$$
$$\text{Sec}[e+f x]^6 \Bigg(-\Bigg(\Bigg(b^4 \text{ArcTan}\Big[\text{Sec}[f x] \left(\frac{\text{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \text{Cos}[4 e]-i b \text{Sin}[4 e]}}-\right.$$
$$\left.\frac{i \text{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \text{Cos}[4 e]-i b \text{Sin}[4 e]}}\right)$$
$$(-a \text{Sin}[f x]-2 b \text{Sin}[f x]+a \text{Sin}[2 e+f x])\Big] \text{Cos}[2 e]\Bigg)\Big/$$
$$\left(64 a^6 \sqrt{a+b} f \sqrt{b \text{Cos}[4 e]-i b \text{Sin}[4 e]}\right)\Bigg)+\Bigg(i b^4 \text{ArcTan}\Big[$$
$$\text{Sec}[f x] \left(\frac{\text{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \text{Cos}[4 e]-i b \text{Sin}[4 e]}}-\frac{i \text{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \text{Cos}[4 e]-i b \text{Sin}[4 e]}}\right)$$
$$(-a \text{Sin}[f x]-2 b \text{Sin}[f x]+a \text{Sin}[2 e+f x])\Big] \text{Sin}[2 e]\Bigg)\Big/$$
$$\left(64 a^6 \sqrt{a+b} f \sqrt{b \text{Cos}[4 e]-i b \text{Sin}[4 e]}\right)\Bigg)\Bigg)\Big/$$
$$\left((a+b)^2 \left(a+b \text{Sec}[e+f x]^2\right)^3\right)+\frac{1}{12288 a^6 (a+b)^2 f \left(a+b \text{Sec}[e+f x]^2\right)^3}$$
$$(a+2 b+$$
$$a \text{Cos}[2 e+2 f x]) \text{Sec}[2 e]$$
$$\text{Sec}[e+f x]^6 \left(720 a^7 f x \text{Cos}[2 e]+768 a^6 b f x \text{Cos}[2 e]+\right.$$
$$1296 a^5 b^2 f x \text{Cos}[2 e]-8352 a^4 b^3 f x \text{Cos}[2 e]-$$
$$64128 a^3 b^4 f x \text{Cos}[2 e]-158976 a^2 b^5 f x \text{Cos}[2 e]-$$

$165888\, a\, b^6\, f\, x\, Cos[2\, e] - 61440\, b^7\, f\, x\, Cos[2\, e] +$
$480\, a^7\, f\, x\, Cos[2\, f\, x] + 192\, a^6\, b\, f\, x\, Cos[2\, f\, x] + 96\, a^5\, b^2\, f\, x\, Cos[2\, f\, x] -$
$4608\, a^4\, b^3\, f\, x\, Cos[2\, f\, x] - 41856\, a^3\, b^4\, f\, x\, Cos[2\, f\, x] -$
$67584\, a^2\, b^5\, f\, x\, Cos[2\, f\, x] - 30720\, a\, b^6\, f\, x\, Cos[2\, f\, x] +$
$480\, a^7\, f\, x\, Cos[4\, e + 2\, f\, x] + 192\, a^6\, b\, f\, x\, Cos[4\, e + 2\, f\, x] +$
$96\, a^5\, b^2\, f\, x\, Cos[4\, e + 2\, f\, x] - 4608\, a^4\, b^3\, f\, x\, Cos[4\, e + 2\, f\, x] -$
$41856\, a^3\, b^4\, f\, x\, Cos[4\, e + 2\, f\, x] - 67584\, a^2\, b^5\, f\, x\, Cos[4\, e + 2\, f\, x] -$
$30720\, a\, b^6\, f\, x\, Cos[4\, e + 2\, f\, x] + 120\, a^7\, f\, x\, Cos[2\, e + 4\, f\, x] -$
$192\, a^6\, b\, f\, x\, Cos[2\, e + 4\, f\, x] + 408\, a^5\, b^2\, f\, x\, Cos[2\, e + 4\, f\, x] -$
$1968\, a^4\, b^3\, f\, x\, Cos[2\, e + 4\, f\, x] - 6528\, a^3\, b^4\, f\, x\, Cos[2\, e + 4\, f\, x] -$
$3840\, a^2\, b^5\, f\, x\, Cos[2\, e + 4\, f\, x] + 120\, a^7\, f\, x\, Cos[6\, e + 4\, f\, x] -$
$192\, a^6\, b\, f\, x\, Cos[6\, e + 4\, f\, x] + 408\, a^5\, b^2\, f\, x\, Cos[6\, e + 4\, f\, x] -$
$1968\, a^4\, b^3\, f\, x\, Cos[6\, e + 4\, f\, x] - 6528\, a^3\, b^4\, f\, x\, Cos[6\, e + 4\, f\, x] -$
$3840\, a^2\, b^5\, f\, x\, Cos[6\, e + 4\, f\, x] - 6048\, a^3\, b^4\, Sin[2\, e] - 21312\, a^2\, b^5\, Sin[2\, e] -$
$29952\, a\, b^6\, Sin[2\, e] - 13824\, b^7\, Sin[2\, e] + 262\, a^7\, Sin[2\, f\, x] + 524\, a^6\, b\, Sin[2\, f\, x] -$
$26\, a^5\, b^2\, Sin[2\, f\, x] + 1728\, a^4\, b^3\, Sin[2\, f\, x] + 14976\, a^3\, b^4\, Sin[2\, f\, x] +$
$28416\, a^2\, b^5\, Sin[2\, f\, x] + 14592\, a\, b^6\, Sin[2\, f\, x] + 262\, a^7\, Sin[4\, e + 2\, f\, x] +$
$524\, a^6\, b\, Sin[4\, e + 2\, f\, x] - 26\, a^5\, b^2\, Sin[4\, e + 2\, f\, x] + 1728\, a^4\, b^3\, Sin[4\, e + 2\, f\, x] +$
$6912\, a^3\, b^4\, Sin[4\, e + 2\, f\, x] + 5376\, a^2\, b^5\, Sin[4\, e + 2\, f\, x] + 768\, a\, b^6\, Sin[4\, e + 2\, f\, x] +$
$238\, a^7\, Sin[2\, e + 4\, f\, x] + 304\, a^6\, b\, Sin[2\, e + 4\, f\, x] - 250\, a^5\, b^2\, Sin[2\, e + 4\, f\, x] +$
$1556\, a^4\, b^3\, Sin[2\, e + 4\, f\, x] + 5904\, a^3\, b^4\, Sin[2\, e + 4\, f\, x] + 3744\, a^2\, b^5\, Sin[2\, e + 4\, f\, x] +$
$238\, a^7\, Sin[6\, e + 4\, f\, x] + 304\, a^6\, b\, Sin[6\, e + 4\, f\, x] - 250\, a^5\, b^2\, Sin[6\, e + 4\, f\, x] +$
$1556\, a^4\, b^3\, Sin[6\, e + 4\, f\, x] + 3888\, a^3\, b^4\, Sin[6\, e + 4\, f\, x] + 2016\, a^2\, b^5\, Sin[6\, e + 4\, f\, x] +$
$87\, a^7\, Sin[4\, e + 6\, f\, x] + 46\, a^6\, b\, Sin[4\, e + 6\, f\, x] - 9\, a^5\, b^2\, Sin[4\, e + 6\, f\, x] +$
$192\, a^4\, b^3\, Sin[4\, e + 6\, f\, x] + 160\, a^3\, b^4\, Sin[4\, e + 6\, f\, x] + 87\, a^7\, Sin[8\, e + 6\, f\, x] +$
$46\, a^6\, b\, Sin[8\, e + 6\, f\, x] - 9\, a^5\, b^2\, Sin[8\, e + 6\, f\, x] + 192\, a^4\, b^3\, Sin[8\, e + 6\, f\, x] +$
$160\, a^3\, b^4\, Sin[8\, e + 6\, f\, x] + 13\, a^7\, Sin[6\, e + 8\, f\, x] + 16\, a^6\, b\, Sin[6\, e + 8\, f\, x] -$
$7\, a^5\, b^2\, Sin[6\, e + 8\, f\, x] - 10\, a^4\, b^3\, Sin[6\, e + 8\, f\, x] + 13\, a^7\, Sin[10\, e + 8\, f\, x] +$
$16\, a^6\, b\, Sin[10\, e + 8\, f\, x] - 7\, a^5\, b^2\, Sin[10\, e + 8\, f\, x] - 10\, a^4\, b^3\, Sin[10\, e + 8\, f\, x] +$
$a^7\, Sin[8\, e + 10\, f\, x] + 2\, a^6\, b\, Sin[8\, e + 10\, f\, x] + a^5\, b^2\, Sin[8\, e + 10\, f\, x] +$
$a^7\, Sin[12\, e + 10\, f\, x] + 2\, a^6\, b\, Sin[12\, e + 10\, f\, x] + a^5\, b^2\, Sin[12\, e + 10\, f\, x])$

Problem 219: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{1}{\left(a + b\, Sec[c + d\, x]^2\right)^4}\, dx$$

Optimal (type 3, 204 leaves, 7 steps):

$$\frac{x}{a^4} - \frac{\sqrt{b}\, \left(35\, a^3 + 70\, a^2\, b + 56\, a\, b^2 + 16\, b^3\right)\, ArcTan\left[\frac{\sqrt{b}\, Tan[c+d\, x]}{\sqrt{a+b}}\right]}{16\, a^4\, (a + b)^{7/2}\, d} - \frac{b\, Tan[c + d\, x]}{6\, a\, (a + b)\, d\, \left(a + b + b\, Tan[c + d\, x]^2\right)^3} - \frac{b\, (11\, a + 6\, b)\, Tan[c + d\, x]}{24\, a^2\, (a + b)^2\, d\, \left(a + b + b\, Tan[c + d\, x]^2\right)^2} - \frac{b\, \left(19\, a^2 + 22\, a\, b + 8\, b^2\right)\, Tan[c + d\, x]}{16\, a^3\, (a + b)^3\, d\, \left(a + b + b\, Tan[c + d\, x]^2\right)}$$

Result (type 3, 1411 leaves):

$$\left(\left(35 a^3+70 a^2 b+56 a b^2+16 b^3\right) (a+2 b+a \text{Cos}[2 c+2 d x])^4 \text{Sec}[c+d x]^8 \left(\left(b \text{ArcTan}\Big[\text{Sec}[d x] \left(\frac{\text{Cos}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cos}[4 c]-\mathbb{i} b \text{Sin}[4 c]}}-\frac{\mathbb{i} \text{Sin}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cos}[4 c]-\mathbb{i} b \text{Sin}[4 c]}}\right) (-a \text{Sin}[d x]-2 b \text{Sin}[d x]+a \text{Sin}[2 c+d x])\Big] \text{Cos}[2 c]\right) \Big/ \left(256 a^4 \sqrt{a+b}\, d \sqrt{b \text{Cos}[4 c]-\mathbb{i} b \text{Sin}[4 c]}\right)-\left(\mathbb{i} b \text{ArcTan}\Big[\text{Sec}[d x] \left(\frac{\text{Cos}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cos}[4 c]-\mathbb{i} b \text{Sin}[4 c]}}-\frac{\mathbb{i} \text{Sin}[2 c]}{2 \sqrt{a+b} \sqrt{b \text{Cos}[4 c]-\mathbb{i} b \text{Sin}[4 c]}}\right) (-a \text{Sin}[d x]-2 b \text{Sin}[d x]+a \text{Sin}[2 c+d x])\Big] \text{Sin}[2 c]\right) \Big/ \left(256 a^4 \sqrt{a+b}\, d \sqrt{b \text{Cos}[4 c]-\mathbb{i} b \text{Sin}[4 c]}\right)\right)\right) \Big/ \left((a+b)^3 \left(a+b \text{Sec}[c+d x]^2\right)^4\right)+\frac{1}{3072 a^4 (a+b)^3 d \left(a+b \text{Sec}[c+d x]^2\right)^4}$$

$$(a+2 b+a \text{Cos}[2 c+2 d x]) \text{Sec}[2 c] \text{Sec}[c+d x]^8 \big(480 a^6 d x \text{Cos}[2 c]+3168 a^5 b d x \text{Cos}[2 c]+8928 a^4 b^2 d x \text{Cos}[2 c]+14112 a^3 b^3 d x \text{Cos}[2 c]+13248 a^2 b^4 d x \text{Cos}[2 c]+6912 a b^5 d x \text{Cos}[2 c]+1536 b^6 d x \text{Cos}[2 c]+360 a^6 d x \text{Cos}[2 d x]+2232 a^5 b d x \text{Cos}[2 d x]+5688 a^4 b^2 d x \text{Cos}[2 d x]+7272 a^3 b^3 d x \text{Cos}[2 d x]+4608 a^2 b^4 d x \text{Cos}[2 d x]+1152 a b^5 d x \text{Cos}[2 d x]+360 a^6 d x \text{Cos}[4 c+2 d x]+2232 a^5 b d x \text{Cos}[4 c+2 d x]+5688 a^4 b^2 d x \text{Cos}[4 c+2 d x]+7272 a^3 b^3 d x \text{Cos}[4 c+2 d x]+4608 a^2 b^4 d x \text{Cos}[4 c+2 d x]+1152 a b^5 d x \text{Cos}[4 c+2 d x]+144 a^6 d x \text{Cos}[2 c+4 d x]+720 a^5 b d x \text{Cos}[2 c+4 d x]+1296 a^4 b^2 d x \text{Cos}[2 c+4 d x]+1008 a^3 b^3 d x \text{Cos}[2 c+4 d x]+288 a^2 b^4 d x \text{Cos}[2 c+4 d x]+144 a^6 d x \text{Cos}[6 c+4 d x]+720 a^5 b d x \text{Cos}[6 c+4 d x]+1296 a^4 b^2 d x \text{Cos}[6 c+4 d x]+1008 a^3 b^3 d x \text{Cos}[6 c+4 d x]+288 a^2 b^4 d x \text{Cos}[6 c+4 d x]+24 a^6 d x \text{Cos}[4 c+6 d x]+72 a^5 b d x \text{Cos}[4 c+6 d x]+72 a^4 b^2 d x \text{Cos}[4 c+6 d x]+24 a^3 b^3 d x \text{Cos}[4 c+6 d x]+24 a^6 d x \text{Cos}[8 c+6 d x]+72 a^5 b d x \text{Cos}[8 c+6 d x]+72 a^4 b^2 d x \text{Cos}[8 c+6 d x]+24 a^3 b^3 d x \text{Cos}[8 c+6 d x]+870 a^5 b \text{Sin}[2 c]+4292 a^4 b^2 \text{Sin}[2 c]+8792 a^3 b^3 \text{Sin}[2 c]+9936 a^2 b^4 \text{Sin}[2 c]+5824 a b^5 \text{Sin}[2 c]+1408 b^6 \text{Sin}[2 c]-870 a^5 b \text{Sin}[2 d x]-3792 a^4 b^2 \text{Sin}[2 d x]-6432 a^3 b^3 \text{Sin}[2 d x]-4608 a^2 b^4 \text{Sin}[2 d x]-1248 a b^5 \text{Sin}[2 d x]+435 a^5 b \text{Sin}[4 c+2 d x]+2124 a^4 b^2 \text{Sin}[4 c+2 d x]+3972 a^3 b^3 \text{Sin}[4 c+2 d x]+3072 a^2 b^4 \text{Sin}[4 c+2 d x]+864 a b^5 \text{Sin}[4 c+2 d x]-435 a^5 b \text{Sin}[2 c+4 d x]-1374 a^4 b^2 \text{Sin}[2 c+4 d x]-1248 a^3 b^3 \text{Sin}[2 c+4 d x]-384 a^2 b^4 \text{Sin}[2 c+4 d x]+87 a^5 b \text{Sin}[6 c+4 d x]+366 a^4 b^2 \text{Sin}[6 c+4 d x]+408 a^3 b^3 \text{Sin}[6 c+4 d x]+144 a^2 b^4 \text{Sin}[6 c+4 d x]-87 a^5 b \text{Sin}[4 c+6 d x]-116 a^4 b^2 \text{Sin}[4 c+6 d x]-44 a^3 b^3 \text{Sin}[4 c+6 d x]\big)$$

Problem 228: Unable to integrate problem.

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

Optimal (type 4, 471 leaves, 11 steps):

$$-\left(\left(\left(2 a^2-3 a b-8 b^2\right) \sqrt{a+b\,\mathrm{Sec}[e+f x]^2}\,\mathrm{Sin}[e+f x] \sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}\right) \Big/ \left(15 b^2 f \sqrt{b+a\,\mathrm{Cos}[e+f x]^2}\right)\right)+$$
$$\left(\left(2 a^2-3 a b-8 b^2\right) \sqrt{\mathrm{Cos}[e+f x]^2}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f x]],\frac{a}{a+b}\right] \sqrt{a+b\,\mathrm{Sec}[e+f x]^2}\right.$$
$$\left.\sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}\right) \Big/ \left(15 b^2 f \sqrt{b+a\,\mathrm{Cos}[e+f x]^2} \sqrt{1-\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}}\right)-$$
$$\left((a-8 b)(a+b) \sqrt{\mathrm{Cos}[e+f x]^2}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f x]],\frac{a}{a+b}\right] \sqrt{a+b\,\mathrm{Sec}[e+f x]^2}\right.$$
$$\left.\sqrt{1-\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}}\right) \Big/ \left(15 b f \sqrt{b+a\,\mathrm{Cos}[e+f x]^2} \sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}\right)+$$
$$\left((a+4 b)\,\mathrm{Sec}[e+f x] \sqrt{a+b\,\mathrm{Sec}[e+f x]^2} \sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}\,\mathrm{Tan}[e+f x]\right) \Big/$$
$$\left(15 b f \sqrt{b+a\,\mathrm{Cos}[e+f x]^2}\right)+$$
$$\left(\mathrm{Sec}[e+f x]^3 \sqrt{a+b\,\mathrm{Sec}[e+f x]^2} \sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}\,\mathrm{Tan}[e+f x]\right) \Big/$$
$$\left(5 f \sqrt{b+a\,\mathrm{Cos}[e+f x]^2}\right)$$

Result (type 8, 27 leaves):

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

Problem 229: Unable to integrate problem.

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

Optimal (type 4, 364 leaves, 10 steps):

$$\frac{(a+2b)\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,\mathrm{Sin}[e+fx]\sqrt{a+b-a\,\mathrm{Sin}[e+fx]^2}}{3bf\sqrt{b+a\,\mathrm{Cos}[e+fx]^2}}-$$

$$\left((a+2b)\sqrt{\mathrm{Cos}[e+fx]^2}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+fx]],\frac{a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\sqrt{a+b-a\,\mathrm{Sin}[e+fx]^2}\right)\Big/\left(3bf\sqrt{b+a\,\mathrm{Cos}[e+fx]^2}\sqrt{1-\frac{a\,\mathrm{Sin}[e+fx]^2}{a+b}}\right)+$$

$$\left(2(a+b)\sqrt{\mathrm{Cos}[e+fx]^2}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+fx]],\frac{a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\sqrt{1-\frac{a\,\mathrm{Sin}[e+fx]^2}{a+b}}\right)\Big/\left(3f\sqrt{b+a\,\mathrm{Cos}[e+fx]^2}\sqrt{a+b-a\,\mathrm{Sin}[e+fx]^2}\right)+$$

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

Result (type 8, 27 leaves) :

$$\int \mathrm{Sec}[e+fx]^3\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,dx$$

Problem 230: Unable to integrate problem.

$$\int \mathrm{Sec}[e+fx]\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,dx$$

Optimal (type 4, 271 leaves, 10 steps) :

$$\frac{\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,\mathrm{Sin}[e+fx]\sqrt{a+b-a\,\mathrm{Sin}[e+fx]^2}}{f\sqrt{b+a\,\mathrm{Cos}[e+fx]^2}}-$$

$$\left(\sqrt{\mathrm{Cos}[e+fx]^2}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+fx]],\frac{a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\sqrt{a+b-a\,\mathrm{Sin}[e+fx]^2}\right)\Big/\left(f\sqrt{b+a\,\mathrm{Cos}[e+fx]^2}\sqrt{1-\frac{a\,\mathrm{Sin}[e+fx]^2}{a+b}}\right)+$$

$$\left((a+b)\sqrt{\mathrm{Cos}[e+fx]^2}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+fx]],\frac{a}{a+b}\right]\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\sqrt{1-\frac{a\,\mathrm{Sin}[e+fx]^2}{a+b}}\right)\Big/\left(f\sqrt{b+a\,\mathrm{Cos}[e+fx]^2}\sqrt{a+b-a\,\mathrm{Sin}[e+fx]^2}\right)$$

Result (type 8, 25 leaves):

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

Problem 232: Unable to integrate problem.

$$\int \text{Cos}[e+f x]^3 \sqrt{a+b \text{Sec}[e+f x]^2} \, dx$$

Optimal (type 4, 299 leaves, 9 steps):

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

Result (type 8, 27 leaves):

$$\int \text{Cos}[e+f x]^3 \sqrt{a+b \text{Sec}[e+f x]^2} \, dx$$

Problem 233: Unable to integrate problem.

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

Optimal (type 4, 400 leaves, 10 steps):

$$\left(2\,(2a-b)\,\text{Cos}[e+fx]^2\,\sqrt{a+b\,\text{Sec}[e+fx]^2}\,\text{Sin}[e+fx]\,\sqrt{a+b-a\,\text{Sin}[e+fx]^2}\right)\Big/\left(15\,a\,f\,\sqrt{b+a\,\text{Cos}[e+fx]^2}\right)+$$

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

$$\left(\left(8a^2+3ab-2b^2\right)\sqrt{\text{Cos}[e+fx]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+fx]],\frac{a}{a+b}\right]\sqrt{a+b\,\text{Sec}[e+fx]^2}\,\sqrt{a+b-a\,\text{Sin}[e+fx]^2}\right)\Big/\left(15\,a^2\,f\,\sqrt{b+a\,\text{Cos}[e+fx]^2}\,\sqrt{1-\frac{a\,\text{Sin}[e+fx]^2}{a+b}}\right)-$$

$$\left(2\,(2a-b)\,b\,(a+b)\,\sqrt{\text{Cos}[e+fx]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+fx]],\frac{a}{a+b}\right]\sqrt{a+b\,\text{Sec}[e+fx]^2}\,\sqrt{1-\frac{a\,\text{Sin}[e+fx]^2}{a+b}}\right)\Big/\left(15\,a^2\,f\,\sqrt{b+a\,\text{Cos}[e+fx]^2}\,\sqrt{a+b-a\,\text{Sin}[e+fx]^2}\right)$$

Result (type 8, 27 leaves):

$$\int \text{Cos}[e+fx]^5\,\sqrt{a+b\,\text{Sec}[e+fx]^2}\,dx$$

Problem 234: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[e+fx]^6\,\sqrt{a+b\,\text{Sec}[e+fx]^2}\,dx$$

Optimal (type 3, 186 leaves, 6 steps):

$$\frac{(a+b)\left(a^2-2ab+5b^2\right)\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{16\,b^{5/2}\,f}+\frac{\left(a^2-2ab+5b^2\right)\text{Tan}[e+fx]\,\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}{16\,b^2\,f}-\frac{(3a-5b)\,\text{Tan}[e+fx]\,\left(a+b+b\,\text{Tan}[e+fx]^2\right)^{3/2}}{24\,b^2\,f}+\frac{\text{Sec}[e+fx]^2\,\text{Tan}[e+fx]\,\left(a+b+b\,\text{Tan}[e+fx]^2\right)^{3/2}}{6\,b\,f}$$

Result (type 3, 407 leaves):

$$\Bigg(e^{i\,(e+f\,x)}\,\sqrt{4\,b+a\,e^{-2\,i\,(e+f\,x)}\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\;\mathrm{Cos}[e+f\,x]\,\Bigg(-\frac{1}{\left(1+e^{2\,i\,(e+f\,x)}\right)^6}\,i\,\sqrt{b}\,\left(-1+e^{2\,i\,(e+f\,x)}\right)$$
$$\Big(-3\,a^2\,\left(1+e^{2\,i\,(e+f\,x)}\right)^4+4\,a\,b\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2\,\left(1+4\,e^{2\,i\,(e+f\,x)}+e^{4\,i\,(e+f\,x)}\right)+$$
$$b^2\,\left(15+100\,e^{2\,i\,(e+f\,x)}+298\,e^{4\,i\,(e+f\,x)}+100\,e^{6\,i\,(e+f\,x)}+15\,e^{8\,i\,(e+f\,x)}\right)\Big)-$$
$$\Bigg(3\,\left(a^3-a^2\,b+3\,a\,b^2+5\,b^3\right)\,\mathrm{Log}\Bigg[\frac{1}{1+e^{2\,i\,(e+f\,x)}}\Bigg(-4\,\sqrt{b}\,\left(-1+e^{2\,i\,(e+f\,x)}\right)\,f+$$
$$4\,i\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\;f\Bigg)\Bigg]\Bigg)\Bigg/\left(\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\Bigg)$$
$$\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\Bigg)\Bigg/\left(24\,\sqrt{2}\,b^{5/2}\,f\,\sqrt{a+2\,b+a\,\mathrm{Cos}[2\,e+2\,f\,x]}\right)$$

Problem 235: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[e+f\,x]^4\,\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\;dx$$

Optimal (type 3, 122 leaves, 5 steps):

$$-\frac{(a-3\,b)\,(a+b)\,\mathrm{ArcTanh}\Big[\frac{\sqrt{b}\,\mathrm{Tan}[e+f\,x]}{\sqrt{a+b+b\,\mathrm{Tan}[e+f\,x]^2}}\Big]}{8\,b^{3/2}\,f}-$$
$$\frac{(a-3\,b)\,\mathrm{Tan}[e+f\,x]\,\sqrt{a+b+b\,\mathrm{Tan}[e+f\,x]^2}}{8\,b\,f}+\frac{\mathrm{Tan}[e+f\,x]\,\left(a+b+b\,\mathrm{Tan}[e+f\,x]^2\right)^{3/2}}{4\,b\,f}$$

Result (type 3, 322 leaves):

$$\Bigg(e^{i\,(e+f\,x)}\,\sqrt{4\,b+a\,e^{-2\,i\,(e+f\,x)}\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\;\mathrm{Cos}[e+f\,x]$$
$$\Bigg(-\frac{1}{\left(1+e^{2\,i\,(e+f\,x)}\right)^4}\,i\,\sqrt{b}\,\left(-1+e^{2\,i\,(e+f\,x)}\right)\,\left(a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2+b\,\left(3+14\,e^{2\,i\,(e+f\,x)}+3\,e^{4\,i\,(e+f\,x)}\right)\right)+$$
$$\Bigg(\left(a^2-2\,a\,b-3\,b^2\right)\,\mathrm{Log}\Bigg[\frac{1}{1+e^{2\,i\,(e+f\,x)}}\Bigg(-4\,\sqrt{b}\,\left(-1+e^{2\,i\,(e+f\,x)}\right)\,f+$$
$$4\,i\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\;f\Bigg)\Bigg]\Bigg)\Bigg/\left(\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\Bigg)$$
$$\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\Bigg)\Bigg/\left(4\,\sqrt{2}\,b^{3/2}\,f\,\sqrt{a+2\,b+a\,\mathrm{Cos}[2\,e+2\,f\,x]}\right)$$

Problem 236: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

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

Optimal (type 3, 76 leaves, 4 steps):

$$\frac{(a+b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{2\sqrt{b}\,f}+\frac{\text{Tan}[e+f x]\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{2 f}$$

Result (type 3, 257 leaves):

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

Problem 237: Unable to integrate problem.

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

Optimal (type 3, 79 leaves, 6 steps):

$$\frac{\sqrt{a}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{f}+\frac{\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{f}$$

Result (type 8, 18 leaves):

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

Problem 238: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f x]^2 \sqrt{a+b\,\text{Sec}[e+f x]^2}\, dx$$

Optimal (type 3, 82 leaves, 4 steps):

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

Result (type 3, 322 leaves):

$$\Bigg(e^{-i (e+f x)}\sqrt{4 b+a\,e^{-2 i (e+f x)}\left(1+e^{2 i (e+f x)}\right)^2}\;\text{Cos}[e+f x]\Bigg(-i\left(-1+e^{2 i (e+f x)}\right)+\Bigg(2 (a+b)\,e^{2 i (e+f x)}\Bigg(2 f x-i\,\text{Log}\left[a+2 b+a\,e^{2 i (e+f x)}+\sqrt{a}\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}\right]+i\,\text{Log}\left[a+a\,e^{2 i (e+f x)}+2 b\,e^{2 i (e+f x)}+\sqrt{a}\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}\right]\Bigg)\Bigg)\Big/\left(\sqrt{a}\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}\right)\Bigg)\sqrt{a+b\,\text{Sec}[e+f x]^2}\Bigg)\Big/\left(4\sqrt{2}\,f\sqrt{a+2 b+a\,\text{Cos}[2 e+2 f x]}\right)$$

Problem 239: Unable to integrate problem.

$$\int \text{Cos}[e+f x]^4\sqrt{a+b\,\text{Sec}[e+f x]^2}\,dx$$

Optimal (type 3, 140 leaves, 5 steps):

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

Result (type 8, 27 leaves):

$$\int \text{Cos}[e+f x]^4\sqrt{a+b\,\text{Sec}[e+f x]^2}\,dx$$

Problem 240: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f x]^6 \sqrt{a+b\,\text{Sec}[e+f x]^2}\, dx$$

Optimal (type 3, 196 leaves, 7 steps):

$$\frac{(a+b)\left(5 a^2-2 a b+b^2\right) \text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{16 a^{5/2} f}+\frac{(3 a-b)(5 a+3 b) \text{Cos}[e+f x] \text{Sin}[e+f x] \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{48 a^2 f}+\frac{(5 a+b) \text{Cos}[e+f x]^3 \text{Sin}[e+f x] \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{24 a f}+\frac{\text{Cos}[e+f x]^5 \text{Sin}[e+f x] \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{6 f}$$

Result (type 6, 1902 leaves):

$$\left(3 (a+b) \text{AppellF1}\left[\frac{1}{2},-2,-\frac{1}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right] \text{Cos}[e+f x]^{10} \sqrt{a+2 b+a\,\text{Cos}[2 (e+f x)]} \sqrt{a+b\,\text{Sec}[e+f x]^2}\, \text{Sin}[e+f x]\right) \Big/$$

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

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

$$\left(12\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,-\frac{1}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right.$$

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

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

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

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

$$\left(3\,(a+b)\,\text{Cos}[e+f\,x]^4\,\sqrt{a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]}\,\,\text{Sin}[e+f\,x]\,\left(-\frac{1}{3\,(a+b)}a\,f\,\text{AppellF1}\left[\right.\right.\right.$$

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

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

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

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

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

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

$$\sqrt{a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]}\,\,\text{Sin}[e+f\,x]$$

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

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

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

$$\text{Sin}[e+f\,x]-\frac{4}{3}\,f\,\text{AppellF1}\left[\frac{3}{2},-1,-\frac{1}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]$$

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

$$\left.\frac{7}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]-\frac{12}{5}f\,\text{AppellF1}\Big[$$

$$\left.\left.\frac{5}{2},-1,\frac{1}{2},\frac{7}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]\right)+$$

$$4\,(a+b)\left(-\frac{1}{5\,(a+b)}3\,a\,f\,\text{AppellF1}\left[\frac{5}{2},-1,\frac{1}{2},\frac{7}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\right.$$

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

$$\left(\frac{5}{6\left(1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right)}+\left(5\,(a+b)^3\,\text{Csc}[e+f x]^6\left(-\frac{2\,a\,\text{Sin}[e+f x]^2}{a+b}-\right.\right.\right.$$

$$\left.\left.\frac{4\,a^2\,\text{Sin}[e+f x]^4}{3\,(a+b)^2}+\frac{2\sqrt{a}\,\text{ArcSin}\left[\frac{\sqrt{a}\,\text{Sin}[e+f x]}{\sqrt{a+b}}\right]\text{Sin}[e+f x]}{\sqrt{a+b}\,\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}\right)\right)\Big/\Bigg(32$$

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

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

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

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

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

$$\left.\text{Sin}[e+f x]\,\text{Sin}[2\,(e+f x)]\right)\Big/\left(\sqrt{a+2\,b+a\,\text{Cos}[2\,(e+f x)]}\right.$$

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

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

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

Problem 241: Unable to integrate problem.

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

Optimal (type 4, 572 leaves, 12 steps):

$$-\left(\left(2\,(a+2\,b)\,\left(a^2-4\,a\,b-4\,b^2\right)\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\text{Sin}[e+f\,x]\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)\Big/\left(35\,b^2\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\right)\right)+$$

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

$$\left(35\,b^2\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}\right)-$$

$$\left((a+b)\,\left(a^2-16\,a\,b-16\,b^2\right)\,\sqrt{\text{Cos}[e+f\,x]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\right.$$

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

$$\left(35\,b\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)+$$

$$\left(\left(a^2+11\,a\,b+8\,b^2\right)\,\text{Sec}[e+f\,x]\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\,\text{Tan}[e+f\,x]\right)\Big/$$

$$\left(35\,b\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\right)+$$

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

$$\left(35\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\right)+$$

$$\left(b\,\text{Sec}[e+f\,x]^5\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\,\text{Tan}[e+f\,x]\right)\Big/$$

$$\left(7\,f\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\right)$$

Result (type 8, 27 leaves):

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

Problem 242: Unable to integrate problem.

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

Optimal (type 4, 470 leaves, 11 steps):

$$\left(\left(3 a^2+13 a b+8 b^2\right) \sqrt{a+b \,\text{Sec}[e+f x]^2} \,\text{Sin}[e+f x] \sqrt{a+b-a \,\text{Sin}[e+f x]^2}\right) \Big/ \left(15 b f \sqrt{b+a \,\text{Cos}[e+f x]^2}\right) - \left(\left(3 a^2+13 a b+8 b^2\right) \sqrt{\text{Cos}[e+f x]^2} \,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b \,\text{Sec}[e+f x]^2} \sqrt{a+b-a \,\text{Sin}[e+f x]^2}\right) \Big/ \left(15 b f \sqrt{b+a \,\text{Cos}[e+f x]^2} \sqrt{1-\frac{a \,\text{Sin}[e+f x]^2}{a+b}}\right) + \left((a+b) (9 a+8 b) \sqrt{\text{Cos}[e+f x]^2} \,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b \,\text{Sec}[e+f x]^2} \sqrt{1-\frac{a \,\text{Sin}[e+f x]^2}{a+b}}\right) \Big/ \left(15 f \sqrt{b+a \,\text{Cos}[e+f x]^2} \sqrt{a+b-a \,\text{Sin}[e+f x]^2}\right) + \left(2 (3 a+2 b) \,\text{Sec}[e+f x] \sqrt{a+b \,\text{Sec}[e+f x]^2} \sqrt{a+b-a \,\text{Sin}[e+f x]^2} \,\text{Tan}[e+f x]\right) \Big/ \left(15 f \sqrt{b+a \,\text{Cos}[e+f x]^2}\right) + \left(b \,\text{Sec}[e+f x]^3 \sqrt{a+b \,\text{Sec}[e+f x]^2} \sqrt{a+b-a \,\text{Sin}[e+f x]^2} \,\text{Tan}[e+f x]\right) \Big/ \left(5 f \sqrt{b+a \,\text{Cos}[e+f x]^2}\right)$$

Result (type 8, 27 leaves):

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

Problem 243: Unable to integrate problem.

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

Optimal (type 4, 366 leaves, 10 steps):

$$\frac{2 (2 a+b) \sqrt{a+b \operatorname{Sec}[e+f x]^2} \operatorname{Sin}[e+f x] \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}}{3 f \sqrt{b+a \operatorname{Cos}[e+f x]^2}}-$$

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

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

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

Result (type 8, 25 leaves):

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

Problem 244: Unable to integrate problem.

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

Optimal (type 4, 277 leaves, 9 steps):

$$\frac{b \sqrt{a+b \operatorname{Sec}[e+f x]^2} \operatorname{Sin}[e+f x] \sqrt{a+b-a \operatorname{Sin}[e+f x]^2}}{f \sqrt{b+a \operatorname{Cos}[e+f x]^2}}+$$

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

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

Result (type 8, 25 leaves):

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

Problem 246: Unable to integrate problem.

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

Optimal (type 4, 395 leaves, 10 steps):

$$-\left(\left(2\,(a-3\,(a+b))\,\mathrm{Cos}[e+f x]^2\,\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}\,\mathrm{Sin}[e+f x]\,\sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}\right)\Big/\left(15\,f\,\sqrt{b+a\,\mathrm{Cos}[e+f x]^2}\right)\right)+\left(a\,\mathrm{Cos}[e+f x]^4\,\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}\,\mathrm{Sin}[e+f x]\,\sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}\right)\Big/\left(5\,f\,\sqrt{b+a\,\mathrm{Cos}[e+f x]^2}\right)+\left(\left(8\,a^2+13\,a\,b+3\,b^2\right)\,\sqrt{\mathrm{Cos}[e+f x]^2}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f x]],\,\frac{a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}\,\sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}\right)\Big/\left(15\,a\,f\,\sqrt{b+a\,\mathrm{Cos}[e+f x]^2}\,\sqrt{1-\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}}\right)-\left(b\,(a+b)\,(4\,a+3\,b)\,\sqrt{\mathrm{Cos}[e+f x]^2}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f x]],\,\frac{a}{a+b}\right]\,\sqrt{a+b\,\mathrm{Sec}[e+f x]^2}\,\sqrt{1-\frac{a\,\mathrm{Sin}[e+f x]^2}{a+b}}\right)\Big/\left(15\,a\,f\,\sqrt{b+a\,\mathrm{Cos}[e+f x]^2}\,\sqrt{a+b-a\,\mathrm{Sin}[e+f x]^2}\right)$$

Result (type 8, 27 leaves):

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

Problem 247: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Sec}[e+f x]^6\,\left(a+b\,\mathrm{Sec}[e+f x]^2\right)^{3/2}\,dx$$

Optimal (type 3, 243 leaves, 7 steps):

$$\frac{(a+b)^2\left(3a^2-10ab+35b^2\right)\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{128\,b^{5/2}\,f}+$$

$$\frac{(a+b)\left(3a^2-10ab+35b^2\right)\text{Tan}[e+fx]\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}{128\,b^2\,f}+$$

$$\frac{\left(3a^2-10ab+35b^2\right)\text{Tan}[e+fx]\left(a+b+b\,\text{Tan}[e+fx]^2\right)^{3/2}}{192\,b^2\,f}-$$

$$\frac{(3a-7b)\,\text{Tan}[e+fx]\left(a+b+b\,\text{Tan}[e+fx]^2\right)^{5/2}}{48\,b^2\,f}+$$

$$\frac{\text{Sec}[e+fx]^2\,\text{Tan}[e+fx]\left(a+b+b\,\text{Tan}[e+fx]^2\right)^{5/2}}{8\,b\,f}$$

Result (type 3, 512 leaves):

$$\frac{1}{96\sqrt{2}\,b^{5/2}\,f\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^{3/2}}$$

$$e^{i(e+fx)}\sqrt{4b+a\,e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}\;\text{Cos}[e+fx]^3$$

$$\left(-\frac{1}{\left(1+e^{2i(e+fx)}\right)^8}\,i\sqrt{b}\left(-1+e^{2i(e+fx)}\right)\left(-9a^3\left(1+e^{2i(e+fx)}\right)^6+3a^2b\left(1+e^{2i(e+fx)}\right)^4\right.\right.$$

$$\left(5+18\,e^{2i(e+fx)}+5\,e^{4i(e+fx)}\right)+a\,b^2\left(1+e^{2i(e+fx)}\right)^2\left(145+948\,e^{2i(e+fx)}+\right.$$

$$2758\,e^{4i(e+fx)}+948\,e^{6i(e+fx)}+145\,e^{8i(e+fx)}\Big)+b^3\Big(105+910\,e^{2i(e+fx)}+$$

$$\left.\left.3591\,e^{4i(e+fx)}+8644\,e^{6i(e+fx)}+3591\,e^{8i(e+fx)}+910\,e^{10i(e+fx)}+105\,e^{12i(e+fx)}\right)\right)-$$

$$\left(3(a+b)^2\left(3a^2-10ab+35b^2\right)\text{Log}\left[\frac{1}{1+e^{2i(e+fx)}}\left(-4\sqrt{b}\left(-1+e^{2i(e+fx)}\right)f+\right.\right.\right.$$

$$\left.\left.\left.4\,i\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\;f\right)\right]\right)\Big/$$

$$\left.\left(\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right)\right)\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}$$

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

$$\int \text{Sec}[e+fx]^4\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}\,dx$$

Optimal (type 3, 165 leaves, 6 steps):

$$-\frac{(a-5b)(a+b)^2 \text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{16\,b^{3/2}\,f}-\frac{(a-5b)(a+b)\,\text{Tan}[e+fx]\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}{16\,b\,f}-\frac{(a-5b)\,\text{Tan}[e+fx]\left(a+b+b\,\text{Tan}[e+fx]^2\right)^{3/2}}{24\,b\,f}+\frac{\text{Tan}[e+fx]\left(a+b+b\,\text{Tan}[e+fx]^2\right)^{5/2}}{6\,b\,f}$$

Result (type 3, 400 leaves):

$$\left(e^{i(e+fx)}\sqrt{4b+a\,e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}\,\text{Cos}[e+fx]^3\left(-\frac{1}{\left(1+e^{2i(e+fx)}\right)^6}\,i\sqrt{b}\left(-1+e^{2i(e+fx)}\right)\left(3a^2\left(1+e^{2i(e+fx)}\right)^4+2ab\left(1+e^{2i(e+fx)}\right)^2\left(11+50\,e^{2i(e+fx)}+11\,e^{4i(e+fx)}\right)+b^2\left(15+100\,e^{2i(e+fx)}+298\,e^{4i(e+fx)}+100\,e^{6i(e+fx)}+15\,e^{8i(e+fx)}\right)\right)+\left(3(a-5b)(a+b)^2\,\text{Log}\left[\frac{1}{1+e^{2i(e+fx)}}\left(-4\sqrt{b}\left(-1+e^{2i(e+fx)}\right)f+4i\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\,f\right)\right]\right)\Big/\left(\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right)\right)\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}\right)\Big/\left(12\sqrt{2}\,b^{3/2}\,f\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^{3/2}\right)$$

Problem 249: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sec}[e+fx]^2\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}dx$$

Optimal (type 3, 111 leaves, 5 steps):

$$\frac{3(a+b)^2\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{8\sqrt{b}\,f}+\frac{3(a+b)\,\text{Tan}[e+fx]\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}{8\,f}+\frac{\text{Tan}[e+fx]\left(a+b+b\,\text{Tan}[e+fx]^2\right)^{3/2}}{4\,f}$$

Result (type 3, 313 leaves):

$$\left(e^{i(e+fx)}\sqrt{4b+a\,e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}\,\mathrm{Cos}[e+fx]^3\right.$$
$$\left(-\frac{1}{\left(1+e^{2i(e+fx)}\right)^4}\,i\left(-1+e^{2i(e+fx)}\right)\left(5a\left(1+e^{2i(e+fx)}\right)^2+b\left(3+14\,e^{2i(e+fx)}+3\,e^{4i(e+fx)}\right)\right)-\right.$$
$$\left(3(a+b)^2\,\mathrm{Log}\left[\frac{1}{1+e^{2i(e+fx)}}\left(-4\sqrt{b}\left(-1+e^{2i(e+fx)}\right)f+4i\right.\right.\right.$$
$$\left.\left.\left.\left.\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\,f\right)\right]\right)\Big/\left(\sqrt{b}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right)\right)$$
$$\left.\left(a+b\,\mathrm{Sec}[e+fx]^2\right)^{3/2}\right)\Big/\left(2\sqrt{2}\,f\left(a+2b+a\,\mathrm{Cos}[2e+2fx]\right)^{3/2}\right)$$

Problem 250: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\left(a+b\,\mathrm{Sec}[e+fx]^2\right)^{3/2}\,dx$$

Optimal (type 3, 118 leaves, 7 steps):

$$\frac{a^{3/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[e+fx]}{\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}\right]}{f}+$$
$$\frac{\sqrt{b}\,(3a+b)\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\mathrm{Tan}[e+fx]}{\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}\right]}{2f}+\frac{b\,\mathrm{Tan}[e+fx]\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}{2f}$$

Result (type 3, 527 leaves):

$$\frac{1}{f\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^{3/2}}\sqrt{2}\,e^{i(e+fx)}\sqrt{4b+a\,e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}\,\text{Cos}[e+fx]^3\left(-\frac{i\,b\left(-1+e^{2i(e+fx)}\right)}{\left(1+e^{2i(e+fx)}\right)^2}+\frac{1}{\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}}\right.$$
$$\left(2a^{3/2}fx-i\,a^{3/2}\,\text{Log}\left[a+2b+a\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]+\right.$$
$$i\,a^{3/2}\,\text{Log}\left[a+a\,e^{2i(e+fx)}+2b\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]-$$
$$3a\sqrt{b}\,\text{Log}\left[\left(-2\sqrt{b}\left(-1+e^{2i(e+fx)}\right)f+2i\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\,f\right)\Big/\left(b\left(3a+b\right)\left(1+e^{2i(e+fx)}\right)\right)\right]-$$
$$\left.\left.b^{3/2}\,\text{Log}\left[\left(-2\sqrt{b}\left(-1+e^{2i(e+fx)}\right)f+2i\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\,f\right)\Big/\left(b\left(3a+b\right)\left(1+e^{2i(e+fx)}\right)\right)\right]\right)\right)\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}$$

Problem 251: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+fx]^2\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}dx$$

Optimal (type 3, 124 leaves, 7 steps):

$$\frac{\sqrt{a}\,(a+3b)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{2f}+\frac{b^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{f}+\frac{a\,\text{Cos}[e+fx]\,\text{Sin}[e+fx]\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}{2f}$$

Result (type 3, 466 leaves):

$$\frac{1}{2\sqrt{2}\, f\, (a+2b+a\,\text{Cos}[2e+2fx])^{3/2}} e^{-i(e+fx)} \sqrt{4b+a\,e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}\,\text{Cos}[e+fx]^3 \Bigg(-i\,a\left(-1+e^{2i(e+fx)}\right)+ \frac{1}{\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}} 2\,e^{2i(e+fx)} \Bigg(2a^{3/2}fx+6\sqrt{a}\,b\,f\,x-i\sqrt{a}\,(a+3b)\,\text{Log}\Big[e^{-2ie}\Big(a+2b+a\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\Big)\Big]+i\sqrt{a}\,(a+3b)\,\text{Log}\Big[e^{-2ie}\Big(a+a\,e^{2i(e+fx)}+2b\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\Big)\Big]-4b^{3/2}\,\text{Log}\Big[-\Big(\Big(e^{3ie}\Big(\sqrt{b}\left(-1+e^{2i(e+fx)}\right)-i\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\Big)f\Big)\Big/\left(2b^2\left(1+e^{2i(e+fx)}\right)\right)\Big)\Big]\Bigg)\Bigg)\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}$$

Problem 252: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+fx]^4\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}\,dx$$

Optimal (type 3, 125 leaves, 5 steps):

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

Result (type 3, 369 leaves):

$$\left(e^{-3 i (e+f x)} \sqrt{4 b+a e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2} \operatorname{Cos}[e+f x]^3 \left(-i \left(-1+e^{2 i (e+f x)}\right) \left(10 b e^{2 i (e+f x)}+a \left(1+8 e^{2 i (e+f x)}+e^{4 i (e+f x)}\right)\right)+\left(12 (a+b)^2 e^{4 i (e+f x)} \left(2 f x-i \operatorname{Log}\left[a+2 b+a e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right]+i \operatorname{Log}\left[a+a e^{2 i (e+f x)}+2 b e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right]\right)\right)\Big/\left(\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right) \left(a+b \operatorname{Sec}[e+f x]^2\right)^{3/2}\right)\Big/\left(16 \sqrt{2} f \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^{3/2}\right)$$

Problem 253: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \operatorname{Cos}[e+f x]^6 \left(a+b \operatorname{Sec}[e+f x]^2\right)^{3/2} dx$$

Optimal (type 3, 193 leaves, 6 steps):

$$\frac{(5 a-b) (a+b)^2 \operatorname{ArcTan}\left[\frac{\sqrt{a} \operatorname{Tan}[e+f x]}{\sqrt{a+b+b \operatorname{Tan}[e+f x]^2}}\right]}{16 a^{3/2} f}+\frac{(5 a-b) (a+b) \operatorname{Cos}[e+f x] \operatorname{Sin}[e+f x] \sqrt{a+b+b \operatorname{Tan}[e+f x]^2}}{16 a f}+\frac{(5 a-b) \operatorname{Cos}[e+f x]^3 \operatorname{Sin}[e+f x] \left(a+b+b \operatorname{Tan}[e+f x]^2\right)^{3/2}}{24 a f}+\frac{\operatorname{Cos}[e+f x]^5 \operatorname{Sin}[e+f x] \left(a+b+b \operatorname{Tan}[e+f x]^2\right)^{5/2}}{6 a f}$$

Result (type 3, 453 leaves):

$$\frac{1}{96\sqrt{2}\,a^{3/2}\,f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^{3/2}}\,e^{-5\,i\,(e+f\,x)}\,\sqrt{4\,b+a\,e^{-2\,i\,(e+f\,x)}\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,\text{Cos}[e+f\,x]^3\,\left(-i\,\sqrt{a}\,\left(-1+e^{2\,i\,(e+f\,x)}\right)\,\left(6\,b^2\,e^{4\,i\,(e+f\,x)}+a\,b\,e^{2\,i\,(e+f\,x)}\,\left(7+58\,e^{2\,i\,(e+f\,x)}+7\,e^{4\,i\,(e+f\,x)}\right)+a^2\,\left(1+9\,e^{2\,i\,(e+f\,x)}+46\,e^{4\,i\,(e+f\,x)}+9\,e^{6\,i\,(e+f\,x)}+e^{8\,i\,(e+f\,x)}\right)\right)+\left(12\,(5\,a-b)\,(a+b)^2\,e^{6\,i\,(e+f\,x)}\,\left(2\,f\,x-i\,\text{Log}\left[a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right]+i\,\text{Log}\left[a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right]\right)\right)\Big/\left(\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right)\right)\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}$$

Problem 254: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 166 leaves, 8 steps):

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

Result (type 3, 706 leaves):

$$\frac{1}{\sqrt{2}\, d\, (a+2b+a\,\mathrm{Cos}[2c+2dx])^{5/2}} e^{i(c+dx)} \sqrt{4b+a e^{-2i(c+dx)}\left(1+e^{2i(c+dx)}\right)^2}\,\mathrm{Cos}[c+dx]^5$$
$$\left(-\frac{1}{\left(1+e^{2i(c+dx)}\right)^4} i\, b\left(-1+e^{2i(c+dx)}\right)\left(9a\left(1+e^{2i(c+dx)}\right)^2+b\left(3+14e^{2i(c+dx)}+3e^{4i(c+dx)}\right)\right)+\right.$$
$$\frac{1}{\sqrt{4be^{2i(c+dx)}+a\left(1+e^{2i(c+dx)}\right)^2}}$$
$$\left(8a^{5/2}dx-4i a^{5/2}\mathrm{Log}\left[a+2b+ae^{2i(c+dx)}+\sqrt{a}\sqrt{4be^{2i(c+dx)}+a\left(1+e^{2i(c+dx)}\right)^2}\right]+\right.$$
$$4i a^{5/2}\mathrm{Log}\left[a+ae^{2i(c+dx)}+2be^{2i(c+dx)}+\sqrt{a}\sqrt{4be^{2i(c+dx)}+a\left(1+e^{2i(c+dx)}\right)^2}\right]-$$
$$15a^2\sqrt{b}\,\mathrm{Log}\left[\left(-4\sqrt{b}\,d\left(-1+e^{2i(c+dx)}\right)+4i d\sqrt{4be^{2i(c+dx)}+a\left(1+e^{2i(c+dx)}\right)^2}\right)\Big/\right.$$
$$\left.\left(b\left(15a^2+10ab+3b^2\right)\left(1+e^{2i(c+dx)}\right)\right)\right]-10ab^{3/2}\mathrm{Log}\left[\left(-4\sqrt{b}\,d\left(-1+e^{2i(c+dx)}\right)+\right.\right.$$
$$\left.\left.4i d\sqrt{4be^{2i(c+dx)}+a\left(1+e^{2i(c+dx)}\right)^2}\right)\Big/\left(b\left(15a^2+10ab+3b^2\right)\left(1+e^{2i(c+dx)}\right)\right)\right]-$$
$$3b^{5/2}\mathrm{Log}\left[\left(-4\sqrt{b}\,d\left(-1+e^{2i(c+dx)}\right)+4i d\sqrt{4be^{2i(c+dx)}+a\left(1+e^{2i(c+dx)}\right)^2}\right)\Big/\right.$$
$$\left.\left.\left.\left(b\left(15a^2+10ab+3b^2\right)\left(1+e^{2i(c+dx)}\right)\right)\right]\right)\right)\left(a+b\,\mathrm{Sec}[c+dx]^2\right)^{5/2}$$

Problem 255: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \left(1+\mathrm{Sec}[x]^2\right)^{3/2} dx$$

Optimal (type 3, 42 leaves, 6 steps):

$$2\,\mathrm{ArcSinh}\left[\frac{\mathrm{Tan}[x]}{\sqrt{2}}\right]+\mathrm{ArcTan}\left[\frac{\mathrm{Tan}[x]}{\sqrt{2+\mathrm{Tan}[x]^2}}\right]+\frac{1}{2}\mathrm{Tan}[x]\sqrt{2+\mathrm{Tan}[x]^2}$$

Result (type 3, 109 leaves):

$$\frac{1}{(3+\mathrm{Cos}[2x])^{3/2}}\left(1+\mathrm{Cos}[x]^2\right)\mathrm{Sec}[x]\sqrt{1+\mathrm{Sec}[x]^2}\left(4\sqrt{2}\,\mathrm{ArcTanh}\left[\frac{\sqrt{2}\,\mathrm{Sin}[x]}{\sqrt{3+\mathrm{Cos}[2x]}}\right]\mathrm{Cos}[x]^2-\right.$$
$$\left.2i\sqrt{2}\,\mathrm{Cos}[x]^2\,\mathrm{Log}\left[\sqrt{3+\mathrm{Cos}[2x]}+i\sqrt{2}\,\mathrm{Sin}[x]\right]+\sqrt{3+\mathrm{Cos}[2x]}\,\mathrm{Sin}[x]\right)$$

Problem 256: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 24 leaves, 5 steps):

$$\text{ArcSinh}\left[\frac{\text{Tan}[x]}{\sqrt{2}}\right]+\text{ArcTan}\left[\frac{\text{Tan}[x]}{\sqrt{2+\text{Tan}[x]^2}}\right]$$

Result (type 3, 57 leaves):

$$\frac{\sqrt{2}\left(\text{ArcSin}\left[\frac{\text{Sin}[x]}{\sqrt{2}}\right]+\text{ArcTanh}\left[\frac{\sqrt{2}\,\text{Sin}[x]}{\sqrt{3+\text{Cos}[2x]}}\right]\right)\text{Cos}[x]\sqrt{1+\text{Sec}[x]^2}}{\sqrt{3+\text{Cos}[2x]}}$$

Problem 257: Unable to integrate problem.

$$\int \frac{\text{Sec}[e+fx]^5}{\sqrt{a+b\,\text{Sec}[e+fx]^2}}\,dx$$

Optimal (type 4, 380 leaves, 10 steps):

$$\left(2(a-b)\sqrt{b+a\,\text{Cos}[e+fx]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+fx]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+fx]^2}\right)\Big/$$
$$\left(3b^2f\sqrt{\text{Cos}[e+fx]^2}\sqrt{a+b\,\text{Sec}[e+fx]^2}\sqrt{1-\frac{a\,\text{Sin}[e+fx]^2}{a+b}}\right)-$$
$$\left((a-2b)\sqrt{b+a\,\text{Cos}[e+fx]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+fx]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+fx]^2}{a+b}}\right)\Big/$$
$$\left(3bf\sqrt{\text{Cos}[e+fx]^2}\sqrt{a+b\,\text{Sec}[e+fx]^2}\sqrt{a+b-a\,\text{Sin}[e+fx]^2}\right)-$$
$$\left(2(a-b)\sqrt{b+a\,\text{Cos}[e+fx]^2}\,\text{Sec}[e+fx]\sqrt{a+b-a\,\text{Sin}[e+fx]^2}\,\text{Tan}[e+fx]\right)\Big/$$
$$\left(3b^2f\sqrt{a+b\,\text{Sec}[e+fx]^2}\right)+$$
$$\left(\sqrt{b+a\,\text{Cos}[e+fx]^2}\,\text{Sec}[e+fx]^3\sqrt{a+b-a\,\text{Sin}[e+fx]^2}\,\text{Tan}[e+fx]\right)\Big/$$
$$\left(3bf\sqrt{a+b\,\text{Sec}[e+fx]^2}\right)$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Sec}[e+fx]^5}{\sqrt{a+b\,\text{Sec}[e+fx]^2}}\,dx$$

Problem 258: Unable to integrate problem.

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

Optimal (type 4, 202 leaves, 7 steps):

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

Result (type 8, 27 leaves):

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

Problem 260: Unable to integrate problem.

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

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

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

Result (type 8, 25 leaves):

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

Problem 261: Unable to integrate problem.

$$\int \frac{\cos[e+f x]^3}{\sqrt{a+b \sec[e+f x]^2}} \, dx$$

Optimal (type 4, 296 leaves, 9 steps):

$$\frac{\sqrt{b+a \cos[e+f x]^2} \sin[e+f x] \sqrt{a+b-a \sin[e+f x]^2}}{3 a f \sqrt{a+b \sec[e+f x]^2}} + \left(2 (a-b) \sqrt{b+a \cos[e+f x]^2} \, \text{EllipticE}\left[\text{ArcSin}[\sin[e+f x]], \frac{a}{a+b}\right] \sqrt{a+b-a \sin[e+f x]^2}\right) \Big/ \left(3 a^2 f \sqrt{\cos[e+f x]^2} \sqrt{a+b \sec[e+f x]^2} \sqrt{1-\frac{a \sin[e+f x]^2}{a+b}}\right) - \left((a-2 b) b \sqrt{b+a \cos[e+f x]^2} \, \text{EllipticF}\left[\text{ArcSin}[\sin[e+f x]], \frac{a}{a+b}\right] \sqrt{1-\frac{a \sin[e+f x]^2}{a+b}}\right) \Big/ \left(3 a^2 f \sqrt{\cos[e+f x]^2} \sqrt{a+b \sec[e+f x]^2} \sqrt{a+b-a \sin[e+f x]^2}\right)$$

Result (type 8, 27 leaves):

$$\int \frac{\cos[e+f x]^3}{\sqrt{a+b \sec[e+f x]^2}} \, dx$$

Problem 262: Unable to integrate problem.

$$\int \frac{\cos[e+f x]^5}{\sqrt{a+b \sec[e+f x]^2}} \, dx$$

Optimal (type 4, 395 leaves, 10 steps):

$$\frac{4\,(a-b)\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}\,\mathrm{Sin}[e+f\,x]\,\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}}{15\,a^2\,f\,\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}}+$$

$$\left(\mathrm{Cos}[e+f\,x]^2\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}\,\mathrm{Sin}[e+f\,x]\,\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}\right)\Big/\left(5\,a\,f\,\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\right)+\left(\left(8\,a^2-7\,a\,b+8\,b^2\right)\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}\,\mathrm{EllipticE}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}\right)\Big/\left(15\,a^3\,f\,\sqrt{\mathrm{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\,\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}\right)-$$

$$\left(b\,\left(4\,a^2-3\,a\,b+8\,b^2\right)\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]^2}\,\mathrm{EllipticF}\left[\mathrm{ArcSin}[\mathrm{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\,\sqrt{1-\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}}\right)\Big/\left(15\,a^3\,f\,\sqrt{\mathrm{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\mathrm{Sin}[e+f\,x]^2}\right)$$

Result (type 8, 27 leaves) :

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

Problem 263: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Sec}[e+f\,x]^6}{\sqrt{a+b\,\mathrm{Sec}[e+f\,x]^2}}\,dx$$

Optimal (type 3, 137 leaves, 5 steps) :

$$\frac{\left(3\,a^2-2\,a\,b+3\,b^2\right)\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\mathrm{Tan}[e+f\,x]}{\sqrt{a+b+b\,\mathrm{Tan}[e+f\,x]^2}}\right]}{8\,b^{5/2}\,f}-$$

$$\frac{3\,(a-b)\,\mathrm{Tan}[e+f\,x]\,\sqrt{a+b+b\,\mathrm{Tan}[e+f\,x]^2}}{8\,b^2\,f}+\frac{\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]\,\sqrt{a+b+b\,\mathrm{Tan}[e+f\,x]^2}}{4\,b\,f}$$

Result (type 3, 326 leaves) :

$$\left(e^{i(e+fx)}\sqrt{4b+a e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}\right.$$
$$\sqrt{a+2b+a\operatorname{Cos}[2e+2fx]}\left(-\frac{1}{\left(1+e^{2i(e+fx)}\right)^4} i\sqrt{b}\left(-1+e^{2i(e+fx)}\right)\right.$$
$$\left(-3a\left(1+e^{2i(e+fx)}\right)^2+b\left(3+14e^{2i(e+fx)}+3e^{4i(e+fx)}\right)\right)-\left(\left(3a^2-2ab+3b^2\right)\operatorname{Log}\Big[\right.$$
$$\left.\left.\frac{1}{1+e^{2i(e+fx)}}\left(-4\sqrt{b}\left(-1+e^{2i(e+fx)}\right)f+4i\sqrt{4be^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\,f\right)\Big]\right)\Bigg/$$
$$\left.\left(\sqrt{4be^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right)\right)\operatorname{Sec}[e+fx]\Bigg)\Bigg/\left(8\sqrt{2}\,b^{5/2}f\sqrt{a+b\operatorname{Sec}[e+fx]^2}\right)$$

Problem 264: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\operatorname{Sec}[e+fx]^4}{\sqrt{a+b\operatorname{Sec}[e+fx]^2}}\,dx$$

Optimal (type 3, 81 leaves, 4 steps):

$$-\frac{(a-b)\operatorname{ArcTanh}\left[\frac{\sqrt{b}\operatorname{Tan}[e+fx]}{\sqrt{a+b+b\operatorname{Tan}[e+fx]^2}}\right]}{2b^{3/2}f}+\frac{\operatorname{Tan}[e+fx]\sqrt{a+b+b\operatorname{Tan}[e+fx]^2}}{2bf}$$

Result (type 3, 266 leaves):

$$\left(e^{i(e+fx)}\sqrt{4b+a e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}\sqrt{a+2b+a\operatorname{Cos}[2e+2fx]}\right.$$
$$\left(-\frac{i\sqrt{b}\left(-1+e^{2i(e+fx)}\right)}{\left(1+e^{2i(e+fx)}\right)^2}+\frac{(a-b)\operatorname{Log}\left[\frac{-4\sqrt{b}\left(-1+e^{2i(e+fx)}\right)f+4i\sqrt{4be^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\,f}{1+e^{2i(e+fx)}}\right]}{\sqrt{4be^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}}\right)$$
$$\left.\operatorname{Sec}[e+fx]\right)\Bigg/\left(2\sqrt{2}\,b^{3/2}f\sqrt{a+b\operatorname{Sec}[e+fx]^2}\right)$$

Problem 265: Unable to integrate problem.

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

Optimal (type 3, 39 leaves, 3 steps):

$$\frac{\operatorname{ArcTanh}\left[\frac{\sqrt{b} \operatorname{Tan}[e+f x]}{\sqrt{a+b+b \operatorname{Tan}[e+f x]^2}}\right]}{\sqrt{b} f}$$

Result (type 8, 27 leaves):

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

Problem 266: Unable to integrate problem.

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

Optimal (type 3, 39 leaves, 3 steps):

$$\frac{\operatorname{ArcTan}\left[\frac{\sqrt{a} \operatorname{Tan}[e+f x]}{\sqrt{a+b+b \operatorname{Tan}[e+f x]^2}}\right]}{\sqrt{a} f}$$

Result (type 8, 18 leaves):

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

Problem 267: Unable to integrate problem.

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

Optimal (type 3, 87 leaves, 4 steps):

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

Result (type 8, 27 leaves):

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

Problem 268: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]^4}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Optimal (type 3, 143 leaves, 6 steps):

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

Result (type 6, 1840 leaves):

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

$$\left(f \sqrt{a+2 b+a\,\text{Cos}[2 (e+f x)]} \sqrt{a+b\,\text{Sec}[e+f x]^2}\right.$$

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

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

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

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

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

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

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

$$\left(12 (a+b) \text{AppellF1}\left[\frac{1}{2},-2,\frac{1}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right] \text{Cos}[e+f x]^3\right.$$

$$
\text{Sin}[e+f\,x]^2\Big)\Big/\Bigg(\sqrt{a+2\,b+a\,\text{Cos}\big[2\,(e+f\,x)\big]}
\Bigg(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},-2,\frac{1}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]+
\Big(a\,\text{AppellF1}\Big[\frac{3}{2},-2,\frac{3}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]-
4\,(a+b)\,\text{AppellF1}\Big[\frac{3}{2},-1,\frac{1}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\Big)\,\text{Sin}[e+f\,x]^2\Bigg)\Bigg)+
\Bigg(3\,(a+b)\,\text{Cos}[e+f\,x]^4\,\text{Sin}[e+f\,x]\,\Bigg(\frac{1}{3\,(a+b)}a\,f\,\text{AppellF1}\Big[\frac{3}{2},-2,\frac{3}{2},\frac{5}{2},
\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{4}{3}f\,
\text{AppellF1}\Big[\frac{3}{2},-1,\frac{1}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\Bigg)\Bigg)\Big/
\Bigg(f\,\sqrt{a+2\,b+a\,\text{Cos}\big[2\,(e+f\,x)\big]}\,\Bigg(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},-2,\frac{1}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,
\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]+\Big(a\,\text{AppellF1}\Big[\frac{3}{2},-2,\frac{3}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]-
4\,(a+b)\,\text{AppellF1}\Big[\frac{3}{2},-1,\frac{1}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\Big)\,\text{Sin}[e+f\,x]^2\Bigg)\Bigg)-
\Bigg(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},-2,\frac{1}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]^4
\Bigg(\text{Sin}[e+f\,x]\,\Bigg(2\,f\,\Big(a\,\text{AppellF1}\Big[\frac{3}{2},-2,\frac{3}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]-
4\,(a+b)\,\text{AppellF1}\Big[\frac{3}{2},-1,\frac{1}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\Big)
\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]+3\,(a+b)\,\Bigg(\frac{1}{3\,(a+b)}a\,f\,\text{AppellF1}\Big[\frac{3}{2},-2,\frac{3}{2},
\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{4}{3}f\,
\text{AppellF1}\Big[\frac{3}{2},-1,\frac{1}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\Bigg)+
\text{Sin}[e+f\,x]^2\,\Bigg(a\,\Bigg(\frac{1}{5\,(a+b)}9\,a\,f\,\text{AppellF1}\Big[\frac{5}{2},-2,\frac{5}{2},\frac{7}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]
$$

$$\text{Cos}[e+f x]\,\text{Sin}[e+f x]-\frac{12}{5} f\,\text{AppellF1}\left[\frac{5}{2},-1,\frac{3}{2},\frac{7}{2},\text{Sin}[e+f x]^2,\right.$$

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

$$\left.\frac{5}{2},-1,\frac{3}{2},\frac{7}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]-\frac{1}{8\,a^3}$$

$$9\,(a+b)^3 f\,\text{Cot}[e+f x]\,\text{Csc}[e+f x]^4\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}\left(-\frac{2\,a\,\text{Sin}[e+f x]^2}{a+b}-\right.$$

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

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

$$\left.\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]+$$

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

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

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

$$\left.\text{Sin}[e+f x]\,\text{Sin}[2\,(e+f x)]\right)\Big/\left((a+2\,b+a\,\text{Cos}[2\,(e+f x)])^{3/2}\right.$$

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

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

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

Problem 269: Result unnecessarily involves higher level functions and more

than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]^6}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Optimal (type 3, 204 leaves, 7 steps):

$$\frac{(a-b)\,\left(5 a^2+2 a b+5 b^2\right)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{16\,a^{7/2}\,f}+\frac{1}{48\,a^3\,f}\left(15 a^2-14 a b+15 b^2\right)\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]\,\sqrt{a+b+b\,\text{Tan}[e+f x]^2}+\frac{5\,(a-b)\,\text{Cos}[e+f x]^3\,\text{Sin}[e+f x]\,\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{24\,a^2\,f}+\frac{\text{Cos}[e+f x]^5\,\text{Sin}[e+f x]\,\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{6\,a\,f}$$

Result (type 6, 1739 leaves):

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{1}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]^{12}\,\text{Sin}[e+f x]\right)\Big/$$
$$\left(f\,\sqrt{a+2 b+a\,\text{Cos}[2\,(e+f x)]}\,\sqrt{a+b\,\text{Sec}[e+f x]^2}\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{1}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]+\right.$$
$$\left(a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{3}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]-\right.$$
$$\left.\left.6\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{1}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\right)\text{Sin}[e+f x]^2\right)$$
$$\left(\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{1}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]^7\right)\Big/\right.$$
$$\left(\sqrt{a+2 b+a\,\text{Cos}[2\,(e+f x)]}\,\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{1}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\right.\right.\right.$$
$$\left.\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]+\left(a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{3}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.6\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{1}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\right)\text{Sin}[e+f x]^2\right)\right)-$$
$$\left(18\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{1}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]^5\right.$$
$$\left.\text{Sin}[e+f x]^2\right)\Big/\left(\sqrt{a+2 b+a\,\text{Cos}[2\,(e+f x)]}\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{1}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]+\right.$$
$$\left(a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{3}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]-\right.$$

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

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

$$\left.\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-$$

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

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

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

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

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

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

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

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

$$\left.\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-2\,f$$

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

$$\text{Sin}[e+f\,x]^2\,\Big(a\,\Big(\frac{1}{5\,(a+b)}9\,a\,f\,\text{AppellF1}\left[\frac{5}{2},-3,\frac{5}{2},\frac{7}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]$$

$$\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{18}{5}f\,\text{AppellF1}\left[\frac{5}{2},-2,\frac{3}{2},\frac{7}{2},\text{Sin}[e+f\,x]^2,\right.$$

$$\left.\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\Big)-6\,(a+b)\,\Big(\frac{1}{5\,(a+b)}$$

$$3\,a\,f\,\text{AppellF1}\left[\frac{5}{2},-2,\frac{3}{2},\frac{7}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]$$

$$\text{Sin}[e+f\,x]-\frac{12}{5}f\,\text{AppellF1}\left[\frac{5}{2},-1,\frac{1}{2},\frac{7}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]$$

$$\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\Big)\Big)\Big)\Big)\Big/\Big(f\,\sqrt{a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]}$$

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

$$\Big(a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{3}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-6\,(a+b)$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-2,\frac{1}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\right)\text{Sin}[e+f x]^2\right)^2\right)+$$
$$\left(3\,a\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{1}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]^6\right.$$
$$\left.\text{Sin}[e+f x]\,\text{Sin}[2\,(e+f x)]\right)\Big/\left(\left(a+2\,b+a\,\text{Cos}[2\,(e+f x)]\right)^{3/2}\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{1}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]+\right.$$
$$\left(a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{3}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.\left.6\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{1}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\right)\text{Sin}[e+f x]^2\right)\right)\right)$$

Problem 270: Unable to integrate problem.

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

Optimal (type 4, 367 leaves, 10 steps):

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

Result (type 8, 27 leaves):

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

Problem 272: Unable to integrate problem.

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

Optimal (type 4, 284 leaves, 9 steps):

$$\frac{\sqrt{b+a\,\text{Cos}[e+f x]^2}\ \text{Sin}[e+f x]}{(a+b)\ f\ \sqrt{a+b\,\text{Sec}[e+f x]^2}\ \sqrt{a+b-a\,\text{Sin}[e+f x]^2}} - \left(\sqrt{b+a\,\text{Cos}[e+f x]^2}\ \text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f x]^2}\right)\Bigg/\left(a\ (a+b)\ f\ \sqrt{\text{Cos}[e+f x]^2}\ \sqrt{a+b\,\text{Sec}[e+f x]^2}\ \sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}\right) + \left(\sqrt{b+a\,\text{Cos}[e+f x]^2}\ \text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}\right)\Bigg/\left(a\ f\ \sqrt{\text{Cos}[e+f x]^2}\ \sqrt{a+b\,\text{Sec}[e+f x]^2}\ \sqrt{a+b-a\,\text{Sin}[e+f x]^2}\right)$$

Result (type 8, 25 leaves):

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

Problem 273: Unable to integrate problem.

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

Optimal (type 4, 295 leaves, 9 steps):

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

Result (type 8, 25 leaves) :

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

Problem 274: Unable to integrate problem.

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

Optimal (type 4, 399 leaves, 10 steps) :

$$-\frac{b\,\text{Cos}[e+f\,x]^2\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{Sin}[e+f\,x]}{a\,(a+b)\,f\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}+\frac{(a+4\,b)\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{Sin}[e+f\,x]\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}}{3\,a^2\,(a+b)\,f\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}+\left(\left(2\,a^2-3\,a\,b-8\,b^2\right)\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)\Big/\left(3\,a^3\,(a+b)\,f\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}\right)-\left((a-8\,b)\,b\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}\right)\Big/\left(3\,a^3\,f\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)$$

Result (type 8, 27 leaves):

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

Problem 275: Unable to integrate problem.

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

Optimal (type 4, 509 leaves, 11 steps):

$$-\frac{b\,\text{Cos}[e+f x]^4 \sqrt{b+a\,\text{Cos}[e+f x]^2}\;\text{Sin}[e+f x]}{a\,(a+b)\,f \sqrt{a+b\,\text{Sec}[e+f x]^2}\;\sqrt{a+b-a\,\text{Sin}[e+f x]^2}}+$$
$$\left(\left(4 a^2-5 a b-24 b^2\right) \sqrt{b+a\,\text{Cos}[e+f x]^2}\;\text{Sin}[e+f x]\,\sqrt{a+b-a\,\text{Sin}[e+f x]^2}\right)\Big/$$
$$\left(15 a^3\,(a+b)\,f \sqrt{a+b\,\text{Sec}[e+f x]^2}\right)+$$
$$\left((a+6 b)\,\text{Cos}[e+f x]^2 \sqrt{b+a\,\text{Cos}[e+f x]^2}\;\text{Sin}[e+f x]\,\sqrt{a+b-a\,\text{Sin}[e+f x]^2}\right)\Big/$$
$$\left(5 a^2\,(a+b)\,f \sqrt{a+b\,\text{Sec}[e+f x]^2}\right)+\left(\left(8 a^3-9 a^2 b+16 a b^2+48 b^3\right) \sqrt{b+a\,\text{Cos}[e+f x]^2}\right.$$
$$\left.\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right] \sqrt{a+b-a\,\text{Sin}[e+f x]^2}\right)\Big/$$
$$\left(15 a^4\,(a+b)\,f \sqrt{\text{Cos}[e+f x]^2}\;\sqrt{a+b\,\text{Sec}[e+f x]^2}\;\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}\right)-$$
$$\left(4 b \left(a^2-2 a b+12 b^2\right) \sqrt{b+a\,\text{Cos}[e+f x]^2}\;\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\right.$$
$$\left.\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}\right)\Big/\left(15 a^4 f \sqrt{\text{Cos}[e+f x]^2}\;\sqrt{a+b\,\text{Sec}[e+f x]^2}\;\sqrt{a+b-a\,\text{Sin}[e+f x]^2}\right)$$

Result (type 8, 27 leaves):

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

Problem 276: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[e+f x]^6}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\,dx$$

Optimal (type 3, 138 leaves, 5 steps):

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

Result (type 3, 375 leaves):

$$\left(e^{i (e+f x)} \sqrt{4 b+a e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2} (a+2 b+a \text{Cos}[2 e+2 f x])^{3/2} \left(-\left(\left(i \sqrt{b} \left(-1+e^{2 i (e+f x)}\right) \left(4 b^2 e^{2 i (e+f x)}+3 a^2 \left(1+e^{2 i (e+f x)}\right)^2+a b \left(1+6 e^{2 i (e+f x)}+e^{4 i (e+f x)}\right)\right)\right) \Big/ \left((a+b) \left(1+e^{2 i (e+f x)}\right)^2 \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)\right)\right)+\left((3 a-b) \text{Log}\left[\frac{1}{1+e^{2 i (e+f x)}}\left(-4 \sqrt{b} \left(-1+e^{2 i (e+f x)}\right) f+4 i \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2} f\right)\right]\right) \Big/ \left(\sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right) \text{Sec}[e+f x]^3\right) \Big/ \left(4 \sqrt{2} b^{5/2} f \left(a+b \text{Sec}[e+f x]^2\right)^{3/2}\right)$$

Problem 277: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[e+f x]^4}{\left(a+b \text{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

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

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

Result (type 3, 289 leaves):

$$\left(e^{i (e+f x)} \sqrt{4 b + a e^{-2 i (e+f x)} \left(1 + e^{2 i (e+f x)}\right)^2} \left(a + 2 b + a \cos[2 e + 2 f x]\right)^{3/2} \left(\frac{i a \sqrt{b} \left(-1 + e^{2 i (e+f x)}\right)}{(a+b) \left(4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2\right)} - \frac{\text{Log}\left[\frac{-4 \sqrt{b} \left(-1+e^{2 i (e+f x)}\right) f + 4 i \sqrt{4 b e^{2 i (e+f x)} + a \left(1+e^{2 i (e+f x)}\right)^2} f}{1+e^{2 i (e+f x)}}\right]}{\sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}}\right) \text{Sec}[e+f x]^3\right) \Big/ \left(2 \sqrt{2} b^{3/2} f \left(a + b \text{Sec}[e+f x]^2\right)^{3/2}\right)$$

Problem 279: Unable to integrate problem.

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

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

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

Result (type 8, 18 leaves):

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

Problem 280: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 131 leaves, 6 steps):

$$\frac{(a-3b)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{2a^{5/2}f}+\frac{\text{Cos}[e+fx]\,\text{Sin}[e+fx]}{2af\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}+\frac{b\,(a+3b)\,\text{Tan}[e+fx]}{2a^2\,(a+b)\,f\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}$$

Result (type 6, 2059 leaves):

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{3}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\text{Cos}[e+fx]^6\,\text{Sin}[e+fx]\right)\Big/$$
$$\left(2f\sqrt{a+2b+a\,\text{Cos}[2\,(e+fx)]}\,\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}\left(a+b-a\,\text{Sin}[e+fx]^2\right)\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{3}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]+\right.$$
$$\left(3a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{5}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]-\right.$$
$$\left.\left.4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{3}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\right)\text{Sin}[e+fx]^2\right)$$
$$\left(\left(3a\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{3}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\text{Cos}[e+fx]^5\right.\right.$$
$$\left.\text{Sin}[e+fx]^2\right)\Big/\left(\sqrt{a+2b+a\,\text{Cos}[2\,(e+fx)]}\,\left(a+b-a\,\text{Sin}[e+fx]^2\right)^2\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{3}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]+\right.$$
$$\left(3a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{5}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{3}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\right)\text{Sin}[e+fx]^2\right)\right)+$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{3}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\text{Cos}[e+fx]^5\right)\Big/$$
$$\left(2\sqrt{a+2b+a\,\text{Cos}[2\,(e+fx)]}\,\left(a+b-a\,\text{Sin}[e+fx]^2\right)\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{3}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]+\right.$$
$$\left(3a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{5}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{3}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\right)\text{Sin}[e+fx]^2\right)\right)-$$
$$\left(6\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{3}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\text{Cos}[e+fx]^3\right.$$
$$\left.\text{Sin}[e+fx]^2\right)\Big/\left(\sqrt{a+2b+a\,\text{Cos}[2\,(e+fx)]}\,\left(a+b-a\,\text{Sin}[e+fx]^2\right)\right.$$

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

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

$$\Bigg(2\,f\,\sqrt{a+2\,b+a\,\text{Cos}[2\,(e+f x)]}\,\left(a+b-a\,\text{Sin}[e+f x]^2\right)$$

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

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

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

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

$$\text{Sin}[e+f x]^2\,\Bigg(3\,a\,\left(\frac{1}{a+b}3\,a\,f\,\text{AppellF1}\left[\frac{5}{2},-2,\frac{7}{2},\frac{7}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]-\frac{12}{5}f\,\text{AppellF1}\left[\frac{5}{2},-1,\frac{5}{2},\frac{7}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]\right)-4\,(a+b)\,\left(\frac{1}{5\,(a+b)}9\,a\,f\,\text{AppellF1}\left[\frac{5}{2},-1,\frac{5}{2},\frac{7}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]-\frac{6}{5}f\,\text{Cos}[e+f x]\,\text{Hypergeometric2F1}\left[\frac{3}{2},\frac{5}{2},\frac{7}{2},\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Sin}[e+f x]\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(2\,f\,\sqrt{a+2\,b+a\,\mathrm{Cos}[2\,(e+f\,x)]}\,\left(a+b-a\,\mathrm{Sin}[e+f\,x]^2\right)\left(3\,(a+b)\,\mathrm{AppellF1}\left[\frac{1}{2},-2,\frac{3}{2},\frac{3}{2},\mathrm{Sin}[e+f\,x]^2,\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}\right]+\left(3\,a\,\mathrm{AppellF1}\left[\frac{3}{2},-2,\frac{5}{2},\frac{5}{2},\mathrm{Sin}[e+f\,x]^2,\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}\right]-4\,(a+b)\,\mathrm{AppellF1}\left[\frac{3}{2},-1,\frac{3}{2},\frac{5}{2},\mathrm{Sin}[e+f\,x]^2,\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}\right]\right)\mathrm{Sin}[e+f\,x]^2\right)^2\right)+$$

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

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

Problem 281: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cos}[e+f\,x]^4}{\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^{3/2}}\,dx$$

Optimal (type 3, 194 leaves, 7 steps):

$$\frac{3\,(a^2-2\,a\,b+5\,b^2)\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[e+f\,x]}{\sqrt{a+b+b\,\mathrm{Tan}[e+f\,x]^2}}\right]}{8\,a^{7/2}\,f}+\frac{(3\,a-5\,b)\,\mathrm{Cos}[e+f\,x]\,\mathrm{Sin}[e+f\,x]}{8\,a^2\,f\,\sqrt{a+b+b\,\mathrm{Tan}[e+f\,x]^2}}+$$

$$\frac{\mathrm{Cos}[e+f\,x]^3\,\mathrm{Sin}[e+f\,x]}{4\,a\,f\,\sqrt{a+b+b\,\mathrm{Tan}[e+f\,x]^2}}+\frac{(a-3\,b)\,b\,(3\,a+5\,b)\,\mathrm{Tan}[e+f\,x]}{8\,a^3\,(a+b)\,f\,\sqrt{a+b+b\,\mathrm{Tan}[e+f\,x]^2}}$$

Result (type 6, 2046 leaves):

$$\left((a+b)\,\mathrm{AppellF1}\left[\frac{1}{2},-3,\frac{3}{2},\frac{3}{2},\mathrm{Sin}[e+f\,x]^2,\frac{a\,\mathrm{Sin}[e+f\,x]^2}{a+b}\right]\mathrm{Cos}[e+f\,x]^{10}\,\mathrm{Sin}[e+f\,x]\right)\Big/$$

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

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

$$\left(a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$
$$\left.\left.2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{3}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)$$
$$\left(\left(a\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{3}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]^7\,\text{Sin}[e+f\,x]^2\right)\Big/\right.$$
$$\left(\sqrt{a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^2\right.$$
$$\left((a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{3}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left(a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{3}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)+$$
$$\left((a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{3}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]^7\right)\Big/$$
$$\left(2\,\sqrt{a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)\right.$$
$$\left((a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{3}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left(a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{3}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)-$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{3}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]^5\right.$$
$$\left.\text{Sin}[e+f\,x]^2\right)\Big/\left(\sqrt{a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)\right.$$
$$\left((a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{3}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left(a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{3}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)+$$
$$\left((a+b)\,\text{Cos}[e+f\,x]^6\,\text{Sin}[e+f\,x]\,\left(\frac{1}{a+b}a\,f\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\right.\right.\right.$$
$$\left.\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-$$
$$\left.\left.2\,f\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{3}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\right)\right)\Big/$$
$$\left(2\,f\,\sqrt{a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)\right.$$

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

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

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

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

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

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

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

$$\text{Cos}[e+f x]\,\text{Sin}[e+f x]-2 f\,\text{AppellF1}\left[\frac{3}{2}, -2, \frac{3}{2}, \frac{5}{2}, \text{Sin}[e+f x]^2,\right.$$

$$\left.\left.\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right] \text{Cos}[e+f x]\,\text{Sin}[e+f x]\right)+\text{Sin}[e+f x]^2$$

$$\left(a\left(\frac{1}{a+b} 3\,a\,f\,\text{AppellF1}\left[\frac{5}{2}, -3, \frac{7}{2}, \frac{7}{2}, \text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\right] \text{Cos}[e+f x]\right.\right.$$

$$\text{Sin}[e+f x]-\frac{18}{5} f\,\text{AppellF1}\left[\frac{5}{2}, -2, \frac{5}{2}, \frac{7}{2}, \text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]$$

$$\left.\text{Cos}[e+f x]\,\text{Sin}[e+f x]\right)-2\left(a+b\right)\left(\frac{1}{5\left(a+b\right)} 9\,a\,f\,\text{AppellF1}\left[\frac{5}{2}, -2, \frac{5}{2}, \frac{7}{2},\right.\right.$$

$$\text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\right] \text{Cos}[e+f x]\,\text{Sin}[e+f x]-\frac{12}{5} f\,\text{AppellF1}\left[\frac{5}{2},\right.$$

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

$$\left(2 f \sqrt{a+2 b+a\,\text{Cos}\left[2\left(e+f x\right)\right]}\left(a+b-a\,\text{Sin}[e+f x]^2\right)\right.$$

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

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

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

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

$$\left.\text{Sin}[e+f x]\,\text{Sin}\left[2\left(e+f x\right)\right]\right) \Big/$$

$$\left(2\left(a+2 b+a\,\text{Cos}\left[2\left(e+f x\right)\right]\right)^{3/2}\left(a+b-a\,\text{Sin}[e+f x]^2\right)\right.$$

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

Problem 282: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[e+fx]^6}{\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}}\,dx$$

Optimal (type 3, 271 leaves, 8 steps):

$$\frac{\left(5a^3-9a^2b+15ab^2-35b^3\right)\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{16a^{9/2}f}+\frac{\left(15a^2-22ab+35b^2\right)\text{Cos}[e+fx]\,\text{Sin}[e+fx]}{48a^3f\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}+\frac{\left(5a-7b\right)\text{Cos}[e+fx]^3\,\text{Sin}[e+fx]}{24a^2f\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}+\frac{\text{Cos}[e+fx]^5\,\text{Sin}[e+fx]}{6af\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}+\frac{b\left(15a^3-17a^2b+25ab^2+105b^3\right)\text{Tan}[e+fx]}{48a^4\left(a+b\right)f\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}$$

Result (type 6, 2068 leaves):

$$\left(3\left(a+b\right)\text{AppellF1}\left[\frac{1}{2},-4,\frac{3}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\text{Cos}[e+fx]^{14}\,\text{Sin}[e+fx]\right)\Big/$$
$$\Bigg(2f\sqrt{a+2b+a\,\text{Cos}\left[2\left(e+fx\right)\right]}\left(a+b\,\text{Sec}[e+fx]^2\right)^{3/2}\left(a+b-a\,\text{Sin}[e+fx]^2\right)$$
$$\left(3\left(a+b\right)\text{AppellF1}\left[\frac{1}{2},-4,\frac{3}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]+\left(3a\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{5}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]-8\left(a+b\right)\text{AppellF1}\left[\frac{3}{2},-3,\frac{3}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\right)\text{Sin}[e+fx]^2\right)$$
$$\Bigg(\Bigg(3a\left(a+b\right)\text{AppellF1}\left[\frac{1}{2},-4,\frac{3}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\text{Cos}[e+fx]^9$$
$$\text{Sin}[e+fx]^2\Bigg)\Big/\Bigg(\sqrt{a+2b+a\,\text{Cos}\left[2\left(e+fx\right)\right]}\left(a+b-a\,\text{Sin}[e+fx]^2\right)^2$$
$$\left(3\left(a+b\right)\text{AppellF1}\left[\frac{1}{2},-4,\frac{3}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]+\right.$$
$$\left(3a\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{5}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]-\right.$$

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

$$\Big(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-4,\frac{3}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\,\text{Cos}[e+f x]^9\Big)\Big/$$

$$\Big(2\,\sqrt{a+2 b+a\,\text{Cos}[2\,(e+f x)]}\,\left(a+b-a\,\text{Sin}[e+f x]^2\right)$$

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

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

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

$$\Big(12\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-4,\frac{3}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\,\text{Cos}[e+f x]^7$$

$$\text{Sin}[e+f x]^2\Big)\Big/\Big(\sqrt{a+2 b+a\,\text{Cos}[2\,(e+f x)]}\,\left(a+b-a\,\text{Sin}[e+f x]^2\right)$$

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

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

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

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

$$\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]-\frac{8}{3}f$$

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

$$\Big(2\,f\,\sqrt{a+2 b+a\,\text{Cos}[2\,(e+f x)]}\,\left(a+b-a\,\text{Sin}[e+f x]^2\right)$$

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

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

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

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

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

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

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

$$\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{8}{3}f\,\text{AppellF1}\Big[\frac{3}{2},\,-3,\,\frac{3}{2},\,\frac{5}{2},\,\text{Sin}[e+f\,x]^2,$$

$$\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\Big)+\text{Sin}[e+f\,x]^2$$

$$\Big(3\,a\,\Big(\frac{1}{a+b}3\,a\,f\,\text{AppellF1}\Big[\frac{5}{2},\,-4,\,\frac{7}{2},\,\frac{7}{2},\,\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]$$

$$\text{Sin}[e+f\,x]-\frac{24}{5}f\,\text{AppellF1}\Big[\frac{5}{2},\,-3,\,\frac{5}{2},\,\frac{7}{2},\,\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]$$

$$\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\Big)-8\,(a+b)\,\Big(\frac{1}{5\,(a+b)}9\,a\,f\,\text{AppellF1}\Big[\frac{5}{2},\,-3,\,\frac{5}{2},\,\frac{7}{2},$$

$$\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{18}{5}f\,\text{AppellF1}\Big[\frac{5}{2},$$

$$-2,\,\frac{3}{2},\,\frac{7}{2},\,\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(2\,f\,\sqrt{a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]}\,\,(a+b-a\,\text{Sin}[e+f\,x]^2)$$

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

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

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

$$\Big(3\,a\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},\,-4,\,\frac{3}{2},\,\frac{3}{2},\,\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]^8$$

$$\text{Sin}[e+f\,x]\,\text{Sin}[2\,(e+f\,x)]\Big)\Big/$$

$$\Big(2\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^{3/2}\,(a+b-a\,\text{Sin}[e+f\,x]^2)$$

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

$$\Big(3\,a\,\text{AppellF1}\Big[\frac{3}{2},\,-4,\,\frac{5}{2},\,\frac{5}{2},\,\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]-$$

$$8\,(a+b)\,\text{AppellF1}\Big[\frac{3}{2},\,-3,\,\frac{3}{2},\,\frac{5}{2},\,\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\Big)\,\text{Sin}[e+f\,x]^2\Big)\Big)\Big)\Big)$$

Problem 284: Unable to integrate problem.

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

Optimal (type 4, 381 leaves, 10 steps):

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

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

$$\left((a-b)\,\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\;\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)\Big/$$

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

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

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

Result (type 8, 27 leaves):

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

Problem 285: Unable to integrate problem.

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

Optimal (type 4, 389 leaves, 10 steps):

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

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

$$\left.\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\;\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)\Big/$$

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

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

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

Result (type 8, 25 leaves) :

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

Problem 286: Unable to integrate problem.

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

Optimal (type 4, 411 leaves, 10 steps) :

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

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

$$\left(\left(3\,a^2+13\,a\,b+8\,b^2\right)\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)\Big/$$

$$\left(3\,a^3\,(a+b)^2\,f\,\sqrt{\text{Cos}[e+f\,x]^2}\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}\right)-\left(b\,(9\,a+8\,b)\right.$$

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

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

Result (type 8, 25 leaves):

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

Problem 287: Unable to integrate problem.

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

Optimal (type 4, 512 leaves, 11 steps):

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

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

$$\left(\left(a^2+11\,a\,b+8\,b^2\right)\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\,\,\text{Sin}[e+f\,x]\,\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)\Big/$$

$$\left(3\,a^3\,(a+b)^2\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\right)+\left(2\,(a+2\,b)\,\left(a^2-4\,a\,b-4\,b^2\right)\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\right.$$

$$\left.\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f\,x]^2}\right)\Big/$$

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

$$\left(b\,\left(a^2-16\,a\,b-16\,b^2\right)\sqrt{b+a\,\text{Cos}[e+f\,x]^2}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f\,x]],\,\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}\right)\Big/$$

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

Result (type 8, 27 leaves):

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

Problem 288: Unable to integrate problem.

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

Optimal (type 4, 639 leaves, 12 steps):

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

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

$$\left(2\left(2\,a^3-3\,a^2\,b-42\,a\,b^2-32\,b^3\right)\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{Sin}[e+f x]\,\sqrt{a+b-a\,\text{Sin}[e+f x]^2}\right)\Big/$$

$$\left(15\,a^4\,(a+b)^2\,f\sqrt{a+b\,\text{Sec}[e+f x]^2}\right)+$$

$$\left(\left(3\,a^2+61\,a\,b+48\,b^2\right)\text{Cos}[e+f x]^2\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{Sin}[e+f x]\,\sqrt{a+b-a\,\text{Sin}[e+f x]^2}\right)\Big/$$

$$\left(15\,a^3\,(a+b)^2\,f\sqrt{a+b\,\text{Sec}[e+f x]^2}\right)+\left(\left(8\,a^4-11\,a^3\,b+27\,a^2\,b^2+184\,a\,b^3+128\,b^4\right)\right.$$

$$\left.\sqrt{b+a\,\text{Cos}[e+f x]^2}\,\text{EllipticE}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{a+b-a\,\text{Sin}[e+f x]^2}\right)\Big/$$

$$\left(15\,a^5\,(a+b)^2\,f\sqrt{\text{Cos}[e+f x]^2}\,\sqrt{a+b\,\text{Sec}[e+f x]^2}\,\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}\right)-$$

$$\left(b\left(4\,a^3-9\,a^2\,b+120\,a\,b^2+128\,b^3\right)\sqrt{b+a\,\text{Cos}[e+f x]^2}\right.$$

$$\left.\text{EllipticF}\left[\text{ArcSin}[\text{Sin}[e+f x]],\frac{a}{a+b}\right]\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}\right)\Big/$$

$$\left(15\,a^5\,(a+b)\,f\sqrt{\text{Cos}[e+f x]^2}\,\sqrt{a+b\,\text{Sec}[e+f x]^2}\,\sqrt{a+b-a\,\text{Sin}[e+f x]^2}\right)$$

Result (type 8, 27 leaves):

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

Problem 289: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Sec}[e+f x]^6}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}}\,dx$$

Optimal (type 3, 133 leaves, 5 steps):

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

Result (type 3, 357 leaves):

$$\left(e^{i (e+f x)} \sqrt{4 b+a\,e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2}\,\left(a+2 b+a\,\text{Cos}[2 e+2 f x]\right)^{5/2} \left(\left(i\,a \sqrt{b} \left(-1+e^{2 i (e+f x)}\right) \left(24 b^2 e^{2 i (e+f x)}+3 a^2 \left(1+e^{2 i (e+f x)}\right)^2+a b \left(5+26\,e^{2 i (e+f x)}+5\,e^{4 i (e+f x)}\right)\right)\right) \Big/ \left((a+b)^2 \left(4 b\,e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^2\right)-\frac{3\,\text{Log}\left[\frac{-4 \sqrt{b} \left(-1+e^{2 i (e+f x)}\right) f+4 i \sqrt{4 b\,e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\,f}{1+e^{2 i (e+f x)}}\right]}{\sqrt{4 b\,e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}}\right) \text{Sec}[e+f x]^5\right) \Big/ \left(12 \sqrt{2}\,b^{5/2} f \left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}\right)$$

Problem 292: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

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

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

Result (type 6, 1927 leaves):

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

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

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

$$\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$

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

$$\left(\left(15\,a\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right.\right.$$

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

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

$$\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$

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

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

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

$$\left.\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$

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

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

$$\left.\text{Sin}[e+f\,x]^2\right)\Big/\left(\sqrt{2}\ \left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\right.$$

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

$$\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$

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

$$\left(3\,(a+b)\,\text{Cos}[e+f\,x]^4\,\text{Sin}[e+f\,x]\,\left(\frac{1}{3\,(a+b)}5\,a\,f\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\right.\right.\right.$$

$$\left.\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{4}{3}f$$

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

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

$$\left.\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$

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

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

$$\text{Sin}[e+f\,x]\,\left(2\,f\,\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.\right.$$

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

$$\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]+3\,(a+b)\,\left(\frac{1}{3\,(a+b)}5\,a\,f\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\right.\right.$$

$$\left.\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{4}{3}f$$

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

$$\text{Sin}[e+f\,x]^2\,\left(5\,a\,\left(\frac{1}{5\,(a+b)}21\,a\,f\,\text{AppellF1}\left[\frac{5}{2},-2,\frac{9}{2},\frac{7}{2},\text{Sin}[e+f\,x]^2,\right.\right.\right.$$

$$\left.\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{12}{5}f\,\text{AppellF1}\left[\frac{5}{2},-1,\frac{7}{2},\right.$$

$$\left.\left.\frac{7}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\right)-4\,(a+b)$$

$$\left(\frac{1}{a+b}3\,a\,f\,\text{AppellF1}\left[\frac{5}{2},-1,\frac{7}{2},\frac{7}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\right.$$

$$\text{Sin}[e+f\,x]-\left(6\,(a+b)^3\,f\,\text{Cot}[e+f\,x]\,\text{Csc}[e+f\,x]^4\left(-1+\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right)^2\right.$$

$$\left(\frac{\sqrt{a}\,\text{ArcSin}\left[\frac{\sqrt{a}\,\text{Sin}[e+f\,x]}{\sqrt{a+b}}\right]\text{Sin}[e+f\,x]}{\sqrt{a+b}\,\sqrt{1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}}}+\frac{a^2\,\text{Sin}[e+f\,x]^4}{3\,(a+b)^2\left(-1+\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right)^2}+\right.$$

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

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

$$\left.\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+$$

$$\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-4\,(a+b)\right.$$

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

Problem 293: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 187 leaves, 7 steps):

$$\frac{(a-5b)\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+fx]}{\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}\right]}{2a^{7/2}f}+\frac{\text{Cos}[e+fx]\,\text{Sin}[e+fx]}{2af\left(a+b+b\,\text{Tan}[e+fx]^2\right)^{3/2}}+$$
$$\frac{b\,(3a+5b)\,\text{Tan}[e+fx]}{6a^2(a+b)\,f\left(a+b+b\,\text{Tan}[e+fx]^2\right)^{3/2}}+\frac{b\left(3a^2+22ab+15b^2\right)\text{Tan}[e+fx]}{6a^3(a+b)^2f\sqrt{a+b+b\,\text{Tan}[e+fx]^2}}$$

Result (type 6, 1775 leaves):

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{5}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\text{Cos}[e+fx]^8\,\text{Sin}[e+fx]\right)\Big/$$
$$\left(4\sqrt{2}\,f\left(a+b\,\text{Sec}[e+fx]^2\right)^{5/2}\left(a+b-a\,\text{Sin}[e+fx]^2\right)^{5/2}\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{5}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]+\right.$$
$$\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{7}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]-\right.$$
$$\left.\left.6\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{5}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\right)\text{Sin}[e+fx]^2\right)$$
$$\left(\left(15\,a\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{5}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\right.\right.$$
$$\left.\text{Cos}[e+fx]^7\,\text{Sin}[e+fx]^2\right)\Big/\left(4\sqrt{2}\left(a+b-a\,\text{Sin}[e+fx]^2\right)^{7/2}\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{5}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]+\right.$$
$$\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{7}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.6\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{5}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\right)\text{Sin}[e+fx]^2\right)\right)+$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{5}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\text{Cos}[e+fx]^7\right)\Big/$$
$$\left(4\sqrt{2}\left(a+b-a\,\text{Sin}[e+fx]^2\right)^{5/2}\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{5}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\right.\right.\right.$$
$$\left.\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]+\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{7}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.6\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{5}{2},\frac{5}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\right)\text{Sin}[e+fx]^2\right)\right)-$$
$$\left(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{5}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]\text{Cos}[e+fx]^5\right.$$
$$\left.\text{Sin}[e+fx]^2\right)\Big/\left(2\sqrt{2}\left(a+b-a\,\text{Sin}[e+fx]^2\right)^{5/2}\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{5}{2},\frac{3}{2},\text{Sin}[e+fx]^2,\frac{a\,\text{Sin}[e+fx]^2}{a+b}\right]+\right.$$

$$\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$

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

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

$$\left.\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-$$

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

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

$$\left.\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$

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

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

$$\text{Sin}[e+f\,x]\,\left(2\,f\,\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.\right.$$

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

$$\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]+3\,(a+b)\,\left(\frac{1}{3\,(a+b)}5\,a\,f\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{7}{2},\right.\right.$$

$$\left.\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-2\,f$$

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

$$\text{Sin}[e+f\,x]^2\,\left(5\,a\,\left(\frac{1}{5\,(a+b)}21\,a\,f\,\text{AppellF1}\left[\frac{5}{2},-3,\frac{9}{2},\frac{7}{2},\text{Sin}[e+f\,x]^2,\right.\right.\right.$$

$$\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{18}{5}\,f\,\text{AppellF1}\left[\frac{5}{2},-2,\frac{7}{2},\right.$$

$$\left.\left.\frac{7}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\right)-6\,(a+b)$$

$$\left(\frac{1}{a+b}3\,a\,f\,\text{AppellF1}\left[\frac{5}{2},-2,\frac{7}{2},\frac{7}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\right.$$

$$\text{Sin}[e+f\,x]-\frac{12}{5}\,f\,\text{AppellF1}\left[\frac{5}{2},-1,\frac{5}{2},\frac{7}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]$$

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

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

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

Problem 294: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cos}[e+f\,x]^4}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}\,dx$$

Optimal (type 3, 261 leaves, 8 steps):

$$\frac{\left(3\,a^2-10\,a\,b+35\,b^2\right)\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{8\,a^{9/2}\,f}+$$
$$\frac{(3\,a-7\,b)\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]}{8\,a^2\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^{3/2}}+\frac{\text{Cos}[e+f\,x]^3\,\text{Sin}[e+f\,x]}{4\,a\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^{3/2}}+$$
$$\frac{b\,\left(9\,a^2-18\,a\,b-35\,b^2\right)\text{Tan}[e+f\,x]}{24\,a^3\,(a+b)\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^{3/2}}+\frac{b\,\left(9\,a^3-15\,a^2\,b-145\,a\,b^2-105\,b^3\right)\text{Tan}[e+f\,x]}{24\,a^4\,(a+b)^2\,f\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}$$

Result (type 6, 1777 leaves):

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-4,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]^{12}\,\text{Sin}[e+f\,x]\right)\Big/$$
$$\left(4\sqrt{2}\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-4,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$
$$\left.\left.8\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)$$
$$\left(\left(15\,a\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-4,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right.\right.$$
$$\left.\text{Cos}[e+f\,x]^9\,\text{Sin}[e+f\,x]^2\right)\Big/\left(4\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{7/2}\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-4,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.8\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)+$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-4,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]^9\right)\Big/$$
$$\left(4\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-4,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\right.\right.\right.$$
$$\left.\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.8\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)-$$
$$\left(3\sqrt{2}\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-4,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right.$$
$$\left.\text{Cos}[e+f\,x]^7\,\text{Sin}[e+f\,x]^2\right)\Big/\left(\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-4,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.8\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)+$$
$$\left(3\,(a+b)\,\text{Cos}[e+f\,x]^8\,\text{Sin}[e+f\,x]\left(\frac{1}{3\,(a+b)}5\,a\,f\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{7}{2},\frac{5}{2},\right.\right.\right.$$
$$\left.\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{8}{3}f$$
$$\left.\left.\text{AppellF1}\left[\frac{3}{2},-3,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\right)\right)\Big/$$
$$\left(4\sqrt{2}\,f\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-4,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\right.\right.\right.$$
$$\left.\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.8\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)-$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-4,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]^8\right.$$
$$\text{Sin}[e+f\,x]\left(2\,f\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-\right.\right.$$
$$\left.8\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)$$
$$\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]+3\,(a+b)\left(\frac{1}{3\,(a+b)}5\,a\,f\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{7}{2},\right.\right.$$
$$\left.\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{8}{3}f$$
$$\left.\text{AppellF1}\left[\frac{3}{2},-3,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\right)+$$

$$\text{Sin}[e+f x]^2 \left(5 a \left(\frac{1}{5 (a+b)} 21 a f \text{AppellF1}\left[\frac{5}{2}, -4, \frac{9}{2}, \frac{7}{2}, \text{Sin}[e+f x]^2, \frac{a \text{Sin}[e+f x]^2}{a+b}\right] \text{Cos}[e+f x] \text{Sin}[e+f x] - \frac{24}{5} f \text{AppellF1}\left[\frac{5}{2}, -3, \frac{7}{2}, \frac{7}{2}, \text{Sin}[e+f x]^2, \frac{a \text{Sin}[e+f x]^2}{a+b}\right] \text{Cos}[e+f x] \text{Sin}[e+f x]\right) - 8 (a+b) \left(\frac{1}{a+b} 3 a f \text{AppellF1}\left[\frac{5}{2}, -3, \frac{7}{2}, \frac{7}{2}, \text{Sin}[e+f x]^2, \frac{a \text{Sin}[e+f x]^2}{a+b}\right] \text{Cos}[e+f x] \text{Sin}[e+f x] - \frac{18}{5} f \text{AppellF1}\left[\frac{5}{2}, -2, \frac{5}{2}, \frac{7}{2}, \text{Sin}[e+f x]^2, \frac{a \text{Sin}[e+f x]^2}{a+b}\right] \text{Cos}[e+f x] \text{Sin}[e+f x]\right)\right)\Bigg)\Bigg) \Bigg/ \left(4 \sqrt{2} f \left(a+b-a \text{Sin}[e+f x]^2\right)^{5/2} \left(3 (a+b) \text{AppellF1}\left[\frac{1}{2}, -4, \frac{5}{2}, \frac{3}{2}, \text{Sin}[e+f x]^2, \frac{a \text{Sin}[e+f x]^2}{a+b}\right] + \left(5 a \text{AppellF1}\left[\frac{3}{2}, -4, \frac{7}{2}, \frac{5}{2}, \text{Sin}[e+f x]^2, \frac{a \text{Sin}[e+f x]^2}{a+b}\right] - 8 (a+b) \text{AppellF1}\left[\frac{3}{2}, -3, \frac{5}{2}, \frac{5}{2}, \text{Sin}[e+f x]^2, \frac{a \text{Sin}[e+f x]^2}{a+b}\right]\right) \text{Sin}[e+f x]^2\right)^2\right)\Bigg)\Bigg)$$

Problem 295: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cos}[e+f x]^6}{\left(a+b \text{Sec}[e+f x]^2\right)^{5/2}} \, dx$$

Optimal (type 3, 332 leaves, 9 steps):

$$\frac{5 (a-3 b) \left(a^2+7 b^2\right) \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[e+f x]}{\sqrt{a+b+b \text{Tan}[e+f x]^2}}\right]}{16 a^{11/2} f} + \frac{\left(5 a^2-10 a b+21 b^2\right) \text{Cos}[e+f x] \text{Sin}[e+f x]}{16 a^3 f \left(a+b+b \text{Tan}[e+f x]^2\right)^{3/2}} + \frac{(5 a-9 b) \text{Cos}[e+f x]^3 \text{Sin}[e+f x]}{24 a^2 f \left(a+b+b \text{Tan}[e+f x]^2\right)^{3/2}} + \frac{\text{Cos}[e+f x]^5 \text{Sin}[e+f x]}{6 a f \left(a+b+b \text{Tan}[e+f x]^2\right)^{3/2}} + \frac{b \left(15 a^3-25 a^2 b+49 a b^2+105 b^3\right) \text{Tan}[e+f x]}{48 a^4 (a+b) f \left(a+b+b \text{Tan}[e+f x]^2\right)^{3/2}} + \frac{b \left(15 a^4-20 a^3 b+38 a^2 b^2+420 a b^3+315 b^4\right) \text{Tan}[e+f x]}{48 a^5 (a+b)^2 f \sqrt{a+b+b \text{Tan}[e+f x]^2}}$$

Result (type 6, 1776 leaves):

$$\left(3 (a+b) \text{AppellF1}\left[\frac{1}{2}, -5, \frac{5}{2}, \frac{3}{2}, \text{Sin}[e+f x]^2, \frac{a \text{Sin}[e+f x]^2}{a+b}\right] \text{Cos}[e+f x]^{16} \text{Sin}[e+f x]\right) \Bigg/ \left(4 \sqrt{2} f \left(a+b \text{Sec}[e+f x]^2\right)^{5/2} \left(a+b-a \text{Sin}[e+f x]^2\right)^{5/2}\right.$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-5,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+5\left(a\,\text{AppellF1}\left[\frac{3}{2},-5,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)$$

$$\left(\left(15\,a\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-5,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]^{11}\,\text{Sin}[e+f\,x]^2\right)\Big/\left(4\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{7/2}\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-5,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+5\left(a\,\text{AppellF1}\left[\frac{3}{2},-5,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)+\right.$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-5,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]^{11}\right)\Big/\left(4\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-5,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+5\left(a\,\text{AppellF1}\left[\frac{3}{2},-5,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)-$$

$$\left(15\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-5,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]^9\,\text{Sin}[e+f\,x]^2\right)\Big/\left(2\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-5,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+5\left(a\,\text{AppellF1}\left[\frac{3}{2},-5,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)+$$

$$\left(3\,(a+b)\,\text{Cos}[e+f\,x]^{10}\,\text{Sin}[e+f\,x]\left(\frac{1}{3\,(a+b)}5\,a\,f\,\text{AppellF1}\left[\frac{3}{2},-5,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{10}{3}f\,\text{AppellF1}\left[\frac{3}{2},-4,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\right)\right)\Big/$$

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

$$\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big] + 5 \Big(a\,\text{AppellF1}\Big[\frac{3}{2}, -5, \frac{7}{2}, \frac{5}{2}, \text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big] -$$

$$2\,(a+b)\,\text{AppellF1}\Big[\frac{3}{2}, -4, \frac{5}{2}, \frac{5}{2}, \text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\Big)\,\text{Sin}[e+f x]^2\Big)\Big) -$$

$$\Big(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2}, -5, \frac{5}{2}, \frac{3}{2}, \text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\,\text{Cos}[e+f x]^{10}$$

$$\text{Sin}[e+f x]\,\Big(10\,f\,\Big(a\,\text{AppellF1}\Big[\frac{3}{2}, -5, \frac{7}{2}, \frac{5}{2}, \text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big] -$$

$$2\,(a+b)\,\text{AppellF1}\Big[\frac{3}{2}, -4, \frac{5}{2}, \frac{5}{2}, \text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\Big)$$

$$\text{Cos}[e+f x]\,\text{Sin}[e+f x] + 3\,(a+b)\,\Big(\frac{1}{3\,(a+b)}5\,a\,f\,\text{AppellF1}\Big[\frac{3}{2}, -5, \frac{7}{2},$$

$$\frac{5}{2}, \text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\,\text{Cos}[e+f x]\,\text{Sin}[e+f x] - \frac{10}{3}\,f$$

$$\text{AppellF1}\Big[\frac{3}{2}, -4, \frac{5}{2}, \frac{5}{2}, \text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]\Big) +$$

$$5\,\text{Sin}[e+f x]^2\,\Big(a\,\Big(\frac{1}{5\,(a+b)}21\,a\,f\,\text{AppellF1}\Big[\frac{5}{2}, -5, \frac{9}{2}, \frac{7}{2}, \text{Sin}[e+f x]^2,$$

$$\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\,\text{Cos}[e+f x]\,\text{Sin}[e+f x] - 6\,f\,\text{AppellF1}\Big[\frac{5}{2}, -4, \frac{7}{2}, \frac{7}{2},$$

$$\text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]\Big) - 2\,(a+b)$$

$$\Big(\frac{1}{a+b}3\,a\,f\,\text{AppellF1}\Big[\frac{5}{2}, -4, \frac{7}{2}, \frac{7}{2}, \text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\,\text{Cos}[e+f x]$$

$$\text{Sin}[e+f x] - \frac{24}{5}\,f\,\text{AppellF1}\Big[\frac{5}{2}, -3, \frac{5}{2}, \frac{7}{2}, \text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]$$

$$\text{Cos}[e+f x]\,\text{Sin}[e+f x]\Big)\Big)\Big)\Big)\Big/\Big(4\,\sqrt{2}\,f\,\big(a+b-a\,\text{Sin}[e+f x]^2\big)^{5/2}$$

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

$$5\,\Big(a\,\text{AppellF1}\Big[\frac{3}{2}, -5, \frac{7}{2}, \frac{5}{2}, \text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big] - 2\,(a+b)$$

$$\text{AppellF1}\Big[\frac{3}{2}, -4, \frac{5}{2}, \frac{5}{2}, \text{Sin}[e+f x]^2, \frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\Big)\,\text{Sin}[e+f x]^2\Big)^2\Big)\Big)\Big)$$

Problem 296: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{1}{\left(a+b\,\text{Sec}[c+d x]^2\right)^{7/2}}\,dx$$

Optimal (type 3, 179 leaves, 7 steps) :

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[c+d x]}{\sqrt{a+b+b\,\text{Tan}[c+d x]^2}}\right]}{a^{7/2}\,d}-\frac{b\,\text{Tan}[c+d x]}{5\,a\,(a+b)\,d\,\left(a+b+b\,\text{Tan}[c+d x]^2\right)^{5/2}}-$$
$$\frac{b\,(9\,a+5\,b)\,\text{Tan}[c+d x]}{15\,a^2\,(a+b)^2\,d\,\left(a+b+b\,\text{Tan}[c+d x]^2\right)^{3/2}}-\frac{b\,\left(33\,a^2+40\,a\,b+15\,b^2\right)\,\text{Tan}[c+d x]}{15\,a^3\,(a+b)^3\,d\,\sqrt{a+b+b\,\text{Tan}[c+d x]^2}}$$

Result (type 6, 1777 leaves) :

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{7}{2},\frac{3}{2},\text{Sin}[c+d x]^2,\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]\text{Cos}[c+d x]^6\,\text{Sin}[c+d x]\right)\Big/$$
$$\left(8\,\sqrt{2}\,d\,\left(a+b\,\text{Sec}[c+d x]^2\right)^{7/2}\left(a+b-a\,\text{Sin}[c+d x]^2\right)^{7/2}\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{7}{2},\frac{3}{2},\text{Sin}[c+d x]^2,\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]+\right.$$
$$\left(7\,a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{9}{2},\frac{5}{2},\text{Sin}[c+d x]^2,\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]-\right.$$
$$\left.\left.6\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[c+d x]^2,\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]\right)\text{Sin}[c+d x]^2\right)$$
$$\left(\left(21\,a\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{7}{2},\frac{3}{2},\text{Sin}[c+d x]^2,\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]\right.\right.$$
$$\left.\text{Cos}[c+d x]^7\,\text{Sin}[c+d x]^2\right)\Big/\left(8\,\sqrt{2}\,\left(a+b-a\,\text{Sin}[c+d x]^2\right)^{9/2}\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{7}{2},\frac{3}{2},\text{Sin}[c+d x]^2,\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]+\right.$$
$$\left(7\,a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{9}{2},\frac{5}{2},\text{Sin}[c+d x]^2,\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.6\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[c+d x]^2,\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]\right)\text{Sin}[c+d x]^2\right)\right)+$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{7}{2},\frac{3}{2},\text{Sin}[c+d x]^2,\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]\text{Cos}[c+d x]^7\right)\Big/$$
$$\left(8\,\sqrt{2}\,\left(a+b-a\,\text{Sin}[c+d x]^2\right)^{7/2}\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{7}{2},\frac{3}{2},\text{Sin}[c+d x]^2,\right.\right.\right.$$
$$\left.\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]+\left(7\,a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{9}{2},\frac{5}{2},\text{Sin}[c+d x]^2,\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]-\right.$$
$$\left.\left.\left.6\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[c+d x]^2,\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]\right)\text{Sin}[c+d x]^2\right)\right)-$$
$$\left(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{7}{2},\frac{3}{2},\text{Sin}[c+d x]^2,\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]\text{Cos}[c+d x]^5\right.$$
$$\left.\text{Sin}[c+d x]^2\right)\Big/\left(4\,\sqrt{2}\,\left(a+b-a\,\text{Sin}[c+d x]^2\right)^{7/2}\right.$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{7}{2},\frac{3}{2},\text{Sin}[c+d x]^2,\frac{a\,\text{Sin}[c+d x]^2}{a+b}\right]+\right.$$

$$\left(7\,a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{9}{2},\frac{5}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]-6\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]\right)\text{Sin}[c+d\,x]^2\Bigg)\Bigg)+$$

$$\Bigg(3\,(a+b)\,\text{Cos}[c+d\,x]^6\,\text{Sin}[c+d\,x]\,\Bigg(\frac{1}{3\,(a+b)}7\,a\,d\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{9}{2},\frac{5}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]-2\,d\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(8\sqrt{2}\,d\,\left(a+b-a\,\text{Sin}[c+d\,x]^2\right)^{7/2}\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{7}{2},\frac{3}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]+\left(7\,a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{9}{2},\frac{5}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]-6\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]\right)\text{Sin}[c+d\,x]^2\Bigg)\Bigg)-$$

$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{7}{2},\frac{3}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]\text{Cos}[c+d\,x]^6\,\text{Sin}[c+d\,x]\,\Bigg(2\,d\,\Bigg(7\,a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{9}{2},\frac{5}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]-6\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]\Bigg)$$

$$\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]+3\,(a+b)\,\Bigg(\frac{1}{3\,(a+b)}7\,a\,d\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{9}{2},\frac{5}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]-2\,d\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]\Bigg)+$$

$$\text{Sin}[c+d\,x]^2\,\Bigg(7\,a\,\Bigg(\frac{1}{5\,(a+b)}27\,a\,d\,\text{AppellF1}\left[\frac{5}{2},-3,\frac{11}{2},\frac{7}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]-\frac{18}{5}\,d\,\text{AppellF1}\left[\frac{5}{2},-2,\frac{9}{2},\frac{7}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]\Bigg)-6\,(a+b)\,\Bigg(\frac{1}{5\,(a+b)}$$

$$21\,a\,d\,\text{AppellF1}\left[\frac{5}{2},-2,\frac{9}{2},\frac{7}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]-\frac{12}{5}\,d\,\text{AppellF1}\left[\frac{5}{2},-1,\frac{7}{2},\frac{7}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]$$

$$\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/\Bigg(8\sqrt{2}\,d\,\left(a+b-a\,\text{Sin}[c+d\,x]^2\right)^{7/2}$$

$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-3,\frac{7}{2},\frac{3}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]+$$

$$\left(7\,a\,\text{AppellF1}\left[\frac{3}{2},-3,\frac{9}{2},\frac{5}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]-6\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[c+d\,x]^2,\frac{a\,\text{Sin}[c+d\,x]^2}{a+b}\right]\right)\text{Sin}[c+d\,x]^2\Big)^2\Big)\Big)\Big)$$

Problem 297: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 3, 47 leaves):

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

Problem 298: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 111 leaves, ? steps):

$$\frac{1}{f\,m}\text{AppellF1}\left[\frac{m}{2},\frac{1}{2},-p,\frac{2+m}{2},\text{Sec}[e+f\,x]^2,-\frac{b\,\text{Sec}[e+f\,x]^2}{a}\right]\text{Cot}[e+f\,x]\,(d\,\text{Sec}[e+f\,x])^m\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\left(1+\frac{b\,\text{Sec}[e+f\,x]^2}{a}\right)^{-p}\sqrt{-\text{Tan}[e+f\,x]^2}$$

Result (type 6, 2195 leaves):

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

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

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

$$\left(a+2 b+a \operatorname{Cos}[2 (e+f x)]\right)^p \left(\operatorname{Sec}[e+f x]^2\right)^{\frac{m}{2}+p}\Bigg) \Bigg/$$

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

$$\Bigg(6 a (a+b) p \operatorname{AppellF1}\left[\frac{1}{2}, 1-\frac{m}{2}, -p, \frac{3}{2}, -\operatorname{Tan}[e+f x]^2, -\frac{b \operatorname{Tan}[e+f x]^2}{a+b}\right] \left(a+2 b+a \operatorname{Cos}[2 (e+f x)]\right)^{-1+p} \left(\operatorname{Sec}[e+f x]^2\right)^{-1+\frac{m}{2}+p} \operatorname{Sin}[2 (e+f x)] \operatorname{Tan}[e+f x]\Bigg) \Bigg/$$

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

$$\Bigg(6 (a+b) \left(-1+\frac{m}{2}+p\right) \operatorname{AppellF1}\left[\frac{1}{2}, 1-\frac{m}{2}, -p, \frac{3}{2}, -\operatorname{Tan}[e+f x]^2, -\frac{b \operatorname{Tan}[e+f x]^2}{a+b}\right] \left(a+2 b+a \operatorname{Cos}[2 (e+f x)]\right)^p \left(\operatorname{Sec}[e+f x]^2\right)^{-1+\frac{m}{2}+p} \operatorname{Tan}[e+f x]^2\Bigg) \Bigg/$$

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

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

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

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

$$\big(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\big)^p\,\big(\text{Sec}[e+f\,x]^2\big)^{-1+\frac{m}{2}+p}\,\text{Tan}[e+f\,x]$$

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

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

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

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

$$\frac{3}{2},2-\frac{m}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Bigg)+$$

$$\text{Tan}[e+f\,x]^2\,\Bigg(2\,b\,p\,\Bigg(-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\Big[\frac{5}{2},1-\frac{m}{2},2-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,$$

$$-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{6}{5}\Big(1-\frac{m}{2}\Big)\,\text{AppellF1}\Big[\frac{5}{2},2-\frac{m}{2},$$

$$1-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Bigg)+$$

$$(a+b)\,(-2+m)\,\Bigg(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\Big[\frac{5}{2},2-\frac{m}{2},1-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,$$

$$-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{6}{5}\Big(2-\frac{m}{2}\Big)\,\text{AppellF1}\Big[\frac{5}{2},3-\frac{m}{2},$$

$$-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

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

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

$$\text{AppellF1}\Big[\frac{3}{2},2-\frac{m}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\Big)\,\text{Tan}[e+f\,x]^2\Bigg)^2\Bigg)\Bigg)$$

Problem 299: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 124 leaves, 5 steps):

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

$$\big(a+b\,\text{Sec}[e+f\,x]^2\big)^p\,\text{Sin}[e+f\,x]\,\big(a+b-a\,\text{Sin}[e+f\,x]^2\big)^p\,\Big(1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big)^{-p}$$

Result (type 6, 3930 leaves):

$$\left(\left(a+b\right)\left(a+2b+a\,\text{Cos}\left[2\left(e+fx\right)\right]\right)^p\text{Sec}[e+fx]^5\left(\text{Sec}[e+fx]^2\right)^{\frac{1}{2}+p}\left(a+b\,\text{Sec}[e+fx]^2\right)^p\right.$$

$$\text{Tan}[e+fx]\left(\left(9\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},-\text{Tan}[e+fx]^2,-\frac{b\,\text{Tan}[e+fx]^2}{a+b}\right]\right)\Big/\right.$$

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

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

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

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

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

$$\left(2\,b\,p\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2},1-p,\frac{7}{2},-\text{Tan}[e+fx]^2,-\frac{b\,\text{Tan}[e+fx]^2}{a+b}\right]+\right.$$

$$\left.\left.\left.\left.\left(a+b\right)\text{AppellF1}\left[\frac{5}{2},\frac{1}{2},-p,\frac{7}{2},-\text{Tan}[e+fx]^2,-\frac{b\,\text{Tan}[e+fx]^2}{a+b}\right]\right)\text{Tan}[e+fx]^2\right)\right)\right)\Big/$$

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

$$\left(\left(9\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},-\text{Tan}[e+fx]^2,-\frac{b\,\text{Tan}[e+fx]^2}{a+b}\right]\right)\Big/\right.$$

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

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

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

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

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

$$\left(2\,b\,p\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2},1-p,\frac{7}{2},-\text{Tan}[e+fx]^2,-\frac{b\,\text{Tan}[e+fx]^2}{a+b}\right]+\left(a+b\right)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{5}{2},\frac{1}{2},-p,\frac{7}{2},-\text{Tan}[e+fx]^2,-\frac{b\,\text{Tan}[e+fx]^2}{a+b}\right]\right)\text{Tan}[e+fx]^2\right)\right)-$$

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

$$\text{Tan}[e+fx]\left(\left(9\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},-\text{Tan}[e+fx]^2,-\frac{b\,\text{Tan}[e+fx]^2}{a+b}\right]\right)\Big/\right.$$

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

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

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

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

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

$$\Big(2\,b\,p\,\text{AppellF1}\Big[\frac{5}{2},-\frac{1}{2},1-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]+(a+b)$$

$$\text{AppellF1}\Big[\frac{5}{2},\frac{1}{2},-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\Big)\,\text{Tan}[e+f\,x]^2\Big)\Big)+$$

$$\frac{2}{3}\,(a+b)\,\Big(\frac{1}{2}+p\Big)\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^p\,\big(\text{Sec}[e+f\,x]^2\big)^{\frac{1}{2}+p}\,\text{Tan}[e+f\,x]^2$$

$$\Big(\Big(9\,\text{AppellF1}\Big[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\Big)\Big/$$

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

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

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

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

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

$$\Big(2\,b\,p\,\text{AppellF1}\Big[\frac{5}{2},-\frac{1}{2},1-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]+(a+b)$$

$$\text{AppellF1}\Big[\frac{5}{2},\frac{1}{2},-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\Big)\,\text{Tan}[e+f\,x]^2\Big)\Big)+$$

$$\frac{1}{3}\,(a+b)\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^p\,\big(\text{Sec}[e+f\,x]^2\big)^{\frac{1}{2}+p}\,\text{Tan}[e+f\,x]$$

$$\Big(\Big(9\,\Big(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\Big[\frac{3}{2},-\frac{1}{2},1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\frac{1}{3}\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{2},-p,\frac{5}{2},$$

$$-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)\Big)\Big/$$

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

$$\left(2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2},1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right)\text{Tan}[e+f\,x]^2\Big)+$$
$$\left(10\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[\right.$$
$$\left.e+f\,x]\right)\Big/\left(5\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left(2\,b\,p\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2},1-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left.(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2},-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right)\text{Tan}[e+f\,x]^2\Big)+$$
$$\left(5\,\text{Tan}[e+f\,x]^2\left(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2},1-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,\right.\right.\right.$$
$$-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\frac{3}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{1}{2},-p,$$
$$\left.\left.\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\Big/$$
$$\left(5\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left(2\,b\,p\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2},1-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left.(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2},-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right)\text{Tan}[e+f\,x]^2\Big)-$$
$$\left(9\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right.$$
$$\left(2\left(2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2},1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\right.\right.$$
$$\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right)\text{Sec}[e+f\,x]^2$$
$$\text{Tan}[e+f\,x]+3\,(a+b)\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2},1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,\right.\right.$$
$$-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\frac{1}{3}\,\text{AppellF1}\Big[\frac{3}{2},\frac{1}{2},-p,\frac{5}{2},$$
$$\left.-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)+\text{Tan}[e+f\,x]^2$$
$$\left(2\,b\,p\left(-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2},2-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,\right.\right.\right.$$
$$-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\frac{3}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{1}{2},1-p,$$
$$\left.\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)+$$

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

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

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

$$\Bigg(2\left(2\,b\,p\,\text{AppellF1}\left[\frac{5}{2},-\frac{1}{2},1-p,\frac{7}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+(a+b)\,\text{AppellF1}\left[\frac{5}{2},\frac{1}{2},-p,\frac{7}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Sec}[e+f x]^2$$

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

$$\Bigg(2\,b\,p\left(-\frac{1}{7(a+b)}10\,b\,(1-p)\,\text{AppellF1}\left[\frac{7}{2},-\frac{1}{2},2-p,\frac{9}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+\frac{5}{7}\text{AppellF1}\left[\frac{7}{2},\frac{1}{2},1-p,\frac{9}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)+$$

$$(a+b)\left(\frac{1}{7(a+b)}10\,b\,p\,\text{AppellF1}\left[\frac{7}{2},\frac{1}{2},1-p,\frac{9}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{5}{7}\text{AppellF1}\left[\frac{7}{2},\frac{3}{2},-p,\frac{9}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

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

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

Problem 300: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 124 leaves, 5 steps):

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

Result (type 6, 1989 leaves):

$$\Big(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\left(a+2b+a\,\text{Cos}[2(e+f x)]\right)^p$$
$$\text{Sec}[e+f x]^3\left(\text{Sec}[e+f x]^2\right)^{\frac{1}{2}+p}\left(a+b\,\text{Sec}[e+f x]^2\right)^p\text{Tan}[e+f x]\Big)\Big/$$
$$\Big(f\Big(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$
$$\Big(2bp\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$
$$(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Big)\text{Tan}[e+f x]^2\Big)$$
$$\Big(\Big(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$
$$\left(a+2b+a\,\text{Cos}[2(e+f x)]\right)^p\left(\text{Sec}[e+f x]^2\right)^{\frac{3}{2}+p}\Big)\Big/$$
$$\Big(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$
$$\Big(2bp\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$
$$(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Big)\text{Tan}[e+f x]^2\Big)-$$
$$\Big(6a(a+b)p\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$
$$\left(a+2b+a\,\text{Cos}[2(e+f x)]\right)^{-1+p}\left(\text{Sec}[e+f x]^2\right)^{\frac{1}{2}+p}\text{Sin}[2(e+f x)]\,\text{Tan}[e+f x]\Big)\Big/$$
$$\Big(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},-\frac{1}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$
$$\Big(2bp\,\text{AppellF1}\left[\frac{3}{2},-\frac{1}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+\frac{1}{3}\,\text{AppellF1}\left[\frac{3}{2},\right.$$

$$\left.\left.\frac{1}{2},\,-p,\,\frac{5}{2},\,-\text{Tan}[e+f\,x]^2,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$

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

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

Problem 301: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 124 leaves, 5 steps):

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

Result (type 6, 1995 leaves):

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

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

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

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

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

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

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

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

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

$$\left(a+2\,b+a\,\text{Cos}\left[2\,\left(e+f\,x\right)\right]\right)^p\,\left(\text{Sec}\left[e+f\,x\right]^2\right)^{-\frac{1}{2}+p}\,\text{Tan}\left[e+f\,x\right]$$
$$\left(2\,\left(2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{2},\,1-p,\,\frac{5}{2},\,-\text{Tan}\left[e+f\,x\right]^2,\,-\frac{b\,\text{Tan}\left[e+f\,x\right]^2}{a+b}\right]-\right.\right.$$
$$\left.\left(a+b\right)\,\text{AppellF1}\left[\frac{3}{2},\,\frac{3}{2},\,-p,\,\frac{5}{2},\,-\text{Tan}\left[e+f\,x\right]^2,\,-\frac{b\,\text{Tan}\left[e+f\,x\right]^2}{a+b}\right]\right)$$
$$\text{Sec}\left[e+f\,x\right]^2\,\text{Tan}\left[e+f\,x\right]+3\,\left(a+b\right)\,\left(\frac{1}{3\,\left(a+b\right)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{2},\,1-p,\,\frac{5}{2},\right.\right.$$
$$\left.-\text{Tan}\left[e+f\,x\right]^2,\,-\frac{b\,\text{Tan}\left[e+f\,x\right]^2}{a+b}\right]\,\text{Sec}\left[e+f\,x\right]^2\,\text{Tan}\left[e+f\,x\right]-\frac{1}{3}\,\text{AppellF1}\left[\frac{3}{2},\right.$$
$$\left.\left.\frac{3}{2},\,-p,\,\frac{5}{2},\,-\text{Tan}\left[e+f\,x\right]^2,\,-\frac{b\,\text{Tan}\left[e+f\,x\right]^2}{a+b}\right]\,\text{Sec}\left[e+f\,x\right]^2\,\text{Tan}\left[e+f\,x\right]\right)+$$
$$\text{Tan}\left[e+f\,x\right]^2\,\left(2\,b\,p\,\left(-\frac{1}{5\,\left(a+b\right)}6\,b\,\left(1-p\right)\,\text{AppellF1}\left[\frac{5}{2},\,\frac{1}{2},\,2-p,\,\frac{7}{2},\,-\text{Tan}\left[e+f\,x\right]^2,\right.\right.\right.$$
$$\left.-\frac{b\,\text{Tan}\left[e+f\,x\right]^2}{a+b}\right]\,\text{Sec}\left[e+f\,x\right]^2\,\text{Tan}\left[e+f\,x\right]-\frac{3}{5}\,\text{AppellF1}\left[\frac{5}{2},\,\frac{3}{2},\,1-p,\right.$$
$$\left.\left.\frac{7}{2},\,-\text{Tan}\left[e+f\,x\right]^2,\,-\frac{b\,\text{Tan}\left[e+f\,x\right]^2}{a+b}\right]\,\text{Sec}\left[e+f\,x\right]^2\,\text{Tan}\left[e+f\,x\right]\right)-$$
$$\left(a+b\right)\,\left(\frac{1}{5\,\left(a+b\right)}6\,b\,p\,\text{AppellF1}\left[\frac{5}{2},\,\frac{3}{2},\,1-p,\,\frac{7}{2},\,-\text{Tan}\left[e+f\,x\right]^2,\right.\right.$$
$$\left.-\frac{b\,\text{Tan}\left[e+f\,x\right]^2}{a+b}\right]\,\text{Sec}\left[e+f\,x\right]^2\,\text{Tan}\left[e+f\,x\right]-\frac{9}{5}\,\text{AppellF1}\left[\frac{5}{2},\,\frac{5}{2},\,-p,\right.$$
$$\left.\left.\left.\left.\left.\frac{7}{2},\,-\text{Tan}\left[e+f\,x\right]^2,\,-\frac{b\,\text{Tan}\left[e+f\,x\right]^2}{a+b}\right]\,\text{Sec}\left[e+f\,x\right]^2\,\text{Tan}\left[e+f\,x\right]\right)\right)\right)\right)\Big/$$
$$\left(3\,\left(a+b\right)\,\text{AppellF1}\left[\frac{1}{2},\,\frac{1}{2},\,-p,\,\frac{3}{2},\,-\text{Tan}\left[e+f\,x\right]^2,\,-\frac{b\,\text{Tan}\left[e+f\,x\right]^2}{a+b}\right]+\right.$$
$$\left(2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\,\frac{1}{2},\,1-p,\,\frac{5}{2},\,-\text{Tan}\left[e+f\,x\right]^2,\,-\frac{b\,\text{Tan}\left[e+f\,x\right]^2}{a+b}\right]-\left(a+b\right)\right.$$
$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\,\frac{3}{2},\,-p,\,\frac{5}{2},\,-\text{Tan}\left[e+f\,x\right]^2,\,-\frac{b\,\text{Tan}\left[e+f\,x\right]^2}{a+b}\right]\right)\,\text{Tan}\left[e+f\,x\right]^2\right)^2\right)\right)$$

Problem 302: Result more than twice size of optimal antiderivative.

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

Optimal (type 6, 122 leaves, 5 steps):

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

Result (type 6, 1983 leaves):

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

$$(a+2 b+a\,\text{Cos}[2\,(e+f x)])^p\,(\text{Sec}[e+f x]^2)^{-\frac{3}{2}+p}\,(a+b\,\text{Sec}[e+f x]^2)^p\,\text{Sin}[e+f x]\Bigg)\Bigg/$$

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

$$\Bigg(-2\,b\,p\,\text{AppellF1}\Big[\frac{3}{2},\frac{3}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]+$$

$$3\,(a+b)\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)$$

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

$$(a+2 b+a\,\text{Cos}[2\,(e+f x)])^p\,(\text{Sec}[e+f x]^2)^{-\frac{1}{2}+p}\Bigg)\Bigg/$$

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

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

$$\text{AppellF1}\Big[\frac{3}{2},\frac{5}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)\Bigg)+$$

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

$$(a+2 b+a\,\text{Cos}[2\,(e+f x)])^{-1+p}\,(\text{Sec}[e+f x]^2)^{-\frac{3}{2}+p}\,\text{Sin}[2\,(e+f x)]\,\text{Tan}[e+f x]\Bigg)\Bigg/$$

$$\Bigg(-3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},\frac{3}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]+$$

$$\Bigg(-2\,b\,p\,\text{AppellF1}\Big[\frac{3}{2},\frac{3}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]+3\,(a+b)$$

$$\text{AppellF1}\Big[\frac{3}{2},\frac{5}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)-$$

$$\Bigg(6\,(a+b)\,\Big(-\frac{3}{2}+p\Big)\,\text{AppellF1}\Big[\frac{1}{2},\frac{3}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]$$

$$(a+2 b+a\,\text{Cos}[2\,(e+f x)])^p\,(\text{Sec}[e+f x]^2)^{-\frac{3}{2}+p}\,\text{Tan}[e+f x]^2\Bigg)\Bigg/$$

$$\Bigg(-3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},\frac{3}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]+$$

$$\Bigg(-2\,b\,p\,\text{AppellF1}\Big[\frac{3}{2},\frac{3}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]+3\,(a+b)$$

$$\text{AppellF1}\Big[\frac{3}{2},\frac{5}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)-$$

$$\Bigg(3\,(a+b)\,(a+2 b+a\,\text{Cos}[2\,(e+f x)])^p\,(\text{Sec}[e+f x]^2)^{-\frac{3}{2}+p}\,\text{Tan}[e+f x]$$

$$\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2},1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right.$$
$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\text{AppellF1}\left[\frac{3}{2},\frac{5}{2},-p,\frac{5}{2},\right.$$
$$\left.\left.-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\Bigg)\Bigg/$$
$$\left(-3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2},-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2},1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+3\,(a+b)\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{5}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right)\text{Tan}[e+f\,x]^2\right)+$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2},-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right.$$
$$(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^p\,\left(\text{Sec}[e+f\,x]^2\right)^{-\frac{3}{2}+p}\,\text{Tan}[e+f\,x]$$
$$\left(2\,\left(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2},1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+3\right.\right.$$
$$\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right)$$
$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-3\,(a+b)\,\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2},1-p,\right.\right.$$
$$\left.\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\text{AppellF1}\left[\frac{3}{2},\right.$$
$$\left.\left.\frac{5}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$
$$\text{Tan}[e+f\,x]^2\,\left(-2\,b\,p\,\left(-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\left[\frac{5}{2},\frac{3}{2},2-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,\right.\right.\right.$$
$$\left.-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{9}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2},1-p,\right.$$
$$\left.\left.\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+3$$
$$(a+b)\,\left(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\left[\frac{5}{2},\frac{5}{2},1-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,\right.\right.$$
$$\left.-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-3\,\text{AppellF1}\left[\frac{5}{2},\frac{7}{2},-p,\right.$$
$$\left.\left.\left.\left.\left.\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\right)\right)\Bigg/$$
$$\left(-3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2},-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{3}{2},1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+3\,(a+b)\right.$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{5}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Tan}[e+f x]^2\Bigg)^2\Bigg)\Bigg)\Bigg)$$

Problem 303: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f x]^3\left(a+b\,\text{Sec}[e+f x]^2\right)^p dx$$

Optimal (type 6, 124 leaves, 5 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},-1+p,-p,\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\left(\text{Cos}[e+f x]^2\right)^p\left(b+a\,\text{Cos}[e+f x]^2\right)^{-p}\left(a+b\,\text{Sec}[e+f x]^2\right)^p\text{Sin}[e+f x]\left(a+b-a\,\text{Sin}[e+f x]^2\right)^p\left(1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 6, 1987 leaves):

$$-\Bigg(\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$
$$\left(a+2b+a\,\text{Cos}[2(e+f x)]\right)^p\left(\text{Sec}[e+f x]^2\right)^{-\frac{7}{2}+p}\left(a+b\,\text{Sec}[e+f x]^2\right)^p\text{Sin}[e+f x]\Bigg)\Bigg/$$
$$\Bigg(f\Bigg(-3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$
$$\Bigg(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$
$$5\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Bigg)\text{Tan}[e+f x]^2\Bigg)$$
$$\Bigg(-\Bigg(\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$
$$\left(a+2b+a\,\text{Cos}[2(e+f x)]\right)^p\left(\text{Sec}[e+f x]^2\right)^{-\frac{3}{2}+p}\Bigg)\Bigg/$$
$$\Bigg(-3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$
$$\Bigg(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+5\,(a+b)$$
$$\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Bigg)\text{Tan}[e+f x]^2\Bigg)\Bigg)+$$
$$\Bigg(6\,a\,(a+b)\,p\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$
$$\left(a+2b+a\,\text{Cos}[2(e+f x)]\right)^{-1+p}\left(\text{Sec}[e+f x]^2\right)^{-\frac{5}{2}+p}\text{Sin}[2(e+f x)]\,\text{Tan}[e+f x]\Bigg)\Bigg/$$
$$\Bigg(-3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$
$$\Bigg(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+5\,(a+b)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Big)\,\text{Tan}[e+f x]^2\Big)-$$

$$\Big(6\,(a+b)\,\left(-\frac{5}{2}+p\right)\text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$

$$(a+2b+a\,\text{Cos}[2\,(e+f x)])^p\,\left(\text{Sec}[e+f x]^2\right)^{-\frac{5}{2}+p}\,\text{Tan}[e+f x]^2\Big)\Big/$$

$$\Big(-3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$

$$\Big(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+5\,(a+b)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Big)\,\text{Tan}[e+f x]^2\Big)-$$

$$\Big(3\,(a+b)\,(a+2b+a\,\text{Cos}[2\,(e+f x)])^p\,\left(\text{Sec}[e+f x]^2\right)^{-\frac{5}{2}+p}\,\text{Tan}[e+f x]$$

$$\Big(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{5}{3}\,\text{AppellF1}\Big[\frac{3}{2},\frac{7}{2},-p,\frac{5}{2},$$

$$-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)\Big)\Big/$$

$$\Big(-3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$

$$\Big(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+5\,(a+b)$$

$$\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Big)\,\text{Tan}[e+f x]^2\Big)+$$

$$\Big(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{5}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$

$$(a+2b+a\,\text{Cos}[2\,(e+f x)])^p\,\left(\text{Sec}[e+f x]^2\right)^{-\frac{5}{2}+p}\,\text{Tan}[e+f x]$$

$$\Big(2\,\Big(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+5$$

$$(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Big)$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-3\,(a+b)\,\Big(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{2},1-p,$$

$$\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{5}{3}\,\text{AppellF1}\Big[$$

$$\frac{3}{2},\frac{7}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)+$$

$$\text{Tan}[e+f x]^2\,\Big(-2\,b\,p\,\Big(-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\Big[\frac{5}{2},\frac{5}{2},2-p,\frac{7}{2},-\text{Tan}[e+f x]^2,$$

$$-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-3\,\text{AppellF1}\Big[\frac{5}{2},\frac{7}{2},1-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Bigg)+5\,(a+b)\left(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\Big[\frac{5}{2},\frac{7}{2},1-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{21}{5}\,\text{AppellF1}\Big[\frac{5}{2},\frac{9}{2},-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(-3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},\frac{5}{2},-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]+\Bigg(-2\,b\,p\,\text{AppellF1}\Big[\frac{3}{2},\frac{5}{2},1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]+5\,(a+b)\,\text{AppellF1}\Big[\frac{3}{2},\frac{7}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\Bigg)\,\text{Tan}[e+f\,x]^2\Bigg)^2\Bigg)\Bigg)\Bigg)$$

Problem 304: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f\,x]^5\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 6, 124 leaves, 5 steps):

$$\frac{1}{f}\text{AppellF1}\Big[\frac{1}{2},-2+p,-p,\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\left(\text{Cos}[e+f\,x]^2\right)^p\,\left(b+a\,\text{Cos}[e+f\,x]^2\right)^{-p}\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\,\text{Sin}[e+f\,x]\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^p\,\left(1-\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right)^{-p}$$

Result (type 6, 1997 leaves):

$$-\Bigg(\Bigg(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},\frac{7}{2},-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]^4\,\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)^p\,\left(\text{Sec}[e+f\,x]^2\right)^{-\frac{7}{2}+p}\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\,\text{Sin}[e+f\,x]\Bigg)\Bigg/$$

$$\Bigg(f\,\Bigg(-3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},\frac{7}{2},-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]+\Bigg(-2\,b\,p\,\text{AppellF1}\Big[\frac{3}{2},\frac{7}{2},1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]+7\,(a+b)\,\text{AppellF1}\Big[\frac{3}{2},\frac{9}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\Bigg)\,\text{Tan}[e+f\,x]^2\Bigg)$$

$$\Bigg(-\Bigg(\Bigg(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},\frac{7}{2},-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\Big]\,\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)^p\,\left(\text{Sec}[e+f\,x]^2\right)^{-\frac{5}{2}+p}\Bigg)\Bigg/$$

$$\left(-3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{7}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\left(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+7\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{9}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Tan}[e+f x]^2\right)\Bigg)+$$

$$\left(6\,a\,(a+b)\,p\,\text{AppellF1}\left[\frac{1}{2},\frac{7}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right](a+2b+a\,\text{Cos}[2(e+f x)])^{-1+p}\left(\text{Sec}[e+f x]^2\right)^{-\frac{7}{2}+p}\text{Sin}[2(e+f x)]\,\text{Tan}[e+f x]\right)\Big/$$

$$\left(-3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{7}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\left(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+7\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{9}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Tan}[e+f x]^2\right)-$$

$$\left(6\,(a+b)\left(-\frac{7}{2}+p\right)\text{AppellF1}\left[\frac{1}{2},\frac{7}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right](a+2b+a\,\text{Cos}[2(e+f x)])^{p}\left(\text{Sec}[e+f x]^2\right)^{-\frac{7}{2}+p}\text{Tan}[e+f x]^2\right)\Big/$$

$$\left(-3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{7}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\left(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+7\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{9}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Tan}[e+f x]^2\right)-$$

$$\Bigg(3\,(a+b)\,(a+2b+a\,\text{Cos}[2(e+f x)])^{p}\left(\text{Sec}[e+f x]^2\right)^{-\frac{7}{2}+p}\text{Tan}[e+f x]\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{7}{3}\text{AppellF1}\left[\frac{3}{2},\frac{9}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\Bigg)\Big/$$

$$\left(-3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{7}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\left(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+7\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{9}{2},-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Tan}[e+f x]^2\right)+$$

$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{7}{2},-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$

$$\left(a+2b+a\,\text{Cos}\left[2\,(e+f\,x)\right]\right)^p\,\left(\text{Sec}[e+f\,x]^2\right)^{-\frac{7}{2}+p}\,\text{Tan}[e+f\,x]$$

$$\left(2\left(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+7\right.\right.$$

$$\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},\frac{9}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right)$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-3\,(a+b)\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},1-p,\right.\right.$$

$$\left.\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{7}{3}\,\text{AppellF1}\Big[$$

$$\left.\frac{3}{2},\frac{9}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Bigg)+$$

$$\text{Tan}[e+f\,x]^2\left(-2\,b\,p\left(-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\left[\frac{5}{2},\frac{7}{2},2-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,\right.\right.\right.$$

$$\left.-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{21}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{9}{2},1-p,\right.$$

$$\left.\left.\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+7$$

$$(a+b)\left(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\left[\frac{5}{2},\frac{9}{2},1-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,\right.\right.$$

$$\left.-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{27}{5}\,\text{AppellF1}\left[\frac{5}{2},\frac{11}{2},-p,\right.$$

$$\left.\left.\left.\left.\left.\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\right)\right)\Bigg/$$

$$\left(-3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\frac{7}{2},-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\right.$$

$$\left(-2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\frac{7}{2},1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+7\,(a+b)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\frac{9}{2},-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right)\text{Tan}[e+f\,x]^2\right)^2\right)\right)$$

Problem 308: Result more than twice size of optimal antiderivative.

$$\int\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 6, 83 leaves, 3 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},1,-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]$$

$$\text{Tan}[e+f\,x]\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^p\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-p}$$

Result (type 6, 2137 leaves):

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Cos}[e+f\,x]\right.$$
$$\left.(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^p\,\left(\text{Sec}[e+f\,x]^2\right)^p\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\,\text{Sin}[e+f\,x]\right)\Big/$$
$$\left(f\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+\right.\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-\right.$$
$$\left.\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)$$
$$\left(\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right.\right.$$
$$\left.(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^p\,\left(\text{Sec}[e+f\,x]^2\right)^{-1+p}\right)\Big/$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-\right.$$
$$\left.\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)-$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right.$$
$$\left.(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^p\,\left(\text{Sec}[e+f\,x]^2\right)^p\,\text{Sin}[e+f\,x]^2\right)\Big/$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-\right.$$
$$\left.\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)+$$
$$\left(6\,(a+b)\,p\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right.$$
$$\left.(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^p\,\left(\text{Sec}[e+f\,x]^2\right)^p\,\text{Sin}[e+f\,x]^2\right)\Big/$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-\right.$$
$$\left.\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)-$$
$$\left(6\,a\,(a+b)\,p\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Cos}[e+f\,x]\right.$$

$$\left(a+2\,b+a\,\mathrm{Cos}\left[2\,\left(e+f\,x\right)\right]\right)^{-1+p}\,\left(\mathrm{Sec}\left[e+f\,x\right]^2\right)^p\,\mathrm{Sin}\left[e+f\,x\right]\,\mathrm{Sin}\left[2\,\left(e+f\,x\right)\right]\Big)\Big/$$

$$\Big(3\,\left(a+b\right)\,\mathrm{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]+$$

$$2\,\Big(b\,p\,\mathrm{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]-$$

$$\left(a+b\right)\,\mathrm{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]\Big)\,\mathrm{Tan}[e+f\,x]^2\Big)+$$

$$\Big(3\,\left(a+b\right)\,\mathrm{Cos}[e+f\,x]\,\left(a+2\,b+a\,\mathrm{Cos}\left[2\,\left(e+f\,x\right)\right]\right)^p\,\left(\mathrm{Sec}[e+f\,x]^2\right)^p\,\mathrm{Sin}[e+f\,x]$$

$$\Big(\frac{1}{3\,\left(a+b\right)}2\,b\,p\,\mathrm{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]$$

$$\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]-\frac{2}{3}\,\mathrm{AppellF1}\Big[\frac{3}{2},-p,2,\frac{5}{2},$$

$$-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\Big]\,\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]\Big)\Big)\Big/$$

$$\Big(3\,\left(a+b\right)\,\mathrm{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]+$$

$$2\,\Big(b\,p\,\mathrm{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]-$$

$$\left(a+b\right)\,\mathrm{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]\Big)\,\mathrm{Tan}[e+f\,x]^2\Big)-$$

$$\Big(3\,\left(a+b\right)\,\mathrm{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]\,\mathrm{Cos}[e+f\,x]$$

$$\left(a+2\,b+a\,\mathrm{Cos}\left[2\,\left(e+f\,x\right)\right]\right)^p\,\left(\mathrm{Sec}[e+f\,x]^2\right)^p\,\mathrm{Sin}[e+f\,x]$$

$$\Big(4\,\Big(b\,p\,\mathrm{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]-$$

$$\left(a+b\right)\,\mathrm{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]\Big)$$

$$\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]+3\,\left(a+b\right)\,\Big(\frac{1}{3\,\left(a+b\right)}2\,b\,p\,\mathrm{AppellF1}\Big[\frac{3}{2},1-p,1,\frac{5}{2},$$

$$-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\Big]\,\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]-\frac{2}{3}\,\mathrm{AppellF1}\Big[\frac{3}{2},$$

$$-p,2,\frac{5}{2},-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\Big]\,\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]\Big)+$$

$$2\,\mathrm{Tan}[e+f\,x]^2\,\Big(b\,p\,\Big(-\frac{6}{5}\,\mathrm{AppellF1}\left[\frac{5}{2},1-p,2,\frac{7}{2},-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]$$

$$\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]-\frac{1}{5\,\left(a+b\right)}6\,b\,\left(1-p\right)\,\mathrm{AppellF1}\Big[\frac{5}{2},2-p,1,$$

$$\frac{7}{2},-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\Big]\,\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]\Big)-$$

$$(a+b)\left(\frac{1}{5(a+b)}6\,b\,p\,\text{AppellF1}\left[\frac{5}{2},1-p,2,\frac{7}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{12}{5}\,\text{AppellF1}\left[\frac{5}{2},-p,3,\frac{7}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\Bigg)^2\Bigg)\Bigg)$$

Problem 309: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f\,x]^2\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 6, 83 leaves, 3 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Tan}[e+f\,x]\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^p\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-p}$$

Result (type 6, 1914 leaves):

$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^p\,\left(\text{Sec}[e+f\,x]^2\right)^{-2+p}\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\,\text{Sin}[e+f\,x]\Bigg)\Bigg/$$
$$\Bigg(f\,\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},2,1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]-2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},3,-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right)\text{Tan}[e+f\,x]^2\Bigg)$$
$$\Bigg(\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right](a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^p\,\left(\text{Sec}[e+f\,x]^2\right)^{-1+p}\Bigg)\Bigg/$$
$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},2,1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]-\right.$$

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},3,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)-$$

$$\Bigg(6\,a\,(a+b)\,p\,\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$

$$(a+2\,b+a\,\text{Cos}[2\,(e+f x)])^{-1+p}\,\left(\text{Sec}[e+f x]^2\right)^{-2+p}\,\text{Sin}[2\,(e+f x)]\,\text{Tan}[e+f x]\Bigg)\Big/$$

$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$

$$2\,\Bigg(b\,p\,\text{AppellF1}\left[\frac{3}{2},2,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-$$

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},3,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)+$$

$$\Bigg(6\,(a+b)\,(-2+p)\,\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$

$$(a+2\,b+a\,\text{Cos}[2\,(e+f x)])^{p}\,\left(\text{Sec}[e+f x]^2\right)^{-2+p}\,\text{Tan}[e+f x]^2\Bigg)\Big/$$

$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$

$$2\,\Bigg(b\,p\,\text{AppellF1}\left[\frac{3}{2},2,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-$$

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},3,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)+$$

$$\Bigg(3\,(a+b)\,(a+2\,b+a\,\text{Cos}[2\,(e+f x)])^{p}\,\left(\text{Sec}[e+f x]^2\right)^{-2+p}\,\text{Tan}[e+f x]$$

$$\Bigg(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},2,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{4}{3}\,\text{AppellF1}\left[\frac{3}{2},3,-p,\frac{5}{2},\right.$$

$$\left.-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)\Bigg)\Big/$$

$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$

$$2\,\Bigg(b\,p\,\text{AppellF1}\left[\frac{3}{2},2,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-$$

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},3,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)-$$

$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$

$$(a+2\,b+a\,\text{Cos}[2\,(e+f x)])^{p}\,\left(\text{Sec}[e+f x]^2\right)^{-2+p}\,\text{Tan}[e+f x]$$

$$\Bigg(4\,\Bigg(b\,p\,\text{AppellF1}\left[\frac{3}{2},2,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-$$

$$2\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},3,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Bigg)$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+3\,(a+b)\,\Bigg(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},2,1-p,\frac{5}{2},\right.$$

$$\left.-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{4}{3}\,\text{AppellF1}\left[\frac{3}{2},\right.$$

$$\left.3,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)+$$

$$2\,\text{Tan}[e+f x]^2\,\Bigg(b\,p\,\Bigg(-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\left[\frac{5}{2},2,2-p,\frac{7}{2},-\text{Tan}[e+f x]^2,\right.$$

$$\left.-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{12}{5}\,\text{AppellF1}\left[\frac{5}{2},3,1-p,\right.$$

$$\left.\frac{7}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)-$$

$$2\,(a+b)\,\Bigg(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\left[\frac{5}{2},3,1-p,\frac{7}{2},-\text{Tan}[e+f x]^2,\right.$$

$$\left.-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{18}{5}\,\text{AppellF1}\left[\frac{5}{2},4,-p,\right.$$

$$\left.\frac{7}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},2,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+$$

$$2\,\Bigg(b\,p\,\text{AppellF1}\left[\frac{3}{2},2,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-2\,(a+b)$$

$$\text{AppellF1}\left[\frac{3}{2},3,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)^2\Bigg)\Bigg)$$

Problem 310: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f x]^4\,\left(a+b\,\text{Sec}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 83 leaves, 3 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},3,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$

$$\text{Tan}[e+f x]\,\left(a+b+b\,\text{Tan}[e+f x]^2\right)^p\,\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 6, 1912 leaves):

$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},3,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]^3$$

$$(a+2\,b+a\,\text{Cos}[2\,(e+f x)])^p\,\left(\text{Sec}[e+f x]^2\right)^{-3+p}\,\left(a+b\,\text{Sec}[e+f x]^2\right)^p\,\text{Sin}[e+f x]\Bigg)\Bigg/$$

$$\left(f\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},3,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\right.\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},3,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-\right.$$
$$\left.\left.3\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},4,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Tan}[e+f x]^2\right)$$
$$\left(\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},3,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right.\right.$$
$$\left.(a+2b+a\,\text{Cos}[2\,(e+f x)])^p\,\left(\text{Sec}[e+f x]^2\right)^{-2+p}\right)\Big/$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},3,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},3,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-\right.$$
$$\left.\left.3\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},4,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Tan}[e+f x]^2\right)-$$
$$\left(6\,a\,(a+b)\,p\,\text{AppellF1}\left[\frac{1}{2},3,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right.$$
$$\left.(a+2b+a\,\text{Cos}[2\,(e+f x)])^{-1+p}\,\left(\text{Sec}[e+f x]^2\right)^{-3+p}\,\text{Sin}[2\,(e+f x)]\,\text{Tan}[e+f x]\right)\Big/$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},3,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},3,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-\right.$$
$$\left.\left.3\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},4,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Tan}[e+f x]^2\right)+$$
$$\left(6\,(a+b)\,(-3+p)\,\text{AppellF1}\left[\frac{1}{2},3,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right.$$
$$\left.(a+2b+a\,\text{Cos}[2\,(e+f x)])^p\,\left(\text{Sec}[e+f x]^2\right)^{-3+p}\,\text{Tan}[e+f x]^2\right)\Big/$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},3,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},3,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-\right.$$
$$\left.\left.3\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},4,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Tan}[e+f x]^2\right)+$$
$$\left(3\,(a+b)\,(a+2b+a\,\text{Cos}[2\,(e+f x)])^p\,\left(\text{Sec}[e+f x]^2\right)^{-3+p}\,\text{Tan}[e+f x]\right.$$
$$\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},3,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\right.$$
$$\text{Tan}[e+f x]-2\,\text{AppellF1}\left[\frac{3}{2},4,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2$$

$$\text{Tan}[e+f x]\Big)\Big)\Big/\Big(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},3,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]+$$

$$2\,\Big(b\,p\,\text{AppellF1}\Big[\frac{3}{2},3,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]-$$

$$3\,(a+b)\,\text{AppellF1}\Big[\frac{3}{2},4,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\Big)\,\text{Tan}[e+f x]^2\Big)-$$

$$\Big(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},3,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]$$

$$(a+2\,b+a\,\text{Cos}[2\,(e+f x)])^p\,(\text{Sec}[e+f x]^2)^{-3+p}\,\text{Tan}[e+f x]$$

$$\Big(4\,\Big(b\,p\,\text{AppellF1}\Big[\frac{3}{2},3,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]-$$

$$3\,(a+b)\,\text{AppellF1}\Big[\frac{3}{2},4,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\Big)$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+3\,(a+b)\,\Big(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\Big[\frac{3}{2},3,1-p,\frac{5}{2},$$

$$-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-2\,\text{AppellF1}\Big[\frac{3}{2},$$

$$4,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)+$$

$$2\,\text{Tan}[e+f x]^2\,\Big(b\,p\,\Big(-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\Big[\frac{5}{2},3,2-p,\frac{7}{2},-\text{Tan}[e+f x]^2,$$

$$-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{18}{5}\,\text{AppellF1}\Big[\frac{5}{2},4,1-p,$$

$$\frac{7}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)-$$

$$3\,(a+b)\,\Big(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\Big[\frac{5}{2},4,1-p,\frac{7}{2},-\text{Tan}[e+f x]^2,$$

$$-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{24}{5}\,\text{AppellF1}\Big[\frac{5}{2},5,-p,$$

$$\frac{7}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},3,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]+$$

$$2\,\Big(b\,p\,\text{AppellF1}\Big[\frac{3}{2},3,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]-3\,(a+b)$$

$$\text{AppellF1}\Big[\frac{3}{2},4,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\Big)\,\text{Tan}[e+f x]^2\Big)^2\Big)\Big)$$

Problem 311: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f x]^6\,\left(a+b\,\text{Sec}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 83 leaves, 3 steps):

$$\frac{1}{f}\text{AppellF1}\left[\frac{1}{2},4,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Tan}[e+f x]\left(a+b+b\,\text{Tan}[e+f x]^2\right)^p\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 6, 1914 leaves):

$$\left(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},4,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]^5\right.$$
$$\left.(a+2b+a\,\text{Cos}[2(e+f x)])^p\left(\text{Sec}[e+f x]^2\right)^{-4+p}\left(a+b\,\text{Sec}[e+f x]^2\right)^p\text{Sin}[e+f x]\right)\Big/$$
$$\left(f\left(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},4,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\right.\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},4,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-\right.$$
$$\left.\left.4(a+b)\,\text{AppellF1}\left[\frac{3}{2},5,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Tan}[e+f x]^2\right)$$
$$\left(\left(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},4,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right.\right.$$
$$\left.(a+2b+a\,\text{Cos}[2(e+f x)])^p\left(\text{Sec}[e+f x]^2\right)^{-3+p}\right)\Big/$$
$$\left(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},4,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},4,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-\right.$$
$$\left.\left.4(a+b)\,\text{AppellF1}\left[\frac{3}{2},5,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Tan}[e+f x]^2\right)-$$
$$\left(6a(a+b)\,p\,\text{AppellF1}\left[\frac{1}{2},4,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right.$$
$$\left.(a+2b+a\,\text{Cos}[2(e+f x)])^{-1+p}\left(\text{Sec}[e+f x]^2\right)^{-4+p}\text{Sin}[2(e+f x)]\,\text{Tan}[e+f x]\right)\Big/$$
$$\left(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},4,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},4,1-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-\right.$$
$$\left.\left.4(a+b)\,\text{AppellF1}\left[\frac{3}{2},5,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Tan}[e+f x]^2\right)+$$
$$\left(6(a+b)(-4+p)\,\text{AppellF1}\left[\frac{1}{2},4,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right.$$
$$\left.(a+2b+a\,\text{Cos}[2(e+f x)])^p\left(\text{Sec}[e+f x]^2\right)^{-4+p}\text{Tan}[e+f x]^2\right)\Big/$$
$$\left(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},4,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\right.$$

$$
\begin{aligned}
&2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},4,1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]-\right.\\
&\quad\left.\left.4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},5,-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right)\text{Tan}[e+f\,x]^2\right)+\\
&\left(3\,(a+b)\,\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)^p\left(\text{Sec}[e+f\,x]^2\right)^{-4+p}\text{Tan}[e+f\,x]\right.\\
&\quad\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},4,1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right.\\
&\qquad\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{8}{3}\text{AppellF1}\left[\frac{3}{2},5,-p,\frac{5}{2},\right.\\
&\qquad\left.\left.\left.-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\Big/\\
&\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},4,-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\right.\\
&\quad 2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},4,1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]-\right.\\
&\qquad\left.\left.4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},5,-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right)\text{Tan}[e+f\,x]^2\right)-\\
&\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},4,-p,\frac{3}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right.\\
&\quad\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)^p\left(\text{Sec}[e+f\,x]^2\right)^{-4+p}\text{Tan}[e+f\,x]\\
&\quad\left(4\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},4,1-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]-\right.\right.\\
&\qquad\left.4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},5,-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right)\\
&\qquad\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+3\,(a+b)\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},4,1-p,\frac{5}{2},\right.\right.\\
&\qquad\quad\left.-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{8}{3}\text{AppellF1}\left[\frac{3}{2},\right.\\
&\qquad\quad\left.\left.5,-p,\frac{5}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+\\
&\qquad 2\,\text{Tan}[e+f\,x]^2\left(b\,p\left(-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\left[\frac{5}{2},4,2-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,\right.\right.\right.\\
&\qquad\qquad\left.-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{24}{5}\text{AppellF1}\left[\frac{5}{2},5,1-p,\right.\\
&\qquad\qquad\left.\left.\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)-\\
&\qquad\quad 4\,(a+b)\left(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\left[\frac{5}{2},5,1-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,\right.\right.\\
&\qquad\qquad\left.-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-6\,\text{AppellF1}\left[\frac{5}{2},6,-p,\right.
\end{aligned}
$$

$$\left.\left.\left.\left.\left.\frac{7}{2},\ -\text{Tan}[e+f x]^2,\ -\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\right)\right)\right)\Big/$$
$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},\ 4,\ -p,\ \frac{3}{2},\ -\text{Tan}[e+f x]^2,\ -\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},\ 4,\ 1-p,\ \frac{5}{2},\ -\text{Tan}[e+f x]^2,\ -\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-4\,(a+b)\right.$$
$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},\ 5,\ -p,\ \frac{5}{2},\ -\text{Tan}[e+f x]^2,\ -\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right)\text{Tan}[e+f x]^2\right)^2\right)\right)$$

Problem 328: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cot}[e+f x]\,\left(a+b\,\text{Sec}[e+f x]^2\right)^2\,dx$$

Optimal (type 3, 53 leaves, 4 steps):

$$-\frac{b\,(2\,a+b)\,\text{Log}[\text{Cos}[e+f x]]}{f}+\frac{(a+b)^2\,\text{Log}[\text{Sin}[e+f x]]}{f}+\frac{b^2\,\text{Sec}[e+f x]^2}{2\,f}$$

Result (type 3, 180 leaves):

$$\frac{1}{4\,f}\left(2\,b^2+2\,i\,a^2\,f\,x+4\,i\,a\,b\,f\,x+2\,i\,b^2\,f\,x-4\,i\,(a+b)^2\,\text{ArcTan}[\text{Tan}[e+f x]]\,\text{Cos}[e+f x]^2-\right.$$
$$4\,a\,b\,\text{Log}[\text{Cos}[e+f x]]-2\,b^2\,\text{Log}[\text{Cos}[e+f x]]+a^2\,\text{Log}\left[\text{Sin}[e+f x]^2\right]+$$
$$2\,a\,b\,\text{Log}\left[\text{Sin}[e+f x]^2\right]+b^2\,\text{Log}\left[\text{Sin}[e+f x]^2\right]+\text{Cos}[2\,(e+f x)]$$
$$\left.\left(-2\,b\,(2\,a+b)\,\text{Log}[\text{Cos}[e+f x]]+(a+b)^2\,\left(2\,i\,f\,x+\text{Log}\left[\text{Sin}[e+f x]^2\right]\right)\right)\right)\text{Sec}[e+f x]^2$$

Problem 329: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cot}[e+f x]^3\,\left(a+b\,\text{Sec}[e+f x]^2\right)^2\,dx$$

Optimal (type 3, 57 leaves, 4 steps):

$$-\frac{(a+b)^2\,\text{Csc}[e+f x]^2}{2\,f}-\frac{b^2\,\text{Log}[\text{Cos}[e+f x]]}{f}-\frac{\left(a^2-b^2\right)\,\text{Log}[\text{Sin}[e+f x]]}{f}$$

Result (type 3, 163 leaves):

$$\frac{1}{4\,f}\text{Csc}[e+f x]^2\,\left(-2\,a^2-4\,a\,b-2\,b^2-2\,i\,a^2\,f\,x+2\,i\,b^2\,f\,x-\right.$$
$$2\,b^2\,\text{Log}[\text{Cos}[e+f x]]-a^2\,\text{Log}\left[\text{Sin}[e+f x]^2\right]+b^2\,\text{Log}\left[\text{Sin}[e+f x]^2\right]+$$
$$\text{Cos}[2\,(e+f x)]\,\left(2\,b^2\,\text{Log}[\text{Cos}[e+f x]]+\left(a^2-b^2\right)\,\left(2\,i\,f\,x+\text{Log}\left[\text{Sin}[e+f x]^2\right]\right)\right)+$$
$$\left.4\,i\,\left(a^2-b^2\right)\,\text{ArcTan}[\text{Tan}[e+f x]]\,\text{Sin}[e+f x]^2\right)$$

Problem 330: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

$$\int \text{Cot}[e+f x]^5 \left(a+b\,\text{Sec}[e+f x]^2\right)^2 dx$$

Optimal (type 3, 51 leaves, 4 steps):

$$\frac{a\,(a+b)\,\text{Csc}[e+f x]^2}{f}-\frac{(a+b)^2\,\text{Csc}[e+f x]^4}{4 f}+\frac{a^2\,\text{Log}[\text{Sin}[e+f x]]}{f}$$

Result (type 3, 132 leaves):

$$\Big(\left(b+a\,\text{Cos}[e+f x]^2\right)^2 \Big(-4\,i\,a^2\,\text{ArcTan}[\text{Tan}[e+f x]]\,\text{Cos}[e+f x]^4+4\,a\,(a+b)\,\text{Cos}[e+f x]^2\,\text{Cot}[e+f x]^2-(a+b)^2\,\text{Cot}[e+f x]^4+2\,a^2\,\text{Cos}[e+f x]^4\left(2\,i\,f x+\text{Log}\left[\text{Sin}[e+f x]^2\right]\right)\Big)\,\text{Sec}[e+f x]^4\Big)\Big/\left(f\,\left(a+2\,b+a\,\text{Cos}[2\,(e+f x)]\right)^2\right)$$

Problem 331: Result more than twice size of optimal antiderivative.

$$\int \left(a+b\,\text{Sec}[e+f x]^2\right)^2\,\text{Tan}[e+f x]^6\,dx$$

Optimal (type 3, 95 leaves, 4 steps):

$$-a^2 x+\frac{a^2\,\text{Tan}[e+f x]}{f}-\frac{a^2\,\text{Tan}[e+f x]^3}{3 f}+\frac{a^2\,\text{Tan}[e+f x]^5}{5 f}+\frac{b\,(2 a+b)\,\text{Tan}[e+f x]^7}{7 f}+\frac{b^2\,\text{Tan}[e+f x]^9}{9 f}$$

Result (type 3, 275 leaves):

$$-\frac{1}{315\,f\,\left(a+2\,b+a\,\text{Cos}[2\,(e+f x)]\right)^2}\,4\,\left(b+a\,\text{Cos}[e+f x]^2\right)^2\,\text{Sec}[e+f x]^9\,\Big(315\,a^2\,f\,x\,\text{Cos}[e+f x]^9-35\,b^2\,\text{Sec}[e]\,\text{Sin}[f x]-5\,(18\,a-19\,b)\,b\,\text{Cos}[e+f x]^2\,\text{Sec}[e]\,\text{Sin}[f x]-3\,\left(21\,a^2-90\,a\,b+25\,b^2\right)\,\text{Cos}[e+f x]^4\,\text{Sec}[e]\,\text{Sin}[f x]+\left(231\,a^2-270\,a\,b+5\,b^2\right)\,\text{Cos}[e+f x]^6\,\text{Sec}[e]\,\text{Sin}[f x]-\left(483\,a^2-90\,a\,b-10\,b^2\right)\,\text{Cos}[e+f x]^8\,\text{Sec}[e]\,\text{Sin}[f x]-35\,b^2\,\text{Cos}[e+f x]\,\text{Tan}[e]-5\,(18\,a-19\,b)\,b\,\text{Cos}[e+f x]^3\,\text{Tan}[e]-3\,\left(21\,a^2-90\,a\,b+25\,b^2\right)\,\text{Cos}[e+f x]^5\,\text{Tan}[e]+\left(231\,a^2-270\,a\,b+5\,b^2\right)\,\text{Cos}[e+f x]^7\,\text{Tan}[e]\Big)$$

Problem 332: Result more than twice size of optimal antiderivative.

$$\int \left(a+b\,\text{Sec}[e+f x]^2\right)^2\,\text{Tan}[e+f x]^4\,dx$$

Optimal (type 3, 77 leaves, 4 steps):

$$a^2 x-\frac{a^2\,\text{Tan}[e+f x]}{f}+\frac{a^2\,\text{Tan}[e+f x]^3}{3 f}+\frac{b\,(2 a+b)\,\text{Tan}[e+f x]^5}{5 f}+\frac{b^2\,\text{Tan}[e+f x]^7}{7 f}$$

Result (type 3, 395 leaves):

$$\frac{1}{13440\,f}\mathrm{Sec}[e]\,\mathrm{Sec}[e+fx]^7\left(3675\,a^2 f x \mathrm{Cos}[fx]+3675\,a^2 f x \mathrm{Cos}[2e+fx]+2205\,a^2 f x \mathrm{Cos}[2e+3fx]+2205\,a^2 f x \mathrm{Cos}[4e+3fx]+735\,a^2 f x \mathrm{Cos}[4e+5fx]+735\,a^2 f x \mathrm{Cos}[6e+5fx]+105\,a^2 f x \mathrm{Cos}[6e+7fx]+105\,a^2 f x \mathrm{Cos}[8e+7fx]-5320\,a^2 \mathrm{Sin}[fx]+1680\,a b \mathrm{Sin}[fx]+840\,b^2 \mathrm{Sin}[fx]+4480\,a^2 \mathrm{Sin}[2e+fx]-1260\,a b \mathrm{Sin}[2e+fx]+420\,b^2 \mathrm{Sin}[2e+fx]-3780\,a^2 \mathrm{Sin}[2e+3fx]+924\,a b \mathrm{Sin}[2e+3fx]-168\,b^2 \mathrm{Sin}[2e+3fx]+2100\,a^2 \mathrm{Sin}[4e+3fx]-840\,a b \mathrm{Sin}[4e+3fx]-420\,b^2 \mathrm{Sin}[4e+3fx]-1540\,a^2 \mathrm{Sin}[4e+5fx]+168\,a b \mathrm{Sin}[4e+5fx]+84\,b^2 \mathrm{Sin}[4e+5fx]+420\,a^2 \mathrm{Sin}[6e+5fx]-420\,a b \mathrm{Sin}[6e+5fx]-280\,a^2 \mathrm{Sin}[6e+7fx]+84\,a b \mathrm{Sin}[6e+7fx]+12\,b^2 \mathrm{Sin}[6e+7fx]\right)$$

Problem 333: Result more than twice size of optimal antiderivative.

$$\int \left(a+b\,\mathrm{Sec}[e+fx]^2\right)^2 \mathrm{Tan}[e+fx]^2\, dx$$

Optimal (type 3, 59 leaves, 4 steps):

$$-a^2 x+\frac{a^2 \mathrm{Tan}[e+fx]}{f}+\frac{b\,(2a+b)\,\mathrm{Tan}[e+fx]^3}{3f}+\frac{b^2 \mathrm{Tan}[e+fx]^5}{5f}$$

Result (type 3, 281 leaves):

$$-\frac{1}{480\,f}\mathrm{Sec}[e]\,\mathrm{Sec}[e+fx]^5\left(150\,a^2 f x \mathrm{Cos}[fx]+150\,a^2 f x \mathrm{Cos}[2e+fx]+75\,a^2 f x \mathrm{Cos}[2e+3fx]+75\,a^2 f x \mathrm{Cos}[4e+3fx]+15\,a^2 f x \mathrm{Cos}[4e+5fx]+15\,a^2 f x \mathrm{Cos}[6e+5fx]-180\,a^2 \mathrm{Sin}[fx]+80\,a b \mathrm{Sin}[fx]-20\,b^2 \mathrm{Sin}[fx]+120\,a^2 \mathrm{Sin}[2e+fx]-120\,a b \mathrm{Sin}[2e+fx]-60\,b^2 \mathrm{Sin}[2e+fx]-120\,a^2 \mathrm{Sin}[2e+3fx]+40\,a b \mathrm{Sin}[2e+3fx]+20\,b^2 \mathrm{Sin}[2e+3fx]+30\,a^2 \mathrm{Sin}[4e+3fx]-60\,a b \mathrm{Sin}[4e+3fx]-30\,a^2 \mathrm{Sin}[4e+5fx]+20\,a b \mathrm{Sin}[4e+5fx]+4\,b^2 \mathrm{Sin}[4e+5fx]\right)$$

Problem 334: Result more than twice size of optimal antiderivative.

$$\int \left(a+b\,\mathrm{Sec}[e+fx]^2\right)^2 dx$$

Optimal (type 3, 40 leaves, 4 steps):

$$a^2 x+\frac{b\,(2a+b)\,\mathrm{Tan}[e+fx]}{f}+\frac{b^2 \mathrm{Tan}[e+fx]^3}{3f}$$

Result (type 3, 106 leaves):

$$\left(4\left(b+a\,\mathrm{Cos}[e+fx]^2\right)^2 \mathrm{Sec}[e+fx]^3\left(3a^2 f x \mathrm{Cos}[e+fx]^3+b^2 \mathrm{Sec}[e]\,\mathrm{Sin}[fx]+2b\,(3a+b)\,\mathrm{Cos}[e+fx]^2\,\mathrm{Sec}[e]\,\mathrm{Sin}[fx]+b^2 \mathrm{Cos}[e+fx]\,\mathrm{Tan}[e]\right)\right)\Big/\left(3f\left(a+2b+a\,\mathrm{Cos}[2(e+fx)]\right)^2\right)$$

Problem 335: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Cot}[e+fx]^2 \left(a+b\,\mathrm{Sec}[e+fx]^2\right)^2 dx$$

Optimal (type 3, 36 leaves, 4 steps):

$$-a^2 x - \frac{(a+b)^2 \operatorname{Cot}[e+f x]}{f} + \frac{b^2 \operatorname{Tan}[e+f x]}{f}$$

Result (type 3, 82 leaves):

$$-\left(\left(4 \left(b + a \operatorname{Cos}[e+f x]^2\right)^2 \operatorname{Sec}[e+f x] \left(a^2 f x \operatorname{Cos}[e+f x] - \left((a+b)^2 \operatorname{Cot}[e+f x] \operatorname{Csc}[e] + b^2 \operatorname{Sec}[e]\right) \operatorname{Sin}[f x]\right)\right) \Big/ \left(f \left(a + 2 b + a \operatorname{Cos}[2 (e+f x)]\right)^2\right)\right)$$

Problem 336: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cot}[e+f x]^4 \left(a + b \operatorname{Sec}[e+f x]^2\right)^2 dx$$

Optimal (type 3, 45 leaves, 4 steps):

$$a^2 x + \frac{\left(a^2 - b^2\right) \operatorname{Cot}[e+f x]}{f} - \frac{(a+b)^2 \operatorname{Cot}[e+f x]^3}{3 f}$$

Result (type 3, 160 leaves):

$$\frac{1}{24 f} \operatorname{Csc}[e] \operatorname{Csc}[e+f x]^3 \left(9 a^2 f x \operatorname{Cos}[f x] - 9 a^2 f x \operatorname{Cos}[2 e+f x] - 3 a^2 f x \operatorname{Cos}[2 e+3 f x] + 3 a^2 f x \operatorname{Cos}[4 e+3 f x] - 12 a^2 \operatorname{Sin}[f x] + 12 b^2 \operatorname{Sin}[f x] - 12 a^2 \operatorname{Sin}[2 e+f x] - 12 a b \operatorname{Sin}[2 e+f x] + 8 a^2 \operatorname{Sin}[2 e+3 f x] + 4 a b \operatorname{Sin}[2 e+3 f x] - 4 b^2 \operatorname{Sin}[2 e+3 f x]\right)$$

Problem 337: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cot}[e+f x]^6 \left(a + b \operatorname{Sec}[e+f x]^2\right)^2 dx$$

Optimal (type 3, 65 leaves, 4 steps):

$$-a^2 x - \frac{a^2 \operatorname{Cot}[e+f x]}{f} + \frac{\left(a^2 - b^2\right) \operatorname{Cot}[e+f x]^3}{3 f} - \frac{(a+b)^2 \operatorname{Cot}[e+f x]^5}{5 f}$$

Result (type 3, 256 leaves):

$$\frac{1}{480 f} \operatorname{Csc}[e] \operatorname{Csc}[e+f x]^5 \left(-150 a^2 f x \operatorname{Cos}[f x] + 150 a^2 f x \operatorname{Cos}[2 e+f x] + 75 a^2 f x \operatorname{Cos}[2 e+3 f x] - 75 a^2 f x \operatorname{Cos}[4 e+3 f x] - 15 a^2 f x \operatorname{Cos}[4 e+5 f x] + 15 a^2 f x \operatorname{Cos}[6 e+5 f x] + 280 a^2 \operatorname{Sin}[f x] + 120 a b \operatorname{Sin}[f x] + 20 b^2 \operatorname{Sin}[f x] + 180 a^2 \operatorname{Sin}[2 e+f x] - 60 b^2 \operatorname{Sin}[2 e+f x] - 140 a^2 \operatorname{Sin}[2 e+3 f x] + 20 b^2 \operatorname{Sin}[2 e+3 f x] - 90 a^2 \operatorname{Sin}[4 e+3 f x] - 60 a b \operatorname{Sin}[4 e+3 f x] + 46 a^2 \operatorname{Sin}[4 e+5 f x] + 12 a b \operatorname{Sin}[4 e+5 f x] - 4 b^2 \operatorname{Sin}[4 e+5 f x]\right)$$

Problem 338: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]^5}{a+b\,\text{Sec}[e+f x]^2}\,dx$$

Optimal (type 3, 69 leaves, 4 steps):

$$\frac{(a+2 b)\,\text{Log}[\text{Cos}[e+f x]]}{b^2 f}-\frac{(a+b)^2\,\text{Log}\left[b+a\,\text{Cos}[e+f x]^2\right]}{2 a b^2 f}+\frac{\text{Sec}[e+f x]^2}{2 b f}$$

Result (type 3, 180 leaves):

$$\frac{1}{8 a b^2 f\left(a+b\,\text{Sec}[e+f x]^2\right)}\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)\Big(2 a b+2 a (a+2 b)\,\text{Log}[\text{Cos}[e+f x]]-a^2\,\text{Log}[a+2 b+a\,\text{Cos}[2 (e+f x)]]-2 a b\,\text{Log}[a+2 b+a\,\text{Cos}[2 (e+f x)]]-b^2\,\text{Log}[a+2 b+a\,\text{Cos}[2 (e+f x)]]+\text{Cos}[2 (e+f x)]\left(2 a (a+2 b)\,\text{Log}[\text{Cos}[e+f x]]-(a+b)^2\,\text{Log}[a+2 b+a\,\text{Cos}[2 (e+f x)]]\right)\Big)\,\text{Sec}[e+f x]^4$$

Problem 343: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[e+f x]^5}{a+b\,\text{Sec}[e+f x]^2}\,dx$$

Optimal (type 3, 108 leaves, 4 steps):

$$\frac{(2 a+3 b)\,\text{Csc}[e+f x]^2}{2 (a+b)^2 f}-\frac{\text{Csc}[e+f x]^4}{4 (a+b) f}+\frac{b^3\,\text{Log}\left[b+a\,\text{Cos}[e+f x]^2\right]}{2 a (a+b)^3 f}+\frac{\left(a^2+3 a b+3 b^2\right)\text{Log}[\text{Sin}[e+f x]]}{(a+b)^3 f}$$

Result (type 3, 464 leaves):

$$\frac{1}{32 a (a+b)^3 f\left(-1+\text{Cot}[e]^2\right)\left(a+b\,\text{Sec}[e+f x]^2\right)}\text{Cos}[2 e]\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)\text{Csc}[e]^2\,\text{Csc}[e+f x]^4\,\text{Sec}[e+f x]^2\Big(4 a^3+12 a^2 b+8 a b^2+6 i a^3 f x+18 i a^2 b f x+18 i a b^2 f x+2 i a^3 f x\,\text{Cos}[4 (e+f x)]+6 i a^2 b f x\,\text{Cos}[4 (e+f x)]+6 i a b^2 f x\,\text{Cos}[4 (e+f x)]+3 b^3\,\text{Log}[a+2 b+a\,\text{Cos}[2 (e+f x)]]+b^3\,\text{Cos}[4 (e+f x)]\,\text{Log}[a+2 b+a\,\text{Cos}[2 (e+f x)]]+3 a^3\,\text{Log}\left[\text{Sin}[e+f x]^2\right]+9 a^2 b\,\text{Log}\left[\text{Sin}[e+f x]^2\right]+9 a b^2\,\text{Log}\left[\text{Sin}[e+f x]^2\right]+a^3\,\text{Cos}[4 (e+f x)]\,\text{Log}\left[\text{Sin}[e+f x]^2\right]+3 a^2 b\,\text{Cos}[4 (e+f x)]\,\text{Log}\left[\text{Sin}[e+f x]^2\right]+3 a b^2\,\text{Cos}[4 (e+f x)]\,\text{Log}\left[\text{Sin}[e+f x]^2\right]+4\,\text{Cos}[2 (e+f x)]\Big(-b^3\,\text{Log}[a+2 b+a\,\text{Cos}[2 (e+f x)]]+a\Big(a^2 (-2-2 i f x)+3 b^2 (-1-2 i f x)+a b (-5-6 i f x)-\left(a^2+3 a b+3 b^2\right)\text{Log}\left[\text{Sin}[e+f x]^2\right]\Big)\Big)-16 i a\left(a^2+3 a b+3 b^2\right)\text{ArcTan}[\text{Tan}[e+f x]]\,\text{Sin}[e+f x]^4\Big)$$

Problem 344: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Tan}[e+f x]^6}{a+b\,\mathrm{Sec}[e+f x]^2}\,dx$$

Optimal (type 3, 83 leaves, 7 steps):

$$-\frac{x}{a}+\frac{(a+b)^{5/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{b}\,\mathrm{Tan}[e+f x]}{\sqrt{a+b}}\right]}{a\,b^{5/2}\,f}-\frac{(a+2 b)\,\mathrm{Tan}[e+f x]}{b^2 f}+\frac{\mathrm{Tan}[e+f x]^3}{3 b f}$$

Result (type 3, 229 leaves):

$$\Bigg((a+2 b+a\,\mathrm{Cos}[2 (e+f x)])\,\mathrm{Sec}[e+f x]^2 \Bigg(-\frac{3 x}{a}-\Bigg(3 (a+b)^{5/2}\,\mathrm{ArcTan}\Big[(\mathrm{Sec}[f x]\,(\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]) (-(a+2 b)\,\mathrm{Sin}[f x]+a\,\mathrm{Sin}[2 e+f x]))\Big/\Big(2\sqrt{a+b}\,\sqrt{b\,(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^4}\Big)\Big] (\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e])\Bigg)\Bigg/\Big(a\,b^2 f\sqrt{b\,(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^4}\Big)-\frac{(3 a+7 b)\,\mathrm{Sec}[e]\,\mathrm{Sec}[e+f x]\,\mathrm{Sin}[f x]}{b^2 f}+\frac{\mathrm{Sec}[e]\,\mathrm{Sec}[e+f x]^3\,\mathrm{Sin}[f x]}{b f}+\frac{\mathrm{Sec}[e+f x]^2\,\mathrm{Tan}[e]}{b f}\Bigg)\Bigg)\Bigg/\Big(6\,(a+b\,\mathrm{Sec}[e+f x]^2)\Big)$$

Problem 345: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Tan}[e+f x]^4}{a+b\,\mathrm{Sec}[e+f x]^2}\,dx$$

Optimal (type 3, 59 leaves, 6 steps):

$$\frac{x}{a}-\frac{(a+b)^{3/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{b}\,\mathrm{Tan}[e+f x]}{\sqrt{a+b}}\right]}{a\,b^{3/2}\,f}+\frac{\mathrm{Tan}[e+f x]}{b f}$$

Result (type 3, 206 leaves):

$$\Bigg((a+2 b+a\,\mathrm{Cos}[2 (e+f x)])\,\mathrm{Sec}[e+f x]^2 \Bigg((a+b)^2\,\mathrm{ArcTan}\Big[(\mathrm{Sec}[f x]\,(\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e]) (-(a+2 b)\,\mathrm{Sin}[f x]+a\,\mathrm{Sin}[2 e+f x]))\Big/\Big(2\sqrt{a+b}\,\sqrt{b\,(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^4}\Big)\Big]\,(\mathrm{Cos}[2 e]-i\,\mathrm{Sin}[2 e])+\sqrt{a+b}\,\sqrt{b\,(i\,\mathrm{Cos}[e]+\mathrm{Sin}[e])^4}\,(b f x+a\,\mathrm{Sec}[e]\,\mathrm{Sec}[e+f x]\,\mathrm{Sin}[f x])\Bigg)\Bigg)\Bigg/\Big(2 a b\sqrt{a+b}\,f\,(a+b\,\mathrm{Sec}[e+f x]^2)\sqrt{b\,(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e])^4}\Big)$$

Problem 346: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]^2}{a+b \,\text{Sec}[e+f x]^2} \, dx$$

Optimal (type 3, 46 leaves, 5 steps):

$$-\frac{x}{a}+\frac{\sqrt{a+b}\ \text{ArcTan}\left[\frac{\sqrt{b}\ \text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{a \sqrt{b}\ f}$$

Result (type 3, 184 leaves):

$$-\left(\left(\left(a+2 b+a \,\text{Cos}\left[2 \left(e+f x\right)\right]\right) \text{Sec}[e+f x]^2 \left(\sqrt{a+b}\ f x \sqrt{b \left(\text{Cos}[e]-i \,\text{Sin}[e]\right)^4}+\left(a+b\right) \text{ArcTan}\left[\left(\text{Sec}[f x] \left(\text{Cos}[2 e]-i \,\text{Sin}[2 e]\right) \left(-\left(a+2 b\right) \text{Sin}[f x]+a \,\text{Sin}[2 e+f x]\right)\right) \Big/ \left(2 \sqrt{a+b} \sqrt{b \left(\text{Cos}[e]-i \,\text{Sin}[e]\right)^4}\right)\right] \left(\text{Cos}[2 e]-i \,\text{Sin}[2 e]\right)\right)\right) \Big/ \left(2 a \sqrt{a+b}\ f \left(a+b \,\text{Sec}[e+f x]^2\right) \sqrt{b \left(\text{Cos}[e]-i \,\text{Sin}[e]\right)^4}\right)\right)$$

Problem 347: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{1}{a+b \,\text{Sec}[e+f x]^2} \, dx$$

Optimal (type 3, 45 leaves, 3 steps):

$$\frac{x}{a}+\frac{\sqrt{b}\ \text{ArcTan}\left[\frac{\sqrt{a+b}\ \text{Cot}[e+f x]}{\sqrt{b}}\right]}{a \sqrt{a+b}\ f}$$

Result (type 3, 182 leaves):

$$\left(\left(a+2 b+a \,\text{Cos}\left[2 \left(e+f x\right)\right]\right) \text{Sec}[e+f x]^2 \left(\sqrt{a+b}\ f x \sqrt{b \left(\text{Cos}[e]-i \,\text{Sin}[e]\right)^4}+b \,\text{ArcTan}\left[\left(\text{Sec}[f x] \left(\text{Cos}[2 e]-i \,\text{Sin}[2 e]\right) \left(-\left(a+2 b\right) \text{Sin}[f x]+a \,\text{Sin}[2 e+f x]\right)\right) \Big/ \left(2 \sqrt{a+b} \sqrt{b \left(\text{Cos}[e]-i \,\text{Sin}[e]\right)^4}\right)\right] \left(\text{Cos}[2 e]-i \,\text{Sin}[2 e]\right)\right)\right) \Big/ \left(2 a \sqrt{a+b}\ f \left(a+b \,\text{Sec}[e+f x]^2\right) \sqrt{b \left(\text{Cos}[e]-i \,\text{Sin}[e]\right)^4}\right)$$

Problem 348: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[e+f x]^2}{a+b \,\text{Sec}[e+f x]^2} \, dx$$

Optimal (type 3, 62 leaves, 6 steps):

$$-\frac{x}{a}+\frac{b^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{a\,(a+b)^{3/2}\,f}-\frac{\text{Cot}[e+f x]}{(a+b)\,f}$$

Result (type 3, 204 leaves):

$$-\Big(\Big(\big(a+2b+a\,\text{Cos}[2\,(e+f x)]\big)\,\text{Sec}[e+f x]^2 \Big(b^2\,\text{ArcTan}\Big[\big(\text{Sec}[f x]\,(\text{Cos}[2e]-i\,\text{Sin}[2e])\,(-(a+2b)\,\text{Sin}[f x]+a\,\text{Sin}[2e+f x])\big)\Big/ \Big(2\sqrt{a+b}\,\sqrt{b\,(\text{Cos}[e]-i\,\text{Sin}[e])^4}\Big)\Big]\,(\text{Cos}[2e]-i\,\text{Sin}[2e])+ \sqrt{a+b}\,\sqrt{b\,(\text{Cos}[e]-i\,\text{Sin}[e])^4}\,\big((a+b)\,f x-a\,\text{Csc}[e]\,\text{Csc}[e+f x]\,\text{Sin}[f x]\big)\Big)\Big)\Big/ \Big(2a\,(a+b)^{3/2}\,f\,(a+b\,\text{Sec}[e+f x]^2)\,\sqrt{b\,(\text{Cos}[e]-i\,\text{Sin}[e])^4}\Big)\Big)$$

Problem 349: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cot}[e+f x]^4}{a+b\,\text{Sec}[e+f x]^2}\,dx$$

Optimal (type 3, 86 leaves, 7 steps):

$$\frac{x}{a}-\frac{b^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{a\,(a+b)^{5/2}\,f}+\frac{(a+2b)\,\text{Cot}[e+f x]}{(a+b)^2\,f}-\frac{\text{Cot}[e+f x]^3}{3\,(a+b)\,f}$$

Result (type 3, 587 leaves):

$$\frac{x\left(a+2b+a\,\text{Cos}[2e+2fx]\right)\text{Sec}[e+fx]^2}{2a\left(a+b\,\text{Sec}[e+fx]^2\right)}-\frac{\left(a+2b+a\,\text{Cos}[2e+2fx]\right)\text{Cot}[e]\,\text{Csc}[e+fx]^2\,\text{Sec}[e+fx]^2}{6\left(a+b\right)f\left(a+b\,\text{Sec}[e+fx]^2\right)}+$$

$$\left(\left(a+2b+a\,\text{Cos}[2e+2fx]\right)\text{Sec}[e+fx]^2\left(\left(b^3\,\text{ArcTan}\Big[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}-\frac{i\,\text{Sin}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}\right)\left(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]\right)\Big]\text{Cos}[2e]\right)\Big/\left(2a\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}\right)-\left(i\,b^3\,\text{ArcTan}\Big[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}-\frac{i\,\text{Sin}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}\right)\left(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]\right)\Big]\text{Sin}[2e]\right)\Big/\left(2a\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}\right)\right)\right)\Big/\left(\left(a+b\right)^2\left(a+b\,\text{Sec}[e+fx]^2\right)\right)+$$

$$\left(\left(a+2b+a\,\text{Cos}[2e+2fx]\right)\text{Csc}[e]\,\text{Csc}[e+fx]^3\,\text{Sec}[e+fx]^2\,\text{Sin}[fx]\right)\Big/\left(6\left(a+b\right)f\left(a+b\,\text{Sec}[e+fx]^2\right)\right)+$$

$$\left(\left(a+2b+a\,\text{Cos}[2e+2fx]\right)\text{Csc}[e]\,\text{Csc}[e+fx]\,\text{Sec}[e+fx]^2\left(-4a\,\text{Sin}[fx]-7b\,\text{Sin}[fx]\right)\right)\Big/\left(6\left(a+b\right)^2 f\left(a+b\,\text{Sec}[e+fx]^2\right)\right)$$

Problem 350: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cot}[e+fx]^6}{a+b\,\text{Sec}[e+fx]^2}\,dx$$

Optimal (type 3, 120 leaves, 8 steps):

$$-\frac{x}{a}+\frac{b^{7/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b}}\right]}{a\left(a+b\right)^{7/2}f}-\frac{\left(a^2+3ab+3b^2\right)\text{Cot}[e+fx]}{\left(a+b\right)^3 f}+\frac{\left(a+2b\right)\text{Cot}[e+fx]^3}{3\left(a+b\right)^2 f}-\frac{\text{Cot}[e+fx]^5}{5\left(a+b\right)f}$$

Result (type 3, 671 leaves):

$$\frac{1}{960\, a\, (a+b)^3 f\, (a+b\,\text{Sec}[e+f x]^2)}\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)\text{Sec}[e+f x]^2 \left(-\left(\left(480\, b^4\, \text{ArcTan}\left[\left(\text{Sec}[f x]\,(\text{Cos}[2 e]-\text{i}\,\text{Sin}[2 e])\,\left(-(a+2 b)\,\text{Sin}[f x]+a\,\text{Sin}[2 e+f x]\right)\right)\Big/\left(2\sqrt{a+b}\,\sqrt{b\,(\text{Cos}[e]-\text{i}\,\text{Sin}[e])^4}\right)\right]\,(\text{Cos}[2 e]-\text{i}\,\text{Sin}[2 e])\right)\Big/\left(\sqrt{a+b}\,\sqrt{b\,(\text{Cos}[e]-\text{i}\,\text{Sin}[e])^4}\right)\right)+\text{Csc}[e]\,\text{Csc}[e+f x]^5 \left(-150\,(a+b)^3 f x\,\text{Cos}[f x]+150\,(a+b)^3 f x\,\text{Cos}[2 e+f x]+75 a^3 f x\,\text{Cos}[2 e+3 f x]+225 a^2 b f x\,\text{Cos}[2 e+3 f x]+225 a b^2 f x\,\text{Cos}[2 e+3 f x]+75 b^3 f x\,\text{Cos}[2 e+3 f x]-75 a^3 f x\,\text{Cos}[4 e+3 f x]-225 a^2 b f x\,\text{Cos}[4 e+3 f x]-225 a b^2 f x\,\text{Cos}[4 e+3 f x]-75 b^3 f x\,\text{Cos}[4 e+3 f x]-15 a^3 f x\,\text{Cos}[4 e+5 f x]-45 a^2 b f x\,\text{Cos}[4 e+5 f x]-45 a b^2 f x\,\text{Cos}[4 e+5 f x]-15 b^3 f x\,\text{Cos}[4 e+5 f x]+15 a^3 f x\,\text{Cos}[6 e+5 f x]+45 a^2 b f x\,\text{Cos}[6 e+5 f x]+45 a b^2 f x\,\text{Cos}[6 e+5 f x]+15 b^3 f x\,\text{Cos}[6 e+5 f x]+280 a^3\,\text{Sin}[f x]+780 a^2 b\,\text{Sin}[f x]+680 a b^2\,\text{Sin}[f x]+180 a^3\,\text{Sin}[2 e+f x]+540 a^2 b\,\text{Sin}[2 e+f x]+480 a b^2\,\text{Sin}[2 e+f x]-140 a^3\,\text{Sin}[2 e+3 f x]-420 a^2 b\,\text{Sin}[2 e+3 f x]-400 a b^2\,\text{Sin}[2 e+3 f x]-90 a^3\,\text{Sin}[4 e+3 f x]-240 a^2 b\,\text{Sin}[4 e+3 f x]-180 a b^2\,\text{Sin}[4 e+3 f x]+46 a^3\,\text{Sin}[4 e+5 f x]+132 a^2 b\,\text{Sin}[4 e+5 f x]+116 a b^2\,\text{Sin}[4 e+5 f x]\right)\right)$$

Problem 355: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[e+f x]^3}{\left(a+b\,\text{Sec}[e+f x]^2\right)^2}\,dx$$

Optimal (type 3, 111 leaves, 4 steps):

$$-\frac{b^3}{2 a^2 (a+b)^2 f\,\left(b+a\,\text{Cos}[e+f x]^2\right)}-\frac{\text{Csc}[e+f x]^2}{2\,(a+b)^2 f}-\frac{b^2\,(3 a+b)\,\text{Log}\left[b+a\,\text{Cos}[e+f x]^2\right]}{2 a^2 (a+b)^3 f}-\frac{(a+3 b)\,\text{Log}[\text{Sin}[e+f x]]}{(a+b)^3 f}$$

Result (type 3, 306 leaves):

$$-\frac{1}{8 a^2 (a+b)^3 f\,\left(a+2 b+a\,\text{Cos}[2\,(e+f x)]\right)}\text{Csc}[e+f x]^2 \left(4 a^4+12 a^3 b+8 a^2 b^2+4 a b^3+4 b^4+3 a^2 b^2\,\text{Log}\left[a+2 b+a\,\text{Cos}[2\,(e+f x)]\right]+13 a b^3\,\text{Log}\left[a+2 b+a\,\text{Cos}[2\,(e+f x)]\right]+4 b^4\,\text{Log}\left[a+2 b+a\,\text{Cos}[2\,(e+f x)]\right]+2 a^4\,\text{Log}[\text{Sin}[e+f x]]+14 a^3 b\,\text{Log}[\text{Sin}[e+f x]]+24 a^2 b^2\,\text{Log}[\text{Sin}[e+f x]]-a\,\text{Cos}[4\,(e+f x)]\left(b^2\,(3 a+b)\,\text{Log}\left[a+2 b+a\,\text{Cos}[2\,(e+f x)]\right]+2 a^2\,(a+3 b)\,\text{Log}[\text{Sin}[e+f x]]\right)+4\,\text{Cos}[2\,(e+f x)]\left(a^4+a^3 b-a b^3-b^4-b^3\,(3 a+b)\,\text{Log}\left[a+2 b+a\,\text{Cos}[2\,(e+f x)]\right]-2 a^2 b\,(a+3 b)\,\text{Log}[\text{Sin}[e+f x]]\right)\right)$$

Problem 356: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[e+f x]^5}{\left(a+b\,\text{Sec}[e+f x]^2\right)^2}\,dx$$

Optimal (type 3, 140 leaves, 4 steps):

$$\frac{b^4}{2 a^2 (a+b)^3 f \left(b+a\,\text{Cos}[e+f x]^2\right)}+\frac{(a+2 b)\,\text{Csc}[e+f x]^2}{(a+b)^3 f}-\frac{\text{Csc}[e+f x]^4}{4 (a+b)^2 f}+\frac{b^3 (4 a+b)\,\text{Log}\left[b+a\,\text{Cos}[e+f x]^2\right]}{2 a^2 (a+b)^4 f}+\frac{\left(a^2+4 a b+6 b^2\right)\text{Log}[\text{Sin}[e+f x]]}{(a+b)^4 f}$$

Result (type 3, 292 leaves):

$$\frac{1}{16 a^2 (a+b)^4 f \left(a+b\,\text{Sec}[e+f x]^2\right)^2}\Big((a+2 b+a\,\text{Cos}[2 (e+f x)])\left(4 b^4 (a+b)+4\,i\,a^2\left(a^2+4 a b+6 b^2\right) f x\,(a+2 b+a\,\text{Cos}[2 (e+f x)])-4\,i\,a^2\left(a^2+4 a b+6 b^2\right)\text{ArcTan}[\text{Tan}[e+f x]]\,(a+2 b+a\,\text{Cos}[2 (e+f x)])+4 a^2 (a+b)(a+2 b)(a+2 b+a\,\text{Cos}[2 (e+f x)])\,\text{Csc}[e+f x]^2-a^2 (a+b)^2 (a+2 b+a\,\text{Cos}[2 (e+f x)])\,\text{Csc}[e+f x]^4+2 b^3 (4 a+b)(a+2 b+a\,\text{Cos}[2 (e+f x)])\,\text{Log}[a+2 b+a\,\text{Cos}[2 (e+f x)]]+2 a^2\left(a^2+4 a b+6 b^2\right)(a+2 b+a\,\text{Cos}[2 (e+f x)])\,\text{Log}\left[\text{Sin}[e+f x]^2\right]\right)\text{Sec}[e+f x]^4\Big)$$

Problem 357: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]^6}{\left(a+b\,\text{Sec}[e+f x]^2\right)^2}\,dx$$

Optimal (type 3, 119 leaves, 7 steps):

$$-\frac{x}{a^2}-\frac{(3 a-2 b)(a+b)^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{2 a^2 b^{5/2} f}+\frac{(3 a+b)\,\text{Tan}[e+f x]}{2 a b^2 f}-\frac{(a+b)\,\text{Tan}[e+f x]^3}{2 a b f\left(a+b+b\,\text{Tan}[e+f x]^2\right)}$$

Result (type 3, 593 leaves):

$$-\frac{x\,(a+2b+a\,\text{Cos}[2e+2fx])^2\,\text{Sec}[e+fx]^4}{4a^2\,(a+b\,\text{Sec}[e+fx]^2)^2}+$$

$$\Bigg(\left(3a-2b\right)\left(a+b\right)^2\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^2\text{Sec}[e+fx]^4\Bigg(\Bigg(\text{ArcTan}\Big[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}-\frac{i\,\text{Sin}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}\right)\left(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]\right)\Big]\,\text{Cos}[2e]\Bigg)\Big/$$

$$\left(8a^2b^2\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}\right)-\Bigg(i\,\text{ArcTan}\Big[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}-\frac{i\,\text{Sin}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}\right)\left(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]\right)\Big]\,\text{Sin}[2e]\Bigg)\Big/$$

$$\left(8a^2b^2\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}\right)\Bigg)\Bigg)\Big/\left(a+b\,\text{Sec}[e+fx]^2\right)^2+$$

$$\frac{(a+2b+a\,\text{Cos}[2e+2fx])^2\,\text{Sec}[e]\,\text{Sec}[e+fx]^5\,\text{Sin}[fx]}{4b^2f\,(a+b\,\text{Sec}[e+fx]^2)^2}+$$

$$\Big(\left(a+2b+a\,\text{Cos}[2e+2fx]\right)\text{Sec}[e+fx]^4\left(-a^3\,\text{Sin}[2e]-4a^2b\,\text{Sin}[2e]-5ab^2\,\text{Sin}[2e]-2b^3\,\text{Sin}[2e]+a^3\,\text{Sin}[2fx]+2a^2b\,\text{Sin}[2fx]+ab^2\,\text{Sin}[2fx]\right)\Big)\Big/$$

$$\left(8a^2b^2f\left(a+b\,\text{Sec}[e+fx]^2\right)^2\left(\text{Cos}[e]-\text{Sin}[e]\right)\left(\text{Cos}[e]+\text{Sin}[e]\right)\right)$$

Problem 358: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Tan}[e+fx]^4}{\left(a+b\,\text{Sec}[e+fx]^2\right)^2}\,dx$$

Optimal (type 3, 90 leaves, 6 steps):

$$\frac{x}{a^2}+\frac{(a-2b)\sqrt{a+b}\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b}}\right]}{2a^2b^{3/2}f}-\frac{(a+b)\,\text{Tan}[e+fx]}{2abf\,\left(a+b+b\,\text{Tan}[e+fx]^2\right)}$$

Result (type 3, 249 leaves):

$$\left((a+2b+a\,\text{Cos}[2(e+fx)])\,\text{Sec}[e+fx]^4\right.$$
$$\left(2x(a+2b+a\,\text{Cos}[2(e+fx)])+\left(\left(-a^2+ab+2b^2\right)\text{ArcTan}\left[\right.\right.\right.$$
$$\left.(\text{Sec}[fx]\,(\text{Cos}[2e]-\text{i}\,\text{Sin}[2e])\,(-(a+2b)\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]))\right/$$
$$\left.\left(2\sqrt{a+b}\,\sqrt{b\,(\text{Cos}[e]-\text{i}\,\text{Sin}[e])^4}\right)\right](a+2b+a\,\text{Cos}[2(e+fx)])$$
$$\left.(\text{Cos}[2e]-\text{i}\,\text{Sin}[2e])\right)\Big/\left(b\sqrt{a+b}\,f\sqrt{b\,(\text{Cos}[e]-\text{i}\,\text{Sin}[e])^4}\right)+$$
$$\left.\left.\frac{(a+b)\,((a+2b)\,\text{Sin}[2e]-a\,\text{Sin}[2fx])}{b\,f\,(\text{Cos}[e]-\text{Sin}[e])\,(\text{Cos}[e]+\text{Sin}[e])}\right)\right)\Big/\left(8a^2\left(a+b\,\text{Sec}[e+fx]^2\right)^2\right)$$

Problem 359: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Tan}[e+fx]^2}{\left(a+b\,\text{Sec}[e+fx]^2\right)^2}\,dx$$

Optimal (type 3, 85 leaves, 6 steps):

$$-\frac{x}{a^2}+\frac{(a+2b)\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b}}\right]}{2a^2\sqrt{b}\,\sqrt{a+b}\,f}+\frac{\text{Tan}[e+fx]}{2af\left(a+b+b\,\text{Tan}[e+fx]^2\right)}$$

Result (type 3, 388 leaves):

$$-\left(\left(\left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^2 \operatorname{Sec}[e+f x]^4\right.\right.$$
$$\left(16 x+\left(\left(-a^3+6 a^2 b+24 a b^2+16 b^3\right) \operatorname{ArcTan}\left[\left(\operatorname{Sec}[f x]\left(\operatorname{Cos}[2 e]-\mathbb{i} \operatorname{Sin}[2 e]\right)\right.\right.\right.\right.$$
$$\left.\left.\left(-(a+2 b) \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x]\right)\right) \Big/ \left(2 \sqrt{a+b} \sqrt{b\left(\operatorname{Cos}[e]-\mathbb{i} \operatorname{Sin}[e]\right)^4}\right)\right]$$
$$\left.\left(\operatorname{Cos}[2 e]-\mathbb{i} \operatorname{Sin}[2 e]\right)\right) \Big/ \left(b (a+b)^{3/2} f \sqrt{b\left(\operatorname{Cos}[e]-\mathbb{i} \operatorname{Sin}[e]\right)^4}\right)+$$
$$\left(\left(a^2+8 a b+8 b^2\right)\left((a+2 b) \operatorname{Sin}[2 e]-a \operatorname{Sin}[2 f x]\right)\right) \Big/$$
$$\left.\left.\left(b (a+b) f\left(a+2 b+a \operatorname{Cos}[2(e+f x)]\right)\left(\operatorname{Cos}[e]-\operatorname{Sin}[e]\right)\left(\operatorname{Cos}[e]+\operatorname{Sin}[e]\right)\right)\right)\right) \Big/$$
$$\left.\left(64 a^2\left(a+b \operatorname{Sec}[e+f x]^2\right)^2\right)\right)+\left(\left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^2\right.$$
$$\operatorname{Sec}[e+f x]^4$$
$$\left.\left(\frac{(a+2 b) \operatorname{ArcTan}\left[\frac{\sqrt{b} \operatorname{Tan}[e+f x]}{\sqrt{a+b}}\right]}{(a+b)^{3/2}}-\frac{a \sqrt{b} \operatorname{Sin}[2(e+f x)]}{(a+b)\left(a+2 b+a \operatorname{Cos}[2(e+f x)]\right)}\right)\right) \Big/ \left(64\right.$$
$$b^{3/2}$$
$$f$$
$$\left.\left(a+b \operatorname{Sec}[e+f x]^2\right)^2\right)$$

Problem 360: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{1}{\left(a+b \operatorname{Sec}[e+f x]^2\right)^2} \, dx$$

Optimal (type 3, 92 leaves, 5 steps):

$$\frac{x}{a^2}-\frac{\sqrt{b}\,(3 a+2 b) \operatorname{ArcTan}\left[\frac{\sqrt{b} \operatorname{Tan}[e+f x]}{\sqrt{a+b}}\right]}{2 a^2 (a+b)^{3/2} f}-\frac{b \operatorname{Tan}[e+f x]}{2 a (a+b) f\left(a+b+b \operatorname{Tan}[e+f x]^2\right)}$$

Result (type 3, 240 leaves):

$$\left(\left(a+2b+a\,\text{Cos}[2(e+fx)]\right)\text{Sec}[e+fx]^4\right.$$
$$\left(2x\left(a+2b+a\,\text{Cos}[2(e+fx)]\right)+\left(b\,(3a+2b)\,\text{ArcTan}\Big[\left(\text{Sec}[fx]\,(\text{Cos}[2e]-i\,\text{Sin}[2e])\right.\right.\right.$$
$$\left.\left.\left(-(a+2b)\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]\right)\right)\Big/\left(2\sqrt{a+b}\sqrt{b\,(\text{Cos}[e]-i\,\text{Sin}[e])^4}\right)\Big]$$
$$\left(a+2b+a\,\text{Cos}[2(e+fx)]\right)(\text{Cos}[2e]-i\,\text{Sin}[2e])\Big)\Big/$$
$$\left.\left.\left((a+b)^{3/2}f\sqrt{b\,(\text{Cos}[e]-i\,\text{Sin}[e])^4}\right)+\frac{b\left((a+2b)\,\text{Sin}[2e]-a\,\text{Sin}[2fx]\right)}{(a+b)\,f\,(\text{Cos}[e]-\text{Sin}[e])\,(\text{Cos}[e]+\text{Sin}[e])}\right)\right)\Big/\left(8a^2\left(a+b\,\text{Sec}[e+fx]^2\right)^2\right)$$

Problem 361: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cot}[e+fx]^2}{\left(a+b\,\text{Sec}[e+fx]^2\right)^2}\,dx$$

Optimal (type 3, 121 leaves, 7 steps):

$$-\frac{x}{a^2}+\frac{b^{3/2}\,(5a+2b)\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b}}\right]}{2a^2\,(a+b)^{5/2}\,f}-$$
$$\frac{(2a-b)\,\text{Cot}[e+fx]}{2a\,(a+b)^2\,f}-\frac{b\,\text{Cot}[e+fx]}{2a\,(a+b)\,f\,\left(a+b+b\,\text{Tan}[e+fx]^2\right)}$$

Result (type 3, 564 leaves):

$$-\frac{x\left(a+2b+a\operatorname{Cos}[2e+2fx]\right)^2\operatorname{Sec}[e+fx]^4}{4a^2\left(a+b\operatorname{Sec}[e+fx]^2\right)^2}+$$

$$\left(\left(5a+2b\right)\left(a+2b+a\operatorname{Cos}[2e+2fx]\right)^2\operatorname{Sec}[e+fx]^4\left(-\left(\left(b^2\operatorname{ArcTan}\left[\operatorname{Sec}[fx]\left(\frac{\operatorname{Cos}[2e]}{2\sqrt{a+b}\sqrt{b\operatorname{Cos}[4e]-i\,b\operatorname{Sin}[4e]}}-\frac{i\operatorname{Sin}[2e]}{2\sqrt{a+b}\sqrt{b\operatorname{Cos}[4e]-i\,b\operatorname{Sin}[4e]}}\right)\left(-a\operatorname{Sin}[fx]-2b\operatorname{Sin}[fx]+a\operatorname{Sin}[2e+fx]\right)\right]\operatorname{Cos}[2e]\right)\Big/\left(8a^2\sqrt{a+b}\,f\sqrt{b\operatorname{Cos}[4e]-i\,b\operatorname{Sin}[4e]}\right)\right)+\left(i\,b^2\operatorname{ArcTan}\left[\operatorname{Sec}[fx]\left(\frac{\operatorname{Cos}[2e]}{2\sqrt{a+b}\sqrt{b\operatorname{Cos}[4e]-i\,b\operatorname{Sin}[4e]}}-\frac{i\operatorname{Sin}[2e]}{2\sqrt{a+b}\sqrt{b\operatorname{Cos}[4e]-i\,b\operatorname{Sin}[4e]}}\right)\left(-a\operatorname{Sin}[fx]-2b\operatorname{Sin}[fx]+a\operatorname{Sin}[2e+fx]\right)\right]\operatorname{Sin}[2e]\right)\Big/\left(8a^2\sqrt{a+b}\,f\sqrt{b\operatorname{Cos}[4e]-i\,b\operatorname{Sin}[4e]}\right)\right)\right)\Big/\left(\left(a+b\right)^2\left(a+b\operatorname{Sec}[e+fx]^2\right)^2\right)+\left(\left(a+2b+a\operatorname{Cos}[2e+2fx]\right)^2\operatorname{Csc}[e]\operatorname{Csc}[e+fx]\operatorname{Sec}[e+fx]^4\operatorname{Sin}[fx]\right)\Big/\left(4\left(a+b\right)^2 f\left(a+b\operatorname{Sec}[e+fx]^2\right)^2\right)+$$

$$\left(\left(a+2b+a\operatorname{Cos}[2e+2fx]\right)\operatorname{Sec}[e+fx]^4\left(-a\,b^2\operatorname{Sin}[2e]-2b^3\operatorname{Sin}[2e]+a\,b^2\operatorname{Sin}[2fx]\right)\right)\Big/\left(8a^2\left(a+b\right)^2 f\left(a+b\operatorname{Sec}[e+fx]^2\right)^2\left(\operatorname{Cos}[e]-\operatorname{Sin}[e]\right)\left(\operatorname{Cos}[e]+\operatorname{Sin}[e]\right)\right)$$

Problem 362: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\operatorname{Cot}[e+fx]^4}{\left(a+b\operatorname{Sec}[e+fx]^2\right)^2}\,dx$$

Optimal (type 3, 160 leaves, 8 steps):

$$\frac{x}{a^2}-\frac{b^{5/2}\,(7a+2b)\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+fx]}{\sqrt{a+b}}\right]}{2a^2\,(a+b)^{7/2}\,f}+\frac{\left(2a^2+6ab-b^2\right)\text{Cot}[e+fx]}{2a\,(a+b)^3\,f}-\frac{(2a-3b)\,\text{Cot}[e+fx]^3}{6a\,(a+b)^2\,f}-\frac{b\,\text{Cot}[e+fx]^3}{2a\,(a+b)\,f\,\left(a+b+b\,\text{Tan}[e+fx]^2\right)}$$

Result (type 3, 1896 leaves) :

$$\Bigg((7a+2b)\,(a+2b+a\,\text{Cos}[2e+2fx])^2\,\text{Sec}[e+fx]^4\Bigg(\Bigg(b^3\,\text{ArcTan}\Big[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}-\frac{i\,\text{Sin}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}\right)(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx])\Big]\,\text{Cos}[2e]\Bigg)\Big/\left(8a^2\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}\right)-\Bigg(i\,b^3\,\text{ArcTan}\Big[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}-\frac{i\,\text{Sin}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}}\right)(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx])\Big]\,\text{Sin}[2e]\Bigg)\Big/\left(8a^2\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-i\,b\,\text{Sin}[4e]}\right)\Bigg)\Bigg)\Big/\left((a+b)^3\left(a+b\,\text{Sec}[e+fx]^2\right)^2\right)+\frac{1}{384a^2\,(a+b)^3\,f\,\left(a+b\,\text{Sec}[e+fx]^2\right)^2}$$

$$(a+2b+a\,\text{Cos}[2e+2fx])\,\text{Csc}[e]\,\text{Csc}[e+fx]^3\,\text{Sec}[2e]\,\text{Sec}[e+fx]^4$$

$$\big(-6a^4fx\,\text{Cos}[fx]-54a^3bfx\,\text{Cos}[fx]-126a^2b^2fx\,\text{Cos}[fx]-114ab^3fx\,\text{Cos}[fx]-36b^4fx\,\text{Cos}[fx]+3a^4fx\,\text{Cos}[3fx]-3a^3bfx\,\text{Cos}[3fx]-27a^2b^2fx\,\text{Cos}[3fx]-33ab^3fx\,\text{Cos}[3fx]-12b^4fx\,\text{Cos}[3fx]+6a^4fx\,\text{Cos}[2e-fx]+54a^3bfx\,\text{Cos}[2e-fx]+126a^2b^2fx\,\text{Cos}[2e-fx]+114ab^3fx\,\text{Cos}[2e-fx]+36b^4fx\,\text{Cos}[2e-fx]+6a^4fx\,\text{Cos}[2e+fx]+54a^3bfx\,\text{Cos}[2e+fx]+126a^2b^2fx\,\text{Cos}[2e+fx]+114ab^3fx\,\text{Cos}[2e+fx]+36b^4fx\,\text{Cos}[2e+fx]-6a^4fx\,\text{Cos}[4e+fx]-54a^3bfx\,\text{Cos}[4e+fx]-126a^2b^2fx\,\text{Cos}[4e+fx]-114ab^3fx\,\text{Cos}[4e+fx]-36b^4fx\,\text{Cos}[4e+fx]-3a^4fx\,\text{Cos}[2e+3fx]+3a^3bfx\,\text{Cos}[2e+3fx]+27a^2b^2fx\,\text{Cos}[2e+3fx]+33ab^3fx\,\text{Cos}[2e+3fx]+12b^4fx\,\text{Cos}[2e+3fx]+3a^4fx\,\text{Cos}[4e+3fx]-3a^3bfx\,\text{Cos}[4e+3fx]-27a^2b^2fx\,\text{Cos}[4e+3fx]-33ab^3fx\,\text{Cos}[4e+3fx]-12b^4fx\,\text{Cos}[4e+3fx]-3a^4fx\,\text{Cos}[6e+3fx]+3a^3bfx\,\text{Cos}[6e+3fx]+27a^2b^2fx\,\text{Cos}[6e+3fx]+33ab^3fx\,\text{Cos}[6e+3fx]+12b^4fx\,\text{Cos}[6e+3fx]-3a^4fx\,\text{Cos}[2e+5fx]-9a^3bfx\,\text{Cos}[2e+5fx]-9a^2b^2fx\,\text{Cos}[2e+5fx]-3ab^3fx\,\text{Cos}[2e+5fx]+3a^4fx\,\text{Cos}[4e+5fx]+9a^3bfx\,\text{Cos}[4e+5fx]+9a^2b^2fx\,\text{Cos}[4e+5fx]+3ab^3fx\,\text{Cos}[4e+5fx]-3a^4fx\,\text{Cos}[6e+5fx]-9a^3bfx\,\text{Cos}[6e+5fx]-9a^2b^2fx\,\text{Cos}[6e+5fx]-3ab^3fx\,\text{Cos}[6e+5fx]+3a^4fx\,\text{Cos}[8e+5fx]+9a^3bfx\,\text{Cos}[8e+5fx]+$$

$$9 a^2 b^2 f x \operatorname{Cos}[8 e+5 f x]+3 a b^3 f x \operatorname{Cos}[8 e+5 f x]-12 a^4 \operatorname{Sin}[f x]-60 a^3 b \operatorname{Sin}[f x]-$$
$$96 a^2 b^2 \operatorname{Sin}[f x]+18 b^4 \operatorname{Sin}[f x]+4 a^4 \operatorname{Sin}[3 f x]+36 a^3 b \operatorname{Sin}[3 f x]+$$
$$80 a^2 b^2 \operatorname{Sin}[3 f x]-6 a b^3 \operatorname{Sin}[3 f x]+6 b^4 \operatorname{Sin}[3 f x]+4 a^4 \operatorname{Sin}[2 e-f x]+$$
$$76 a^3 b \operatorname{Sin}[2 e-f x]+144 a^2 b^2 \operatorname{Sin}[2 e-f x]+18 b^4 \operatorname{Sin}[2 e-f x]-4 a^4 \operatorname{Sin}[2 e+f x]-$$
$$76 a^3 b \operatorname{Sin}[2 e+f x]-144 a^2 b^2 \operatorname{Sin}[2 e+f x]+6 a b^3 \operatorname{Sin}[2 e+f x]+$$
$$18 b^4 \operatorname{Sin}[2 e+f x]-12 a^4 \operatorname{Sin}[4 e+f x]-60 a^3 b \operatorname{Sin}[4 e+f x]-96 a^2 b^2 \operatorname{Sin}[4 e+f x]-$$
$$6 a b^3 \operatorname{Sin}[4 e+f x]-18 b^4 \operatorname{Sin}[4 e+f x]-12 a^4 \operatorname{Sin}[2 e+3 f x]-24 a^3 b \operatorname{Sin}[2 e+3 f x]+$$
$$6 a b^3 \operatorname{Sin}[2 e+3 f x]-6 b^4 \operatorname{Sin}[2 e+3 f x]+4 a^4 \operatorname{Sin}[4 e+3 f x]+36 a^3 b \operatorname{Sin}[4 e+3 f x]+$$
$$80 a^2 b^2 \operatorname{Sin}[4 e+3 f x]-3 a b^3 \operatorname{Sin}[4 e+3 f x]-6 b^4 \operatorname{Sin}[4 e+3 f x]-$$
$$12 a^4 \operatorname{Sin}[6 e+3 f x]-24 a^3 b \operatorname{Sin}[6 e+3 f x]+3 a b^3 \operatorname{Sin}[6 e+3 f x]+$$
$$6 b^4 \operatorname{Sin}[6 e+3 f x]+8 a^4 \operatorname{Sin}[2 e+5 f x]+20 a^3 b \operatorname{Sin}[2 e+5 f x]+3 a b^3 \operatorname{Sin}[2 e+5 f x]-$$
$$3 a b^3 \operatorname{Sin}[4 e+5 f x]+8 a^4 \operatorname{Sin}[6 e+5 f x]+20 a^3 b \operatorname{Sin}[6 e+5 f x]\Big)$$

Problem 363: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cot}[e+f x]^6}{\left(a+b \operatorname{Sec}[e+f x]^2\right)^2}\, dx$$

Optimal (type 3, 207 leaves, 9 steps):

$$-\frac{x}{a^2}+\frac{b^{7/2} (9 a+2 b) \operatorname{ArcTan}\left[\frac{\sqrt{b} \operatorname{Tan}[e+f x]}{\sqrt{a+b}}\right]}{2 a^2 (a+b)^{9/2} f}-\frac{\left(2 a^3+8 a^2 b+12 a b^2-b^3\right) \operatorname{Cot}[e+f x]}{2 a (a+b)^4 f}+$$
$$\frac{\left(2 a^2+6 a b-3 b^2\right) \operatorname{Cot}[e+f x]^3}{6 a (a+b)^3 f}-\frac{(2 a-5 b) \operatorname{Cot}[e+f x]^5}{10 a (a+b)^2 f}-\frac{b \operatorname{Cot}[e+f x]^5}{2 a (a+b) f \left(a+b+b \operatorname{Tan}[e+f x]^2\right)}$$

Result (type 3, 3028 leaves):

$$\Bigg((9 a+2 b) (a+2 b+a \operatorname{Cos}[2 e+2 f x])^2 \operatorname{Sec}[e+f x]^4$$
$$\Bigg(-\Bigg(\Bigg(b^4 \operatorname{ArcTan}\Bigg[\operatorname{Sec}[f x] \left(\frac{\operatorname{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}-\frac{i \operatorname{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}\right)$$
$$(-a \operatorname{Sin}[f x]-2 b \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x])\Bigg] \operatorname{Cos}[2 e]\Bigg)\Bigg/$$
$$\left(8 a^2 \sqrt{a+b}\, f \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}\right)\Bigg)+\Bigg(i b^4 \operatorname{ArcTan}\Bigg[$$
$$\operatorname{Sec}[f x] \left(\frac{\operatorname{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}-\frac{i \operatorname{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}}\right)$$
$$(-a \operatorname{Sin}[f x]-2 b \operatorname{Sin}[f x]+a \operatorname{Sin}[2 e+f x])\Bigg] \operatorname{Sin}[2 e]\Bigg)\Bigg/$$
$$\left(8 a^2 \sqrt{a+b}\, f \sqrt{b \operatorname{Cos}[4 e]-i b \operatorname{Sin}[4 e]}\right)\Bigg)\Bigg/$$

$$\left(\left(a+b\right)^4\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2\right)+\frac{1}{7680\,a^2\left(a+b\right)^4 f\left(a+b\,\text{Sec}[e+f\,x]^2\right)^2}$$

$$\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)\text{Csc}[e]\,\text{Csc}[e+f\,x]^5\,\text{Sec}[2\,e]\,\text{Sec}[e+f\,x]^4$$

$$\left(75\,a^5 f\,x\,\text{Cos}[f\,x]+900\,a^4 b\,f\,x\,\text{Cos}[f\,x]+2850\,a^3 b^2 f\,x\,\text{Cos}[f\,x]+3900\,a^2 b^3 f\,x\,\text{Cos}[f\,x]+2475\,a\,b^4 f\,x\,\text{Cos}[f\,x]+600\,b^5 f\,x\,\text{Cos}[f\,x]-15\,a^5 f\,x\,\text{Cos}[3\,f\,x]+240\,a^4 b\,f\,x\,\text{Cos}[3\,f\,x]+1110\,a^3 b^2 f\,x\,\text{Cos}[3\,f\,x]+1740\,a^2 b^3 f\,x\,\text{Cos}[3\,f\,x]+1185\,a\,b^4 f\,x\,\text{Cos}[3\,f\,x]+300\,b^5 f\,x\,\text{Cos}[3\,f\,x]-75\,a^5 f\,x\,\text{Cos}[2\,e-f\,x]-900\,a^4 b\,f\,x\,\text{Cos}[2\,e-f\,x]-2850\,a^3 b^2 f\,x\,\text{Cos}[2\,e-f\,x]-3900\,a^2 b^3 f\,x\,\text{Cos}[2\,e-f\,x]-2475\,a\,b^4 f\,x\,\text{Cos}[2\,e-f\,x]-600\,b^5 f\,x\,\text{Cos}[2\,e-f\,x]-75\,a^5 f\,x\,\text{Cos}[2\,e+f\,x]-900\,a^4 b\,f\,x\,\text{Cos}[2\,e+f\,x]-2850\,a^3 b^2 f\,x\,\text{Cos}[2\,e+f\,x]-3900\,a^2 b^3 f\,x\,\text{Cos}[2\,e+f\,x]-2475\,a\,b^4 f\,x\,\text{Cos}[2\,e+f\,x]-600\,b^5 f\,x\,\text{Cos}[2\,e+f\,x]+75\,a^5 f\,x\,\text{Cos}[4\,e+f\,x]+900\,a^4 b\,f\,x\,\text{Cos}[4\,e+f\,x]+2850\,a^3 b^2 f\,x\,\text{Cos}[4\,e+f\,x]+3900\,a^2 b^3 f\,x\,\text{Cos}[4\,e+f\,x]+2475\,a\,b^4 f\,x\,\text{Cos}[4\,e+f\,x]+600\,b^5 f\,x\,\text{Cos}[4\,e+f\,x]+15\,a^5 f\,x\,\text{Cos}[2\,e+3\,f\,x]-240\,a^4 b\,f\,x\,\text{Cos}[2\,e+3\,f\,x]-1110\,a^3 b^2 f\,x\,\text{Cos}[2\,e+3\,f\,x]-1740\,a^2 b^3 f\,x\,\text{Cos}[2\,e+3\,f\,x]-1185\,a\,b^4 f\,x\,\text{Cos}[2\,e+3\,f\,x]-300\,b^5 f\,x\,\text{Cos}[2\,e+3\,f\,x]-15\,a^5 f\,x\,\text{Cos}[4\,e+3\,f\,x]+240\,a^4 b\,f\,x\,\text{Cos}[4\,e+3\,f\,x]+1110\,a^3 b^2 f\,x\,\text{Cos}[4\,e+3\,f\,x]+1740\,a^2 b^3 f\,x\,\text{Cos}[4\,e+3\,f\,x]+1185\,a\,b^4 f\,x\,\text{Cos}[4\,e+3\,f\,x]+300\,b^5 f\,x\,\text{Cos}[4\,e+3\,f\,x]+15\,a^5 f\,x\,\text{Cos}[6\,e+3\,f\,x]-240\,a^4 b\,f\,x\,\text{Cos}[6\,e+3\,f\,x]-1110\,a^3 b^2 f\,x\,\text{Cos}[6\,e+3\,f\,x]-1740\,a^2 b^3 f\,x\,\text{Cos}[6\,e+3\,f\,x]-1185\,a\,b^4 f\,x\,\text{Cos}[6\,e+3\,f\,x]-300\,b^5 f\,x\,\text{Cos}[6\,e+3\,f\,x]+45\,a^5 f\,x\,\text{Cos}[2\,e+5\,f\,x]+120\,a^4 b\,f\,x\,\text{Cos}[2\,e+5\,f\,x]+30\,a^3 b^2 f\,x\,\text{Cos}[2\,e+5\,f\,x]-180\,a^2 b^3 f\,x\,\text{Cos}[2\,e+5\,f\,x]-195\,a\,b^4 f\,x\,\text{Cos}[2\,e+5\,f\,x]-60\,b^5 f\,x\,\text{Cos}[2\,e+5\,f\,x]-45\,a^5 f\,x\,\text{Cos}[4\,e+5\,f\,x]-120\,a^4 b\,f\,x\,\text{Cos}[4\,e+5\,f\,x]-30\,a^3 b^2 f\,x\,\text{Cos}[4\,e+5\,f\,x]+180\,a^2 b^3 f\,x\,\text{Cos}[4\,e+5\,f\,x]+195\,a\,b^4 f\,x\,\text{Cos}[4\,e+5\,f\,x]+60\,b^5 f\,x\,\text{Cos}[4\,e+5\,f\,x]+45\,a^5 f\,x\,\text{Cos}[6\,e+5\,f\,x]+120\,a^4 b\,f\,x\,\text{Cos}[6\,e+5\,f\,x]+30\,a^3 b^2 f\,x\,\text{Cos}[6\,e+5\,f\,x]-180\,a^2 b^3 f\,x\,\text{Cos}[6\,e+5\,f\,x]-195\,a\,b^4 f\,x\,\text{Cos}[6\,e+5\,f\,x]-60\,b^5 f\,x\,\text{Cos}[6\,e+5\,f\,x]-45\,a^5 f\,x\,\text{Cos}[8\,e+5\,f\,x]-120\,a^4 b\,f\,x\,\text{Cos}[8\,e+5\,f\,x]-30\,a^3 b^2 f\,x\,\text{Cos}[8\,e+5\,f\,x]+180\,a^2 b^3 f\,x\,\text{Cos}[8\,e+5\,f\,x]+195\,a\,b^4 f\,x\,\text{Cos}[8\,e+5\,f\,x]+60\,b^5 f\,x\,\text{Cos}[8\,e+5\,f\,x]-15\,a^5 f\,x\,\text{Cos}[4\,e+7\,f\,x]-60\,a^4 b\,f\,x\,\text{Cos}[4\,e+7\,f\,x]-90\,a^3 b^2 f\,x\,\text{Cos}[4\,e+7\,f\,x]-60\,a^2 b^3 f\,x\,\text{Cos}[4\,e+7\,f\,x]-15\,a\,b^4 f\,x\,\text{Cos}[4\,e+7\,f\,x]+15\,a^5 f\,x\,\text{Cos}[6\,e+7\,f\,x]+60\,a^4 b\,f\,x\,\text{Cos}[6\,e+7\,f\,x]+90\,a^3 b^2 f\,x\,\text{Cos}[6\,e+7\,f\,x]+60\,a^2 b^3 f\,x\,\text{Cos}[6\,e+7\,f\,x]+15\,a\,b^4 f\,x\,\text{Cos}[6\,e+7\,f\,x]-15\,a^5 f\,x\,\text{Cos}[8\,e+7\,f\,x]-60\,a^4 b\,f\,x\,\text{Cos}[8\,e+7\,f\,x]-90\,a^3 b^2 f\,x\,\text{Cos}[8\,e+7\,f\,x]-60\,a^2 b^3 f\,x\,\text{Cos}[8\,e+7\,f\,x]-15\,a\,b^4 f\,x\,\text{Cos}[8\,e+7\,f\,x]+15\,a^5 f\,x\,\text{Cos}[10\,e+7\,f\,x]+60\,a^4 b\,f\,x\,\text{Cos}[10\,e+7\,f\,x]+90\,a^3 b^2 f\,x\,\text{Cos}[10\,e+7\,f\,x]+60\,a^2 b^3 f\,x\,\text{Cos}[10\,e+7\,f\,x]+15\,a\,b^4 f\,x\,\text{Cos}[10\,e+7\,f\,x]-10\,a^5\,\text{Sin}[f\,x]+860\,a^4 b\,\text{Sin}[f\,x]+3120\,a^3 b^2\,\text{Sin}[f\,x]+3600\,a^2 b^3\,\text{Sin}[f\,x]-300\,b^5\,\text{Sin}[f\,x]+46\,a^5\,\text{Sin}[3\,f\,x]-508\,a^4 b\,\text{Sin}[3\,f\,x]-2324\,a^3 b^2\,\text{Sin}[3\,f\,x]-3120\,a^2 b^3\,\text{Sin}[3\,f\,x]+75\,a\,b^4\,\text{Sin}[3\,f\,x]-150\,b^5\,\text{Sin}[3\,f\,x]-240\,a^5\,\text{Sin}[2\,e-f\,x]-1840\,a^4 b\,\text{Sin}[2\,e-f\,x]-4840\,a^3 b^2\,\text{Sin}[2\,e-f\,x]-5040\,a^2 b^3\,\text{Sin}[2\,e-f\,x]-300\,b^5\,\text{Sin}[2\,e-f\,x]+240\,a^5\,\text{Sin}[2\,e+f\,x]+1840\,a^4 b\,\text{Sin}[2\,e+f\,x]+4840\,a^3 b^2\,\text{Sin}[2\,e+f\,x]+5040\,a^2 b^3\,\text{Sin}[2\,e+f\,x]-75\,a\,b^4\,\text{Sin}[2\,e+f\,x]-300\,b^5\,\text{Sin}[2\,e+f\,x]-10\,a^5\,\text{Sin}[4\,e+f\,x]+860\,a^4 b\,\text{Sin}[4\,e+f\,x]+3120\,a^3 b^2\,\text{Sin}[4\,e+f\,x]+3600\,a^2 b^3\,\text{Sin}[4\,e+f\,x]+75\,a\,b^4\,\text{Sin}[4\,e+f\,x]+300\,b^5\,\text{Sin}[4\,e+f\,x]-240\,a^4 b\,\text{Sin}[2\,e+3\,f\,x]-$$

$900 a^3 b^2 \text{Sin}[2 e + 3 f x] - 1200 a^2 b^3 \text{Sin}[2 e + 3 f x] - 75 a b^4 \text{Sin}[2 e + 3 f x] + 150 b^5 \text{Sin}[2 e + 3 f x] + 46 a^5 \text{Sin}[4 e + 3 f x] - 508 a^4 b \text{Sin}[4 e + 3 f x] - 2324 a^3 b^2 \text{Sin}[4 e + 3 f x] - 3120 a^2 b^3 \text{Sin}[4 e + 3 f x] + 60 a b^4 \text{Sin}[4 e + 3 f x] + 150 b^5 \text{Sin}[4 e + 3 f x] - 240 a^4 b \text{Sin}[6 e + 3 f x] - 900 a^3 b^2 \text{Sin}[6 e + 3 f x] - 1200 a^2 b^3 \text{Sin}[6 e + 3 f x] - 60 a b^4 \text{Sin}[6 e + 3 f x] - 150 b^5 \text{Sin}[6 e + 3 f x] - 48 a^5 \text{Sin}[2 e + 5 f x] - 32 a^4 b \text{Sin}[2 e + 5 f x] + 340 a^3 b^2 \text{Sin}[2 e + 5 f x] + 864 a^2 b^3 \text{Sin}[2 e + 5 f x] - 60 a b^4 \text{Sin}[2 e + 5 f x] + 30 b^5 \text{Sin}[2 e + 5 f x] - 90 a^5 \text{Sin}[4 e + 5 f x] - 300 a^4 b \text{Sin}[4 e + 5 f x] - 300 a^3 b^2 \text{Sin}[4 e + 5 f x] + 60 a b^4 \text{Sin}[4 e + 5 f x] - 30 b^5 \text{Sin}[4 e + 5 f x] - 48 a^5 \text{Sin}[6 e + 5 f x] - 32 a^4 b \text{Sin}[6 e + 5 f x] + 340 a^3 b^2 \text{Sin}[6 e + 5 f x] + 864 a^2 b^3 \text{Sin}[6 e + 5 f x] - 15 a b^4 \text{Sin}[6 e + 5 f x] - 30 b^5 \text{Sin}[6 e + 5 f x] - 90 a^5 \text{Sin}[8 e + 5 f x] - 300 a^4 b \text{Sin}[8 e + 5 f x] - 300 a^3 b^2 \text{Sin}[8 e + 5 f x] + 15 a b^4 \text{Sin}[8 e + 5 f x] + 30 b^5 \text{Sin}[8 e + 5 f x] + 46 a^5 \text{Sin}[4 e + 7 f x] + 172 a^4 b \text{Sin}[4 e + 7 f x] + 216 a^3 b^2 \text{Sin}[4 e + 7 f x] + 15 a b^4 \text{Sin}[4 e + 7 f x] - 15 a b^4 \text{Sin}[6 e + 7 f x] + 46 a^5 \text{Sin}[8 e + 7 f x] + 172 a^4 b \text{Sin}[8 e + 7 f x] + 216 a^3 b^2 \text{Sin}[8 e + 7 f x])$

Problem 367: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Cot}[e + f x]}{\left(a + b \text{Sec}[e + f x]^2\right)^3} \, dx$$

Optimal (type 3, 130 leaves, 4 steps):

$$-\frac{b^3}{4 a^3 (a + b) f \left(b + a \text{Cos}[e + f x]^2\right)^2} + \frac{b^2 (3 a + 2 b)}{2 a^3 (a + b)^2 f \left(b + a \text{Cos}[e + f x]^2\right)} + \frac{b \left(3 a^2 + 3 a b + b^2\right) \text{Log}\left[b + a \text{Cos}[e + f x]^2\right]}{2 a^3 (a + b)^3 f} + \frac{\text{Log}[\text{Sin}[e + f x]]}{(a + b)^3 f}$$

Result (type 3, 253 leaves):

$$\frac{1}{32 a^3 (a + b)^3 f \left(a + b \text{Sec}[e + f x]^2\right)^3} (a + 2 b + a \text{Cos}[2 (e + f x)]) \Big(-4 b^3 (a + b)^2 + 4 b^2 (a + b) (3 a + 2 b) (a + 2 b + a \text{Cos}[2 (e + f x)]) + 4 i b \left(3 a^2 + 3 a b + b^2\right) f x (a + 2 b + a \text{Cos}[2 (e + f x)])^2 - 2 i b \left(3 a^2 + 3 a b + b^2\right) \text{ArcTan}[\text{Tan}[2 (e + f x)]] (a + 2 b + a \text{Cos}[2 (e + f x)])^2 + b \left(3 a^2 + 3 a b + b^2\right) (a + 2 b + a \text{Cos}[2 (e + f x)])^2 \text{Log}\left[(a + 2 b + a \text{Cos}[2 (e + f x)])^2\right] + 4 a^3 (a + 2 b + a \text{Cos}[2 (e + f x)])^2 \text{Log}[\text{Sin}[e + f x]]\Big) \text{Sec}[e + f x]^6$$

Problem 368: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[e + f x]^3}{\left(a + b \text{Sec}[e + f x]^2\right)^3} \, dx$$

Optimal (type 3, 154 leaves, 4 steps):

$$\frac{b^4}{4 a^3 (a+b)^2 f (b+a \text{Cos}[e+f x]^2)^2}-\frac{b^3 (2 a+b)}{a^3 (a+b)^3 f (b+a \text{Cos}[e+f x]^2)}-\frac{\text{Csc}[e+f x]^2}{2 (a+b)^3 f}-\frac{b^2 (6 a^2+4 a b+b^2) \text{Log}[b+a \text{Cos}[e+f x]^2]}{2 a^3 (a+b)^4 f}-\frac{(a+4 b) \text{Log}[\text{Sin}[e+f x]]}{(a+b)^4 f}$$

Result (type 3, 1045 leaves):

$$\frac{b^4 (a+2 b+a \text{Cos}[2 e+2 f x]) \text{Sec}[e+f x]^6}{8 a^3 (a+b)^2 f (a+b \text{Sec}[e+f x]^2)^3}-\frac{b^3 (2 a+b) (a+2 b+a \text{Cos}[2 e+2 f x])^2 \text{Sec}[e+f x]^6}{4 a^3 (a+b)^3 f (a+b \text{Sec}[e+f x]^2)^3}-$$
$$\left(i (-6 a^2 b^2-4 a b^3-b^4) \text{ArcTan}[\text{Tan}[2 e+2 f x]] (a+2 b+a \text{Cos}[2 e+2 f x])^3 \text{Sec}[e+f x]^6\right) \Big/ \left(16 a^3 (a+b)^4 f (a+b \text{Sec}[e+f x]^2)^3\right)-\frac{(a+2 b+a \text{Cos}[2 e+2 f x])^3 \text{Csc}[e+f x]^2 \text{Sec}[e+f x]^6}{16 (a+b)^3 f (a+b \text{Sec}[e+f x]^2)^3}+$$
$$\left((-6 a^2 b^2-4 a b^3-b^4) (a+2 b+a \text{Cos}[2 e+2 f x])^3 \text{Log}\left[(a+2 b+a \text{Cos}[2 e+2 f x])^2\right] \text{Sec}[e+f x]^6\right) \Big/ \left(32 a^3 (a+b)^4 f (a+b \text{Sec}[e+f x]^2)^3\right)+$$
$$\left((-a-4 b) (a+2 b+a \text{Cos}[2 e+2 f x])^3 \text{Log}[\text{Sin}[e+f x]] \text{Sec}[e+f x]^6\right) \Big/ \left(8 (a+b)^4 f (a+b \text{Sec}[e+f x]^2)^3\right)+$$
$$\frac{1}{(a+b \text{Sec}[e+f x]^2)^3} x (a+2 b+a \text{Cos}[2 e+2 f x])^3 \text{Sec}[e+f x]^6$$
$$\left(\frac{a \text{Cot}[e]}{8 (a+b)^4}+\frac{b \text{Cot}[e]}{2 (a+b)^4}-\frac{3 i b^2 \text{Cos}[e]^2}{4 a (a+b)^4 (\text{Cos}[e]^2-\text{Sin}[e]^2)}-\frac{i b^3 \text{Cos}[e]^2}{2 a^2 (a+b)^4 (\text{Cos}[e]^2-\text{Sin}[e]^2)}-\right.$$
$$\frac{i b^4 \text{Cos}[e]^2}{8 a^3 (a+b)^4 (\text{Cos}[e]^2-\text{Sin}[e]^2)}-\frac{3 b^2 \text{Cos}[e] \text{Sin}[e]}{2 a (a+b)^4 (\text{Cos}[e]^2-\text{Sin}[e]^2)}-$$
$$\frac{b^3 \text{Cos}[e] \text{Sin}[e]}{a^2 (a+b)^4 (\text{Cos}[e]^2-\text{Sin}[e]^2)}-\frac{b^4 \text{Cos}[e] \text{Sin}[e]}{4 a^3 (a+b)^4 (\text{Cos}[e]^2-\text{Sin}[e]^2)}+$$
$$\frac{3 i b^2 \text{Sin}[e]^2}{4 a (a+b)^4 (\text{Cos}[e]^2-\text{Sin}[e]^2)}+\frac{i b^3 \text{Sin}[e]^2}{2 a^2 (a+b)^4 (\text{Cos}[e]^2-\text{Sin}[e]^2)}+$$
$$\frac{i b^4 \text{Sin}[e]^2}{8 a^3 (a+b)^4 (\text{Cos}[e]^2-\text{Sin}[e]^2)}-\frac{i (a+a \text{Cos}[2 e]+i a \text{Sin}[2 e])}{8 (a+b)^4 (-1+\text{Cos}[2 e]+i \text{Sin}[2 e])}-$$
$$\frac{i (b+b \text{Cos}[2 e]+i b \text{Sin}[2 e])}{2 (a+b)^4 (-1+\text{Cos}[2 e]+i \text{Sin}[2 e])}-\frac{3 i (-b^2+b^2 \text{Cos}[4 e]+i b^2 \text{Sin}[4 e])}{4 a (a+b)^4 (1+\text{Cos}[4 e]+i \text{Sin}[4 e])}-$$
$$\left.\frac{i (-b^3+b^3 \text{Cos}[4 e]+i b^3 \text{Sin}[4 e])}{2 a^2 (a+b)^4 (1+\text{Cos}[4 e]+i \text{Sin}[4 e])}-\frac{i (-b^4+b^4 \text{Cos}[4 e]+i b^4 \text{Sin}[4 e])}{8 a^3 (a+b)^4 (1+\text{Cos}[4 e]+i \text{Sin}[4 e])}\right)$$

Problem 369: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[e+f x]^5}{(a+b \text{Sec}[e+f x]^2)^3} \, dx$$

Optimal (type 3, 192 leaves, 4 steps):

$$-\frac{b^5}{4 a^3 (a+b)^3 f \left(b+a \operatorname{Cos}[e+f x]^2\right)^2}+\frac{b^4 (5 a+2 b)}{2 a^3 (a+b)^4 f \left(b+a \operatorname{Cos}[e+f x]^2\right)}+\frac{(2 a+5 b) \operatorname{Csc}[e+f x]^2}{2 (a+b)^4 f}-\frac{\operatorname{Csc}[e+f x]^4}{4 (a+b)^3 f}+\frac{b^3 \left(10 a^2+5 a b+b^2\right) \operatorname{Log}\left[b+a \operatorname{Cos}[e+f x]^2\right]}{2 a^3 (a+b)^5 f}+\frac{\left(a^2+5 a b+10 b^2\right) \operatorname{Log}[\operatorname{Sin}[e+f x]]}{(a+b)^5 f}$$

Result (type 3, 1286 leaves):

$$-\frac{b^5\left(a+2b+a\,\text{Cos}[2e+2fx]\right)\text{Sec}[e+fx]^6}{8a^3(a+b)^3 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3}+\frac{b^4(5a+2b)\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^2\text{Sec}[e+fx]^6}{8a^3(a+b)^4 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3}-$$

$$\left(i\left(a^2+5ab+10b^2\right)\text{ArcTan}[\text{Tan}[e+fx]]\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Sec}[e+fx]^6\right)\Big/\left(8(a+b)^5 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)-$$

$$\left(i\left(10a^2b^3+5ab^4+b^5\right)\text{ArcTan}[\text{Tan}[2e+2fx]]\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Sec}[e+fx]^6\right)\Big/\left(16a^3(a+b)^5 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)+$$

$$\frac{(2a+5b)\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Csc}[e+fx]^2\text{Sec}[e+fx]^6}{16(a+b)^4 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3}-\frac{\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Csc}[e+fx]^4\text{Sec}[e+fx]^6}{32(a+b)^3 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3}+$$

$$\left(\left(10a^2b^3+5ab^4+b^5\right)\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Log}\left[\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^2\right]\text{Sec}[e+fx]^6\right)\Big/\left(32a^3(a+b)^5 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)+$$

$$\left(\left(a^2+5ab+10b^2\right)\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Log}\left[\text{Sin}[e+fx]^2\right]\text{Sec}[e+fx]^6\right)\Big/\left(16(a+b)^5 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)+$$

$$\frac{1}{\left(a+b\,\text{Sec}[e+fx]^2\right)^3}x\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Sec}[e+fx]^6\left(\frac{i a^2}{8(a+b)^5}+\frac{5 i a b}{8(a+b)^5}+\frac{5 i b^2}{4(a+b)^5}-\frac{a^2\text{Cot}[e]}{8(a+b)^5}-\frac{5ab\,\text{Cot}[e]}{8(a+b)^5}-\frac{5b^2\text{Cot}[e]}{4(a+b)^5}+\frac{5 i b^3\text{Cos}[e]^2}{4a(a+b)^5\left(\text{Cos}[e]^2-\text{Sin}[e]^2\right)}+\right.$$

$$\frac{5 i b^4\text{Cos}[e]^2}{8a^2(a+b)^5\left(\text{Cos}[e]^2-\text{Sin}[e]^2\right)}+\frac{i b^5\text{Cos}[e]^2}{8a^3(a+b)^5\left(\text{Cos}[e]^2-\text{Sin}[e]^2\right)}+\frac{5b^3\text{Cos}[e]\,\text{Sin}[e]}{2a(a+b)^5\left(\text{Cos}[e]^2-\text{Sin}[e]^2\right)}+\frac{5b^4\text{Cos}[e]\,\text{Sin}[e]}{4a^2(a+b)^5\left(\text{Cos}[e]^2-\text{Sin}[e]^2\right)}+$$

$$\frac{b^5\text{Cos}[e]\,\text{Sin}[e]}{4a^3(a+b)^5\left(\text{Cos}[e]^2-\text{Sin}[e]^2\right)}-\frac{5 i b^3\text{Sin}[e]^2}{4a(a+b)^5\left(\text{Cos}[e]^2-\text{Sin}[e]^2\right)}-\frac{5 i b^4\text{Sin}[e]^2}{8a^2(a+b)^5\left(\text{Cos}[e]^2-\text{Sin}[e]^2\right)}-\frac{i b^5\text{Sin}[e]^2}{8a^3(a+b)^5\left(\text{Cos}[e]^2-\text{Sin}[e]^2\right)}+$$

$$\left(i\left(a^2+5ab+a^2\text{Cos}[2e]+5ab\,\text{Cos}[2e]+i a^2\text{Sin}[2e]+5 i ab\,\text{Sin}[2e]\right)\right)\Big/\left(8(a+b)^5\left(-1+\text{Cos}[2e]+i\,\text{Sin}[2e]\right)\right)+$$

$$\frac{5i\left(b^2+b^2\text{Cos}[2e]+i b^2\text{Sin}[2e]\right)}{4(a+b)^5\left(-1+\text{Cos}[2e]+i\,\text{Sin}[2e]\right)}+\frac{5i\left(-b^3+b^3\text{Cos}[4e]+i b^3\text{Sin}[4e]\right)}{4a(a+b)^5\left(1+\text{Cos}[4e]+i\,\text{Sin}[4e]\right)}+$$

$$\left.\frac{5i\left(-b^4+b^4\text{Cos}[4e]+i b^4\text{Sin}[4e]\right)}{8a^2(a+b)^5\left(1+\text{Cos}[4e]+i\,\text{Sin}[4e]\right)}+\frac{i\left(-b^5+b^5\text{Cos}[4e]+i b^5\text{Sin}[4e]\right)}{8a^3(a+b)^5\left(1+\text{Cos}[4e]+i\,\text{Sin}[4e]\right)}\right)$$

Problem 370: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]^6}{\left(a+b\,\text{Sec}[e+f x]^2\right)^3}\,dx$$

Optimal (type 3, 147 leaves, 7 steps):

$$-\frac{x}{a^3}+\frac{\sqrt{a+b}\,\left(3 a^2-4 a b+8 b^2\right) \text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{8 a^3 b^{5/2} f}-\frac{(a+b)\,\text{Tan}[e+f x]^3}{4 a b f \left(a+b+b\,\text{Tan}[e+f x]^2\right)^2}-\frac{(3 a-4 b)\,(a+b)\,\text{Tan}[e+f x]}{8 a^2 b^2 f \left(a+b+b\,\text{Tan}[e+f x]^2\right)}$$

Result (type 3, 760 leaves):

$$\Bigg(\left(-3 a^3+a^2 b-4 a b^2-8 b^3\right) (a+2 b+a\,\text{Cos}[2 e+2 f x])^3\,\text{Sec}[e+f x]^6 \Bigg(\Bigg(\text{ArcTan}\Big[\text{Sec}[f x] \left(\frac{\text{Cos}[2 e]}{2 \sqrt{a+b}\,\sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}}-\frac{i\,\text{Sin}[2 e]}{2 \sqrt{a+b}\,\sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}}\right) (-a\,\text{Sin}[f x]-2 b\,\text{Sin}[f x]+a\,\text{Sin}[2 e+f x])\Big]\,\text{Cos}[2 e]\Bigg)\Bigg/\left(64 a^3 b^2 \sqrt{a+b}\,f \sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}\right)-\Bigg(i\,\text{ArcTan}\Big[\text{Sec}[f x] \left(\frac{\text{Cos}[2 e]}{2 \sqrt{a+b}\,\sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}}-\frac{i\,\text{Sin}[2 e]}{2 \sqrt{a+b}\,\sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}}\right) (-a\,\text{Sin}[f x]-2 b\,\text{Sin}[f x]+a\,\text{Sin}[2 e+f x])\Big]\,\text{Sin}[2 e]\Bigg)\Bigg/\left(64 a^3 b^2 \sqrt{a+b}\,f \sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}\right)\Bigg)\Bigg)\Bigg/\left(a+b\,\text{Sec}[e+f x]^2\right)^3+\frac{1}{128 a^3 b^2 f \left(a+b\,\text{Sec}[e+f x]^2\right)^3}(a+2 b+a\,\text{Cos}[2 e+2 f x])\,\text{Sec}[2 e]\,\text{Sec}[e+f x]^6 \big(-24 a^2 b^2 f x\,\text{Cos}[2 e]-64 a b^3 f x\,\text{Cos}[2 e]-64 b^4 f x\,\text{Cos}[2 e]-16 a^2 b^2 f x\,\text{Cos}[2 f x]-32 a b^3 f x\,\text{Cos}[2 f x]-16 a^2 b^2 f x\,\text{Cos}[4 e+2 f x]-32 a b^3 f x\,\text{Cos}[4 e+2 f x]-4 a^2 b^2 f x\,\text{Cos}[2 e+4 f x]-4 a^2 b^2 f x\,\text{Cos}[6 e+4 f x]+9 a^4\,\text{Sin}[2 e]+15 a^3 b\,\text{Sin}[2 e]-18 a^2 b^2\,\text{Sin}[2 e]-72 a b^3\,\text{Sin}[2 e]-48 b^4\,\text{Sin}[2 e]-9 a^4\,\text{Sin}[2 f x]-13 a^3 b\,\text{Sin}[2 f x]+28 a^2 b^2\,\text{Sin}[2 f x]+32 a b^3\,\text{Sin}[2 f x]+3 a^4\,\text{Sin}[4 e+2 f x]-a^3 b\,\text{Sin}[4 e+2 f x]-20 a^2 b^2\,\text{Sin}[4 e+2 f x]-16 a b^3\,\text{Sin}[4 e+2 f x]-3 a^4\,\text{Sin}[2 e+4 f x]+3 a^3 b\,\text{Sin}[2 e+4 f x]+6 a^2 b^2\,\text{Sin}[2 e+4 f x]\big)$$

Problem 371: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]^4}{\left(a+b\,\text{Sec}[e+f x]^2\right)^3}\,dx$$

Optimal (type 3, 137 leaves, 7 steps):

$$\frac{x}{a^3}+\frac{\left(a^2-4 a b-8 b^2\right)\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{8 a^3 b^{3/2}\sqrt{a+b}\,f}-\frac{(a+b)\,\text{Tan}[e+f x]}{4 a b f\left(a+b+b\,\text{Tan}[e+f x]^2\right)^2}+\frac{(a-4 b)\,\text{Tan}[e+f x]}{8 a^2 b f\left(a+b+b\,\text{Tan}[e+f x]^2\right)}$$

Result (type 3, 1744 leaves):

$$\left((a+2 b+a\,\text{Cos}[2 e+2 f x])^3\,\text{Sec}[e+f x]^6\left(\frac{\left(3 a^2+8 a b+8 b^2\right)\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}-\left(a\sqrt{b}\left(3 a^2+16 a b+16 b^2+3 a (a+2 b)\,\text{Cos}[2 (e+f x)]\right)\text{Sin}[2 (e+f x)]\right)\Big/\left((a+b)^2\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)^2\right)\right)\right)\Big/\left(1024 b^{5/2} f\left(a+b\,\text{Sec}[e+f x]^2\right)^3\right)-$$

$$\left((a+2 b+a\,\text{Cos}[2 e+2 f x])^3\,\text{Sec}[e+f x]^6\left(-\frac{3 a (a+2 b)\,\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}+\left(\sqrt{b}\left(3 a^3+14 a^2 b+24 a b^2+16 b^3+a\left(3 a^2+4 a b+4 b^2\right)\text{Cos}[2 (e+f x)]\right)\text{Sin}[2 (e+f x)]\right)\Big/\left((a+b)^2\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)^2\right)\right)\right)\Big/$$

$$\left(2048 b^{5/2} f\left(a+b\,\text{Sec}[e+f x]^2\right)^3\right)+\frac{1}{32\left(a+b\,\text{Sec}[e+f x]^2\right)^3}$$

$$(a+2 b+a\,\text{Cos}[2 e+2 f x])^3\,\text{Sec}[e+f x]^6$$

$$\left(\frac{1}{(a+b)^2}\left(3 a^5-10 a^4 b+80 a^3 b^2+480 a^2 b^3+640 a b^4+256 b^5\right)\left(\left(\text{ArcTan}\left[\text{Sec}[f x]\right.\right.\right.\right.$$

$$\left(\frac{\text{Cos}[2 e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}}-\frac{i\,\text{Sin}[2 e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}}\right)$$

$$\left.\left(-a\,\text{Sin}[f x]-2 b\,\text{Sin}[f x]+a\,\text{Sin}[2 e+f x]\right)\right]\text{Cos}[2 e]\Big)\Big/$$

$$\left(64 a^3 b^2\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}\right)-\left(i\,\text{ArcTan}\left[\text{Sec}[f x]\right.\right.$$

$$\left(\frac{\text{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \,\text{Cos}[4 e]-i b \,\text{Sin}[4 e]}}-\frac{i \,\text{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \,\text{Cos}[4 e]-i b \,\text{Sin}[4 e]}}\right)$$

$$\left.\left.(-a \,\text{Sin}[f x]-2 b \,\text{Sin}[f x]+a \,\text{Sin}[2 e+f x])\right] \text{Sin}[2 e]\right) \Big/ \left(64 a^3 b^2 \sqrt{a+b}\, f\right.$$

$$\left.\left.\sqrt{b \,\text{Cos}[4 e]-i b \,\text{Sin}[4 e]}\right)\right)+\frac{1}{128 a^3 b^2 (a+b)^2 f (a+2 b+a \,\text{Cos}[2 e+2 f x])^2}$$

$$\text{Sec}[2 e] \left(768 a^4 b^2 f x \,\text{Cos}[2 e]+3584 a^3 b^3 f x \,\text{Cos}[2 e]+6912 a^2 b^4 f x \,\text{Cos}[2 e]+\right.$$
$$6144 a b^5 f x \,\text{Cos}[2 e]+2048 b^6 f x \,\text{Cos}[2 e]+512 a^4 b^2 f x \,\text{Cos}[2 f x]+$$
$$2048 a^3 b^3 f x \,\text{Cos}[2 f x]+2560 a^2 b^4 f x \,\text{Cos}[2 f x]+1024 a b^5 f x \,\text{Cos}[2 f x]+$$
$$512 a^4 b^2 f x \,\text{Cos}[4 e+2 f x]+2048 a^3 b^3 f x \,\text{Cos}[4 e+2 f x]+2560 a^2 b^4 f x \,\text{Cos}[4 e+2 f x]+$$
$$1024 a b^5 f x \,\text{Cos}[4 e+2 f x]+128 a^4 b^2 f x \,\text{Cos}[2 e+4 f x]+256 a^3 b^3 f x \,\text{Cos}[2 e+4 f x]+$$
$$128 a^2 b^4 f x \,\text{Cos}[2 e+4 f x]+128 a^4 b^2 f x \,\text{Cos}[6 e+4 f x]+256 a^3 b^3 f x \,\text{Cos}[6 e+4 f x]+$$
$$128 a^2 b^4 f x \,\text{Cos}[6 e+4 f x]-9 a^6 \,\text{Sin}[2 e]+12 a^5 b \,\text{Sin}[2 e]+684 a^4 b^2 \,\text{Sin}[2 e]+$$
$$2880 a^3 b^3 \,\text{Sin}[2 e]+5280 a^2 b^4 \,\text{Sin}[2 e]+4608 a b^5 \,\text{Sin}[2 e]+1536 b^6 \,\text{Sin}[2 e]+$$
$$9 a^6 \,\text{Sin}[2 f x]-14 a^5 b \,\text{Sin}[2 f x]-608 a^4 b^2 \,\text{Sin}[2 f x]-2112 a^3 b^3 \,\text{Sin}[2 f x]-$$
$$2560 a^2 b^4 \,\text{Sin}[2 f x]-1024 a b^5 \,\text{Sin}[2 f x]-3 a^6 \,\text{Sin}[4 e+2 f x]+10 a^5 b \,\text{Sin}[4 e+2 f x]+$$
$$304 a^4 b^2 \,\text{Sin}[4 e+2 f x]+1056 a^3 b^3 \,\text{Sin}[4 e+2 f x]+1280 a^2 b^4 \,\text{Sin}[4 e+2 f x]+$$
$$512 a b^5 \,\text{Sin}[4 e+2 f x]+3 a^6 \,\text{Sin}[2 e+4 f x]-12 a^5 b \,\text{Sin}[2 e+4 f x]-$$
$$\left.204 a^4 b^2 \,\text{Sin}[2 e+4 f x]-384 a^3 b^3 \,\text{Sin}[2 e+4 f x]-192 a^2 b^4 \,\text{Sin}[2 e+4 f x]\right)-$$

$$\left(\left(a+2 b+a \,\text{Cos}[2 e+2 f x]\right)^3 \text{Sec}[e+f x]^6 \left(-\left(\left(6 a^2 \,\text{ArcTan}\left[\left(\text{Sec}[f x] \left(\text{Cos}[2 e]-i \,\text{Sin}[2 e]\right)\right.\right.\right.\right.\right.\right.$$
$$\left.\left.\left.(-(a+2 b) \,\text{Sin}[f x]+a \,\text{Sin}[2 e+f x])\right)\Big/\left(2 \sqrt{a+b} \sqrt{b (\text{Cos}[e]-i \,\text{Sin}[e])^4}\right)\right]$$
$$\left.\left.(\text{Cos}[2 e]-i \,\text{Sin}[2 e])\right)\Big/\left(\sqrt{a+b} \sqrt{b (\text{Cos}[e]-i \,\text{Sin}[e])^4}\right)\right)+$$
$$\left(a \,\text{Sec}[2 e] \left(\left(-9 a^4-16 a^3 b+48 a^2 b^2+128 a b^3+64 b^4\right) \text{Sin}[2 f x]+a \left(-3 a^3+2 a^2 b+24 a\right.\right.\right.$$
$$\left.\left.b^2+16 b^3\right) \text{Sin}[2 (e+2 f x)]+\left(3 a^4-64 a^2 b^2-128 a b^3-64 b^4\right) \text{Sin}[4 e+2 f x]\right)+$$
$$\left(9 a^5+18 a^4 b-64 a^3 b^2-256 a^2 b^3-320 a b^4-128 b^5\right) \text{Tan}[2 e]\Big)\Big/$$
$$\left.\left.\left(a^2 \left(a+2 b+a \,\text{Cos}[2 (e+f x)]\right)^2\right)\right)\right)\Big/\left(2048 b^2 (a+b)^2 f \left(a+b \,\text{Sec}[e+f x]^2\right)^3\right)$$

Problem 372: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]^2}{\left(a+b \,\text{Sec}[e+f x]^2\right)^3} \, dx$$

Optimal (type 3, 138 leaves, 7 steps):

$$-\frac{x}{a^3}+\frac{\left(3 a^2+12 a b+8 b^2\right) \text{ArcTan}\left[\frac{\sqrt{b}\, \text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{8 a^3 \sqrt{b}\, (a+b)^{3/2} f}+$$
$$\frac{\text{Tan}[e+f x]}{4 a f \left(a+b+b \,\text{Tan}[e+f x]^2\right)^2}+\frac{(3 a+4 b) \,\text{Tan}[e+f x]}{8 a^2 (a+b) f \left(a+b+b \,\text{Tan}[e+f x]^2\right)}$$

Result (type 3, 1745 leaves):

$$\left((a+2b+a\,\mathrm{Cos}[2e+2fx])^3\,\mathrm{Sec}[e+fx]^6\left(\frac{(3a^2+8ab+8b^2)\,\mathrm{ArcTan}\left[\frac{\sqrt{b}\,\mathrm{Tan}[e+fx]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}-\left(a\sqrt{b}\,(3a^2+16ab+16b^2+3a\,(a+2b)\,\mathrm{Cos}[2\,(e+fx)])\,\mathrm{Sin}[2\,(e+fx)]\right)\Big/\left((a+b)^2\,(a+2b+a\,\mathrm{Cos}[2\,(e+fx)])^2\right)\right)\right)\Big/\left(1024\,b^{5/2}\,f\,(a+b\,\mathrm{Sec}[e+fx]^2)^3\right)+$$

$$\left((a+2b+a\,\mathrm{Cos}[2e+2fx])^3\,\mathrm{Sec}[e+fx]^6\left(-\frac{3a\,(a+2b)\,\mathrm{ArcTan}\left[\frac{\sqrt{b}\,\mathrm{Tan}[e+fx]}{\sqrt{a+b}}\right]}{(a+b)^{5/2}}+\left(\sqrt{b}\,(3a^3+14a^2b+24ab^2+16b^3+a\,(3a^2+4ab+4b^2)\,\mathrm{Cos}[2\,(e+fx)])\,\mathrm{Sin}[2\,(e+fx)]\right)\Big/\left((a+b)^2\,(a+2b+a\,\mathrm{Cos}[2\,(e+fx)])^2\right)\right)\right)\Big/$$

$$\left(2048\,b^{5/2}\,f\,(a+b\,\mathrm{Sec}[e+fx]^2)^3\right)+\frac{1}{32\,(a+b\,\mathrm{Sec}[e+fx]^2)^3}$$

$$(a+2b+a\,\mathrm{Cos}[2e+2fx])^3\,\mathrm{Sec}[e+fx]^6$$

$$\left(-\frac{1}{(a+b)^2}(3a^5-10a^4b+80a^3b^2+480a^2b^3+640ab^4+256b^5)\right.$$

$$\left(\left(\left(\mathrm{ArcTan}\left[\mathrm{Sec}[fx]\left(\frac{\mathrm{Cos}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}}-\frac{i\,\mathrm{Sin}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}}\right)(-a\,\mathrm{Sin}[fx]-2b\,\mathrm{Sin}[fx]+a\,\mathrm{Sin}[2e+fx])\right]\mathrm{Cos}[2e]\right)\Big/\left(64a^3b^2\sqrt{a+b}\,f\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}\right)-\right.$$

$$\left(i\,\mathrm{ArcTan}\left[\mathrm{Sec}[fx]\left(\frac{\mathrm{Cos}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}}-\frac{i\,\mathrm{Sin}[2e]}{2\sqrt{a+b}\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}}\right)(-a\,\mathrm{Sin}[fx]-2b\,\mathrm{Sin}[fx]+a\,\mathrm{Sin}[2e+fx])\right]\mathrm{Sin}[2e]\right)\Big/\left(64a^3b^2\sqrt{a+b}\,f\,\sqrt{b\,\mathrm{Cos}[4e]-i\,b\,\mathrm{Sin}[4e]}\right)\Bigg)-$$

$$\frac{1}{128a^3b^2\,(a+b)^2\,f\,(a+2b+a\,\mathrm{Cos}[2e+2fx])^2}\,\mathrm{Sec}[2e]\,\big(768a^4b^2fx\,\mathrm{Cos}[2e]+$$

$$3584a^3b^3fx\,\mathrm{Cos}[2e]+6912a^2b^4fx\,\mathrm{Cos}[2e]+6144ab^5fx\,\mathrm{Cos}[2e]+$$
$$2048b^6fx\,\mathrm{Cos}[2e]+512a^4b^2fx\,\mathrm{Cos}[2fx]+2048a^3b^3fx\,\mathrm{Cos}[2fx]+$$
$$2560a^2b^4fx\,\mathrm{Cos}[2fx]+1024ab^5fx\,\mathrm{Cos}[2fx]+512a^4b^2fx\,\mathrm{Cos}[4e+2fx]+$$
$$2048a^3b^3fx\,\mathrm{Cos}[4e+2fx]+2560a^2b^4fx\,\mathrm{Cos}[4e+2fx]+1024ab^5fx\,\mathrm{Cos}[4e+2fx]+$$
$$128a^4b^2fx\,\mathrm{Cos}[2e+4fx]+256a^3b^3fx\,\mathrm{Cos}[2e+4fx]+128a^2b^4fx\,\mathrm{Cos}[2e+4fx]+$$
$$128a^4b^2fx\,\mathrm{Cos}[6e+4fx]+256a^3b^3fx\,\mathrm{Cos}[6e+4fx]+128a^2b^4fx\,\mathrm{Cos}[6e+4fx]-$$

$$9 a^6 \text{Sin}[2 e] + 12 a^5 b \text{Sin}[2 e] + 684 a^4 b^2 \text{Sin}[2 e] + 2880 a^3 b^3 \text{Sin}[2 e] +$$
$$5280 a^2 b^4 \text{Sin}[2 e] + 4608 a b^5 \text{Sin}[2 e] + 1536 b^6 \text{Sin}[2 e] + 9 a^6 \text{Sin}[2 f x] -$$
$$14 a^5 b \text{Sin}[2 f x] - 608 a^4 b^2 \text{Sin}[2 f x] - 2112 a^3 b^3 \text{Sin}[2 f x] - 2560 a^2 b^4 \text{Sin}[2 f x] -$$
$$1024 a b^5 \text{Sin}[2 f x] - 3 a^6 \text{Sin}[4 e + 2 f x] + 10 a^5 b \text{Sin}[4 e + 2 f x] +$$
$$304 a^4 b^2 \text{Sin}[4 e + 2 f x] + 1056 a^3 b^3 \text{Sin}[4 e + 2 f x] + 1280 a^2 b^4 \text{Sin}[4 e + 2 f x] +$$
$$512 a b^5 \text{Sin}[4 e + 2 f x] + 3 a^6 \text{Sin}[2 e + 4 f x] - 12 a^5 b \text{Sin}[2 e + 4 f x] -$$
$$204 a^4 b^2 \text{Sin}[2 e + 4 f x] - 384 a^3 b^3 \text{Sin}[2 e + 4 f x] - 192 a^2 b^4 \text{Sin}[2 e + 4 f x])\Big) -$$

$$\Big((a + 2 b + a \text{Cos}[2 e + 2 f x])^3 \text{Sec}[e + f x]^6$$
$$\Big(-\Big(\Big(6 a^2 \text{ArcTan}\Big[(\text{Sec}[f x] (\text{Cos}[2 e] - i \text{Sin}[2 e]) (-(a + 2 b) \text{Sin}[f x] + a \text{Sin}[2 e + f x]))\Big/$$
$$\Big(2 \sqrt{a + b} \sqrt{b (\text{Cos}[e] - i \text{Sin}[e])^4}\Big)\Big]$$
$$(\text{Cos}[2 e] - i \text{Sin}[2 e])\Big)\Big/\Big(\sqrt{a + b} \sqrt{b (\text{Cos}[e] - i \text{Sin}[e])^4}\Big)\Big) +$$
$$(a \text{Sec}[2 e] ((-9 a^4 - 16 a^3 b + 48 a^2 b^2 + 128 a b^3 + 64 b^4) \text{Sin}[2 f x] + a (-3 a^3 + 2 a^2 b + 24 a$$
$$b^2 + 16 b^3) \text{Sin}[2 (e + 2 f x)] + (3 a^4 - 64 a^2 b^2 - 128 a b^3 - 64 b^4) \text{Sin}[4 e + 2 f x]) +$$
$$(9 a^5 + 18 a^4 b - 64 a^3 b^2 - 256 a^2 b^3 - 320 a b^4 - 128 b^5) \text{Tan}[2 e])\Big/$$
$$(a^2 (a + 2 b + a \text{Cos}[2 (e + f x)])^2)\Big)\Big)\Big/\Big(2048 b^2 (a + b)^2 f (a + b \text{Sec}[e + f x]^2)^3\Big)$$

Problem 373: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{1}{(a + b \text{Sec}[e + f x]^2)^3} \, dx$$

Optimal (type 3, 144 leaves, 6 steps):

$$\frac{x}{a^3} - \frac{\sqrt{b} (15 a^2 + 20 a b + 8 b^2) \text{ArcTan}\left[\frac{\sqrt{b} \text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{8 a^3 (a + b)^{5/2} f} -$$
$$\frac{b \text{Tan}[e + f x]}{4 a (a + b) f (a + b + b \text{Tan}[e + f x]^2)^2} - \frac{b (7 a + 4 b) \text{Tan}[e + f x]}{8 a^2 (a + b)^2 f (a + b + b \text{Tan}[e + f x]^2)}$$

Result (type 3, 627 leaves):

$$\frac{x\left(a+2b+a\operatorname{Cos}[2e+2fx]\right)^3\operatorname{Sec}[e+fx]^6}{8a^3\left(a+b\operatorname{Sec}[e+fx]^2\right)^3}+$$
$$\Bigg(\left(15a^2+20ab+8b^2\right)\left(a+2b+a\operatorname{Cos}[2e+2fx]\right)^3\operatorname{Sec}[e+fx]^6\Bigg(\Bigg(b\operatorname{ArcTan}\Big[$$
$$\operatorname{Sec}[fx]\left(\frac{\operatorname{Cos}[2e]}{2\sqrt{a+b}\sqrt{b\operatorname{Cos}[4e]-\text{i}\,b\operatorname{Sin}[4e]}}-\frac{\text{i}\operatorname{Sin}[2e]}{2\sqrt{a+b}\sqrt{b\operatorname{Cos}[4e]-\text{i}\,b\operatorname{Sin}[4e]}}\right)$$
$$\left(-a\operatorname{Sin}[fx]-2b\operatorname{Sin}[fx]+a\operatorname{Sin}[2e+fx]\right)\Big]\operatorname{Cos}[2e]\Bigg)\Big/$$
$$\left(64a^3\sqrt{a+b}\,f\sqrt{b\operatorname{Cos}[4e]-\text{i}\,b\operatorname{Sin}[4e]}\right)-\Bigg(\text{i}\,b\operatorname{ArcTan}\Big[$$
$$\operatorname{Sec}[fx]\left(\frac{\operatorname{Cos}[2e]}{2\sqrt{a+b}\sqrt{b\operatorname{Cos}[4e]-\text{i}\,b\operatorname{Sin}[4e]}}-\frac{\text{i}\operatorname{Sin}[2e]}{2\sqrt{a+b}\sqrt{b\operatorname{Cos}[4e]-\text{i}\,b\operatorname{Sin}[4e]}}\right)$$
$$\left(-a\operatorname{Sin}[fx]-2b\operatorname{Sin}[fx]+a\operatorname{Sin}[2e+fx]\right)\Big]\operatorname{Sin}[2e]\Bigg)\Big/$$
$$\left(64a^3\sqrt{a+b}\,f\sqrt{b\operatorname{Cos}[4e]-\text{i}\,b\operatorname{Sin}[4e]}\right)\Bigg)\Bigg)\Big/\left(\left(a+b\right)^2\left(a+b\operatorname{Sec}[e+fx]^2\right)^3\right)+$$
$$\Big(\left(a+2b+a\operatorname{Cos}[2e+2fx]\right)^2\operatorname{Sec}[e+fx]^6\left(9a^2b\operatorname{Sin}[2e]+28ab^2\operatorname{Sin}[2e]+\right.$$
$$\left.16b^3\operatorname{Sin}[2e]-9a^2b\operatorname{Sin}[2fx]-6ab^2\operatorname{Sin}[2fx]\right)\Big)\Big/$$
$$\Big(64a^3\left(a+b\right)^2f\left(a+b\operatorname{Sec}[e+fx]^2\right)^3\left(\operatorname{Cos}[e]-\operatorname{Sin}[e]\right)$$
$$\left(\operatorname{Cos}[e]+\operatorname{Sin}[e]\right)\Big)+$$
$$\Big(\left(a+2b+a\operatorname{Cos}[2e+2fx]\right)\operatorname{Sec}[e+fx]^6\left(-ab^2\operatorname{Sin}[2e]-2b^3\operatorname{Sin}[2e]+ab^2\operatorname{Sin}[2fx]\right)\Big)\Big/$$
$$\Big(16a^3\left(a+b\right)f\left(a+b\operatorname{Sec}[e+fx]^2\right)^3$$
$$\left(\operatorname{Cos}[e]-\operatorname{Sin}[e]\right)\left(\operatorname{Cos}[e]+\operatorname{Sin}[e]\right)\Big)$$

Problem 374: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\operatorname{Cot}[e+fx]^2}{\left(a+b\operatorname{Sec}[e+fx]^2\right)^3}\,dx$$

Optimal (type 3, 181 leaves, 8 steps):

$$-\frac{x}{a^3}+\frac{b^{3/2}\left(35a^2+28ab+8b^2\right)\operatorname{ArcTan}\left[\frac{\sqrt{b}\operatorname{Tan}[e+fx]}{\sqrt{a+b}}\right]}{8a^3\left(a+b\right)^{7/2}f}-\frac{\left(8a^2-11ab-4b^2\right)\operatorname{Cot}[e+fx]}{8a^2\left(a+b\right)^3f}-$$
$$\frac{b\operatorname{Cot}[e+fx]}{4a\left(a+b\right)f\left(a+b+b\operatorname{Tan}[e+fx]^2\right)^2}-\frac{b\left(9a+4b\right)\operatorname{Cot}[e+fx]}{8a^2\left(a+b\right)^2f\left(a+b+b\operatorname{Tan}[e+fx]^2\right)}$$

Result (type 3, 2089 leaves):

$$\Big(\left(35a^2+28ab+8b^2\right)\left(a+2b+a\operatorname{Cos}[2e+2fx]\right)^3$$

$$\text{Sec}[e+f x]^6 \left(-\left(\left(b^2 \text{ArcTan}\left[\text{Sec}[f x] \left(\frac{\text{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \text{Cos}[4 e]-i b \text{Sin}[4 e]}}-\frac{i \text{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \text{Cos}[4 e]-i b \text{Sin}[4 e]}}\right) (-a \text{Sin}[f x]-2 b \text{Sin}[f x]+a \text{Sin}[2 e+f x])\right] \text{Cos}[2 e]\right) \Big/ \left(64 a^3 \sqrt{a+b} f \sqrt{b \text{Cos}[4 e]-i b \text{Sin}[4 e]}\right)\right)+\left(i b^2 \text{ArcTan}\left[\text{Sec}[f x] \left(\frac{\text{Cos}[2 e]}{2 \sqrt{a+b} \sqrt{b \text{Cos}[4 e]-i b \text{Sin}[4 e]}}-\frac{i \text{Sin}[2 e]}{2 \sqrt{a+b} \sqrt{b \text{Cos}[4 e]-i b \text{Sin}[4 e]}}\right) (-a \text{Sin}[f x]-2 b \text{Sin}[f x]+a \text{Sin}[2 e+f x])\right] \text{Sin}[2 e]\right) \Big/ \left(64 a^3 \sqrt{a+b} f \sqrt{b \text{Cos}[4 e]-i b \text{Sin}[4 e]}\right)\right) \Big/$$

$$\left((a+b)^3 \left(a+b \text{Sec}[e+f x]^2\right)^3\right)+\frac{1}{512 a^3 (a+b)^3 f \left(a+b \text{Sec}[e+f x]^2\right)^3}$$

$$(a+2 b+a \text{Cos}[2 e+2 f x]) \text{Csc}[e] \text{Csc}[e+f x] \text{Sec}[2 e] \text{Sec}[e+f x]^6$$

$$\begin{aligned}
&(8 a^5 f x \text{Cos}[f x]+56 a^4 b f x \text{Cos}[f x]+\\
&184 a^3 b^2 f x \text{Cos}[f x]+296 a^2 b^3 f x \text{Cos}[f x]+\\
&224 a b^4 f x \text{Cos}[f x]+64 b^5 f x \text{Cos}[f x]-12 a^5 f x \text{Cos}[3 f x]-\\
&68 a^4 b f x \text{Cos}[3 f x]-132 a^3 b^2 f x \text{Cos}[3 f x]-\\
&108 a^2 b^3 f x \text{Cos}[3 f x]-32 a b^4 f x \text{Cos}[3 f x]-\\
&8 a^5 f x \text{Cos}[2 e-f x]-56 a^4 b f x \text{Cos}[2 e-f x]-\\
&184 a^3 b^2 f x \text{Cos}[2 e-f x]-296 a^2 b^3 f x \text{Cos}[2 e-f x]-\\
&224 a b^4 f x \text{Cos}[2 e-f x]-64 b^5 f x \text{Cos}[2 e-f x]-8 a^5 f x \text{Cos}[2 e+f x]-\\
&56 a^4 b f x \text{Cos}[2 e+f x]-184 a^3 b^2 f x \text{Cos}[2 e+f x]-\\
&296 a^2 b^3 f x \text{Cos}[2 e+f x]-224 a b^4 f x \text{Cos}[2 e+f x]-\\
&64 b^5 f x \text{Cos}[2 e+f x]+8 a^5 f x \text{Cos}[4 e+f x]+56 a^4 b f x \text{Cos}[4 e+f x]+\\
&184 a^3 b^2 f x \text{Cos}[4 e+f x]+296 a^2 b^3 f x \text{Cos}[4 e+f x]+\\
&224 a b^4 f x \text{Cos}[4 e+f x]+64 b^5 f x \text{Cos}[4 e+f x]+12 a^5 f x \text{Cos}[2 e+3 f x]+\\
&68 a^4 b f x \text{Cos}[2 e+3 f x]+132 a^3 b^2 f x \text{Cos}[2 e+3 f x]+\\
&108 a^2 b^3 f x \text{Cos}[2 e+3 f x]+32 a b^4 f x \text{Cos}[2 e+3 f x]-\\
&12 a^5 f x \text{Cos}[4 e+3 f x]-68 a^4 b f x \text{Cos}[4 e+3 f x]-132 a^3 b^2 f x \text{Cos}[4 e+3 f x]-\\
&108 a^2 b^3 f x \text{Cos}[4 e+3 f x]-32 a b^4 f x \text{Cos}[4 e+3 f x]+\\
&12 a^5 f x \text{Cos}[6 e+3 f x]+68 a^4 b f x \text{Cos}[6 e+3 f x]+132 a^3 b^2 f x \text{Cos}[6 e+3 f x]+\\
&108 a^2 b^3 f x \text{Cos}[6 e+3 f x]+32 a b^4 f x \text{Cos}[6 e+3 f x]-4 a^5 f x \text{Cos}[2 e+5 f x]-\\
&12 a^4 b f x \text{Cos}[2 e+5 f x]-12 a^3 b^2 f x \text{Cos}[2 e+5 f x]-4 a^2 b^3 f x \text{Cos}[2 e+5 f x]+\\
&4 a^5 f x \text{Cos}[4 e+5 f x]+12 a^4 b f x \text{Cos}[4 e+5 f x]+12 a^3 b^2 f x \text{Cos}[4 e+5 f x]+\\
&4 a^2 b^3 f x \text{Cos}[4 e+5 f x]-4 a^5 f x \text{Cos}[6 e+5 f x]-12 a^4 b f x \text{Cos}[6 e+5 f x]-\\
&12 a^3 b^2 f x \text{Cos}[6 e+5 f x]-4 a^2 b^3 f x \text{Cos}[6 e+5 f x]+4 a^5 f x \text{Cos}[8 e+5 f x]+\\
&12 a^4 b f x \text{Cos}[8 e+5 f x]+12 a^3 b^2 f x \text{Cos}[8 e+5 f x]+4 a^2 b^3 f x \text{Cos}[8 e+5 f x]-\\
&32 a^5 \text{Sin}[f x]-64 a^4 b \text{Sin}[f x]-30 a^2 b^3 \text{Sin}[f x]-120 a b^4 \text{Sin}[f x]-\\
&48 b^5 \text{Sin}[f x]+32 a^5 \text{Sin}[3 f x]+64 a^4 b \text{Sin}[3 f x]+26 a^3 b^2 \text{Sin}[3 f x]+
\end{aligned}$$

$86 a^2 b^3 \text{Sin}[3 f x] + 32 a b^4 \text{Sin}[3 f x] - 48 a^5 \text{Sin}[2 e - f x] - 128 a^4 b \text{Sin}[2 e - f x] - 128 a^3 b^2 \text{Sin}[2 e - f x] - 30 a^2 b^3 \text{Sin}[2 e - f x] - 120 a b^4 \text{Sin}[2 e - f x] - 48 b^5 \text{Sin}[2 e - f x] + 48 a^5 \text{Sin}[2 e + f x] + 128 a^4 b \text{Sin}[2 e + f x] + 102 a^3 b^2 \text{Sin}[2 e + f x] - 86 a^2 b^3 \text{Sin}[2 e + f x] - 136 a b^4 \text{Sin}[2 e + f x] - 48 b^5 \text{Sin}[2 e + f x] - 32 a^5 \text{Sin}[4 e + f x] - 64 a^4 b \text{Sin}[4 e + f x] + 26 a^3 b^2 \text{Sin}[4 e + f x] + 86 a^2 b^3 \text{Sin}[4 e + f x] + 136 a b^4 \text{Sin}[4 e + f x] + 48 b^5 \text{Sin}[4 e + f x] - 8 a^5 \text{Sin}[2 e + 3 f x] - 26 a^3 b^2 \text{Sin}[2 e + 3 f x] - 86 a^2 b^3 \text{Sin}[2 e + 3 f x] - 32 a b^4 \text{Sin}[2 e + 3 f x] + 32 a^5 \text{Sin}[4 e + 3 f x] + 64 a^4 b \text{Sin}[4 e + 3 f x] - 13 a^3 b^2 \text{Sin}[4 e + 3 f x] - 36 a^2 b^3 \text{Sin}[4 e + 3 f x] - 16 a b^4 \text{Sin}[4 e + 3 f x] - 8 a^5 \text{Sin}[6 e + 3 f x] + 13 a^3 b^2 \text{Sin}[6 e + 3 f x] + 36 a^2 b^3 \text{Sin}[6 e + 3 f x] + 16 a b^4 \text{Sin}[6 e + 3 f x] + 8 a^5 \text{Sin}[2 e + 5 f x] + 13 a^3 b^2 \text{Sin}[2 e + 5 f x] + 6 a^2 b^3 \text{Sin}[2 e + 5 f x] - 13 a^3 b^2 \text{Sin}[4 e + 5 f x] - 6 a^2 b^3 \text{Sin}[4 e + 5 f x] + 8 a^5 \text{Sin}[6 e + 5 f x]\Big)$

Problem 375: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[e+f x]^4}{\left(a+b\,\text{Sec}[e+f x]^2\right)^3}\,dx$$

Optimal (type 3, 230 leaves, 9 steps):

$$\frac{x}{a^3}-\frac{b^{5/2}\left(63 a^2+36 a b+8 b^2\right)\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b}}\right]}{8 a^3 (a+b)^{9/2} f}+\frac{\left(8 a^3+32 a^2 b-15 a b^2-4 b^3\right)\text{Cot}[e+f x]}{8 a^2 (a+b)^4 f}-\frac{\left(8 a^2-39 a b-12 b^2\right)\text{Cot}[e+f x]^3}{24 a^2 (a+b)^3 f}-\frac{b\,\text{Cot}[e+f x]^3}{4 a (a+b) f \left(a+b+b\,\text{Tan}[e+f x]^2\right)^2}-\frac{b (11 a+4 b)\text{Cot}[e+f x]^3}{8 a^2 (a+b)^2 f \left(a+b+b\,\text{Tan}[e+f x]^2\right)}$$

Result (type 3, 3340 leaves):

$$\Bigg(\left(63 a^2+36 a b+8 b^2\right)\left(a+2 b+a\,\text{Cos}[2 e+2 f x]\right)^3\text{Sec}[e+f x]^6\Bigg(\Bigg(b^3\,\text{ArcTan}\Big[\text{Sec}[f x]\left(\frac{\text{Cos}[2 e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}}-\frac{i\,\text{Sin}[2 e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}}\right)\left(-a\,\text{Sin}[f x]-2 b\,\text{Sin}[f x]+a\,\text{Sin}[2 e+f x]\right)\Big]\text{Cos}[2 e]\Bigg)\Big/\left(64 a^3\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}\right)-\Bigg(i\,b^3\,\text{ArcTan}\Big[\text{Sec}[f x]\left(\frac{\text{Cos}[2 e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}}-\frac{i\,\text{Sin}[2 e]}{2\sqrt{a+b}\,\sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}}\right)\left(-a\,\text{Sin}[f x]-2 b\,\text{Sin}[f x]+a\,\text{Sin}[2 e+f x]\right)\Big]\text{Sin}[2 e]\Bigg)\Big/\left(64 a^3\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4 e]-i\,b\,\text{Sin}[4 e]}\right)\Bigg)\Bigg)\Big/$$

$\left(\left(a+b\right)^4\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3\right)+\frac{1}{6144\,a^3\,\left(a+b\right)^4\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3}$

$\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)$
$\text{Csc}[e]\,\text{Csc}[e+f\,x]^3\,\text{Sec}[2\,e]\,\text{Sec}[e+f\,x]^6$

$\big(-36\,a^6\,f\,x\,\text{Cos}[f\,x]-336\,a^5\,b\,f\,x\,\text{Cos}[f\,x]-1560\,a^4\,b^2\,f\,x\,\text{Cos}[f\,x]-$
$3600\,a^3\,b^3\,f\,x\,\text{Cos}[f\,x]-4260\,a^2\,b^4\,f\,x\,\text{Cos}[f\,x]-2496\,a\,b^5\,f\,x\,\text{Cos}[f\,x]-$
$576\,b^6\,f\,x\,\text{Cos}[f\,x]+36\,a^6\,f\,x\,\text{Cos}[3\,f\,x]+240\,a^5\,b\,f\,x\,\text{Cos}[3\,f\,x]+$
$408\,a^4\,b^2\,f\,x\,\text{Cos}[3\,f\,x]-48\,a^3\,b^3\,f\,x\,\text{Cos}[3\,f\,x]-732\,a^2\,b^4\,f\,x\,\text{Cos}[3\,f\,x]-$
$672\,a\,b^5\,f\,x\,\text{Cos}[3\,f\,x]-192\,b^6\,f\,x\,\text{Cos}[3\,f\,x]+36\,a^6\,f\,x\,\text{Cos}[2\,e-f\,x]+$
$336\,a^5\,b\,f\,x\,\text{Cos}[2\,e-f\,x]+1560\,a^4\,b^2\,f\,x\,\text{Cos}[2\,e-f\,x]+3600\,a^3\,b^3\,f\,x\,\text{Cos}[2\,e-f\,x]+$
$4260\,a^2\,b^4\,f\,x\,\text{Cos}[2\,e-f\,x]+2496\,a\,b^5\,f\,x\,\text{Cos}[2\,e-f\,x]+$
$576\,b^6\,f\,x\,\text{Cos}[2\,e-f\,x]+36\,a^6\,f\,x\,\text{Cos}[2\,e+f\,x]+336\,a^5\,b\,f\,x\,\text{Cos}[2\,e+f\,x]+$
$1560\,a^4\,b^2\,f\,x\,\text{Cos}[2\,e+f\,x]+3600\,a^3\,b^3\,f\,x\,\text{Cos}[2\,e+f\,x]+$
$4260\,a^2\,b^4\,f\,x\,\text{Cos}[2\,e+f\,x]+2496\,a\,b^5\,f\,x\,\text{Cos}[2\,e+f\,x]+576\,b^6\,f\,x\,\text{Cos}[2\,e+f\,x]-$
$36\,a^6\,f\,x\,\text{Cos}[4\,e+f\,x]-336\,a^5\,b\,f\,x\,\text{Cos}[4\,e+f\,x]-1560\,a^4\,b^2\,f\,x\,\text{Cos}[4\,e+f\,x]-$
$3600\,a^3\,b^3\,f\,x\,\text{Cos}[4\,e+f\,x]-4260\,a^2\,b^4\,f\,x\,\text{Cos}[4\,e+f\,x]-2496\,a\,b^5\,f\,x\,\text{Cos}[4\,e+f\,x]-$
$576\,b^6\,f\,x\,\text{Cos}[4\,e+f\,x]-36\,a^6\,f\,x\,\text{Cos}[2\,e+3\,f\,x]-240\,a^5\,b\,f\,x\,\text{Cos}[2\,e+3\,f\,x]-$
$408\,a^4\,b^2\,f\,x\,\text{Cos}[2\,e+3\,f\,x]+48\,a^3\,b^3\,f\,x\,\text{Cos}[2\,e+3\,f\,x]+732\,a^2\,b^4\,f\,x\,\text{Cos}[2\,e+3\,f\,x]+$
$672\,a\,b^5\,f\,x\,\text{Cos}[2\,e+3\,f\,x]+192\,b^6\,f\,x\,\text{Cos}[2\,e+3\,f\,x]+36\,a^6\,f\,x\,\text{Cos}[4\,e+3\,f\,x]+$
$240\,a^5\,b\,f\,x\,\text{Cos}[4\,e+3\,f\,x]+408\,a^4\,b^2\,f\,x\,\text{Cos}[4\,e+3\,f\,x]-48\,a^3\,b^3\,f\,x\,\text{Cos}[4\,e+3\,f\,x]-$
$732\,a^2\,b^4\,f\,x\,\text{Cos}[4\,e+3\,f\,x]-672\,a\,b^5\,f\,x\,\text{Cos}[4\,e+3\,f\,x]-192\,b^6\,f\,x\,\text{Cos}[4\,e+3\,f\,x]-$
$36\,a^6\,f\,x\,\text{Cos}[6\,e+3\,f\,x]-240\,a^5\,b\,f\,x\,\text{Cos}[6\,e+3\,f\,x]-408\,a^4\,b^2\,f\,x\,\text{Cos}[6\,e+3\,f\,x]+$
$48\,a^3\,b^3\,f\,x\,\text{Cos}[6\,e+3\,f\,x]+732\,a^2\,b^4\,f\,x\,\text{Cos}[6\,e+3\,f\,x]+672\,a\,b^5\,f\,x\,\text{Cos}[6\,e+3\,f\,x]+$
$192\,b^6\,f\,x\,\text{Cos}[6\,e+3\,f\,x]-12\,a^6\,f\,x\,\text{Cos}[2\,e+5\,f\,x]-144\,a^5\,b\,f\,x\,\text{Cos}[2\,e+5\,f\,x]-$
$456\,a^4\,b^2\,f\,x\,\text{Cos}[2\,e+5\,f\,x]-624\,a^3\,b^3\,f\,x\,\text{Cos}[2\,e+5\,f\,x]-396\,a^2\,b^4\,f\,x\,\text{Cos}[2\,e+5\,f\,x]-$
$96\,a\,b^5\,f\,x\,\text{Cos}[2\,e+5\,f\,x]+12\,a^6\,f\,x\,\text{Cos}[4\,e+5\,f\,x]+144\,a^5\,b\,f\,x\,\text{Cos}[4\,e+5\,f\,x]+$
$456\,a^4\,b^2\,f\,x\,\text{Cos}[4\,e+5\,f\,x]+624\,a^3\,b^3\,f\,x\,\text{Cos}[4\,e+5\,f\,x]+396\,a^2\,b^4\,f\,x\,\text{Cos}[4\,e+5\,f\,x]+$
$96\,a\,b^5\,f\,x\,\text{Cos}[4\,e+5\,f\,x]-12\,a^6\,f\,x\,\text{Cos}[6\,e+5\,f\,x]-144\,a^5\,b\,f\,x\,\text{Cos}[6\,e+5\,f\,x]-$
$456\,a^4\,b^2\,f\,x\,\text{Cos}[6\,e+5\,f\,x]-624\,a^3\,b^3\,f\,x\,\text{Cos}[6\,e+5\,f\,x]-396\,a^2\,b^4\,f\,x\,\text{Cos}[6\,e+5\,f\,x]-$
$96\,a\,b^5\,f\,x\,\text{Cos}[6\,e+5\,f\,x]+12\,a^6\,f\,x\,\text{Cos}[8\,e+5\,f\,x]+144\,a^5\,b\,f\,x\,\text{Cos}[8\,e+5\,f\,x]+$
$456\,a^4\,b^2\,f\,x\,\text{Cos}[8\,e+5\,f\,x]+624\,a^3\,b^3\,f\,x\,\text{Cos}[8\,e+5\,f\,x]+396\,a^2\,b^4\,f\,x\,\text{Cos}[8\,e+5\,f\,x]+$
$96\,a\,b^5\,f\,x\,\text{Cos}[8\,e+5\,f\,x]-12\,a^6\,f\,x\,\text{Cos}[4\,e+7\,f\,x]-48\,a^5\,b\,f\,x\,\text{Cos}[4\,e+7\,f\,x]-$
$72\,a^4\,b^2\,f\,x\,\text{Cos}[4\,e+7\,f\,x]-48\,a^3\,b^3\,f\,x\,\text{Cos}[4\,e+7\,f\,x]-12\,a^2\,b^4\,f\,x\,\text{Cos}[4\,e+7\,f\,x]+$
$12\,a^6\,f\,x\,\text{Cos}[6\,e+7\,f\,x]+48\,a^5\,b\,f\,x\,\text{Cos}[6\,e+7\,f\,x]+72\,a^4\,b^2\,f\,x\,\text{Cos}[6\,e+7\,f\,x]+$
$48\,a^3\,b^3\,f\,x\,\text{Cos}[6\,e+7\,f\,x]+12\,a^2\,b^4\,f\,x\,\text{Cos}[6\,e+7\,f\,x]-12\,a^6\,f\,x\,\text{Cos}[8\,e+7\,f\,x]-$
$48\,a^5\,b\,f\,x\,\text{Cos}[8\,e+7\,f\,x]-72\,a^4\,b^2\,f\,x\,\text{Cos}[8\,e+7\,f\,x]-48\,a^3\,b^3\,f\,x\,\text{Cos}[8\,e+7\,f\,x]-$
$12\,a^2\,b^4\,f\,x\,\text{Cos}[8\,e+7\,f\,x]+12\,a^6\,f\,x\,\text{Cos}[10\,e+7\,f\,x]+48\,a^5\,b\,f\,x\,\text{Cos}[10\,e+7\,f\,x]+$
$72\,a^4\,b^2\,f\,x\,\text{Cos}[10\,e+7\,f\,x]+48\,a^3\,b^3\,f\,x\,\text{Cos}[10\,e+7\,f\,x]+12\,a^2\,b^4\,f\,x\,\text{Cos}[10\,e+7\,f\,x]-$
$128\,a^6\,\text{Sin}[f\,x]-440\,a^5\,b\,\text{Sin}[f\,x]-1152\,a^4\,b^2\,\text{Sin}[f\,x]-1920\,a^3\,b^3\,\text{Sin}[f\,x]+$
$228\,a^2\,b^4\,\text{Sin}[f\,x]+1320\,a\,b^5\,\text{Sin}[f\,x]+432\,b^6\,\text{Sin}[f\,x]+48\,a^6\,\text{Sin}[3\,f\,x]+$
$104\,a^5\,b\,\text{Sin}[3\,f\,x]+640\,a^4\,b^2\,\text{Sin}[3\,f\,x]+1511\,a^3\,b^3\,\text{Sin}[3\,f\,x]-528\,a^2\,b^4\,\text{Sin}[3\,f\,x]+$
$264\,a\,b^5\,\text{Sin}[3\,f\,x]+144\,b^6\,\text{Sin}[3\,f\,x]-32\,a^6\,\text{Sin}[2\,e-f\,x]+384\,a^5\,b\,\text{Sin}[2\,e-f\,x]+$
$2048\,a^4\,b^2\,\text{Sin}[2\,e-f\,x]+3072\,a^3\,b^3\,\text{Sin}[2\,e-f\,x]+228\,a^2\,b^4\,\text{Sin}[2\,e-f\,x]+$
$1320\,a\,b^5\,\text{Sin}[2\,e-f\,x]+432\,b^6\,\text{Sin}[2\,e-f\,x]+32\,a^6\,\text{Sin}[2\,e+f\,x]-384\,a^5\,b\,\text{Sin}[2\,e+f\,x]-$
$2048\,a^4\,b^2\,\text{Sin}[2\,e+f\,x]-2919\,a^3\,b^3\,\text{Sin}[2\,e+f\,x]+642\,a^2\,b^4\,\text{Sin}[2\,e+f\,x]+$
$1416\,a\,b^5\,\text{Sin}[2\,e+f\,x]+432\,b^6\,\text{Sin}[2\,e+f\,x]-128\,a^6\,\text{Sin}[4\,e+f\,x]-$
$440\,a^5\,b\,\text{Sin}[4\,e+f\,x]-1152\,a^4\,b^2\,\text{Sin}[4\,e+f\,x]-2073\,a^3\,b^3\,\text{Sin}[4\,e+f\,x]-$
$642\,a^2\,b^4\,\text{Sin}[4\,e+f\,x]-1416\,a\,b^5\,\text{Sin}[4\,e+f\,x]-432\,b^6\,\text{Sin}[4\,e+f\,x]-$
$144\,a^6\,\text{Sin}[2\,e+3\,f\,x]-672\,a^5\,b\,\text{Sin}[2\,e+3\,f\,x]-960\,a^4\,b^2\,\text{Sin}[2\,e+3\,f\,x]+$

$153\,a^3\,b^3\,\text{Sin}[2\,e+3\,f\,x]+528\,a^2\,b^4\,\text{Sin}[2\,e+3\,f\,x]-264\,a\,b^5\,\text{Sin}[2\,e+3\,f\,x]-$
$144\,b^6\,\text{Sin}[2\,e+3\,f\,x]+48\,a^6\,\text{Sin}[4\,e+3\,f\,x]+104\,a^5\,b\,\text{Sin}[4\,e+3\,f\,x]+$
$640\,a^4\,b^2\,\text{Sin}[4\,e+3\,f\,x]+1664\,a^3\,b^3\,\text{Sin}[4\,e+3\,f\,x]-66\,a^2\,b^4\,\text{Sin}[4\,e+3\,f\,x]-$
$408\,a\,b^5\,\text{Sin}[4\,e+3\,f\,x]-144\,b^6\,\text{Sin}[4\,e+3\,f\,x]-144\,a^6\,\text{Sin}[6\,e+3\,f\,x]-$
$672\,a^5\,b\,\text{Sin}[6\,e+3\,f\,x]-960\,a^4\,b^2\,\text{Sin}[6\,e+3\,f\,x]+66\,a^2\,b^4\,\text{Sin}[6\,e+3\,f\,x]+$
$408\,a\,b^5\,\text{Sin}[6\,e+3\,f\,x]+144\,b^6\,\text{Sin}[6\,e+3\,f\,x]+80\,a^6\,\text{Sin}[2\,e+5\,f\,x]+$
$480\,a^5\,b\,\text{Sin}[2\,e+5\,f\,x]+832\,a^4\,b^2\,\text{Sin}[2\,e+5\,f\,x]+294\,a^2\,b^4\,\text{Sin}[2\,e+5\,f\,x]+$
$96\,a\,b^5\,\text{Sin}[2\,e+5\,f\,x]-48\,a^6\,\text{Sin}[4\,e+5\,f\,x]-120\,a^5\,b\,\text{Sin}[4\,e+5\,f\,x]-$
$294\,a^2\,b^4\,\text{Sin}[4\,e+5\,f\,x]-96\,a\,b^5\,\text{Sin}[4\,e+5\,f\,x]+80\,a^6\,\text{Sin}[6\,e+5\,f\,x]+$
$480\,a^5\,b\,\text{Sin}[6\,e+5\,f\,x]+832\,a^4\,b^2\,\text{Sin}[6\,e+5\,f\,x]-51\,a^3\,b^3\,\text{Sin}[6\,e+5\,f\,x]-$
$132\,a^2\,b^4\,\text{Sin}[6\,e+5\,f\,x]-48\,a\,b^5\,\text{Sin}[6\,e+5\,f\,x]-48\,a^6\,\text{Sin}[8\,e+5\,f\,x]-$
$120\,a^5\,b\,\text{Sin}[8\,e+5\,f\,x]+51\,a^3\,b^3\,\text{Sin}[8\,e+5\,f\,x]+132\,a^2\,b^4\,\text{Sin}[8\,e+5\,f\,x]+$
$48\,a\,b^5\,\text{Sin}[8\,e+5\,f\,x]+32\,a^6\,\text{Sin}[4\,e+7\,f\,x]+104\,a^5\,b\,\text{Sin}[4\,e+7\,f\,x]+$
$51\,a^3\,b^3\,\text{Sin}[4\,e+7\,f\,x]+18\,a^2\,b^4\,\text{Sin}[4\,e+7\,f\,x]-51\,a^3\,b^3\,\text{Sin}[6\,e+7\,f\,x]-$
$18\,a^2\,b^4\,\text{Sin}[6\,e+7\,f\,x]+32\,a^6\,\text{Sin}[8\,e+7\,f\,x]+104\,a^5\,b\,\text{Sin}[8\,e+7\,f\,x]\Big)$

Problem 376: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[e+f\,x]^6}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^3}\,dx$$

Optimal (type 3, 285 leaves, 10 steps):

$$-\frac{x}{a^3}+\frac{b^{7/2}\left(99\,a^2+44\,a\,b+8\,b^2\right)\text{ArcTan}\left[\frac{\sqrt{b}\,\text{Tan}[e+f\,x]}{\sqrt{a+b}}\right]}{8\,a^3\,(a+b)^{11/2}\,f}-$$
$$\frac{\left(8\,a^4+40\,a^3\,b+80\,a^2\,b^2-19\,a\,b^3-4\,b^4\right)\text{Cot}[e+f\,x]}{8\,a^2\,(a+b)^5\,f}+$$
$$\frac{\left(8\,a^3+32\,a^2\,b-51\,a\,b^2-12\,b^3\right)\text{Cot}[e+f\,x]^3}{24\,a^2\,(a+b)^4\,f}-\frac{\left(8\,a^2-75\,a\,b-20\,b^2\right)\text{Cot}[e+f\,x]^5}{40\,a^2\,(a+b)^3\,f}-$$
$$\frac{b\,\text{Cot}[e+f\,x]^5}{4\,a\,(a+b)\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^2}-\frac{b\,(13\,a+4\,b)\,\text{Cot}[e+f\,x]^5}{8\,a^2\,(a+b)^2\,f\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)}$$

Result (type 3, 976 leaves):

$$-\frac{x\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Sec}[e+fx]^6}{8a^3\left(a+b\,\text{Sec}[e+fx]^2\right)^3}+$$

$$\left(\left(11a\,\text{Cos}[e]+26b\,\text{Cos}[e]\right)\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Csc}[e]\,\text{Csc}[e+fx]^2\,\text{Sec}[e+fx]^6\right)\Big/\left(120\left(a+b\right)^4 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)-$$

$$\frac{\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Cot}[e]\,\text{Csc}[e+fx]^4\,\text{Sec}[e+fx]^6}{40\left(a+b\right)^3 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3}+$$

$$\left(\left(99a^2+44ab+8b^2\right)\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Sec}[e+fx]^6\left(-\left(\left(b^4\,\text{ArcTan}\Big[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-\mathrm{i}\,b\,\text{Sin}[4e]}}-\frac{\mathrm{i}\,\text{Sin}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-\mathrm{i}\,b\,\text{Sin}[4e]}}\right)\left(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]\right)\Big]\text{Cos}[2e]\right)\Big/\left(64a^3\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-\mathrm{i}\,b\,\text{Sin}[4e]}\right)\right)+\left(\mathrm{i}\,b^4\,\text{ArcTan}\Big[\text{Sec}[fx]\left(\frac{\text{Cos}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-\mathrm{i}\,b\,\text{Sin}[4e]}}-\frac{\mathrm{i}\,\text{Sin}[2e]}{2\sqrt{a+b}\sqrt{b\,\text{Cos}[4e]-\mathrm{i}\,b\,\text{Sin}[4e]}}\right)\left(-a\,\text{Sin}[fx]-2b\,\text{Sin}[fx]+a\,\text{Sin}[2e+fx]\right)\Big]\text{Sin}[2e]\right)\Big/\left(64a^3\sqrt{a+b}\,f\sqrt{b\,\text{Cos}[4e]-\mathrm{i}\,b\,\text{Sin}[4e]}\right)\right)\right)\Big/\left(\left(a+b\right)^5\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)+$$

$$\left(\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Csc}[e]\,\text{Csc}[e+fx]^5\,\text{Sec}[e+fx]^6\,\text{Sin}[fx]\right)\Big/\left(40\left(a+b\right)^3 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)+$$

$$\left(\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Csc}[e]\,\text{Csc}[e+fx]^3\,\text{Sec}[e+fx]^6\left(-11a\,\text{Sin}[fx]-26b\,\text{Sin}[fx]\right)\right)\Big/\left(120\left(a+b\right)^4 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)+$$

$$\left(\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^3\text{Csc}[e]\,\text{Csc}[e+fx]\,\text{Sec}[e+fx]^6\left(23a^2\,\text{Sin}[fx]+106ab\,\text{Sin}[fx]+173b^2\,\text{Sin}[fx]\right)\right)\Big/\left(120\left(a+b\right)^5 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)+$$

$$\left(\left(a+2b+a\,\text{Cos}[2e+2fx]\right)\text{Sec}[2e]\,\text{Sec}[e+fx]^6\left(a\,b^5\,\text{Sin}[2e]+2b^6\,\text{Sin}[2e]-a\,b^5\,\text{Sin}[2fx]\right)\right)\Big/\left(16a^3\left(a+b\right)^4 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)+$$

$$\left(\left(a+2b+a\,\text{Cos}[2e+2fx]\right)^2\text{Sec}[2e]\,\text{Sec}[e+fx]^6\left(-21a^2b^4\,\text{Sin}[2e]-52ab^5\,\text{Sin}[2e]-16b^6\,\text{Sin}[2e]+21a^2b^4\,\text{Sin}[2fx]+6ab^5\,\text{Sin}[2fx]\right)\right)\Big/\left(64a^3\left(a+b\right)^5 f\left(a+b\,\text{Sec}[e+fx]^2\right)^3\right)$$

Problem 377: Unable to integrate problem.

$$\int \sqrt{a+b\,\text{Sec}[e+f\,x]^2}\;\text{Tan}[e+f\,x]^5\,dx$$

Optimal (type 3, 111 leaves, 7 steps):

$$-\frac{\sqrt{a}\;\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a}}\right]}{f}+\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{f}-\frac{(a+2\,b)\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}{3\,b^2\,f}+\frac{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}{5\,b^2\,f}$$

Result (type 8, 27 leaves):

$$\int \sqrt{a+b\,\text{Sec}[e+f\,x]^2}\;\text{Tan}[e+f\,x]^5\,dx$$

Problem 378: Unable to integrate problem.

$$\int \sqrt{a+b\,\text{Sec}[e+f\,x]^2}\;\text{Tan}[e+f\,x]^3\,dx$$

Optimal (type 3, 80 leaves, 6 steps):

$$\frac{\sqrt{a}\;\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a}}\right]}{f}-\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{f}+\frac{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}{3\,b\,f}$$

Result (type 8, 27 leaves):

$$\int \sqrt{a+b\,\text{Sec}[e+f\,x]^2}\;\text{Tan}[e+f\,x]^3\,dx$$

Problem 379: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \sqrt{a+b\,\text{Sec}[e+f\,x]^2}\;\text{Tan}[e+f\,x]\,dx$$

Optimal (type 3, 54 leaves, 5 steps):

$$-\frac{\sqrt{a}\;\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a}}\right]}{f}+\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{f}$$

Result (type 3, 307 leaves):

$$\left(e^{i(e+fx)}\sqrt{4b+a e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}\,\mathrm{Cos}[e+fx]\left(\frac{2}{1+e^{2i(e+fx)}}+\left(i\sqrt{a}\left(2fx+i\,\mathrm{Log}\left[a+2b+a e^{2i(e+fx)}+\sqrt{a}\sqrt{4b e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]+i\,\mathrm{Log}\left[a+a e^{2i(e+fx)}+2b e^{2i(e+fx)}+\sqrt{a}\sqrt{4b e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]\right)\right)\Big/\left(\sqrt{4b e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right)\right)\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\right)\Big/\left(\sqrt{2}\,f\sqrt{a+2b+a\,\mathrm{Cos}[2e+2fx]}\right)$$

Problem 380: Unable to integrate problem.

$$\int \mathrm{Cot}[e+fx]\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,dx$$

Optimal (type 3, 70 leaves, 7 steps):

$$\frac{\sqrt{a}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}}{\sqrt{a}}\right]}{f}-\frac{\sqrt{a+b}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}}{\sqrt{a+b}}\right]}{f}$$

Result (type 8, 25 leaves):

$$\int \mathrm{Cot}[e+fx]\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,dx$$

Problem 381: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \mathrm{Cot}[e+fx]^3\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,dx$$

Optimal (type 3, 109 leaves, 8 steps):

$$-\frac{\sqrt{a}\,\mathrm{ArcTanh}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}}{\sqrt{a}}\right]}{f}+\frac{(2a+b)\,\mathrm{ArcTanh}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}}{\sqrt{a+b}}\right]}{2\sqrt{a+b}\,f}-\frac{\mathrm{Cot}[e+fx]^2\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}}{2f}$$

Result (type 3, 527 leaves):

$$\frac{1}{\sqrt{2}\, f \sqrt{a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]}}$$

$$e^{i\,(e+f\,x)} \sqrt{4\,b+a\,e^{-2\,i\,(e+f\,x)}\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\;\text{Cos}[e+f\,x]\left(\frac{1+e^{2\,i\,(e+f\,x)}}{\left(-1+e^{2\,i\,(e+f\,x)}\right)^2}-\right.$$

$$\frac{1}{\sqrt{a+b}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}}\left(-2\,i\,\sqrt{a}\,\sqrt{a+b}\,f\,x+(2\,a+b)\,\text{Log}\left[1-e^{2\,i\,(e+f\,x)}\right]+\right.$$

$$\sqrt{a}\,\sqrt{a+b}\,\text{Log}\left[a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right]+$$

$$\sqrt{a}\,\sqrt{a+b}\,\text{Log}\left[a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right]-$$

$$2\,a\,\text{Log}\left[a+b+a\,e^{2\,i\,(e+f\,x)}+b\,e^{2\,i\,(e+f\,x)}+\sqrt{a+b}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right]-$$

$$b\,\text{Log}\left[a+b+a\,e^{2\,i\,(e+f\,x)}+b\,e^{2\,i\,(e+f\,x)}+\right.$$

$$\left.\left.\left.\sqrt{a+b}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right]\right)\right)\sqrt{a+b\,\text{Sec}[e+f\,x]^2}$$

Problem 382: Unable to integrate problem.

$$\int \text{Cot}[e+f\,x]^5\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,dx$$

Optimal (type 3, 161 leaves, 9 steps):

$$\frac{\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a}}\right]}{f}-\frac{\left(8\,a^2+12\,a\,b+3\,b^2\right)\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a+b}}\right]}{8\,(a+b)^{3/2}\,f}+$$

$$\frac{(4\,a+3\,b)\,\text{Cot}[e+f\,x]^2\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{8\,(a+b)\,f}-\frac{\text{Cot}[e+f\,x]^4\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{4\,f}$$

Result (type 8, 27 leaves):

$$\int \text{Cot}[e+f\,x]^5\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,dx$$

Problem 383: Unable to integrate problem.

$$\int \sqrt{a+b\,\text{Sec}[e+f\,x]^2}\,\text{Tan}[e+f\,x]^6\,dx$$

Optimal (type 3, 219 leaves, 10 steps):

$$-\frac{\sqrt{a}\ \text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{f}+\frac{\left(a^3+5 a^2 b+15 a b^2-5 b^3\right)\text{ArcTanh}\left[\frac{\sqrt{b}\ \text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{16 b^{5/2} f}-\frac{(a-b)\ (a+5 b)\ \text{Tan}[e+f x]\ \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{16 b^2 f}+\frac{(a-5 b)\ \text{Tan}[e+f x]^3\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{24 b f}+\frac{\text{Tan}[e+f x]^5\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{6 f}$$

Result (type 8, 27 leaves):

$$\int\sqrt{a+b\,\text{Sec}[e+f x]^2}\ \text{Tan}[e+f x]^6\,dx$$

Problem 384: Unable to integrate problem.

$$\int\sqrt{a+b\,\text{Sec}[e+f x]^2}\ \text{Tan}[e+f x]^4\,dx$$

Optimal (type 3, 165 leaves, 9 steps):

$$\frac{\sqrt{a}\ \text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{f}-\frac{\left(a^2+6 a b-3 b^2\right)\text{ArcTanh}\left[\frac{\sqrt{b}\ \text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{8 b^{3/2} f}+\frac{(a-3 b)\ \text{Tan}[e+f x]\ \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{8 b f}+\frac{\text{Tan}[e+f x]^3\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{4 f}$$

Result (type 8, 27 leaves):

$$\int\sqrt{a+b\,\text{Sec}[e+f x]^2}\ \text{Tan}[e+f x]^4\,dx$$

Problem 385: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\sqrt{a+b\,\text{Sec}[e+f x]^2}\ \text{Tan}[e+f x]^2\,dx$$

Optimal (type 3, 118 leaves, 8 steps):

$$-\frac{\sqrt{a}\ \text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{f}+\frac{(a-b)\ \text{ArcTanh}\left[\frac{\sqrt{b}\ \text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{2\sqrt{b}\ f}+\frac{\text{Tan}[e+f x]\ \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{2 f}$$

Result (type 3, 526 leaves):

$$\frac{1}{\sqrt{2}\, f \sqrt{a+2b+a\,\mathrm{Cos}[2e+2fx]}} e^{i(e+fx)} \sqrt{4b+a\,e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}\ \mathrm{Cos}[e+fx]$$
$$\left(-\frac{i\left(-1+e^{2i(e+fx)}\right)}{\left(1+e^{2i(e+fx)}\right)^2}+\frac{1}{\sqrt{b}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}}\left(-2\sqrt{a}\sqrt{b}\,f x+\right.\right.$$
$$i\sqrt{a}\sqrt{b}\,\mathrm{Log}\left[a+2b+a\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]-$$
$$i\sqrt{a}\sqrt{b}\,\mathrm{Log}\left[a+a\,e^{2i(e+fx)}+2b\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]-$$
$$a\,\mathrm{Log}\left[\left(2\left(\sqrt{b}\left(-1+e^{2i(e+fx)}\right)-i\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right)f\right)\Big/\right.$$
$$\left.\left((a-b)\left(1+e^{2i(e+fx)}\right)\right)\right]+$$
$$b\,\mathrm{Log}\left[\left(2\left(\sqrt{b}\left(-1+e^{2i(e+fx)}\right)-i\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right)f\right)\Big/\right.$$
$$\left.\left.\left.\left((a-b)\left(1+e^{2i(e+fx)}\right)\right)\right]\right)\right)\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}$$

Problem 386: Unable to integrate problem.

$$\int\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,dx$$

Optimal (type 3, 79 leaves, 6 steps):

$$\frac{\sqrt{a}\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[e+fx]}{\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}\right]}{f}+\frac{\sqrt{b}\,\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\mathrm{Tan}[e+fx]}{\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}\right]}{f}$$

Result (type 8, 18 leaves):

$$\int\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,dx$$

Problem 387: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\mathrm{Cot}[e+fx]^2\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,dx$$

Optimal (type 3, 69 leaves, 6 steps):

$$-\frac{\sqrt{a}\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[e+fx]}{\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}\right]}{f}-\frac{\mathrm{Cot}[e+fx]\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}{f}$$

Result (type 3, 306 leaves):

$$\left(e^{i(e+fx)}\sqrt{4b+a\,e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}\,\mathrm{Cos}[e+fx]\left(-\frac{2\,i}{-1+e^{2i(e+fx)}}+\right.\right.$$
$$\left(\sqrt{a}\left(-2fx+i\,\mathrm{Log}\left[a+2b+a\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]-\right.\right.$$
$$\left.\left.\left.i\,\mathrm{Log}\left[a+a\,e^{2i(e+fx)}+2b\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]\right)\right)\Big/$$
$$\left.\left(\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right)\right)\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\Bigg)\Big/$$
$$\left(\sqrt{2}\,f\sqrt{a+2b+a\,\mathrm{Cos}[2e+2fx]}\right)$$

Problem 388: Unable to integrate problem.

$$\int \mathrm{Cot}[e+fx]^4\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,dx$$

Optimal (type 3, 114 leaves, 7 steps):

$$\frac{\sqrt{a}\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[e+fx]}{\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}\right]}{f}+\frac{(3a+2b)\,\mathrm{Cot}[e+fx]\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}{3(a+b)f}-\frac{\mathrm{Cot}[e+fx]^3\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}{3f}$$

Result (type 8, 27 leaves):

$$\int \mathrm{Cot}[e+fx]^4\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,dx$$

Problem 389: Unable to integrate problem.

$$\int \mathrm{Cot}[e+fx]^6\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,dx$$

Optimal (type 3, 167 leaves, 8 steps):

$$-\frac{\sqrt{a}\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[e+fx]}{\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}\right]}{f}-\frac{\left(15a^2+25ab+8b^2\right)\mathrm{Cot}[e+fx]\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}{15(a+b)^2f}-$$
$$\frac{(b-5(a+b))\,\mathrm{Cot}[e+fx]^3\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}{15(a+b)f}-\frac{\mathrm{Cot}[e+fx]^5\sqrt{a+b+b\,\mathrm{Tan}[e+fx]^2}}{5f}$$

Result (type 8, 27 leaves):

$$\int \mathrm{Cot}[e+fx]^6\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}\,dx$$

Problem 390: Unable to integrate problem.

$$\int \left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\text{Tan}[e+f\,x]^5\,dx$$

Optimal (type 3, 135 leaves, 8 steps):

$$-\frac{a^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a}}\right]}{f}+\frac{a\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{f}+\frac{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}{3\,f}-\frac{(a+2\,b)\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}{5\,b^2\,f}+\frac{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{7/2}}{7\,b^2\,f}$$

Result (type 8, 27 leaves):

$$\int \left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\text{Tan}[e+f\,x]^5\,dx$$

Problem 391: Unable to integrate problem.

$$\int \left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\text{Tan}[e+f\,x]^3\,dx$$

Optimal (type 3, 104 leaves, 7 steps):

$$\frac{a^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a}}\right]}{f}-\frac{a\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{f}-\frac{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}{3\,f}+\frac{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}{5\,b\,f}$$

Result (type 8, 27 leaves):

$$\int \left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\text{Tan}[e+f\,x]^3\,dx$$

Problem 392: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\text{Tan}[e+f\,x]\,dx$$

Optimal (type 3, 78 leaves, 6 steps):

$$-\frac{a^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a}}\right]}{f}+\frac{a\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{f}+\frac{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}{3\,f}$$

Result (type 3, 343 leaves):

$$\left(\sqrt{2}\, e^{i (e+f x)} \sqrt{4 b + a e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2} \operatorname{Cos}[e+f x]^3 \left(\frac{8 \left(b e^{2 i (e+f x)} + a \left(1+e^{2 i (e+f x)}\right)^2\right)}{\left(1+e^{2 i (e+f x)}\right)^3} + \left(3 i a^{3/2} \left(2 f x + i \operatorname{Log}\left[a+2 b+a e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right] + i \operatorname{Log}\left[a+a e^{2 i (e+f x)}+2 b e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right]\right)\right) \Big/ \left(\sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right) \left(a+b \operatorname{Sec}[e+f x]^2\right)^{3/2}\right) \Big/ \left(3 f \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^{3/2}\right)$$

Problem 393: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \operatorname{Cot}[e+f x] \left(a+b \operatorname{Sec}[e+f x]^2\right)^{3/2} dx$$

Optimal (type 3, 91 leaves, 8 steps):

$$\frac{a^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{a+b \operatorname{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{f} - \frac{(a+b)^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{a+b \operatorname{Sec}[e+f x]^2}}{\sqrt{a+b}}\right]}{f} + \frac{b \sqrt{a+b \operatorname{Sec}[e+f x]^2}}{f}$$

Result (type 3, 506 leaves):

$$\frac{1}{f \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^{3/2}} \sqrt{2}\, e^{i (e+f x)} \sqrt{4 b + a e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2} \operatorname{Cos}[e+f x]^3 \left(\frac{2 b}{1+e^{2 i (e+f x)}} + \frac{1}{\sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}} \left(-2 i a^{3/2} f x + 2 (a+b)^{3/2} \operatorname{Log}\left[1-e^{2 i (e+f x)}\right] + a^{3/2} \operatorname{Log}\left[a+2 b+a e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right] + a^{3/2} \operatorname{Log}\left[a+a e^{2 i (e+f x)}+2 b e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right] - 2 a \sqrt{a+b} \operatorname{Log}\left[a+b+a e^{2 i (e+f x)}+b e^{2 i (e+f x)}+\sqrt{a+b} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right] - 2 b \sqrt{a+b} \operatorname{Log}\left[a+b+a e^{2 i (e+f x)}+b e^{2 i (e+f x)}+\sqrt{a+b} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right]\right)\right) \left(a+b \operatorname{Sec}[e+f x]^2\right)^{3/2}$$

Problem 394: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

$$\int \text{Cot}[e+f x]^3 \left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2} dx$$

Optimal (type 3, 114 leaves, 8 steps):

$$-\frac{a^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{f}+\frac{(2 a-b)\sqrt{a+b}\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a+b}}\right]}{2 f}-\frac{(a+b)\,\text{Cot}[e+f x]^2\sqrt{a+b\,\text{Sec}[e+f x]^2}}{2 f}$$

Result (type 3, 622 leaves):

$$\frac{1}{f\left(a+2 b+a\,\text{Cos}[2 e+2 f x]\right)^{3/2}}\sqrt{2}\,e^{i (e+f x)}\sqrt{4 b+a\,e^{-2 i (e+f x)}\left(1+e^{2 i (e+f x)}\right)^2}\;\text{Cos}[e+f x]^3\left(\frac{(a+b)\left(1+e^{2 i (e+f x)}\right)}{\left(-1+e^{2 i (e+f x)}\right)^2}-\frac{1}{\sqrt{a+b}\,\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}}\right.$$
$$\left(-2\,i\,a^{3/2}\sqrt{a+b}\,f x+\left(2 a^2+a b-b^2\right)\text{Log}\left[1-e^{2 i (e+f x)}\right]+\right.$$
$$a^{3/2}\sqrt{a+b}\,\text{Log}\left[a+2 b+a\,e^{2 i (e+f x)}+\sqrt{a}\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}\right]+$$
$$a^{3/2}\sqrt{a+b}\,\text{Log}\left[a+a\,e^{2 i (e+f x)}+2 b\,e^{2 i (e+f x)}+\sqrt{a}\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}\right]-$$
$$2 a^2\,\text{Log}\left[a+b+a\,e^{2 i (e+f x)}+b\,e^{2 i (e+f x)}+\sqrt{a+b}\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}\right]-$$
$$a b\,\text{Log}\left[a+b+a\,e^{2 i (e+f x)}+b\,e^{2 i (e+f x)}+\sqrt{a+b}\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}\right]+$$
$$\left.\left.b^2\,\text{Log}\left[a+b+a\,e^{2 i (e+f x)}+b\,e^{2 i (e+f x)}+\sqrt{a+b}\sqrt{4 b\,e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}\right]\right)\right)\left(a+b\right.$$
$$\left.\text{Sec}[e+f x]^2\right)^{3/2}$$

Problem 395: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cot}[e+f x]^5 \left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2} dx$$

Optimal (type 3, 159 leaves, 9 steps):

$$\frac{a^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a}}\right]}{f}-\frac{\left(8\,a^2+4\,a\,b-b^2\right)\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a+b}}\right]}{8\,\sqrt{a+b}\,f}+\frac{(4\,a-b)\,\text{Cot}[e+f\,x]^2\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{8\,f}-\frac{(a+b)\,\text{Cot}[e+f\,x]^4\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{4\,f}$$

Result (type 3, 684 leaves):

$$\frac{1}{2\,\sqrt{2}\,f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^{3/2}}\,e^{i\,(e+f\,x)}\,\sqrt{4\,b+a\,e^{-2\,i\,(e+f\,x)}\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,\text{Cos}[e+f\,x]^3\left(-\left(\left(\left(1+e^{2\,i\,(e+f\,x)}\right)\,\left(b\,\left(1+6\,e^{2\,i\,(e+f\,x)}+e^{4\,i\,(e+f\,x)}\right)+a\,\left(6-4\,e^{2\,i\,(e+f\,x)}+6\,e^{4\,i\,(e+f\,x)}\right)\right)\right)\Big/\left(-1+e^{2\,i\,(e+f\,x)}\right)^4\right)+\frac{1}{\sqrt{a+b}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}}\left(-8\,i\,a^{3/2}\,\sqrt{a+b}\,f\,x+\left(8\,a^2+4\,a\,b-b^2\right)\,\text{Log}\left[1-e^{2\,i\,(e+f\,x)}\right]+4\,a^{3/2}\,\sqrt{a+b}\,\text{Log}\left[a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right]+4\,a^{3/2}\,\sqrt{a+b}\,\text{Log}\left[a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right]-8\,a^2\,\text{Log}\left[a+b+a\,e^{2\,i\,(e+f\,x)}+b\,e^{2\,i\,(e+f\,x)}+\sqrt{a+b}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right]-4\,a\,b\,\text{Log}\left[a+b+a\,e^{2\,i\,(e+f\,x)}+b\,e^{2\,i\,(e+f\,x)}+\sqrt{a+b}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right]+b^2\,\text{Log}\left[a+b+a\,e^{2\,i\,(e+f\,x)}+b\,e^{2\,i\,(e+f\,x)}+\sqrt{a+b}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\right]\right)\right)\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}$$

Problem 396: Unable to integrate problem.

$$\int\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\,\text{Tan}[e+f\,x]^6\,dx$$

Optimal (type 3, 290 leaves, 11 steps):

$$-\frac{a^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{f}+\frac{\left(3\,a^4+20\,a^3\,b+90\,a^2\,b^2-60\,a\,b^3-5\,b^4\right)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{128\,b^{5/2}\,f}-\frac{\left(3\,a^3+17\,a^2\,b-55\,a\,b^2-5\,b^3\right)\,\text{Tan}[e+f\,x]\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}{128\,b^2\,f}+\frac{\left(3\,a^2-50\,a\,b-5\,b^2\right)\,\text{Tan}[e+f\,x]^3\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}{192\,b\,f}+\frac{(9\,a+b)\,\text{Tan}[e+f\,x]^5\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}{48\,f}+\frac{b\,\text{Tan}[e+f\,x]^7\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}{8\,f}$$

Result (type 8, 27 leaves):

$$\int \left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\,\text{Tan}[e+f\,x]^6\,dx$$

Problem 397: Unable to integrate problem.

$$\int \left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\,\text{Tan}[e+f\,x]^4\,dx$$

Optimal (type 3, 214 leaves, 10 steps):

$$\frac{a^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{f}-\frac{(a-b)\,\left(a^2+10\,a\,b+b^2\right)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{16\,b^{3/2}\,f}+\frac{\left(a^2-8\,a\,b-b^2\right)\,\text{Tan}[e+f\,x]\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}{16\,b\,f}+\frac{(7\,a+b)\,\text{Tan}[e+f\,x]^3\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}{24\,f}+\frac{b\,\text{Tan}[e+f\,x]^5\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}{6\,f}$$

Result (type 8, 27 leaves):

$$\int \left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\,\text{Tan}[e+f\,x]^4\,dx$$

Problem 398: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\,\text{Tan}[e+f\,x]^2\,dx$$

Optimal (type 3, 166 leaves, 9 steps):

$$-\frac{a^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{f}+\frac{\left(3 a^2-6 a b-b^2\right)\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{8\sqrt{b}\,f}+$$

$$\frac{(5 a+b)\,\text{Tan}[e+f x]\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{8 f}+\frac{b\,\text{Tan}[e+f x]^3\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{4 f}$$

Result (type 3, 702 leaves):

$$\frac{1}{2\sqrt{2}\,f\left(a+2 b+a\,\text{Cos}[2(e+f x)]\right)^{3/2}}\,e^{i(e+f x)}\sqrt{4 b+a\,e^{-2 i(e+f x)}\left(1+e^{2 i(e+f x)}\right)^2}\;\text{Cos}[e+f x]^3$$

$$\left(-\frac{1}{\left(1+e^{2 i(e+f x)}\right)^4}\,i\left(-1+e^{2 i(e+f x)}\right)\left(5 a\left(1+e^{2 i(e+f x)}\right)^2-b\left(1-6 e^{2 i(e+f x)}+e^{4 i(e+f x)}\right)\right)+\right.$$

$$\frac{1}{\sqrt{b}\sqrt{4 b\,e^{2 i(e+f x)}+a\left(1+e^{2 i(e+f x)}\right)^2}}\left(-8 a^{3/2}\sqrt{b}\,f x+\right.$$

$$4\,i\,a^{3/2}\sqrt{b}\,\text{Log}\left[a+2 b+a\,e^{2 i(e+f x)}+\sqrt{a}\sqrt{4 b\,e^{2 i(e+f x)}+a\left(1+e^{2 i(e+f x)}\right)^2}\right]-$$

$$4\,i\,a^{3/2}\sqrt{b}\,\text{Log}\left[a+a\,e^{2 i(e+f x)}+2 b\,e^{2 i(e+f x)}+\sqrt{a}\sqrt{4 b\,e^{2 i(e+f x)}+a\left(1+e^{2 i(e+f x)}\right)^2}\right]-$$

$$3 a^2\,\text{Log}\left[\left(4\left(\sqrt{b}\left(-1+e^{2 i(e+f x)}\right)-i\sqrt{4 b\,e^{2 i(e+f x)}+a\left(1+e^{2 i(e+f x)}\right)^2}\right)f\right)\Big/\left(\left(3 a^2-6 a b-b^2\right)\left(1+e^{2 i(e+f x)}\right)\right)\right]+$$

$$6 a b\,\text{Log}\left[\left(4\left(\sqrt{b}\left(-1+e^{2 i(e+f x)}\right)-i\sqrt{4 b\,e^{2 i(e+f x)}+a\left(1+e^{2 i(e+f x)}\right)^2}\right)f\right)\Big/\left(\left(3 a^2-6 a b-b^2\right)\left(1+e^{2 i(e+f x)}\right)\right)\right]+$$

$$\left.\left.b^2\,\text{Log}\left[\left(4\left(\sqrt{b}\left(-1+e^{2 i(e+f x)}\right)-i\sqrt{4 b\,e^{2 i(e+f x)}+a\left(1+e^{2 i(e+f x)}\right)^2}\right)f\right)\Big/\left(\left(3 a^2-6 a b-b^2\right)\left(1+e^{2 i(e+f x)}\right)\right)\right]\right)\right)\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}$$

Problem 399: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}dx$$

Optimal (type 3, 118 leaves, 7 steps):

$$\frac{a^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{f}+$$

$$\frac{\sqrt{b}\,(3\,a+b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{2\,f}+\frac{b\,\text{Tan}[e+f\,x]\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}{2\,f}$$

Result (type 3, 527 leaves):

$$\frac{1}{f\,\left(a+2\,b+a\,\text{Cos}[2\,e+2\,f\,x]\right)^{3/2}}\sqrt{2}\,e^{i\,(e+f\,x)}\,\sqrt{4\,b+a\,e^{-2\,i\,(e+f\,x)}\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}$$

$$\text{Cos}[e+f\,x]^3\,\left(-\frac{i\,b\,\left(-1+e^{2\,i\,(e+f\,x)}\right)}{\left(1+e^{2\,i\,(e+f\,x)}\right)^2}+\frac{1}{\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}}\right.$$

$$\left(2\,a^{3/2}\,f\,x-i\,a^{3/2}\,\text{Log}\left[a+2\,b+a\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,\right]+\right.$$

$$i\,a^{3/2}\,\text{Log}\left[a+a\,e^{2\,i\,(e+f\,x)}+2\,b\,e^{2\,i\,(e+f\,x)}+\sqrt{a}\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,\right]-$$

$$3\,a\,\sqrt{b}\,\text{Log}\left[\left(-2\,\sqrt{b}\,\left(-1+e^{2\,i\,(e+f\,x)}\right)\,f+2\,i\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,f\right)\Big/\right.$$

$$\left.\left(b\,(3\,a+b)\,\left(1+e^{2\,i\,(e+f\,x)}\right)\right)\right]-$$

$$b^{3/2}\,\text{Log}\left[\left(-2\,\sqrt{b}\,\left(-1+e^{2\,i\,(e+f\,x)}\right)\,f+2\,i\,\sqrt{4\,b\,e^{2\,i\,(e+f\,x)}+a\,\left(1+e^{2\,i\,(e+f\,x)}\right)^2}\,f\right)\Big/\right.$$

$$\left.\left.\left.\left(b\,(3\,a+b)\,\left(1+e^{2\,i\,(e+f\,x)}\right)\right)\right]\right)\right)\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}$$

Problem 400: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cot}[e+f\,x]^2\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\,dx$$

Optimal (type 3, 111 leaves, 8 steps):

$$-\frac{a^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{f}+$$

$$\frac{b^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{f}-\frac{(a+b)\,\text{Cot}[e+f\,x]\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}{f}$$

Result (type 3, 410 leaves):

$$\left(\sqrt{2}\, e^{i (e+f x)} \sqrt{4 b + a e^{-2 i (e+f x)} \left(1 + e^{2 i (e+f x)}\right)^2}\, \text{Cos}[e+f x]^3\right.$$
$$\left(-\frac{2 i (a+b)}{-1 + e^{2 i (e+f x)}} + \left(i\, a^{3/2} \text{Log}\left[a + 2 b + a e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right] - \right.\right.$$
$$i\, a^{3/2} \text{Log}\left[a + a e^{2 i (e+f x)} + 2 b e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right] -$$
$$2 \left(a^{3/2} f x + b^{3/2} \text{Log}\left[\left(\left(\sqrt{b} \left(-1 + e^{2 i (e+f x)}\right) - i \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right) f\right) \Big/ \right.\right.$$
$$\left.\left.\left.\left.\left(b^2 \left(1 + e^{2 i (e+f x)}\right)\right)\right]\right)\right) \Big/ \left(\sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right)$$
$$\left.\left(a + b\, \text{Sec}[e+f x]^2\right)^{3/2}\right) \Big/ \left(f \left(a + 2 b + a\, \text{Cos}[2 e + 2 f x]\right)^{3/2}\right)$$

Problem 401: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cot}[e+f x]^4 \left(a + b\, \text{Sec}[e+f x]^2\right)^{3/2} dx$$

Optimal (type 3, 112 leaves, 7 steps):

$$\frac{a^{3/2} \text{ArcTan}\left[\frac{\sqrt{a}\, \text{Tan}[e+f x]}{\sqrt{a+b+b\, \text{Tan}[e+f x]^2}}\right]}{f} + \frac{(3 a - b)\, \text{Cot}[e+f x] \sqrt{a + b + b\, \text{Tan}[e+f x]^2}}{3 f} -$$
$$\frac{(a+b)\, \text{Cot}[e+f x]^3 \sqrt{a + b + b\, \text{Tan}[e+f x]^2}}{3 f}$$

Result (type 3, 354 leaves):

$$\left(\sqrt{2}\, e^{i (e+f x)} \sqrt{4 b + a e^{-2 i (e+f x)} \left(1 + e^{2 i (e+f x)}\right)^2}\right.$$
$$\operatorname{Cos}[e+f x]^3 \left(\frac{8 i \left(b e^{2 i (e+f x)} + a \left(1 - e^{2 i (e+f x)} + e^{4 i (e+f x)}\right)\right)}{\left(-1 + e^{2 i (e+f x)}\right)^3} + \right.$$
$$\left(3 a^{3/2} \left(2 f x - i \operatorname{Log}\left[a + 2 b + a e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\,\right] + \right.\right.$$
$$\left.\left. i \operatorname{Log}\left[a + a e^{2 i (e+f x)} + 2 b e^{2 i (e+f x)} + \sqrt{a} \sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\,\right]\right)\right) \Big/$$
$$\left.\left(\sqrt{4 b e^{2 i (e+f x)} + a \left(1 + e^{2 i (e+f x)}\right)^2}\right)\right) \left(a + b \operatorname{Sec}[e+f x]^2\right)^{3/2}\right) \Big/$$
$$\left(3 f \left(a + 2 b + a \operatorname{Cos}[2 e + 2 f x]\right)^{3/2}\right)$$

Problem 402: Unable to integrate problem.

$$\int \operatorname{Cot}[e+f x]^6 \left(a + b \operatorname{Sec}[e+f x]^2\right)^{3/2} dx$$

Optimal (type 3, 165 leaves, 8 steps):

$$-\frac{a^{3/2} \operatorname{ArcTan}\left[\frac{\sqrt{a} \operatorname{Tan}[e+f x]}{\sqrt{a+b+b \operatorname{Tan}[e+f x]^2}}\right]}{f} - \frac{\left(15 a^2 + 10 a b - 2 b^2\right) \operatorname{Cot}[e+f x] \sqrt{a+b+b \operatorname{Tan}[e+f x]^2}}{15 (a+b) f} +$$
$$\frac{(5 a - b) \operatorname{Cot}[e+f x]^3 \sqrt{a+b+b \operatorname{Tan}[e+f x]^2}}{15 f} - \frac{(a+b) \operatorname{Cot}[e+f x]^5 \sqrt{a+b+b \operatorname{Tan}[e+f x]^2}}{5 f}$$

Result (type 8, 27 leaves):

$$\int \operatorname{Cot}[e+f x]^6 \left(a + b \operatorname{Sec}[e+f x]^2\right)^{3/2} dx$$

Problem 403: Unable to integrate problem.

$$\int \frac{\operatorname{Tan}[e+f x]^5}{\sqrt{a + b \operatorname{Sec}[e+f x]^2}} dx$$

Optimal (type 3, 89 leaves, 6 steps):

$$-\frac{\operatorname{ArcTanh}\left[\frac{\sqrt{a+b \operatorname{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{\sqrt{a}\, f} - \frac{(a + 2 b) \sqrt{a + b \operatorname{Sec}[e+f x]^2}}{b^2 f} + \frac{\left(a + b \operatorname{Sec}[e+f x]^2\right)^{3/2}}{3 b^2 f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Tan}[e+f x]^5}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Problem 404: Unable to integrate problem.

$$\int \frac{\text{Tan}[e+f x]^3}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Optimal (type 3, 56 leaves, 5 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{\sqrt{a}\,f}+\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{b\,f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Tan}[e+f x]^3}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Problem 405: Unable to integrate problem.

$$\int \frac{\text{Tan}[e+f x]}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Optimal (type 3, 33 leaves, 4 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{\sqrt{a}\,f}$$

Result (type 8, 25 leaves):

$$\int \frac{\text{Tan}[e+f x]}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Problem 406: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f x]}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Optimal (type 3, 70 leaves, 7 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{\sqrt{a}\,f}-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a+b}}\right]}{\sqrt{a+b}\,f}$$

Result (type 8, 25 leaves):

$$\int \frac{\text{Cot}[e+f x]}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Problem 407: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f x]^3}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Optimal (type 3, 116 leaves, 8 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{\sqrt{a}\,f}+\frac{(2 a+3 b)\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a+b}}\right]}{2\,(a+b)^{3/2}\,f}-\frac{\text{Cot}[e+f x]^2\,\sqrt{a+b\,\text{Sec}[e+f x]^2}}{2\,(a+b)\,f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f x]^3}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Problem 408: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f x]^5}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Optimal (type 3, 166 leaves, 9 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{\sqrt{a}\,f}-\frac{\left(8 a^2+20 a b+15 b^2\right)\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a+b}}\right]}{8\,(a+b)^{5/2}\,f}+$$
$$\frac{(4 a+7 b)\,\text{Cot}[e+f x]^2\,\sqrt{a+b\,\text{Sec}[e+f x]^2}}{8\,(a+b)^2\,f}-\frac{\text{Cot}[e+f x]^4\,\sqrt{a+b\,\text{Sec}[e+f x]^2}}{4\,(a+b)\,f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f x]^5}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Problem 409: Unable to integrate problem.

$$\int \frac{\text{Tan}[e+f x]^6}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Optimal (type 3, 173 leaves, 9 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{\sqrt{a}\,f}+\frac{\left(3 a^2+10 a b+15 b^2\right)\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{8 b^{5/2} f}-\frac{(3 a+7 b)\,\text{Tan}[e+f x]\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{8 b^2 f}+\frac{\text{Tan}[e+f x]^3\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{4 b f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Tan}[e+f x]^6}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Problem 410: Unable to integrate problem.

$$\int \frac{\text{Tan}[e+f x]^4}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Optimal (type 3, 120 leaves, 8 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{\sqrt{a}\,f}-\frac{(a+3 b)\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{2 b^{3/2} f}+\frac{\text{Tan}[e+f x]\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{2 b f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Tan}[e+f x]^4}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Problem 411: Unable to integrate problem.

$$\int \frac{\text{Tan}[e+f x]^2}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Optimal (type 3, 80 leaves, 7 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{\sqrt{a}\,f}+\frac{\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{\sqrt{b}\,f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Tan}[e+f x]^2}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Problem 412: Unable to integrate problem.

$$\int \frac{1}{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}\,dx$$

Optimal (type 3, 39 leaves, 3 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{\sqrt{a}\,f}$$

Result (type 8, 18 leaves):

$$\int \frac{1}{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}\,dx$$

Problem 413: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f\,x]^2}{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}\,dx$$

Optimal (type 3, 74 leaves, 6 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{\sqrt{a}\,f}-\frac{\text{Cot}[e+f\,x]\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}{(a+b)\,f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f\,x]^2}{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}\,dx$$

Problem 414: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f\,x]^4}{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}\,dx$$

Optimal (type 3, 119 leaves, 7 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f\,x]}{\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}\right]}{\sqrt{a}\,f}+$$

$$\frac{(3\,a+5\,b)\,\text{Cot}[e+f\,x]\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}{3\,(a+b)^2\,f}-\frac{\text{Cot}[e+f\,x]^3\,\sqrt{a+b+b\,\text{Tan}[e+f\,x]^2}}{3\,(a+b)\,f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f x]^4}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Problem 415: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f x]^6}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Optimal (type 3, 172 leaves, 8 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{\sqrt{a}\,f}-\frac{\left(15 a^2+40 a b+33 b^2\right)\text{Cot}[e+f x]\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{15\,(a+b)^3 f}+\frac{(5 a+9 b)\,\text{Cot}[e+f x]^3\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{15\,(a+b)^2 f}-\frac{\text{Cot}[e+f x]^5\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{5\,(a+b)\,f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f x]^6}{\sqrt{a+b\,\text{Sec}[e+f x]^2}}\,dx$$

Problem 416: Unable to integrate problem.

$$\int \frac{\text{Tan}[e+f x]^5}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\,dx$$

Optimal (type 3, 88 leaves, 6 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{a^{3/2} f}+\frac{(a+b)^2}{a b^2 f\sqrt{a+b\,\text{Sec}[e+f x]^2}}+\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{b^2 f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Tan}[e+f x]^5}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\,dx$$

Problem 417: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]^3}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\,dx$$

Optimal (type 3, 63 leaves, 5 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a}}\right]}{a^{3/2}\,f}-\frac{a+b}{a\,b\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}$$

Result (type 6, 1695 leaves):

$$\left(3\,(a+b)\,\text{AppellF1}\left[2,\frac{1}{2},\frac{3}{2},3,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Sin}[e+f\,x]^3\,\text{Tan}[e+f\,x]^4\right)\Big/$$
$$\left(4\sqrt{2}\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{3/2}\right.$$
$$\left(6\,(a+b)\,\text{AppellF1}\left[2,\frac{1}{2},\frac{3}{2},3,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left(3\,a\,\text{AppellF1}\left[3,\frac{1}{2},\frac{5}{2},4,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left.\left.(a+b)\,\text{AppellF1}\left[3,\frac{3}{2},\frac{3}{2},4,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)$$
$$\left(\left(9\,a\,(a+b)\,\text{AppellF1}\left[2,\frac{1}{2},\frac{3}{2},3,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Sin}[e+f\,x]^5\right)\Big/\right.$$
$$\left(4\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\left(6\,(a+b)\,\text{AppellF1}\left[2,\frac{1}{2},\frac{3}{2},3,\text{Sin}[e+f\,x]^2,\right.\right.\right.$$
$$\left.\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(3\,a\,\text{AppellF1}\left[3,\frac{1}{2},\frac{5}{2},4,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left.\left.\left.(a+b)\,\text{AppellF1}\left[3,\frac{3}{2},\frac{3}{2},4,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)+$$
$$\left(9\,(a+b)\,\text{AppellF1}\left[2,\frac{1}{2},\frac{3}{2},3,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Sin}[e+f\,x]^3\right)\Big/$$
$$\left(4\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{3/2}\left(6\,(a+b)\,\text{AppellF1}\left[2,\frac{1}{2},\frac{3}{2},3,\text{Sin}[e+f\,x]^2,\right.\right.\right.$$
$$\left.\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(3\,a\,\text{AppellF1}\left[3,\frac{1}{2},\frac{5}{2},4,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left.\left.\left.(a+b)\,\text{AppellF1}\left[3,\frac{3}{2},\frac{3}{2},4,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)+$$
$$\left(3\,(a+b)\,\text{Sin}[e+f\,x]^3\left(\frac{1}{a+b}2\,a\,f\,\text{AppellF1}\left[3,\frac{1}{2},\frac{5}{2},4,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right.\right.$$
$$\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]+\frac{2}{3}\,f\,\text{AppellF1}\left[3,\frac{3}{2},\frac{3}{2},4,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]$$
$$\left.\left.\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\right)\text{Tan}[e+f\,x]\right)\Big/\left(4\sqrt{2}\,f\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{3/2}\right.$$
$$\left(6\,(a+b)\,\text{AppellF1}\left[2,\frac{1}{2},\frac{3}{2},3,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left(3\,a\,\text{AppellF1}\left[3,\frac{1}{2},\frac{5}{2},4,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\right.$$
$$\left.\left.\left.(a+b)\,\text{AppellF1}\left[3,\frac{3}{2},\frac{3}{2},4,\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)-$$

$$\Bigg(3\,(a+b)\,\text{AppellF1}\Big[2,\frac{1}{2},\frac{3}{2},3,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\,\text{Sin}[e+f x]^3$$

$$\Bigg(2 f\,\Bigg(3 a\,\text{AppellF1}\Big[3,\frac{1}{2},\frac{5}{2},4,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]+(a+b)$$

$$\text{AppellF1}\Big[3,\frac{3}{2},\frac{3}{2},4,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\Bigg)\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]+$$

$$6\,(a+b)\,\Bigg(\frac{1}{a+b}2\,a\,f\,\text{AppellF1}\Big[3,\frac{1}{2},\frac{5}{2},4,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\,\text{Cos}[e+f x]$$

$$\text{Sin}[e+f x]+\frac{2}{3}f\,\text{AppellF1}\Big[3,\frac{3}{2},\frac{3}{2},4,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]$$

$$\text{Cos}[e+f x]\,\text{Sin}[e+f x]\Bigg)+\text{Sin}[e+f x]^2\,\Bigg(3 a\,\Bigg(\frac{1}{4\,(a+b)}15\,a\,f\,\text{AppellF1}\Big[4,\frac{1}{2},\frac{7}{2},$$

$$5,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]+\frac{3}{4}f\,\text{AppellF1}\Big[$$

$$4,\frac{3}{2},\frac{5}{2},5,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]\Bigg)+$$

$$(a+b)\,\Bigg(\frac{1}{4\,(a+b)}9\,a\,f\,\text{AppellF1}\Big[4,\frac{3}{2},\frac{5}{2},5,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]$$

$$\text{Cos}[e+f x]\,\text{Sin}[e+f x]+\frac{9}{4}f\,\text{AppellF1}\Big[4,\frac{5}{2},\frac{3}{2},5,\text{Sin}[e+f x]^2,$$

$$\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\,\text{Cos}[e+f x]\,\text{Sin}[e+f x]\Bigg)\Bigg)\Bigg)\,\text{Tan}[e+f x]\Bigg)\Bigg/$$

$$\Bigg(4\sqrt{2}\,f\,\big(a+b-a\,\text{Sin}[e+f x]^2\big)^{3/2}\,\Bigg(6\,(a+b)\,\text{AppellF1}\Big[2,\frac{1}{2},\frac{3}{2},3,\text{Sin}[e+f x]^2,$$

$$\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]+\Bigg(3 a\,\text{AppellF1}\Big[3,\frac{1}{2},\frac{5}{2},4,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]+$$

$$(a+b)\,\text{AppellF1}\Big[3,\frac{3}{2},\frac{3}{2},4,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\Bigg)\,\text{Sin}[e+f x]^2\Bigg)^2\Bigg)+$$

$$\Bigg(3\,(a+b)\,\text{AppellF1}\Big[2,\frac{1}{2},\frac{3}{2},3,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\,\text{Sin}[e+f x]\,\text{Tan}[e+f x]^2\Bigg)\Bigg/$$

$$\Bigg(4\sqrt{2}\,\big(a+b-a\,\text{Sin}[e+f x]^2\big)^{3/2}$$

$$\Bigg(6\,(a+b)\,\text{AppellF1}\Big[2,\frac{1}{2},\frac{3}{2},3,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]+$$

$$\Bigg(3 a\,\text{AppellF1}\Big[3,\frac{1}{2},\frac{5}{2},4,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]+$$

$$(a+b)\,\text{AppellF1}\Big[3,\frac{3}{2},\frac{3}{2},4,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\Big]\Bigg)\,\text{Sin}[e+f x]^2\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 418: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\,dx$$

Optimal (type 3, 57 leaves, 5 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{a^{3/2} f}+\frac{1}{a f \sqrt{a+b\,\text{Sec}[e+f x]^2}}$$

Result (type 3, 425 leaves):

$$-\frac{\left(a+2 b+a \,\text{Cos}[2 e+2 f x]\right)^{3/2} \text{Sec}[e+f x]^2}{8 b f \sqrt{a+2 b+a \,\text{Cos}[2 (e+f x)]}\,\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}+$$
$$\left(e^{i (e+f x)} \sqrt{4 b+a e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2}\right.$$
$$\left(a+2 b+a\,\text{Cos}[2 e+2 f x]\right)^{3/2} \left(\frac{\sqrt{a}\,(a+4 b) \left(1+e^{2 i (e+f x)}\right)}{b \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)}+\right.$$
$$\left(4 i f x-2\,\text{Log}\left[a+2 b+a e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right]-\right.$$
$$\left.2\,\text{Log}\left[a+a e^{2 i (e+f x)}+2 b e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right]\right)\Big/$$
$$\left.\left.\left(\sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right) \text{Sec}[e+f x]^3\right)\Big/\left(8 \sqrt{2}\, a^{3/2} f \left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}\right)$$

Problem 419: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f x]}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\,dx$$

Optimal (type 3, 100 leaves, 8 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{a^{3/2} f}-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a+b}}\right]}{(a+b)^{3/2} f}-\frac{b}{a\,(a+b)\, f \sqrt{a+b\,\text{Sec}[e+f x]^2}}$$

Result (type 8, 25 leaves):

$$\int \frac{\text{Cot}[e+f x]}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\,dx$$

Problem 420: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f x]^3}{\left(a+b \,\text{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

Optimal (type 3, 153 leaves, 9 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b \,\text{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{a^{3/2} f}+\frac{(2 a+5 b) \,\text{ArcTanh}\left[\frac{\sqrt{a+b \,\text{Sec}[e+f x]^2}}{\sqrt{a+b}}\right]}{2 (a+b)^{5/2} f}-\frac{(a-2 b) b}{2 a (a+b)^2 f \sqrt{a+b \,\text{Sec}[e+f x]^2}}-\frac{\text{Cot}[e+f x]^2}{2 (a+b) f \sqrt{a+b \,\text{Sec}[e+f x]^2}}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f x]^3}{\left(a+b \,\text{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

Problem 421: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f x]^5}{\left(a+b \,\text{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

Optimal (type 3, 213 leaves, 10 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b \,\text{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{a^{3/2} f}-\frac{\left(8 a^2+28 a b+35 b^2\right) \text{ArcTanh}\left[\frac{\sqrt{a+b \,\text{Sec}[e+f x]^2}}{\sqrt{a+b}}\right]}{8 (a+b)^{7/2} f}+\frac{b \left(4 a^2+11 a b-8 b^2\right)}{8 a (a+b)^3 f \sqrt{a+b \,\text{Sec}[e+f x]^2}}+\frac{(4 a+9 b) \,\text{Cot}[e+f x]^2}{8 (a+b)^2 f \sqrt{a+b \,\text{Sec}[e+f x]^2}}-\frac{\text{Cot}[e+f x]^4}{4 (a+b) f \sqrt{a+b \,\text{Sec}[e+f x]^2}}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f x]^5}{\left(a+b \,\text{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

Problem 422: Unable to integrate problem.

$$\int \frac{\text{Tan}[e+f x]^6}{\left(a+b \,\text{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

Optimal (type 3, 172 leaves, 9 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{a^{3/2} f}-\frac{(3 a+5 b)\ \text{ArcTanh}\left[\frac{\sqrt{b}\ \text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{2 b^{5/2} f}-\frac{(a+b)\ \text{Tan}[e+f x]^3}{a b f \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}+\frac{(3 a+2 b)\ \text{Tan}[e+f x] \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{2 a b^2 f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Tan}[e+f x]^6}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\, dx$$

Problem 423: Unable to integrate problem.

$$\int \frac{\text{Tan}[e+f x]^4}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\, dx$$

Optimal (type 3, 116 leaves, 8 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{a^{3/2} f}+\frac{\text{ArcTanh}\left[\frac{\sqrt{b}\ \text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{b^{3/2} f}-\frac{(a+b)\ \text{Tan}[e+f x]}{a b f \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Tan}[e+f x]^4}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\, dx$$

Problem 424: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]^2}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\, dx$$

Optimal (type 3, 71 leaves, 5 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{a^{3/2} f}+\frac{\text{Tan}[e+f x]}{a f \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}$$

Result (type 3, 764 leaves):

$$-\left(\left(e^{i (e+f x)} \sqrt{4 b+a e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2} \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^{3/2} \left(-3 i a^{3/2} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}-4 i \sqrt{a}\, b \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}+3 i a^{3/2} e^{2 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}+4 i \sqrt{a}\, b e^{2 i (e+f x)} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}+4 a^2 f x+4 a b f x+8 a^2 e^{2 i (e+f x)} f x+24 a b e^{2 i (e+f x)} f x+16 b^2 e^{2 i (e+f x)} f x+4 a^2 e^{4 i (e+f x)} f x+4 a b e^{4 i (e+f x)} f x-2 i (a+b) \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right) \operatorname{Log}\left[e^{-2 i e} \left(a+2 b+a e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right]+2 i (a+b) \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right) \operatorname{Log}\left[e^{-2 i e} \left(a+a e^{2 i (e+f x)}+2 b e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right]\right) \operatorname{Sec}[e+f x]^3\right) \Big/ \left(8 \sqrt{2}\, a^{3/2} (a+b) \left(4 b e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^{3/2} f \left(a+b \operatorname{Sec}[e+f x]^2\right)^{3/2}\right)\right)+\frac{\left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^{3/2} \operatorname{Sec}[e+f x]^2 \operatorname{Tan}[e+f x]}{8 (a+b) f \sqrt{a+2 b+a \operatorname{Cos}[2 (e+f x)]} \left(a+b \operatorname{Sec}[e+f x]^2\right)^{3/2}}$$

Problem 425: Unable to integrate problem.

$$\int \frac{1}{\left(a+b \operatorname{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

Optimal (type 3, 77 leaves, 4 steps):

$$\frac{\operatorname{ArcTan}\left[\frac{\sqrt{a} \operatorname{Tan}[e+f x]}{\sqrt{a+b+b \operatorname{Tan}[e+f x]^2}}\right]}{a^{3/2} f}-\frac{b \operatorname{Tan}[e+f x]}{a (a+b) f \sqrt{a+b+b \operatorname{Tan}[e+f x]^2}}$$

Result (type 8, 18 leaves):

$$\int \frac{1}{\left(a+b \operatorname{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

Problem 426: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f x]^2}{\left(a+b \text{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

Optimal (type 3, 119 leaves, 7 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[e+f x]}{\sqrt{a+b+b \text{Tan}[e+f x]^2}}\right]}{a^{3/2} f}-\frac{b \text{Cot}[e+f x]}{a (a+b) f \sqrt{a+b+b \text{Tan}[e+f x]^2}}-\frac{(a-b) \text{Cot}[e+f x] \sqrt{a+b+b \text{Tan}[e+f x]^2}}{a (a+b)^2 f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f x]^2}{\left(a+b \text{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

Problem 427: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f x]^4}{\left(a+b \text{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

Optimal (type 3, 174 leaves, 8 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[e+f x]}{\sqrt{a+b+b \text{Tan}[e+f x]^2}}\right]}{a^{3/2} f}-\frac{b \text{Cot}[e+f x]^3}{a (a+b) f \sqrt{a+b+b \text{Tan}[e+f x]^2}}+\frac{(3 a-b) (a+3 b) \text{Cot}[e+f x] \sqrt{a+b+b \text{Tan}[e+f x]^2}}{3 a (a+b)^3 f}-\frac{(a-3 b) \text{Cot}[e+f x]^3 \sqrt{a+b+b \text{Tan}[e+f x]^2}}{3 a (a+b)^2 f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f x]^4}{\left(a+b \text{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

Problem 428: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f x]^6}{\left(a+b \text{Sec}[e+f x]^2\right)^{3/2}} \, dx$$

Optimal (type 3, 241 leaves, 9 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{a^{3/2} f}-\frac{b\,\text{Cot}[e+f x]^5}{a\,(a+b)\,f\,\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}-\frac{\left(15 a^3+55 a^2 b+73 a b^2-15 b^3\right)\text{Cot}[e+f x]\,\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{15 a\,(a+b)^4 f}+\frac{\left(5 a^2+14 a b-15 b^2\right)\text{Cot}[e+f x]^3\,\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{15 a\,(a+b)^3 f}-\frac{(a-5 b)\,\text{Cot}[e+f x]^5\,\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{5 a\,(a+b)^2 f}$$

Result (type 8, 27 leaves):

$$\int\frac{\text{Cot}[e+f x]^6}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}\,dx$$

Problem 429: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Tan}[e+f x]^5}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}}\,dx$$

Optimal (type 3, 97 leaves, 6 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{a^{5/2} f}+\frac{(a+b)^2}{3 a b^2 f\left(a+b\,\text{Sec}[e+f x]^2\right)^{3/2}}+\frac{\frac{1}{a^2}-\frac{1}{b^2}}{f\sqrt{a+b\,\text{Sec}[e+f x]^2}}$$

Result (type 6, 1699 leaves):

$$\left((a+b)\,\text{AppellF1}\left[3,\frac{1}{2},\frac{5}{2},4,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Sin}[e+f x]^5\,\text{Tan}[e+f x]^6\right)\Big/$$
$$\left(3\sqrt{2}\,f\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}\left(a+b-a\,\text{Sin}[e+f x]^2\right)^{5/2}\right.$$
$$\left(8\,(a+b)\,\text{AppellF1}\left[3,\frac{1}{2},\frac{5}{2},4,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]+\right.$$
$$\left(5\,a\,\text{AppellF1}\left[4,\frac{1}{2},\frac{7}{2},5,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]+\right.$$
$$\left.\left.(a+b)\,\text{AppellF1}\left[4,\frac{3}{2},\frac{5}{2},5,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\right)\text{Sin}[e+f x]^2\right)$$
$$\left(\left(5\,a\,(a+b)\,\text{AppellF1}\left[3,\frac{1}{2},\frac{5}{2},4,\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Sin}[e+f x]^7\right)\Big/\right.$$
$$\left(3\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f x]^2\right)^{7/2}\left(8\,(a+b)\,\text{AppellF1}\left[3,\frac{1}{2},\frac{5}{2},4,\text{Sin}[e+f x]^2,\right.\right.\right.$$

$$\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big] + \Big(5\,a\,\text{AppellF1}\Big[4, \frac{1}{2}, \frac{7}{2}, 5, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big] +$$

$$(a+b)\,\text{AppellF1}\Big[4, \frac{3}{2}, \frac{5}{2}, 5, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\Big)\,\text{Sin}[e+f\,x]^2\Big)\Big) +$$

$$\Big(5\,(a+b)\,\text{AppellF1}\Big[3, \frac{1}{2}, \frac{5}{2}, 4, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Sin}[e+f\,x]^5\Big) \Big/$$

$$\Big(3\,\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\,\Big(8\,(a+b)\,\text{AppellF1}\Big[3, \frac{1}{2}, \frac{5}{2}, 4, \text{Sin}[e+f\,x]^2,$$

$$\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big] + \Big(5\,a\,\text{AppellF1}\Big[4, \frac{1}{2}, \frac{7}{2}, 5, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big] +$$

$$(a+b)\,\text{AppellF1}\Big[4, \frac{3}{2}, \frac{5}{2}, 5, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\Big)\,\text{Sin}[e+f\,x]^2\Big)\Big) +$$

$$\Big((a+b)\,\text{Sin}[e+f\,x]^5\,\Big(\frac{1}{4\,(a+b)}15\,a\,f\,\text{AppellF1}\Big[4, \frac{1}{2}, \frac{7}{2}, 5, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]$$

$$\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x] + \frac{3}{4}\,f\,\text{AppellF1}\Big[4, \frac{3}{2}, \frac{5}{2}, 5, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]$$

$$\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\Big)\,\text{Tan}[e+f\,x]\Big) \Big/ \Big(3\,\sqrt{2}\,f\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}$$

$$\Big(8\,(a+b)\,\text{AppellF1}\Big[3, \frac{1}{2}, \frac{5}{2}, 4, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big] +$$

$$\Big(5\,a\,\text{AppellF1}\Big[4, \frac{1}{2}, \frac{7}{2}, 5, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big] +$$

$$(a+b)\,\text{AppellF1}\Big[4, \frac{3}{2}, \frac{5}{2}, 5, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\Big)\,\text{Sin}[e+f\,x]^2\Big)\Big) -$$

$$\Big((a+b)\,\text{AppellF1}\Big[3, \frac{1}{2}, \frac{5}{2}, 4, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Sin}[e+f\,x]^5$$

$$\Big(2\,f\,\Big(5\,a\,\text{AppellF1}\Big[4, \frac{1}{2}, \frac{7}{2}, 5, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big] + (a+b)$$

$$\text{AppellF1}\Big[4, \frac{3}{2}, \frac{5}{2}, 5, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\Big)\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x] +$$

$$8\,(a+b)\,\Big(\frac{1}{4\,(a+b)}15\,a\,f\,\text{AppellF1}\Big[4, \frac{1}{2}, \frac{7}{2}, 5, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]$$

$$\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x] + \frac{3}{4}\,f\,\text{AppellF1}\Big[4, \frac{3}{2}, \frac{5}{2}, 5, \text{Sin}[e+f\,x]^2,$$

$$\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\Big) + \text{Sin}[e+f\,x]^2$$

$$\Big(5\,a\,\Big(\frac{1}{5\,(a+b)}28\,a\,f\,\text{AppellF1}\Big[5, \frac{1}{2}, \frac{9}{2}, 6, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]$$

$$\text{Sin}[e+f\,x] + \frac{4}{5}\,f\,\text{AppellF1}\Big[5, \frac{3}{2}, \frac{7}{2}, 6, \text{Sin}[e+f\,x]^2, \frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[$$

$$e+f\,x]\,\text{Sin}[e+f\,x]\Big) + (a+b)\,\Big(\frac{1}{a+b}4\,a\,f\,\text{AppellF1}\Big[5, \frac{3}{2}, \frac{7}{2}, 6, \text{Sin}[e+f\,x]^2,$$

$$\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]+\frac{12}{5}\,f\,\text{AppellF1}\Big[5,\,\frac{5}{2},\,\frac{5}{2},\,6,$$

$$\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\Big)\Big)\Big)\,\text{Tan}[e+f\,x]\Big)\Big/$$

$$\Big(3\,\sqrt{2}\,f\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\,\Big(8\,(a+b)\,\text{AppellF1}\Big[3,\,\frac{1}{2},\,\frac{5}{2},\,4,\,\text{Sin}[e+f\,x]^2,$$

$$\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]+\Big(5\,a\,\text{AppellF1}\Big[4,\,\frac{1}{2},\,\frac{7}{2},\,5,\,\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]+$$

$$(a+b)\,\text{AppellF1}\Big[4,\,\frac{3}{2},\,\frac{5}{2},\,5,\,\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\Big)\,\text{Sin}[e+f\,x]^2\Big)^2\Big)+$$

$$\Big((a+b)\,\text{AppellF1}\Big[3,\,\frac{1}{2},\,\frac{5}{2},\,4,\,\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\,\text{Sin}[e+f\,x]^3\,\text{Tan}[e+f\,x]^2\Big)\Big/$$

$$\Big(3\,\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}$$

$$\Big(8\,(a+b)\,\text{AppellF1}\Big[3,\,\frac{1}{2},\,\frac{5}{2},\,4,\,\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]+$$

$$\Big(5\,a\,\text{AppellF1}\Big[4,\,\frac{1}{2},\,\frac{7}{2},\,5,\,\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]+$$

$$(a+b)\,\text{AppellF1}\Big[4,\,\frac{3}{2},\,\frac{5}{2},\,5,\,\text{Sin}[e+f\,x]^2,\,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\Big]\Big)\,\text{Sin}[e+f\,x]^2\Big)\Big)\Big)$$

Problem 430: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Tan}[e+f\,x]^3}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}\,dx$$

Optimal (type 3, 89 leaves, 6 steps):

$$\frac{\text{ArcTanh}\Big[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a}}\Big]}{a^{5/2}\,f}-\frac{a+b}{3\,a\,b\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}-\frac{1}{a^2\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}$$

Result (type 3, 613 leaves):

$$-\left(\left(\left(a+3b+a\,\mathrm{Cos}\left[2\left(e+fx\right)\right]\right)\left(a+2b+a\,\mathrm{Cos}[2e+2fx]\right)^{5/2}\mathrm{Sec}[e+fx]^4\right)\Big/\left(48b^2f\left(a+2b+a\,\mathrm{Cos}\left[2\left(e+fx\right)\right]\right)^{3/2}\left(a+b\,\mathrm{Sec}[e+fx]^2\right)^{5/2}\right)\right)+$$
$$\left(\left(a+b+\left(a-2b\right)\mathrm{Cos}\left[2\left(e+fx\right)\right]\right)\left(a+2b+a\,\mathrm{Cos}[2e+2fx]\right)^{5/2}\mathrm{Sec}[e+fx]^4\right)\Big/\left(96b^2f\left(a+2b+a\,\mathrm{Cos}\left[2\left(e+fx\right)\right]\right)^{3/2}\left(a+b\,\mathrm{Sec}[e+fx]^2\right)^{5/2}\right)-$$
$$\frac{1}{96\sqrt{2}\,a^{5/2}f\left(a+b\,\mathrm{Sec}[e+fx]^2\right)^{5/2}}\,e^{i(e+fx)}\sqrt{4b+a\,e^{-2i(e+fx)}\left(1+e^{2i(e+fx)}\right)^2}\left(a+2b+a\,\mathrm{Cos}[2e+2fx]\right)^{5/2}$$
$$\left(-\left(\left(\sqrt{a}\left(1+e^{2i(e+fx)}\right)\left(-96b^3e^{2i(e+fx)}+a^3\left(1+e^{2i(e+fx)}\right)^2-32ab^2\left(1+e^{2i(e+fx)}\right)^2-6a^2b\left(1+e^{2i(e+fx)}+e^{4i(e+fx)}\right)\right)\right)\Big/\left(b^2\left(4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2\right)^2\right)\right)+\right.$$
$$\left(24ifx-12\,\mathrm{Log}\left[a+2b+a\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]-\right.$$
$$\left.12\,\mathrm{Log}\left[a+a\,e^{2i(e+fx)}+2b\,e^{2i(e+fx)}+\sqrt{a}\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right]\right)\Big/$$
$$\left.\left(\sqrt{4b\,e^{2i(e+fx)}+a\left(1+e^{2i(e+fx)}\right)^2}\right)\right)\mathrm{Sec}[e+fx]^5$$

Problem 431: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Tan}[e+fx]}{\left(a+b\,\mathrm{Sec}[e+fx]^2\right)^{5/2}}\,dx$$

Optimal (type 3, 83 leaves, 6 steps):

$$-\frac{\mathrm{ArcTanh}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}}{\sqrt{a}}\right]}{a^{5/2}f}+\frac{1}{3af\left(a+b\,\mathrm{Sec}[e+fx]^2\right)^{3/2}}+\frac{1}{a^2f\sqrt{a+b\,\mathrm{Sec}[e+fx]^2}}$$

Result (type 3, 613 leaves):

$$-\left(\left(\left(a+3 b+a \operatorname{Cos}[2(e+f x)]\right)\left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^{5/2} \operatorname{Sec}[e+f x]^4\right) \Big/ \left(48 b^2 f\left(a+2 b+a \operatorname{Cos}[2(e+f x)]\right)^{3/2}\left(a+b \operatorname{Sec}[e+f x]^2\right)^{5/2}\right)\right)+$$
$$\left(\left(a+b+(a-2 b) \operatorname{Cos}[2(e+f x)]\right)\left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^{5/2} \operatorname{Sec}[e+f x]^4\right) \Big/ \left(32 b^2 f\left(a+2 b+a \operatorname{Cos}[2(e+f x)]\right)^{3/2}\left(a+b \operatorname{Sec}[e+f x]^2\right)^{5/2}\right)+$$
$$\frac{1}{96 \sqrt{2}\, a^{5/2} f\left(a+b \operatorname{Sec}[e+f x]^2\right)^{5/2}}$$
$$e^{i(e+f x)} \sqrt{4 b+a e^{-2 i(e+f x)}\left(1+e^{2 i(e+f x)}\right)^2}\left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^{5/2}$$
$$\left(-\left(\left(\sqrt{a}\left(1+e^{2 i(e+f x)}\right)\left(-96 b^3 e^{2 i(e+f x)}+a^3\left(1+e^{2 i(e+f x)}\right)^2-32 a b^2\left(1+e^{2 i(e+f x)}\right)^2-6 a^2 b\left(1+e^{2 i(e+f x)}+e^{4 i(e+f x)}\right)\right)\right) \Big/ \left(b^2\left(4 b e^{2 i(e+f x)}+a\left(1+e^{2 i(e+f x)}\right)^2\right)^2\right)\right)+\right.$$
$$\left(24 i f x-12 \operatorname{Log}\left[a+2 b+a e^{2 i(e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i(e+f x)}+a\left(1+e^{2 i(e+f x)}\right)^2}\right]-\right.$$
$$\left.12 \operatorname{Log}\left[a+a e^{2 i(e+f x)}+2 b e^{2 i(e+f x)}+\sqrt{a} \sqrt{4 b e^{2 i(e+f x)}+a\left(1+e^{2 i(e+f x)}\right)^2}\right]\right) \Big/$$
$$\left.\left(\sqrt{4 b e^{2 i(e+f x)}+a\left(1+e^{2 i(e+f x)}\right)^2}\right)\right) \operatorname{Sec}[e+f x]^5$$

Problem 432: Unable to integrate problem.

$$\int \frac{\operatorname{Cot}[e+f x]}{\left(a+b \operatorname{Sec}[e+f x]^2\right)^{5/2}}\, dx$$

Optimal (type 3, 137 leaves, 9 steps):

$$\frac{\operatorname{ArcTanh}\left[\frac{\sqrt{a+b \operatorname{Sec}[e+f x]^2}}{\sqrt{a}}\right]}{a^{5/2} f}-\frac{\operatorname{ArcTanh}\left[\frac{\sqrt{a+b \operatorname{Sec}[e+f x]^2}}{\sqrt{a+b}}\right]}{(a+b)^{5/2} f}-$$
$$\frac{b}{3 a(a+b) f\left(a+b \operatorname{Sec}[e+f x]^2\right)^{3/2}}-\frac{b(2 a+b)}{a^2(a+b)^2 f \sqrt{a+b \operatorname{Sec}[e+f x]^2}}$$

Result (type 8, 25 leaves):

$$\int \frac{\operatorname{Cot}[e+f x]}{\left(a+b \operatorname{Sec}[e+f x]^2\right)^{5/2}}\, dx$$

Problem 433: Unable to integrate problem.

$$\int \frac{\operatorname{Cot}[e+f x]^3}{\left(a+b \operatorname{Sec}[e+f x]^2\right)^{5/2}}\, dx$$

Optimal (type 3, 200 leaves, 10 steps):

$$-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a}}\right]}{a^{5/2}\,f}+\frac{(2\,a+7\,b)\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a+b}}\right]}{2\,(a+b)^{7/2}\,f}-\frac{(3\,a-2\,b)\,b}{6\,a\,(a+b)^2\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}-\frac{\text{Cot}[e+f\,x]^2}{2\,(a+b)\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}-\frac{b\,\left(a^2-6\,a\,b-2\,b^2\right)}{2\,a^2\,(a+b)^3\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f\,x]^3}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}\,dx$$

Problem 434: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f\,x]^5}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}\,dx$$

Optimal (type 3, 268 leaves, 11 steps):

$$\frac{\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a}}\right]}{a^{5/2}\,f}-\frac{\left(8\,a^2+36\,a\,b+63\,b^2\right)\,\text{ArcTanh}\left[\frac{\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}{\sqrt{a+b}}\right]}{8\,(a+b)^{9/2}\,f}+\frac{b\,\left(12\,a^2+39\,a\,b-8\,b^2\right)}{24\,a\,(a+b)^3\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}+\frac{(4\,a+11\,b)\,\text{Cot}[e+f\,x]^2}{8\,(a+b)^2\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}-\frac{\text{Cot}[e+f\,x]^4}{4\,(a+b)\,f\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{3/2}}+\frac{b\,\left(4\,a^3+15\,a^2\,b-32\,a\,b^2-8\,b^3\right)}{8\,a^2\,(a+b)^4\,f\,\sqrt{a+b\,\text{Sec}[e+f\,x]^2}}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f\,x]^5}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}\,dx$$

Problem 435: Unable to integrate problem.

$$\int \frac{\text{Tan}[e+f\,x]^6}{\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{5/2}}\,dx$$

Optimal (type 3, 157 leaves, 9 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{a^{5/2} f}+\frac{\text{ArcTanh}\left[\frac{\sqrt{b}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{b^{5/2} f}-\frac{(a+b)\,\text{Tan}[e+f x]^3}{3 a b f\left(a+b+b\,\text{Tan}[e+f x]^2\right)^{3/2}}+\frac{\left(\frac{1}{a^2}-\frac{1}{b^2}\right)\text{Tan}[e+f x]}{f\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Tan}[e+f x]^6}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}}\,dx$$

Problem 436: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]^4}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}}\,dx$$

Optimal (type 3, 120 leaves, 7 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{a^{5/2} f}-\frac{(a+b)\,\text{Tan}[e+f x]}{3 a b f\left(a+b+b\,\text{Tan}[e+f x]^2\right)^{3/2}}+\frac{(a-3 b)\,\text{Tan}[e+f x]}{3 a^2 b f\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}$$

Result (type 3, 1414 leaves):

$$\Bigg(\mathrm{i}\, e^{\mathrm{i}\,(e+f x)} \sqrt{4 b + a\, e^{-2\mathrm{i}\,(e+f x)} \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2}\, \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^{5/2}$$

$$\Bigg(-25 a^{7/2}-58 a^{5/2} b-32 a^{3/2} b^2-15 a^{7/2} e^{2\mathrm{i}\,(e+f x)}-108 a^{5/2} b\, e^{2\mathrm{i}\,(e+f x)}-192 a^{3/2} b^2 e^{2\mathrm{i}\,(e+f x)}-$$

$$96 \sqrt{a}\, b^3 e^{2\mathrm{i}\,(e+f x)}+15 a^{7/2} e^{4\mathrm{i}\,(e+f x)}+108 a^{5/2} b\, e^{4\mathrm{i}\,(e+f x)}+192 a^{3/2} b^2 e^{4\mathrm{i}\,(e+f x)}+$$

$$96 \sqrt{a}\, b^3 e^{4\mathrm{i}\,(e+f x)}+25 a^{7/2} e^{6\mathrm{i}\,(e+f x)}+58 a^{5/2} b\, e^{6\mathrm{i}\,(e+f x)}+32 a^{3/2} b^2 e^{6\mathrm{i}\,(e+f x)}-24\,\mathrm{i}\, a^2$$

$$\left(4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2\right)^{3/2} f x-48\,\mathrm{i}\, a b \left(4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2\right)^{3/2} f x-$$

$$24\,\mathrm{i}\, b^2 \left(4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2\right)^{3/2} f x-12 a^2 \left(4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2\right)^{3/2}$$

$$\operatorname{Log}\left[e^{-2\mathrm{i}\, e}\left(a+2 b+a\, e^{2\mathrm{i}\,(e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2}\right)\right]-$$

$$24 a b \left(4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2\right)^{3/2}$$

$$\operatorname{Log}\left[e^{-2\mathrm{i}\, e}\left(a+2 b+a\, e^{2\mathrm{i}\,(e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2}\right)\right]-$$

$$12 b^2 \left(4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2\right)^{3/2}$$

$$\operatorname{Log}\left[e^{-2\mathrm{i}\, e}\left(a+2 b+a\, e^{2\mathrm{i}\,(e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2}\right)\right]+$$

$$12 a^2 \left(4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2\right)^{3/2}$$

$$\operatorname{Log}\left[e^{-2\mathrm{i}\, e}\left(a+a\, e^{2\mathrm{i}\,(e+f x)}+2 b\, e^{2\mathrm{i}\,(e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2}\right)\right]+$$

$$24 a b \left(4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2\right)^{3/2}$$

$$\operatorname{Log}\left[e^{-2\mathrm{i}\, e}\left(a+a\, e^{2\mathrm{i}\,(e+f x)}+2 b\, e^{2\mathrm{i}\,(e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2}\right)\right]+$$

$$12 b^2 \left(4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2\right)^{3/2}$$

$$\operatorname{Log}\left[e^{-2\mathrm{i}\, e}\left(a+a\, e^{2\mathrm{i}\,(e+f x)}+2 b\, e^{2\mathrm{i}\,(e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2}\right)\right]\Bigg)$$

$$\operatorname{Sec}[e+f x]^5\Bigg) \Big/ \left(96 \sqrt{2}\, a^{5/2} (a+b)^2 \left(4 b\, e^{2\mathrm{i}\,(e+f x)}+a \left(1+e^{2\mathrm{i}\,(e+f x)}\right)^2\right)^2\right.$$

$$\left. f \left(a+b \operatorname{Sec}[e+f x]^2\right)^{5/2}\right)+$$

$$\Big(\left(2 a+3 b+a \operatorname{Cos}[2 (e+f x)]\right) \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^{5/2}$$

$$\operatorname{Sec}[e+f x]^4 \operatorname{Tan}[e+f x]\Big) \Big/$$

$$\left(48 (a+b)^2 f \left(a+2 b+a \operatorname{Cos}[2 (e+f x)]\right)^{3/2} \left(a+b \operatorname{Sec}[e+f x]^2\right)^{5/2}\right)-$$

$$\Big(\left(b+(3 a+2 b) \operatorname{Cos}[2 (e+f x)]\right) \left(a+2 b+a \operatorname{Cos}[2 e+2 f x]\right)^{5/2}$$

$$\operatorname{Sec}[e+f x]^4 \operatorname{Tan}[e+f x]\Big) \Big/$$

$$\left(32 (a+b)^2 f \left(a+2 b+a \operatorname{Cos}[2 (e+f x)]\right)^{3/2} \left(a+b \operatorname{Sec}[e+f x]^2\right)^{5/2}\right)$$

Problem 437: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[e+f x]^2}{\left(a+b \,\text{Sec}[e+f x]^2\right)^{5/2}} \, dx$$

Optimal (type 3, 119 leaves, 7 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{a^{5/2} f}+\frac{\text{Tan}[e+f x]}{3 a f \left(a+b+b\,\text{Tan}[e+f x]^2\right)^{3/2}}+\frac{(2 a+3 b)\,\text{Tan}[e+f x]}{3 a^2 (a+b) f \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}$$

Result (type 3, 1414 leaves):

$$-\left(\left(i\, e^{i (e+f x)} \sqrt{4 b+a\, e^{-2 i (e+f x)} \left(1+e^{2 i (e+f x)}\right)^2}\, \left(a+2 b+a\, \text{Cos}[2 e+2 f x]\right)^{5/2}\right.\right.$$

$$\left(-25 a^{7/2}-58 a^{5/2} b-32 a^{3/2} b^2-15 a^{7/2} e^{2 i (e+f x)}-108 a^{5/2} b\, e^{2 i (e+f x)}-\right.$$

$$192 a^{3/2} b^2 e^{2 i (e+f x)}-96 \sqrt{a}\, b^3 e^{2 i (e+f x)}+15 a^{7/2} e^{4 i (e+f x)}+108 a^{5/2} b\, e^{4 i (e+f x)}+$$

$$192 a^{3/2} b^2 e^{4 i (e+f x)}+96 \sqrt{a}\, b^3 e^{4 i (e+f x)}+25 a^{7/2} e^{6 i (e+f x)}+58 a^{5/2} b\, e^{6 i (e+f x)}+$$

$$32 a^{3/2} b^2 e^{6 i (e+f x)}-24 i a^2 \left(4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^{3/2} f x-$$

$$48 i a b \left(4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^{3/2} f x-$$

$$24 i b^2 \left(4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^{3/2} f x-12 a^2 \left(4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^{3/2}$$

$$\text{Log}\left[e^{-2 i e} \left(a+2 b+a\, e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right]-$$

$$24 a b \left(4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^{3/2}$$

$$\text{Log}\left[e^{-2 i e} \left(a+2 b+a\, e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right]-$$

$$12 b^2 \left(4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^{3/2}$$

$$\text{Log}\left[e^{-2 i e} \left(a+2 b+a\, e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right]+$$

$$12 a^2 \left(4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^{3/2}$$

$$\text{Log}\left[e^{-2 i e} \left(a+a\, e^{2 i (e+f x)}+2 b\, e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right]+$$

$$24 a b \left(4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^{3/2}$$

$$\text{Log}\left[e^{-2 i e} \left(a+a\, e^{2 i (e+f x)}+2 b\, e^{2 i (e+f x)}+\sqrt{a} \sqrt{4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2}\right)\right]+$$

$$12 b^2 \left(4 b\, e^{2 i (e+f x)}+a \left(1+e^{2 i (e+f x)}\right)^2\right)^{3/2}$$

$$\text{Log}\left[e^{-2 i e}\left(a+a e^{2 i (e+f x)}+2 b e^{2 i (e+f x)}+\sqrt{a}\sqrt{4 b e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2}\right)\right]$$

$$\left.\text{Sec}[e+f x]^5\right) \Big/ \left(96\sqrt{2}\, a^{5/2}(a+b)^2\left(4 b e^{2 i (e+f x)}+a\left(1+e^{2 i (e+f x)}\right)^2\right)^2\right.$$

$$\left.f\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}\right)+$$

$$\left(\left(2 a+3 b+a\,\text{Cos}[2(e+f x)]\right)\left(a+2 b+a\,\text{Cos}[2 e+2 f x]\right)^{5/2}\right.$$
$$\text{Sec}[e+f x]^4$$
$$\left.\text{Tan}[e+f x]\right) \Big/ \left(48\right.$$
$$(a+b)^2$$
$$f$$
$$\left(a+2 b+a\,\text{Cos}[2(e+f x)]\right)^{3/2}$$
$$\left.\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}\right)-$$

$$\left(\left(b+(3 a+2 b)\,\text{Cos}[2(e+f x)]\right)\left(a+2 b+a\,\text{Cos}[2 e+2 f x]\right)^{5/2}\right.$$
$$\text{Sec}[e+f x]^4$$
$$\left.\text{Tan}[e+f x]\right) \Big/$$
$$\left(96(a+b)^2 f\left(a+2 b+a\,\text{Cos}[2(e+f x)]\right)^{3/2}\right.$$
$$\left.\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}\right)$$

Problem 438: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{1}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}}\,dx$$

Optimal (type 3, 125 leaves, 6 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{a^{5/2} f}-$$
$$\frac{b\,\text{Tan}[e+f x]}{3 a (a+b) f\left(a+b+b\,\text{Tan}[e+f x]^2\right)^{3/2}}-\frac{b(5 a+3 b)\,\text{Tan}[e+f x]}{3 a^2(a+b)^2 f\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}$$

Result (type 6, 1927 leaves):

$$\left(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]^4\,\text{Sin}[e+f x]\right) \Big/$$

$$\left(4\sqrt{2}\, f\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}\left(a+b-a\,\text{Sin}[e+f x]^2\right)^{5/2}\right.$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)$$

$$\left(\left(15\,a\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right.\right.$$

$$\left.\text{Cos}[e+f\,x]^5\,\text{Sin}[e+f\,x]^2\right)\Big/\left(4\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{7/2}\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)+$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]^5\right)\Big/\left(4\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)-$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]^3\,\text{Sin}[e+f\,x]^2\right)\Big/\left(\sqrt{2}\,\left(a+b-a\,\text{Sin}[e+f\,x]^2\right)^{5/2}\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]+\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]-4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\right)\text{Sin}[e+f\,x]^2\right)\right)+$$

$$\left(3\,(a+b)\,\text{Cos}[e+f\,x]^4\,\text{Sin}[e+f\,x]\,\left(\frac{1}{3\,(a+b)}5\,a\,f\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f\,x]^2,\frac{a\,\text{Sin}[e+f\,x]^2}{a+b}\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]-\frac{4}{3}f\right.\right.$$

$$\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]\Bigg)\Bigg)\Bigg/$$

$$\Bigg(4\sqrt{2}\,f\left(a+b-a\,\text{Sin}[e+f x]^2\right)^{5/2}\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]+\Bigg(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]-4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\Bigg)\text{Sin}[e+f x]^2\Bigg)\Bigg)-$$

$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]^4$$

$$\text{Sin}[e+f x]\Bigg(2\,f\Bigg(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]-4\,(a+b)\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\Bigg)$$

$$\text{Cos}[e+f x]\,\text{Sin}[e+f x]+3\,(a+b)\Bigg(\frac{1}{3\,(a+b)}5\,a\,f\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]-\frac{4}{3}f\,\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]\Bigg)+$$

$$\text{Sin}[e+f x]^2\Bigg(5\,a\Bigg(\frac{1}{5\,(a+b)}21\,a\,f\,\text{AppellF1}\left[\frac{5}{2},-2,\frac{9}{2},\frac{7}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]-\frac{12}{5}f\,\text{AppellF1}\left[\frac{5}{2},-1,\frac{7}{2},\frac{7}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]\,\text{Sin}[e+f x]\Bigg)-4\,(a+b)$$

$$\Bigg(\frac{1}{a+b}3\,a\,f\,\text{AppellF1}\left[\frac{5}{2},-1,\frac{7}{2},\frac{7}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\text{Cos}[e+f x]$$

$$\text{Sin}[e+f x]-\left(6\,(a+b)^3 f\,\text{Cot}[e+f x]\,\text{Csc}[e+f x]^4\left(-1+\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right)^2\right.$$

$$\left(\frac{\sqrt{a}\,\text{ArcSin}\left[\frac{\sqrt{a}\,\text{Sin}[e+f x]}{\sqrt{a+b}}\right]\text{Sin}[e+f x]}{\sqrt{a+b}\,\sqrt{1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}}}+\frac{a^2\,\text{Sin}[e+f x]^4}{3\,(a+b)^2\left(-1+\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right)^2}+\right.$$

$$\left.\left.\frac{a\,\text{Sin}[e+f x]^2}{(a+b)\left(-1+\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right)}\right)\Bigg/\left(a^3\left(1-\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right)^{3/2}\right)\right)\Bigg/$$

$$\left(4\sqrt{2}\,f\left(a+b-a\,\text{Sin}[e+f x]^2\right)^{5/2}\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-2,\frac{5}{2},\frac{3}{2},\right.\right.\right.$$

$$\left.\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]+$$

$$\left(5\,a\,\text{AppellF1}\left[\frac{3}{2},-2,\frac{7}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]-4\,(a+b)\right.$$

$$\left.\left.\left.\text{AppellF1}\left[\frac{3}{2},-1,\frac{5}{2},\frac{5}{2},\text{Sin}[e+f x]^2,\frac{a\,\text{Sin}[e+f x]^2}{a+b}\right]\right)\text{Sin}[e+f x]^2\right)^2\right)$$

Problem 439: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f x]^2}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}}\,dx$$

Optimal (type 3, 174 leaves, 8 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{a^{5/2}\,f}-\frac{b\,\text{Cot}[e+f x]}{3\,a\,(a+b)\,f\left(a+b+b\,\text{Tan}[e+f x]^2\right)^{3/2}}-$$

$$\frac{b\,(7\,a+3\,b)\,\text{Cot}[e+f x]}{3\,a^2\,(a+b)^2\,f\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}-\frac{(a-3\,b)\,(3\,a+b)\,\text{Cot}[e+f x]\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{3\,a^2\,(a+b)^3\,f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f x]^2}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}}\,dx$$

Problem 440: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f x]^4}{\left(a+b \,\text{Sec}[e+f x]^2\right)^{5/2}} \, dx$$

Optimal (type 3, 236 leaves, 9 steps):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{a^{5/2} f} - \frac{b\,\text{Cot}[e+f x]^3}{3 a (a+b) f \left(a+b+b\,\text{Tan}[e+f x]^2\right)^{3/2}} - \frac{b (3 a+b)\,\text{Cot}[e+f x]^3}{a^2 (a+b)^2 f \sqrt{a+b+b\,\text{Tan}[e+f x]^2}} + \frac{(a-b)\left(3 a^2+14 a b+3 b^2\right) \text{Cot}[e+f x] \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{3 a^2 (a+b)^4 f} - \frac{\left(a^2-10 a b-3 b^2\right) \text{Cot}[e+f x]^3 \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{3 a^2 (a+b)^3 f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f x]^4}{\left(a+b \,\text{Sec}[e+f x]^2\right)^{5/2}} \, dx$$

Problem 441: Unable to integrate problem.

$$\int \frac{\text{Cot}[e+f x]^6}{\left(a+b \,\text{Sec}[e+f x]^2\right)^{5/2}} \, dx$$

Optimal (type 3, 315 leaves, 10 steps):

$$-\frac{\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[e+f x]}{\sqrt{a+b+b\,\text{Tan}[e+f x]^2}}\right]}{a^{5/2} f} - \frac{b\,\text{Cot}[e+f x]^5}{3 a (a+b) f \left(a+b+b\,\text{Tan}[e+f x]^2\right)^{3/2}} - \frac{b (11 a+3 b)\,\text{Cot}[e+f x]^5}{3 a^2 (a+b)^2 f \sqrt{a+b+b\,\text{Tan}[e+f x]^2}} - \frac{1}{15 a^2 (a+b)^5 f}\left(15 a^4+70 a^3 b+128 a^2 b^2-70 a b^3-15 b^4\right) \text{Cot}[e+f x] \sqrt{a+b+b\,\text{Tan}[e+f x]^2} + \frac{\left(5 a^3+19 a^2 b-65 a b^2-15 b^3\right) \text{Cot}[e+f x]^3 \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{15 a^2 (a+b)^4 f} - \frac{\left(a^2-20 a b-5 b^2\right) \text{Cot}[e+f x]^5 \sqrt{a+b+b\,\text{Tan}[e+f x]^2}}{5 a^2 (a+b)^3 f}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Cot}[e+f x]^6}{\left(a+b\,\text{Sec}[e+f x]^2\right)^{5/2}}\,dx$$

Problem 442: Result more than twice size of optimal antiderivative.

$$\int \left(a+b\,\text{Sec}[e+f x]^2\right)^p\,(d\,\text{Tan}[e+f x])^m\,dx$$

Optimal (type 6, 105 leaves, 4 steps):

$$\frac{1}{d f (1+m)}\text{AppellF1}\left[\frac{1+m}{2},1,-p,\frac{3+m}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right] (d\,\text{Tan}[e+f x])^{1+m}\left(a+b+b\,\text{Tan}[e+f x]^2\right)^p\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 6, 2929 leaves):

$$\left((a+b)(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right.$$
$$\text{Cos}[e+f x]\,(a+2 b+a\,\text{Cos}[2 (e+f x)])^p\left(\text{Sec}[e+f x]^2\right)^p$$
$$\left.\left(a+b\,\text{Sec}[e+f x]^2\right)^p\,\text{Sin}[e+f x]\,\text{Tan}[e+f x]^m\,(d\,\text{Tan}[e+f x])^m\right)\Big/$$
$$\left(f (1+m)\left((a+b)(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+\right.\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3+m}{2},1-p,1,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-\right.$$
$$\left.\left.(a+b)\,\text{AppellF1}\left[\frac{3+m}{2},-p,2,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)$$
$$\left(\left((a+b)\,m\,(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right.\right.$$
$$\left.\text{Cos}[e+f x]\,(a+2 b+a\,\text{Cos}[2 (e+f x)])^p\left(\text{Sec}[e+f x]^2\right)^{1+p}\text{Sin}[e+f x]\,\text{Tan}[e+f x]^{-1+m}\right)\Big/$$
$$\left((1+m)\left((a+b)(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+\right.\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3+m}{2},1-p,1,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-(a+b)\right.$$
$$\left.\left.\left.\text{AppellF1}\left[\frac{3+m}{2},-p,2,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\right)+$$
$$\left((a+b)(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right.$$
$$\left.(a+2 b+a\,\text{Cos}[2 (e+f x)])^p\left(\text{Sec}[e+f x]^2\right)^{-1+p}\text{Tan}[e+f x]^m\right)\Big/$$
$$\left((1+m)\left((a+b)(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+\right.\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3+m}{2},1-p,1,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-(a+b)\right.$$

$$\text{AppellF1}\left[\frac{3+m}{2},-p,2,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Tan}[e+f x]^2\Bigg)\Bigg)-$$

$$\Bigg(\left(a+b\right)\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]$$

$$\left(a+2b+a\,\text{Cos}\left[2\left(e+f x\right)\right]\right)^p\left(\text{Sec}[e+f x]^2\right)^p\text{Sin}[e+f x]^2\,\text{Tan}[e+f x]^m\Bigg)\Bigg/$$

$$\Bigg(\left(1+m\right)\Bigg(\left(a+b\right)\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+$$

$$2\Bigg(b\,p\,\text{AppellF1}\left[\frac{3+m}{2},1-p,1,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-\left(a+b\right)$$

$$\text{AppellF1}\left[\frac{3+m}{2},-p,2,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\Bigg)\text{Tan}[e+f x]^2\Bigg)\Bigg)-$$

$$\Bigg(2a\left(a+b\right)\left(3+m\right)p\,\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]$$

$$\text{Cos}[e+f x]\left(a+2b+a\,\text{Cos}\left[2\left(e+f x\right)\right]\right)^{-1+p}\left(\text{Sec}[e+f x]^2\right)^p$$

$$\text{Sin}[e+f x]\,\text{Sin}\left[2\left(e+f x\right)\right]\text{Tan}[e+f x]^m\Bigg)\Bigg/$$

$$\Bigg(\left(1+m\right)\Bigg(\left(a+b\right)\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+$$

$$2\Bigg(b\,p\,\text{AppellF1}\left[\frac{3+m}{2},1-p,1,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-\left(a+b\right)$$

$$\text{AppellF1}\left[\frac{3+m}{2},-p,2,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\Bigg)\text{Tan}[e+f x]^2\Bigg)\Bigg)+$$

$$\Bigg(2\left(a+b\right)\left(3+m\right)p\,\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]$$

$$\text{Cos}[e+f x]\left(a+2b+a\,\text{Cos}\left[2\left(e+f x\right)\right]\right)^p\left(\text{Sec}[e+f x]^2\right)^p\text{Sin}[e+f x]\,\text{Tan}[e+f x]^{1+m}\Bigg)\Bigg/$$

$$\Bigg(\left(1+m\right)\Bigg(\left(a+b\right)\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+$$

$$2\Bigg(b\,p\,\text{AppellF1}\left[\frac{3+m}{2},1-p,1,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-\left(a+b\right)$$

$$\text{AppellF1}\left[\frac{3+m}{2},-p,2,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\Bigg)\text{Tan}[e+f x]^2\Bigg)\Bigg)+$$

$$\Bigg(\left(a+b\right)\left(3+m\right)\text{Cos}[e+f x]\left(a+2b+a\,\text{Cos}\left[2\left(e+f x\right)\right]\right)^p\left(\text{Sec}[e+f x]^2\right)^p$$

$$\text{Sin}[e+f x]\,\text{Tan}[e+f x]^m$$

$$\Bigg(\frac{1}{\left(a+b\right)\left(3+m\right)}2b\left(1+m\right)p\,\text{AppellF1}\left[1+\frac{1+m}{2},1-p,1,1+\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\right.$$

$$\left.-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{1}{3+m}2\left(1+m\right)\text{AppellF1}\left[1+\frac{1+m}{2},-p,\right.$$

$$\left.2,1+\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)\Bigg)\Bigg/$$

$$\left((1+m)\left((a+b)(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+\right.\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3+m}{2},1-p,1,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-(a+b)\right.$$
$$\left.\left.\left.\text{AppellF1}\left[\frac{3+m}{2},-p,2,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\right)-$$
$$\left((a+b)(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right.$$
$$\text{Cos}[e+f x]\,(a+2b+a\,\text{Cos}[2(e+f x)])^p\,(\text{Sec}[e+f x]^2)^p\,\text{Sin}[e+f x]\,\text{Tan}[e+f x]^m$$
$$\left(4\left(b\,p\,\text{AppellF1}\left[\frac{3+m}{2},1-p,1,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-\right.\right.$$
$$\left.(a+b)\,\text{AppellF1}\left[\frac{3+m}{2},-p,2,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)$$
$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+(a+b)(3+m)\left(\left(2b(1+m)\,p\,\text{AppellF1}\left[1+\frac{1+m}{2},1-p,\right.\right.\right.$$
$$\left.\left.1,1+\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\Big/$$
$$((a+b)(3+m))-\frac{1}{3+m}2(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},-p,2,1+\frac{3+m}{2},\right.$$
$$\left.\left.-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)+2\,\text{Tan}[e+f x]^2$$
$$\left(b\,p\left(-\frac{1}{5+m}2(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},1-p,2,1+\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\right.\right.\right.$$
$$\left.-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\left(2b(3+m)(1-p)\,\text{AppellF1}\left[\right.\right.$$
$$\left.1+\frac{3+m}{2},2-p,1,1+\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2$$
$$\left.\left.\text{Tan}[e+f x]\right)\Big/((a+b)(5+m))\right)-(a+b)\left(\left(2b(3+m)\,p\,\text{AppellF1}\left[\right.\right.\right.$$
$$\left.1+\frac{3+m}{2},1-p,2,1+\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2$$
$$\left.\text{Tan}[e+f x]\right)\Big/((a+b)(5+m))-\frac{1}{5+m}4(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},-p,3,\right.$$
$$\left.\left.\left.\left.\left.1+\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\right)\right)\right)\Big/$$
$$\left((1+m)\left((a+b)(3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-p,1,\frac{3+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+\right.\right.$$
$$2\left(b\,p\,\text{AppellF1}\left[\frac{3+m}{2},1-p,1,\frac{5+m}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\right.\right.$$
$$\left.-\text{Tan}[e+f x]^2\right]-(a+b)\,\text{AppellF1}\left[\frac{3+m}{2},-p,2,\frac{5+m}{2},\right.$$
$$\left.\left.\left.\left.\left.-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)^2\right)\right)\right)$$

Problem 446: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cot}[e+f x] \left(a+b \,\text{Sec}[e+f x]^2\right)^p \, dx$$

Optimal (type 5, 114 leaves, 5 steps):

$$-\left(\left(\text{Hypergeometric2F1}\left[1,\,1+p,\,2+p,\,\frac{a+b\,\text{Sec}[e+f x]^2}{a+b}\right] \left(a+b\,\text{Sec}[e+f x]^2\right)^{1+p}\right) \Big/ \left(2\,(a+b)\,f\,(1+p)\right)\right)+\frac{1}{2\,a\,f\,(1+p)} \text{Hypergeometric2F1}\left[1,\,1+p,\,2+p,\,1+\frac{b\,\text{Sec}[e+f x]^2}{a}\right] \left(a+b\,\text{Sec}[e+f x]^2\right)^{1+p}$$

Result (type 6, 2055 leaves):

$$\Bigg(\left(a+2 b+a \,\text{Cos}[2 (e+f x)]\right)^p \text{Cot}[e+f x] \left(\text{Sec}[e+f x]^2\right)^p \left(a+b\,\text{Sec}[e+f x]^2\right)^p$$
$$\Bigg(\frac{1}{p}\left(1+\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\right)^{-p} \text{Hypergeometric2F1}\left[-p,\,-p,\,1-p,\,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\right]-$$
$$\left(2\,(a+b)\,\text{AppellF1}\left[1,\,-p,\,1,\,2,\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\right] \text{Sin}[e+f x]^2\right) \Big/$$
$$\Bigg(2\,(a+b)\,\text{AppellF1}\left[1,\,-p,\,1,\,2,\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\right]+$$
$$\Bigg(b\,p\,\text{AppellF1}\left[2,\,1-p,\,1,\,3,\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\right]-$$
$$(a+b)\,\text{AppellF1}\left[2,\,-p,\,2,\,3,\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\right]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)\Bigg)\Bigg) \Big/$$
$$\Bigg(2\,f\,\Bigg(-a\,p\,\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)^{-1+p} \left(\text{Sec}[e+f x]^2\right)^p \text{Sin}[2 (e+f x)]$$
$$\Bigg(\frac{1}{p}\left(1+\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\right)^{-p} \text{Hypergeometric2F1}\left[-p,\,-p,\,1-p,\,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\right]-$$
$$\left(2\,(a+b)\,\text{AppellF1}\left[1,\,-p,\,1,\,2,\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\right] \text{Sin}[e+f x]^2\right) \Big/$$
$$\Bigg(2\,(a+b)\,\text{AppellF1}\left[1,\,-p,\,1,\,2,\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\right]+$$
$$\Bigg(b\,p\,\text{AppellF1}\left[2,\,1-p,\,1,\,3,\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\right]-$$
$$(a+b)\,\text{AppellF1}\left[2,\,-p,\,2,\,3,\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\right]\Bigg)\,\text{Tan}[e+f x]^2\Bigg)\Bigg)+$$
$$p\,\left(a+2 b+a\,\text{Cos}[2 (e+f x)]\right)^p \left(\text{Sec}[e+f x]^2\right)^p \text{Tan}[e+f x]$$
$$\Bigg(\frac{1}{p}\left(1+\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\right)^{-p} \text{Hypergeometric2F1}\left[-p,\,-p,\,1-p,\,-\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\right]-$$

$$\left(2\,(a+b)\,\text{AppellF1}\left[1,-p,1,2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sin}[e+f\,x]^2\right)\Big/$$
$$\left(2\,(a+b)\,\text{AppellF1}\left[1,-p,1,2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+\left(b\,p\,\text{AppellF1}\left[2,1-p,1,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[2,-p,2,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\Bigg)+$$
$$\frac{1}{2}\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^p\,(\text{Sec}[e+f\,x]^2)^p\,\Bigg(\frac{1}{b}2\,(a+b)\,\text{Cot}[e+f\,x]\left(1+\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right)^{-1-p}\text{Csc}[e+f\,x]^2$$
$$\text{Hypergeometric2F1}\left[-p,-p,1-p,-\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right]+$$
$$2\left(1+\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right)^{-p}\text{Csc}[e+f\,x]\left(\left(1+\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right)^p-\text{Hypergeometric2F1}\left[-p,-p,1-p,-\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right]\right)\text{Sec}[e+f\,x]-$$
$$\left(4\,(a+b)\,\text{AppellF1}\left[1,-p,1,2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\right)\Big/\left(2\,(a+b)\,\text{AppellF1}\left[1,-p,1,2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+\right.$$
$$\left.\left(b\,p\,\text{AppellF1}\left[2,1-p,1,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[2,-p,2,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)-$$
$$\left(2\,(a+b)\,\text{Sin}[e+f\,x]^2\left(\frac{1}{a+b}b\,p\,\text{AppellF1}\left[2,1-p,1,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\text{AppellF1}\left[2,-p,2,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\Big/$$
$$\left(2\,(a+b)\,\text{AppellF1}\left[1,-p,1,2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+\left(b\,p\,\text{AppellF1}\left[2,1-p,1,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[2,-p,2,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)+$$
$$\left(2\,(a+b)\,\text{AppellF1}\left[1,-p,1,2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sin}[e+f\,x]^2\right.$$
$$\left(2\left(b\,p\,\text{AppellF1}\left[2,1-p,1,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-\right.\right.$$

$$\left(a+b\right)\,\text{AppellF1}\left[2,\,-p,\,2,\,3,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\Big)$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+2\,\left(a+b\right)\,\left(\frac{1}{a+b}b\,p\,\text{AppellF1}\left[2,\,1-p,\,1,\,3,\right.\right.$$

$$\left.-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\text{AppellF1}\left[2,\right.$$

$$\left.\left.-p,\,2,\,3,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$

$$\text{Tan}[e+f\,x]^2\,\left(b\,p\,\left(-\frac{4}{3}\,\text{AppellF1}\left[3,\,1-p,\,2,\,4,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\right.\right.$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{3\,\left(a+b\right)}4\,b\,\left(1-p\right)\,\text{AppellF1}\left[3,\,2-p,\,1,\right.$$

$$\left.\left.4,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)-$$

$$\left(a+b\right)\,\left(\frac{1}{3\,\left(a+b\right)}4\,b\,p\,\text{AppellF1}\left[3,\,1-p,\,2,\,4,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\right.\right.$$

$$\left.-\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{8}{3}\,\text{AppellF1}\left[3,\,-p,\,3,\,4,\right.$$

$$\left.\left.\left.\left.\left.-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\right)\right)\Big/$$

$$\left(2\,\left(a+b\right)\,\text{AppellF1}\left[1,\,-p,\,1,\,2,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]+\right.$$

$$\left(b\,p\,\text{AppellF1}\left[2,\,1-p,\,1,\,3,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]-\left(a+b\right)\right.$$

$$\left.\left.\left.\left.\text{AppellF1}\left[2,\,-p,\,2,\,3,\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)^2\right)\right)\right)$$

Problem 447: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cot}[e+f\,x]^3\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 5, 157 leaves, 6 steps):

$$-\frac{\text{Cot}[e+f\,x]^2\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{1+p}}{2\,\left(a+b\right)\,f}+$$

$$\left(\left(a+b-b\,p\right)\,\text{Hypergeometric2F1}\left[1,\,1+p,\,2+p,\,\frac{a+b\,\text{Sec}[e+f\,x]^2}{a+b}\right]\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{1+p}\right)\Big/$$

$$\left(2\,\left(a+b\right)^2\,f\,\left(1+p\right)\right)-\frac{1}{2\,a\,f\,\left(1+p\right)}$$

$$\text{Hypergeometric2F1}\left[1,\,1+p,\,2+p,\,1+\frac{b\,\text{Sec}[e+f\,x]^2}{a}\right]\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^{1+p}$$

Result (type 6, 2951 leaves):

$$\left(2^{-1+p}\,\mathrm{Cot}[e+f\,x]^3\,\left(a+b\,\mathrm{Sec}[e+f\,x]^2\right)^p\,\left(1+\mathrm{Tan}[e+f\,x]^2\right)^p\,\left(\frac{a+b+b\,\mathrm{Tan}[e+f\,x]^2}{1+\mathrm{Tan}[e+f\,x]^2}\right)^p\right.$$

$$\left(-\left(\left(2\,(a+b)\,\mathrm{AppellF1}\left[1,-p,1,2,-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]\mathrm{Tan}[e+f\,x]^2\right)\right/\right.$$

$$\left(\left(1+\mathrm{Tan}[e+f\,x]^2\right)\,\left(-2\,(a+b)\,\mathrm{AppellF1}\left[1,-p,1,2,-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]+\right.\right.$$

$$\left(-b\,p\,\mathrm{AppellF1}\left[2,1-p,1,3,-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]+(a+b)\right.$$

$$\left.\left.\left.\left.\mathrm{AppellF1}\left[2,-p,2,3,-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]\right)\mathrm{Tan}[e+f\,x]^2\right)\right)\right)+$$

$$\frac{1}{(-1+p)\,p}\mathrm{Cot}[e+f\,x]^2\,\left(1+\frac{(a+b)\,\mathrm{Cot}[e+f\,x]^2}{b}\right)^{-p}$$

$$\left(p\,\mathrm{Hypergeometric2F1}\left[1-p,-p,2-p,-\frac{(a+b)\,\mathrm{Cot}[e+f\,x]^2}{b}\right]-\right.$$

$$\left.\left.\left.(-1+p)\,\mathrm{Hypergeometric2F1}\left[-p,-p,1-p,-\frac{(a+b)\,\mathrm{Cot}[e+f\,x]^2}{b}\right]\mathrm{Tan}[e+f\,x]^2\right)\right)\right)\Big/$$

$$\left(f\,\left(2^p\,p\,\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]\,\left(1+\mathrm{Tan}[e+f\,x]^2\right)^{-1+p}\,\left(\frac{a+b+b\,\mathrm{Tan}[e+f\,x]^2}{1+\mathrm{Tan}[e+f\,x]^2}\right)^p\right.\right.$$

$$\left(-\left(\left(2\,(a+b)\,\mathrm{AppellF1}\left[1,-p,1,2,-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]\mathrm{Tan}[e+f\,x]^2\right)\right/\right.$$

$$\left(\left(1+\mathrm{Tan}[e+f\,x]^2\right)\right.$$

$$\left(-2\,(a+b)\,\mathrm{AppellF1}\left[1,-p,1,2,-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]+\right.$$

$$\left(-b\,p\,\mathrm{AppellF1}\left[2,1-p,1,3,-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]+(a+b)\right.$$

$$\left.\left.\left.\left.\mathrm{AppellF1}\left[2,-p,2,3,-\frac{b\,\mathrm{Tan}[e+f\,x]^2}{a+b},-\mathrm{Tan}[e+f\,x]^2\right]\right)\mathrm{Tan}[e+f\,x]^2\right)\right)\right)+$$

$$\frac{1}{(-1+p)\,p}\mathrm{Cot}[e+f\,x]^2\,\left(1+\frac{(a+b)\,\mathrm{Cot}[e+f\,x]^2}{b}\right)^{-p}$$

$$\left(p\,\mathrm{Hypergeometric2F1}\left[1-p,-p,2-p,-\frac{(a+b)\,\mathrm{Cot}[e+f\,x]^2}{b}\right]-\right.$$

$$\left.\left.(-1+p)\,\mathrm{Hypergeometric2F1}\left[-p,-p,1-p,-\frac{(a+b)\,\mathrm{Cot}[e+f\,x]^2}{b}\right]\mathrm{Tan}[e+f\,x]^2\right)\right)+$$

$$2^{-1+p}\,p\,\left(1+\mathrm{Tan}[e+f\,x]^2\right)^p\,\left(\frac{a+b+b\,\mathrm{Tan}[e+f\,x]^2}{1+\mathrm{Tan}[e+f\,x]^2}\right)^{-1+p}$$

$$\left(\frac{2\,b\,\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]}{1+\mathrm{Tan}[e+f\,x]^2}-\frac{2\,\mathrm{Sec}[e+f\,x]^2\,\mathrm{Tan}[e+f\,x]\,\left(a+b+b\,\mathrm{Tan}[e+f\,x]^2\right)}{\left(1+\mathrm{Tan}[e+f\,x]^2\right)^2}\right)$$

$$\left(-\left(\left(2\,(a+b)\,\text{AppellF1}\left[1,-p,1,2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Tan}[e+f\,x]^2\right)\Big/\right.\right.$$

$$\left(\left(1+\text{Tan}[e+f\,x]^2\right)\right.$$

$$\left(-2\,(a+b)\,\text{AppellF1}\left[1,-p,1,2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+\right.$$

$$\left(-b\,p\,\text{AppellF1}\left[2,1-p,1,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+(a+b)\right.$$

$$\left.\left.\left.\left.\text{AppellF1}\left[2,-p,2,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\right)\right)+$$

$$\frac{1}{(-1+p)\,p}\text{Cot}[e+f\,x]^2\left(1+\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right)^{-p}$$

$$\left(p\,\text{Hypergeometric2F1}\left[1-p,-p,2-p,-\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right]-\right.$$

$$\left.\left.(-1+p)\,\text{Hypergeometric2F1}\left[-p,-p,1-p,-\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right]\text{Tan}[e+f\,x]^2\right)\right)+$$

$$2^{-1+p}\left(1+\text{Tan}[e+f\,x]^2\right)^p\left(\frac{a+b+b\,\text{Tan}[e+f\,x]^2}{1+\text{Tan}[e+f\,x]^2}\right)^p$$

$$\left(\frac{1}{(-1+p)\,p}\text{Cot}[e+f\,x]^2\left(1+\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right)^{-p}\right.$$

$$\left(-2\,(1-p)\,p\,\text{Csc}[e+f\,x]\left(\left(1+\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right)^p-\text{Hypergeometric2F1}\left[\right.\right.\right.$$

$$\left.\left.1-p,-p,2-p,-\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right]\right)\text{Sec}[e+f\,x]-$$

$$2\,(-1+p)\,p\left(\left(1+\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right)^p-\text{Hypergeometric2F1}\left[-p,-p,\right.\right.$$

$$\left.\left.1-p,-\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right]\right)\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-$$

$$2\,(-1+p)\,\text{Hypergeometric2F1}\left[-p,-p,1-p,-\frac{(a+b)\,\text{Cot}[e+f\,x]^2}{b}\right]$$

$$\left.\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$

$$\left(4\,(a+b)\,\text{AppellF1}\left[1,-p,1,2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right.$$

$$\left.\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]^3\right)\Big/\left(\left(1+\text{Tan}[e+f\,x]^2\right)^2\right.$$

$$\left(-2\,(a+b)\,\text{AppellF1}\left[1,-p,1,2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+\right.$$

$$\left(-b\,p\,\text{AppellF1}\left[2,1-p,1,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+(a+b)\right.$$

$$\text{AppellF1}\left[2, -p, 2, 3, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\right] \text{Tan}[e+f x]^2\Big)\Big) -$$

$$\Big(4\,(a+b)\,\text{AppellF1}\left[1, -p, 1, 2, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\right]$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big) \Big/ \Big(\left(1+\text{Tan}[e+f x]^2\right)$$

$$\Big(-2\,(a+b)\,\text{AppellF1}\left[1, -p, 1, 2, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\right] +$$

$$\Big(-b\,p\,\text{AppellF1}\left[2, 1-p, 1, 3, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\right] + (a+b)$$

$$\text{AppellF1}\left[2, -p, 2, 3, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\right] \text{Tan}[e+f x]^2\Big)\Big) -$$

$$\Big(2\,(a+b)\,\text{Tan}[e+f x]^2\,\Big(\frac{1}{a+b} b\,p\,\text{AppellF1}\left[2, 1-p, 1, 3, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+\right.$$

$$\left.f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x] - \text{AppellF1}\left[2, -p, 2, 3, -\frac{b\,\text{Tan}[e+f x]^2}{a+b},\right.$$

$$\left.-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)\Big) \Big/ \Big(\left(1+\text{Tan}[e+f x]^2\right)$$

$$\Big(-2\,(a+b)\,\text{AppellF1}\left[1, -p, 1, 2, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\right] +$$

$$\Big(-b\,p\,\text{AppellF1}\left[2, 1-p, 1, 3, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\right] + (a+b)$$

$$\text{AppellF1}\left[2, -p, 2, 3, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\right] \text{Tan}[e+f x]^2\Big)\Big) +$$

$$\frac{1}{b\,(-1+p)} 2\,(a+b)\,\text{Cot}[e+f x]^3 \left(1+\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\right)^{-1-p} \text{Csc}[e+f x]^2$$

$$\Big(p\,\text{Hypergeometric2F1}\left[1-p, -p, 2-p, -\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\right] -$$

$$(-1+p)\,\text{Hypergeometric2F1}\left[-p, -p, 1-p, -\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\right] \text{Tan}[e+f x]^2\Big) -$$

$$\frac{1}{(-1+p)\,p} 2\,\text{Cot}[e+f x]\,\left(1+\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\right)^{-p} \text{Csc}[e+f x]^2$$

$$\Big(p\,\text{Hypergeometric2F1}\left[1-p, -p, 2-p, -\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\right] -$$

$$(-1+p)\,\text{Hypergeometric2F1}\left[-p, -p, 1-p, -\frac{(a+b)\,\text{Cot}[e+f x]^2}{b}\right] \text{Tan}[e+f x]^2\Big) +$$

$$\Big(2\,(a+b)\,\text{AppellF1}\left[1, -p, 1, 2, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\right] \text{Tan}[e+f x]^2$$

$$\Big(2\,\Big(-b\,p\,\text{AppellF1}\left[2, 1-p, 1, 3, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\right] +$$

$$(a+b)\,\text{AppellF1}\left[2,-p,2,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\Big)$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-2\,(a+b)\left(\frac{1}{a+b}b\,p\,\text{AppellF1}\Big[2,1-p,1,3,\right.$$

$$-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\text{AppellF1}\Big[2,$$

$$\left.-p,2,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$

$$\text{Tan}[e+f\,x]^2\left(-b\,p\left(-\frac{4}{3}\,\text{AppellF1}\Big[3,1-p,2,4,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\right.\right.$$

$$-\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{3\,(a+b)}4\,b\,(1-p)\,\text{AppellF1}\Big[3,$$

$$\left.2-p,1,4,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$

$$(a+b)\left(\frac{1}{3\,(a+b)}4\,b\,p\,\text{AppellF1}\Big[3,1-p,2,4,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\right.$$

$$-\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{8}{3}\,\text{AppellF1}\Big[3,-p,3,4,$$

$$\left.\left.\left.\left.-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\right)\right)\Big/$$

$$\left(\left(1+\text{Tan}[e+f\,x]^2\right)\left(-2\,(a+b)\,\text{AppellF1}\Big[1,-p,1,2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\right.\right.$$

$$-\text{Tan}[e+f\,x]^2\Big]+\left(-b\,p\,\text{AppellF1}\Big[2,1-p,1,3,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\right.$$

$$-\text{Tan}[e+f\,x]^2\Big]+(a+b)\,\text{AppellF1}\Big[2,-p,2,3,$$

$$\left.\left.\left.\left.-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]\right)\,\text{Tan}[e+f\,x]^2\right)^2\right)\right)\right)$$

Problem 448: Result more than twice size of optimal antiderivative.

$$\int\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\,\text{Tan}[e+f\,x]^4\,dx$$

Optimal (type 6, 88 leaves, 4 steps):

$$\frac{1}{5\,f}\text{AppellF1}\left[\frac{5}{2},1,-p,\frac{7}{2},-\text{Tan}[e+f\,x]^2,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]$$
$$\text{Tan}[e+f\,x]^5\,\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^p\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-p}$$

Result (type 6, 2777 leaves):

$$\left(\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)^p\,\left(\text{Sec}[e+f\,x]^2\right)^p\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\,\text{Tan}[e+f\,x]^5\right.$$

$$\left(\left(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\,\text{Cos}[e+f\,x]^2\right)\Big/\right.$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)+$$

$$\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-p}\left(-3\,\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\text{Hypergeometric2F1}\left[\frac{3}{2},-p,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Tan}[e+f\,x]^2\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,f\left(\frac{1}{3}\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)\right)^p\left(\text{Sec}[e+f\,x]^2\right)^{1+p}$$

$$\Bigg(\Bigg(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Cos}[e+f\,x]^2\Bigg)\Bigg/$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)+$$

$$\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-p}\left(-3\,\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\text{Hypergeometric2F1}\left[\frac{3}{2},-p,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Tan}[e+f\,x]^2\right)\Bigg)-$$

$$\frac{2}{3}\,a\,p\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)^{-1+p}\left(\text{Sec}[e+f\,x]^2\right)^p\,\text{Sin}[2\,(e+f\,x)]\,\text{Tan}[e+f\,x]$$

$$\Bigg(\Bigg(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Cos}[e+f\,x]^2\Bigg)\Bigg/$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)+$$

$$\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-p}\left(-3\,\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\text{Hypergeometric2F1}\left[\frac{3}{2},-p,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Tan}[e+f\,x]^2\right)\Bigg)+$$

$$\frac{2}{3}\,p\left(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\right)^p\left(\text{Sec}[e+f\,x]^2\right)^p\,\text{Tan}[e+f\,x]^2$$

$$\Bigg(\Bigg(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Cos}[e+f\,x]^2\Bigg)\Bigg/$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)+$$

$$\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-p}\left(-3\,\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\text{Hypergeometric2F1}\left[\frac{3}{2},-p,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Tan}[e+f\,x]^2\right)\Bigg)+$$

$$\frac{1}{3}\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^p\,(\text{Sec}[e+f\,x]^2)^p\,\text{Tan}[e+f\,x]$$

$$\Bigg(-\Bigg(\left(18\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Cos}[e+f\,x]\,\text{Sin}[e+f\,x]\right)\Big/\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)\Bigg)+$$

$$\left(9\,(a+b)\,\text{Cos}[e+f\,x]^2\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{2}{3}\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\Big/$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)-$$

$$\frac{1}{a+b}2\,b\,p\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-1-p}$$

$$\left(-3\,\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\text{Hypergeometric2F1}\left[\frac{3}{2},-p,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Tan}[e+f\,x]^2\right)-$$

$$\Bigg(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Cos}[e+f\,x]^2$$

$$\Bigg(4\,\Bigg(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-$$

$$\left(a+b\right)\,\text{AppellF1}\left[\frac{3}{2},\,-p,\,2,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\Bigg)$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+3\,\left(a+b\right)\,\left(\frac{1}{3\,\left(a+b\right)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},\,1-p,\,1,\right.\right.$$

$$\left.\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{2}{3}\,\text{AppellF1}\left[\right.$$

$$\left.\left.\frac{3}{2},\,-p,\,2,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)+$$

$$2\,\text{Tan}[e+f\,x]^2\,\left(b\,p\,\left(-\frac{6}{5}\,\text{AppellF1}\left[\frac{5}{2},\,1-p,\,2,\,\frac{7}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\right.\right.$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{5\,\left(a+b\right)}6\,b\,\left(1-p\right)\,\text{AppellF1}\left[\frac{5}{2},\,2-p,\,1,\right.$$

$$\left.\left.\frac{7}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)-$$

$$\left(a+b\right)\,\left(\frac{1}{5\,\left(a+b\right)}6\,b\,p\,\text{AppellF1}\left[\frac{5}{2},\,1-p,\,2,\,\frac{7}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\right.\right.$$

$$\left.-\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{12}{5}\,\text{AppellF1}\left[\frac{5}{2},\,-p,\,3,\right.$$

$$\left.\left.\left.\left.\frac{7}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\right)\right)\right)\right)\Bigg/$$

$$\left(3\,\left(a+b\right)\,\text{AppellF1}\left[\frac{1}{2},\,-p,\,1,\,\frac{3}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]+\right.$$

$$2\,\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},\,1-p,\,1,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]-\left(a+b\right)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{3}{2},\,-p,\,2,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\,-\text{Tan}[e+f\,x]^2\right]\right)\,\text{Tan}[e+f\,x]^2\right)^2+$$

$$\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-p}\,\left(2\,\text{Hypergeometric2F1}\left[\frac{3}{2},\,-p,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right.$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-3\,\text{Csc}[e+f\,x]\,\text{Sec}[e+f\,x]\,\left(-\text{Hypergeometric2F1}\left[\frac{1}{2},\,-p,\right.\right.$$

$$\left.\left.\frac{3}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^p\right)+3\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]$$

$$\left.\left.\left.\left.\left(-\text{Hypergeometric2F1}\left[\frac{3}{2},\,-p,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]+\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^p\right)\right)\right)\right)\right)$$

Problem 449: Result more than twice size of optimal antiderivative.

$$\int\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\,\text{Tan}[e+f\,x]^2\,dx$$

Optimal (type 6, 88 leaves, 4 steps):

$$\frac{1}{3 f}\text{AppellF1}\left[\frac{3}{2},1,-p,\frac{5}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]$$
$$\text{Tan}[e+f x]^3\left(a+b+b\,\text{Tan}[e+f x]^2\right)^p\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 6, 2465 leaves):

$$\Bigg(\left(a+2 b+a\,\text{Cos}[2(e+f x)]\right)^p\left(\text{Sec}[e+f x]^2\right)^p\left(a+b\,\text{Sec}[e+f x]^2\right)^p\,\text{Tan}[e+f x]^3$$
$$\Bigg(\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-p}-$$
$$\left(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Cos}[e+f x]^2\right)\Big/$$
$$\Bigg(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+$$
$$2\Bigg(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-$$
$$(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\Bigg)\text{Tan}[e+f x]^2\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(f\Bigg(\left(a+2 b+a\,\text{Cos}[2(e+f x)]\right)^p\left(\text{Sec}[e+f x]^2\right)^{1+p}$$
$$\Bigg(\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-p}-$$
$$\left(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Cos}[e+f x]^2\right)\Big/$$
$$\Bigg(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+$$
$$2\Bigg(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-(a+b)\,\text{AppellF1}\Big[$$
$$\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\Bigg)-$$
$$2\,a\,p\left(a+2 b+a\,\text{Cos}[2(e+f x)]\right)^{-1+p}\left(\text{Sec}[e+f x]^2\right)^p\,\text{Sin}[2(e+f x)]\,\text{Tan}[e+f x]$$
$$\Bigg(\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-p}-$$
$$\left(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Cos}[e+f x]^2\right)\Big/$$
$$\Bigg(3(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+$$
$$2\Bigg(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-(a+b)\,\text{AppellF1}\Big[$$
$$\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\Bigg)\text{Tan}[e+f x]^2\Bigg)\Bigg)+$$
$$2\,p\left(a+2 b+a\,\text{Cos}[2(e+f x)]\right)^p\left(\text{Sec}[e+f x]^2\right)^p\,\text{Tan}[e+f x]^2$$

$$\left(\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-p}-\right.$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Cos}[e+f x]^2\right)\Big/$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+\right.$$

$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-(a+b)\,\text{AppellF1}\left[\right.\right.$$

$$\left.\left.\left.\left.\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)\right)+$$

$$(a+2b+a\,\text{Cos}[2\,(e+f x)])^p\,\left(\text{Sec}[e+f x]^2\right)^p\,\text{Tan}[e+f x]$$

$$\left(-\frac{1}{a+b}2\,b\,p\,\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\right.$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-1-p}+$$

$$\left(6\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Cos}[e+f x]\right.$$

$$\left.\text{Sin}[e+f x]\right)\Big/\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+\right.$$

$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-\right.$$

$$\left.\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)-$$

$$\left(3\,(a+b)\,\text{Cos}[e+f x]^2\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\right.\right.\right.$$

$$\left.-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{2}{3}\,\text{AppellF1}\left[\frac{3}{2},-p,2,\right.$$

$$\left.\left.\left.\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\right)\Big/$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+\right.$$

$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-\right.$$

$$\left.\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)+$$

$$\text{Csc}[e+f x]\,\text{Sec}[e+f x]\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-p}$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{2},-p,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]+\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^p\right)+$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Cos}[e+f x]^2\right.$$

$$\Big(4\Big(b\,p\,\text{AppellF1}\Big[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]-(a+b)\,\text{AppellF1}\Big[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\Big)\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+3\,(a+b)\,\Big(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\Big[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{2}{3}\,\text{AppellF1}\Big[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)+2\,\text{Tan}[e+f x]^2\,\Big(b\,p\,\Big(-\frac{6}{5}\,\text{AppellF1}\Big[\frac{5}{2},1-p,2,\frac{7}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\Big[\frac{5}{2},2-p,1,\frac{7}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)-(a+b)\,\Big(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\Big[\frac{5}{2},1-p,2,\frac{7}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{12}{5}\,\text{AppellF1}\Big[\frac{5}{2},-p,3,\frac{7}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)\Big)\Big)\Big/$$

$$\Big(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]+2\,\Big(b\,p\,\text{AppellF1}\Big[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]-(a+b)\,\text{AppellF1}\Big[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\Big)\,\text{Tan}[e+f x]^2\Big)^2\Big)\Big)\Big)$$

Problem 450: Result more than twice size of optimal antiderivative.

$$\int \left(a+b\,\text{Sec}[e+f x]^2\right)^p\,dx$$

Optimal (type 6, 83 leaves, 3 steps):

$$\frac{1}{f}\text{AppellF1}\Big[\frac{1}{2},1,-p,\frac{3}{2},-\text{Tan}[e+f x]^2,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]\,\text{Tan}[e+f x]\,\left(a+b+b\,\text{Tan}[e+f x]^2\right)^p\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 6, 2137 leaves):

$$\Big(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\,\text{Cos}[e+f x]$$

$$\left(a+2\,b+a\,\text{Cos}\left[2\,(e+f\,x)\right]\right)^p\,\left(\text{Sec}[e+f\,x]^2\right)^p\,\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\,\text{Sin}[e+f\,x]\Big)\Big/$$

$$\Big(f\,\Big(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+$$

$$2\,\Big(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-$$

$$(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\Big)\,\text{Tan}[e+f\,x]^2\Big)$$

$$\Big(\Big(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]$$

$$\left(a+2\,b+a\,\text{Cos}\left[2\,(e+f\,x)\right]\right)^p\,\left(\text{Sec}[e+f\,x]^2\right)^{-1+p}\Big)\Big/$$

$$\Big(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+$$

$$2\,\Big(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-$$

$$(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\Big)\,\text{Tan}[e+f\,x]^2\Big)-$$

$$\Big(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]$$

$$\left(a+2\,b+a\,\text{Cos}\left[2\,(e+f\,x)\right]\right)^p\,\left(\text{Sec}[e+f\,x]^2\right)^p\,\text{Sin}[e+f\,x]^2\Big)\Big/$$

$$\Big(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+$$

$$2\,\Big(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-$$

$$(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\Big)\,\text{Tan}[e+f\,x]^2\Big)+$$

$$\Big(6\,(a+b)\,p\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]$$

$$\left(a+2\,b+a\,\text{Cos}\left[2\,(e+f\,x)\right]\right)^p\,\left(\text{Sec}[e+f\,x]^2\right)^p\,\text{Sin}[e+f\,x]^2\Big)\Big/$$

$$\Big(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+$$

$$2\,\Big(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-$$

$$(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\Big)\,\text{Tan}[e+f\,x]^2\Big)-$$

$$\Big(6\,a\,(a+b)\,p\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\,\text{Cos}[e+f\,x]$$

$$\left(a+2\,b+a\,\text{Cos}\left[2\,(e+f\,x)\right]\right)^{-1+p}\,\left(\text{Sec}[e+f\,x]^2\right)^p\,\text{Sin}[e+f\,x]\,\text{Sin}\left[2\,(e+f\,x)\right]\Big)\Big/$$

$$\Big(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]+$$

$$2\,\Big(b\,p\,\text{AppellF1}\Big[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]-$$

$$(a+b)\,\text{AppellF1}\Big[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Big)+$$

$$\Big(3\,(a+b)\,\text{Cos}[e+f\,x]\,\big(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\big)^p\,\big(\text{Sec}[e+f\,x]^2\big)^p\,\text{Sin}[e+f\,x]$$

$$\Big(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\Big[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{2}{3}\,\text{AppellF1}\Big[\frac{3}{2},-p,2,\frac{5}{2},$$

$$-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)\Big)\Big/$$

$$\Big(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]+$$

$$2\,\Big(b\,p\,\text{AppellF1}\Big[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]-$$

$$(a+b)\,\text{AppellF1}\Big[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]\Big)\,\text{Tan}[e+f\,x]^2\Big)-$$

$$\Big(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]\,\text{Cos}[e+f\,x]$$

$$\big(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)]\big)^p\,\big(\text{Sec}[e+f\,x]^2\big)^p\,\text{Sin}[e+f\,x]$$

$$\Big(4\,\Big(b\,p\,\text{AppellF1}\Big[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]-$$

$$(a+b)\,\text{AppellF1}\Big[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]\Big)$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]+3\,(a+b)\,\Big(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\Big[\frac{3}{2},1-p,1,\frac{5}{2},$$

$$-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{2}{3}\,\text{AppellF1}\Big[\frac{3}{2},$$

$$-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)+$$

$$2\,\text{Tan}[e+f\,x]^2\,\Big(b\,p\,\Big(-\frac{6}{5}\,\text{AppellF1}\Big[\frac{5}{2},1-p,2,\frac{7}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\Big[\frac{5}{2},2-p,1,$$

$$\frac{7}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\Big]\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\Big)-$$

$$(a+b)\,\Big(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\Big[\frac{5}{2},1-p,2,\frac{7}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},$$

$$-\text{Tan}[e+f x]^2\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]-\frac{12}{5}\ \text{AppellF1}\Big[\frac{5}{2},-p,3,\frac{7}{2},-\frac{b\ \text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\ \text{Sec}[e+f x]^2\ \text{Tan}[e+f x]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\ (a+b)\ \text{AppellF1}\Big[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\ \text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]+2\ \Big(b\ p\ \text{AppellF1}\Big[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\ \text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]-(a+b)\ \text{AppellF1}\Big[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\ \text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\Big)\ \text{Tan}[e+f x]^2\Big)^2\Big)\Big)$$

Problem 451: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[e+f x]^2\ \left(a+b\ \text{Sec}[e+f x]^2\right)^p\, dx$$

Optimal (type 6, 84 leaves, 4 steps):

$$-\frac{1}{f}\text{AppellF1}\Big[-\frac{1}{2},1,-p,\frac{1}{2},-\text{Tan}[e+f x]^2,-\frac{b\ \text{Tan}[e+f x]^2}{a+b}\Big]\ \text{Cot}[e+f x]\ \left(a+b+b\ \text{Tan}[e+f x]^2\right)^p\ \left(1+\frac{b\ \text{Tan}[e+f x]^2}{a+b}\right)^{-p}$$

Result (type 6, 2469 leaves):

$$\Big(\left(a+2 b+a\ \text{Cos}[2\ (e+f x)]\right)^p\ \text{Cot}[e+f x]^3\ \left(\text{Sec}[e+f x]^2\right)^p\ \left(a+b\ \text{Sec}[e+f x]^2\right)^p\ \Big(-\text{Hypergeometric2F1}\Big[-\frac{1}{2},-p,\frac{1}{2},-\frac{b\ \text{Tan}[e+f x]^2}{a+b}\Big]\ \left(1+\frac{b\ \text{Tan}[e+f x]^2}{a+b}\right)^{-p}-$$

$$\Big(3\ (a+b)\ \text{AppellF1}\Big[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\ \text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\ \text{Sin}[e+f x]^2\Big)\Big/$$

$$\Big(3\ (a+b)\ \text{AppellF1}\Big[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\ \text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]+2\ \Big(b\ p\ \text{AppellF1}\Big[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\ \text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]-(a+b)\ \text{AppellF1}\Big[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\ \text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\Big)\ \text{Tan}[e+f x]^2\Big)\Big)\Big)\Big/$$

$$\Big(f\ \Big(2\ p\ \left(a+2 b+a\ \text{Cos}[2\ (e+f x)]\right)^p\ \left(\text{Sec}[e+f x]^2\right)^p\ \Big(-\text{Hypergeometric2F1}\Big[-\frac{1}{2},-p,\frac{1}{2},-\frac{b\ \text{Tan}[e+f x]^2}{a+b}\Big]\ \left(1+\frac{b\ \text{Tan}[e+f x]^2}{a+b}\right)^{-p}-$$

$$\Big(3\ (a+b)\ \text{AppellF1}\Big[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\ \text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\ \text{Sin}[e+f x]^2\Big)\Big/$$

$$\Big(3\ (a+b)\ \text{AppellF1}\Big[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\ \text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]+$$

$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\Bigg)\Bigg)-$$

$$(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^p\,\text{Csc}[e+f\,x]^2\,\left(\text{Sec}[e+f\,x]^2\right)^p$$

$$\left(-\text{Hypergeometric2F1}\left[-\frac{1}{2},-p,\frac{1}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-p}-\right.$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sin}[e+f\,x]^2\right)\Big/$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+\right.$$

$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\Bigg)\Bigg)-$$

$$2\,a\,p\,(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^{-1+p}\,\text{Cot}[e+f\,x]\,\left(\text{Sec}[e+f\,x]^2\right)^p\,\text{Sin}[2\,(e+f\,x)]$$

$$\left(-\text{Hypergeometric2F1}\left[-\frac{1}{2},-p,\frac{1}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-p}-\right.$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Sin}[e+f\,x]^2\right)\Big/$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+\right.$$

$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\Bigg)\Bigg)+$$

$$(a+2\,b+a\,\text{Cos}[2\,(e+f\,x)])^p\,\text{Cot}[e+f\,x]\,\left(\text{Sec}[e+f\,x]^2\right)^p$$

$$\left(\frac{1}{a+b}2\,b\,p\,\text{Hypergeometric2F1}\left[-\frac{1}{2},-p,\frac{1}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\right.$$

$$\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-1-p}-$$

$$\left(6\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\text{Cos}[e+f\,x]\right.$$

$$\left.\text{Sin}[e+f\,x]\right)\Big/\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]+\right.$$

$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]-\right.$$

$$\left.\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},-\text{Tan}[e+f\,x]^2\right]\right)\text{Tan}[e+f\,x]^2\right)-$$

$$\left(3\,(a+b)\,\text{Sin}[e+f\,x]^2\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f\,x]^2}{a+b},\right.\right.\right.$$

$$-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{2}{3}\,\text{AppellF1}\Big[\frac{3}{2},\,-p,\,2,$$

$$\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)\Big)\Big/$$

$$\Big(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},\,-p,\,1,\,\frac{3}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]+$$

$$2\,\Big(b\,p\,\text{AppellF1}\Big[\frac{3}{2},\,1-p,\,1,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]-$$

$$(a+b)\,\text{AppellF1}\Big[\frac{3}{2},\,-p,\,2,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]\Big)\,\text{Tan}[e+f x]^2\Big)-$$

$$\text{Csc}[e+f x]\,\text{Sec}[e+f x]\,\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-p}\Big(\text{Hypergeometric2F1}\Big[-\frac{1}{2},$$

$$-p,\,\frac{1}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]-\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{p}\Big)+$$

$$\Big(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},\,-p,\,1,\,\frac{3}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]\,\text{Sin}[e+f x]^2$$

$$\Big(4\,\Big(b\,p\,\text{AppellF1}\Big[\frac{3}{2},\,1-p,\,1,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]-$$

$$(a+b)\,\text{AppellF1}\Big[\frac{3}{2},\,-p,\,2,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]\Big)$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+3\,(a+b)\,\Big(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\Big[\frac{3}{2},\,1-p,\,1,$$

$$\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{2}{3}\,\text{AppellF1}\Big[$$

$$\frac{3}{2},\,-p,\,2,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)+$$

$$2\,\text{Tan}[e+f x]^2\,\Big(b\,p\,\Big(-\frac{6}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,1-p,\,2,\,\frac{7}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\Big[\frac{5}{2},\,2-p,\,1,$$

$$\frac{7}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)-$$

$$(a+b)\,\Big(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\Big[\frac{5}{2},\,1-p,\,2,\,\frac{7}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},$$

$$-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{12}{5}\,\text{AppellF1}\Big[\frac{5}{2},\,-p,\,3,$$

$$\frac{7}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2},\,-p,\,1,\,\frac{3}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]+$$

$$2\,\Big(b\,p\,\text{AppellF1}\Big[\frac{3}{2},\,1-p,\,1,\,\frac{5}{2},\,-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\,-\text{Tan}[e+f x]^2\Big]-(a+b)$$

$$\text{AppellF1}\left[\frac{3}{2}, -p, 2, \frac{5}{2}, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}, -\text{Tan}[e+f\,x]^2\right]\text{Tan}[e+f\,x]^2\Big)^2\Big)\Big)\Big)$$

Problem 452: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[e+f\,x]^4\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\,dx$$

Optimal (type 6, 88 leaves, 4 steps):

$$-\frac{1}{3f}\text{AppellF1}\left[-\frac{3}{2}, 1, -p, -\frac{1}{2}, -\text{Tan}[e+f\,x]^2, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\\ \text{Cot}[e+f\,x]^3\left(a+b+b\,\text{Tan}[e+f\,x]^2\right)^p\left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-p}$$

Result (type 6, 3033 leaves):

$$\Bigg(\left(a+2b+a\,\text{Cos}[2(e+f\,x)]\right)^p\text{Cot}[e+f\,x]^7\left(\text{Sec}[e+f\,x]^2\right)^p\left(a+b\,\text{Sec}[e+f\,x]^2\right)^p\\ \Bigg(\Bigg(9(a+b)\,\text{AppellF1}\left[\frac{1}{2}, -p, 1, \frac{3}{2}, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}, -\text{Tan}[e+f\,x]^2\right]\text{Sin}[e+f\,x]^2\\ \text{Tan}[e+f\,x]^2\Bigg)\Big/\Bigg(3(a+b)\,\text{AppellF1}\left[\frac{1}{2}, -p, 1, \frac{3}{2}, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}, -\text{Tan}[e+f\,x]^2\right]+\\ 2\Bigg(b\,p\,\text{AppellF1}\left[\frac{3}{2}, 1-p, 1, \frac{5}{2}, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}, -\text{Tan}[e+f\,x]^2\right]-\\ (a+b)\,\text{AppellF1}\left[\frac{3}{2}, -p, 2, \frac{5}{2}, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}, -\text{Tan}[e+f\,x]^2\right]\Bigg)\text{Tan}[e+f\,x]^2\Bigg)-\\ \left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-p}\Bigg(\text{Hypergeometric2F1}\left[-\frac{3}{2}, -p, -\frac{1}{2}, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]-\\ 3\,\text{Hypergeometric2F1}\left[-\frac{1}{2}, -p, \frac{1}{2}, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Tan}[e+f\,x]^2\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg(3f\Bigg(\frac{2}{3}p\left(a+2b+a\,\text{Cos}[2(e+f\,x)]\right)^p\text{Cot}[e+f\,x]^2\left(\text{Sec}[e+f\,x]^2\right)^p\\ \Bigg(\Bigg(9(a+b)\,\text{AppellF1}\left[\frac{1}{2}, -p, 1, \frac{3}{2}, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}, -\text{Tan}[e+f\,x]^2\right]\text{Sin}[e+f\,x]^2\\ \text{Tan}[e+f\,x]^2\Bigg)\Big/\Bigg(3(a+b)\,\text{AppellF1}\left[\frac{1}{2}, -p, 1, \frac{3}{2}, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}, -\text{Tan}[e+f\,x]^2\right]+\\ 2\Bigg(b\,p\,\text{AppellF1}\left[\frac{3}{2}, 1-p, 1, \frac{5}{2}, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}, -\text{Tan}[e+f\,x]^2\right]-\\ (a+b)\,\text{AppellF1}\left[\frac{3}{2}, -p, 2, \frac{5}{2}, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}, -\text{Tan}[e+f\,x]^2\right]\Bigg)\text{Tan}[e+f\,x]^2\Bigg)-\\ \left(1+\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right)^{-p}\Bigg(\text{Hypergeometric2F1}\left[-\frac{3}{2}, -p, -\frac{1}{2}, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]-\\ 3\,\text{Hypergeometric2F1}\left[-\frac{1}{2}, -p, \frac{1}{2}, -\frac{b\,\text{Tan}[e+f\,x]^2}{a+b}\right]\text{Tan}[e+f\,x]^2\Bigg)\Bigg)-\\ \left(a+2b+a\,\text{Cos}[2(e+f\,x)]\right)^p\text{Cot}[e+f\,x]^2\,\text{Csc}[e+f\,x]^2\left(\text{Sec}[e+f\,x]^2\right)^p$$

$$\left(\left(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sin}[e+f x]^2\right.\right.$$

$$\left.\text{Tan}[e+f x]^2\right)\Big/\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+\right.$$

$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-\right.$$

$$\left.\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)-$$

$$\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-p}\left(\text{Hypergeometric2F1}\left[-\frac{3}{2},-p,-\frac{1}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-\right.$$

$$\left.\left.3\,\text{Hypergeometric2F1}\left[-\frac{1}{2},-p,\frac{1}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Tan}[e+f x]^2\right)\right)-$$

$$\frac{2}{3}\,a\,p\,\left(a+2\,b+a\,\text{Cos}[2\,(e+f x)]\right)^{-1+p}\,\text{Cot}[e+f x]^3\,\left(\text{Sec}[e+f x]^2\right)^p\,\text{Sin}[2\,(e+f x)]$$

$$\left(\left(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sin}[e+f x]^2\right.\right.$$

$$\left.\text{Tan}[e+f x]^2\right)\Big/\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+\right.$$

$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-\right.$$

$$\left.\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)-$$

$$\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-p}\left(\text{Hypergeometric2F1}\left[-\frac{3}{2},-p,-\frac{1}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-\right.$$

$$\left.\left.3\,\text{Hypergeometric2F1}\left[-\frac{1}{2},-p,\frac{1}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Tan}[e+f x]^2\right)\right)+$$

$$\frac{1}{3}\,\left(a+2\,b+a\,\text{Cos}[2\,(e+f x)]\right)^p\,\text{Cot}[e+f x]^3\,\left(\text{Sec}[e+f x]^2\right)^p$$

$$\left(\left(18\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sin}[e+f x]^2\right.\right.$$

$$\left.\text{Tan}[e+f x]\right)\Big/\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+\right.$$

$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-\right.$$

$$\left.\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\right)+$$

$$\left(18\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Tan}[e+f x]^3\right)\Big/$$

$$\left(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+\right.$$

$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-\right.$$

$$(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\Big)+$$

$$\Bigg(9\,(a+b)\,\text{Sin}[e+f x]^2\,\text{Tan}[e+f x]^2\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},\right.\right.$$

$$-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{2}{3}\,\text{AppellF1}\left[\frac{3}{2},\right.$$

$$\left.\left.-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\right)\Bigg)\Big/$$

$$\Bigg(3\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]+$$

$$2\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-\right.$$

$$\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)\text{Tan}[e+f x]^2\Bigg)+$$

$$\frac{1}{a+b}2\,b\,p\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\left(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right)^{-1-p}$$

$$\left(\text{Hypergeometric2F1}\left[-\frac{3}{2},-p,-\frac{1}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]-\right.$$

$$\left.3\,\text{Hypergeometric2F1}\left[-\frac{1}{2},-p,\frac{1}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b}\right]\text{Tan}[e+f x]^2\right)-$$

$$\Bigg(9\,(a+b)\,\text{AppellF1}\left[\frac{1}{2},-p,1,\frac{3}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sin}[e+f x]^2$$

$$\text{Tan}[e+f x]^2\Bigg(4\left(b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]-\right.$$

$$\left.(a+b)\,\text{AppellF1}\left[\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right)$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]+3\,(a+b)\left(\frac{1}{3\,(a+b)}2\,b\,p\,\text{AppellF1}\left[\frac{3}{2},1-p,1,\right.\right.$$

$$\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{2}{3}\,\text{AppellF1}\Big[$$

$$\left.\frac{3}{2},-p,2,\frac{5}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)+$$

$$2\,\text{Tan}[e+f x]^2\left(b\,p\left(-\frac{6}{5}\,\text{AppellF1}\left[\frac{5}{2},1-p,2,\frac{7}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\right.\right.$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{1}{5\,(a+b)}6\,b\,(1-p)\,\text{AppellF1}\left[\frac{5}{2},2-p,1,\right.$$

$$\left.\frac{7}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},-\text{Tan}[e+f x]^2\right]\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Bigg)-$$

$$(a+b)\left(\frac{1}{5\,(a+b)}6\,b\,p\,\text{AppellF1}\left[\frac{5}{2},1-p,2,\frac{7}{2},-\frac{b\,\text{Tan}[e+f x]^2}{a+b},\right.\right.$$

$$-\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]-\frac{12}{5}\,\text{AppellF1}\left[\frac{5}{2},-p,3,\right.$$

$$\frac{7}{2}, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\Big]\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(3\,(a+b)\,\text{AppellF1}\Big[\frac{1}{2}, -p, 1, \frac{3}{2}, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\Big] +$$

$$2\,\Big(b\,p\,\text{AppellF1}\Big[\frac{3}{2}, 1-p, 1, \frac{5}{2}, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\Big] - (a+b)$$

$$\text{AppellF1}\Big[\frac{3}{2}, -p, 2, \frac{5}{2}, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}, -\text{Tan}[e+f x]^2\Big]\Big)\,\text{Tan}[e+f x]^2\Big)^2 -$$

$$\Big(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big)^{-p}\,\Big(-6\,\text{Hypergeometric2F1}\Big[-\frac{1}{2}, -p, \frac{1}{2}, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big]$$

$$\text{Sec}[e+f x]^2\,\text{Tan}[e+f x] - 3\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]\,\Big(\text{Hypergeometric2F1}\Big[-\frac{1}{2},$$

$$-p, \frac{1}{2}, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big] - \Big(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big)^p\Big) - 3\,\text{Csc}[e+f x]\,\text{Sec}[e+f x]$$

$$\Big(-\text{Hypergeometric2F1}\Big[-\frac{3}{2}, -p, -\frac{1}{2}, -\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big] + \Big(1+\frac{b\,\text{Tan}[e+f x]^2}{a+b}\Big)^p\Big)\Big)\Big)\Big)\Big)$$

Problem 458: Result is not expressed in closed-form.

$$\int \frac{\text{Tan}[e+f x]^5}{a+b\,\text{Sec}[e+f x]^3}\,dx$$

Optimal (type 3, 219 leaves, 11 steps):

$$-\frac{\left(a^{2/3}+2\,b^{2/3}\right)\,\text{ArcTan}\Big[\frac{b^{1/3}-2\,a^{1/3}\,\text{Cos}[e+f x]}{\sqrt{3}\,b^{1/3}}\Big]}{\sqrt{3}\,a^{1/3}\,b^{4/3}\,f} - \frac{\left(a^{2/3}-2\,b^{2/3}\right)\,\text{Log}\big[b^{1/3}+a^{1/3}\,\text{Cos}[e+f x]\big]}{3\,a^{1/3}\,b^{4/3}\,f} +$$

$$\frac{\left(a^{2/3}-2\,b^{2/3}\right)\,\text{Log}\big[b^{2/3}-a^{1/3}\,b^{1/3}\,\text{Cos}[e+f x]+a^{2/3}\,\text{Cos}[e+f x]^2\big]}{6\,a^{1/3}\,b^{4/3}\,f} -$$

$$\frac{\text{Log}\big[b+a\,\text{Cos}[e+f x]^3\big]}{3\,a\,f} + \frac{\text{Sec}[e+f x]}{b\,f}$$

Result (type 7, 251 leaves):

$$\frac{1}{3\,a\,b\,f}\Big(3\,b\,\text{Log}\Big[\text{Sec}\Big[\frac{1}{2}\,(e+f x)\Big]^2\Big] - \text{RootSum}\Big[-8\,a+12\,a\,\#1-6\,a\,\#1^2+a\,\#1^3-b\,\#1^3\,\&,$$

$$\Big(-4\,a^2\,\text{Log}\Big[1-\#1+\text{Tan}\Big[\frac{1}{2}\,(e+f x)\Big]^2\Big] + 4\,a\,b\,\text{Log}\Big[1-\#1+\text{Tan}\Big[\frac{1}{2}\,(e+f x)\Big]^2\Big] +$$

$$2\,a^2\,\text{Log}\Big[1-\#1+\text{Tan}\Big[\frac{1}{2}\,(e+f x)\Big]^2\Big]\,\#1 - 8\,a\,b\,\text{Log}\Big[1-\#1+\text{Tan}\Big[\frac{1}{2}\,(e+f x)\Big]^2\Big]\,\#1 +$$

$$a\,b\,\text{Log}\Big[1-\#1+\text{Tan}\Big[\frac{1}{2}\,(e+f x)\Big]^2\Big]\,\#1^2 - b^2\,\text{Log}\Big[1-\#1+\text{Tan}\Big[\frac{1}{2}\,(e+f x)\Big]^2\Big]\,\#1^2\Big)\Big/$$

$$\left(4\,a-4\,a\,\#1+a\,\#1^2-b\,\#1^2\right)\,\&\Big] + 3\,a\,\text{Sec}[e+f x]\Big)$$

Problem 459: Result is not expressed in closed-form.

$$\int \frac{\text{Tan}[e+f x]^3}{a+b\,\text{Sec}[e+f x]^3}\,dx$$

Optimal (type 3, 166 leaves, 9 steps):

$$\frac{\text{ArcTan}\left[\frac{b^{1/3}-2 a^{1/3}\text{Cos}[e+f x]}{\sqrt{3}\, b^{1/3}}\right]}{\sqrt{3}\, a^{1/3} b^{2/3} f}-\frac{\text{Log}\left[b^{1/3}+a^{1/3}\text{Cos}[e+f x]\right]}{3 a^{1/3} b^{2/3} f}+\frac{\text{Log}\left[b^{2/3}-a^{1/3} b^{1/3}\text{Cos}[e+f x]+a^{2/3}\text{Cos}[e+f x]^2\right]}{6 a^{1/3} b^{2/3} f}+\frac{\text{Log}\left[b+a\,\text{Cos}[e+f x]^3\right]}{3 a f}$$

Result (type 7, 242 leaves):

$$\frac{1}{3 a f}\left(-3\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]+\text{RootSum}\left[-a-b+3 a \#1-3 b \#1-3 a \#1^2-3 b \#1^2+a \#1^3-b \#1^3\,\&,\right.\right.$$
$$\left(-a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-\right.$$
$$4 a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\#1-2 b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\#1+$$
$$\left.a\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\#1^2-b\,\text{Log}\left[-\#1+\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\#1^2\right)\Big/$$
$$\left.\left.\left(a-b-2 a \#1-2 b \#1+a \#1^2-b \#1^2\right)\,\&\right]\right)$$

Problem 461: Result is not expressed in closed-form.

$$\int \frac{\text{Cot}[e+f x]}{a+b\,\text{Sec}[e+f x]^3}\,dx$$

Optimal (type 3, 295 leaves, 11 steps):

$$-\frac{b^{2/3}\,\text{ArcTan}\left[\frac{b^{1/3}-2 a^{1/3}\text{Cos}[e+f x]}{\sqrt{3}\, b^{1/3}}\right]}{\sqrt{3}\, a^{1/3}\left(a^{4/3}+a^{2/3} b^{2/3}+b^{4/3}\right) f}+\frac{\text{Log}[1-\text{Cos}[e+f x]]}{2(a+b) f}+\frac{\text{Log}[1+\text{Cos}[e+f x]]}{2(a-b) f}-\frac{\left(a^{2/3}+b^{2/3}\right) b^{2/3}\,\text{Log}\left[b^{1/3}+a^{1/3}\text{Cos}[e+f x]\right]}{3 a^{1/3}\left(a^2-b^2\right) f}+\frac{\left(a^{2/3}+b^{2/3}\right) b^{2/3}\,\text{Log}\left[b^{2/3}-a^{1/3} b^{1/3}\text{Cos}[e+f x]+a^{2/3}\text{Cos}[e+f x]^2\right]}{6 a^{1/3}\left(a^2-b^2\right) f}-\frac{b^2\,\text{Log}\left[b+a\,\text{Cos}[e+f x]^3\right]}{3 a\left(a^2-b^2\right) f}$$

Result (type 7, 290 leaves):

$$\frac{1}{3\,a\,(a-b)\,(a+b)\,f}\left(3\left(a\,(a+b)\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]\right]+b^2\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+a\,(a-b)\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(e+f\,x)\right]\right]\right)-\right.$$
$$b\,\text{RootSum}\left[-8\,a+12\,a\,\#1-6\,a\,\#1^2+a\,\#1^3-b\,\#1^3\,\&,\,\left(-4\,a^2\,\text{Log}\left[1-\#1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+\right.\right.$$
$$4\,a\,b\,\text{Log}\left[1-\#1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+2\,a^2\,\text{Log}\left[1-\#1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\#1-$$
$$2\,a\,b\,\text{Log}\left[1-\#1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\#1+a\,b\,\text{Log}\left[1-\#1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\#1^2-$$
$$\left.\left.\left.b^2\,\text{Log}\left[1-\#1+\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\#1^2\right)\Big/\left(4\,a-4\,a\,\#1+a\,\#1^2-b\,\#1^2\right)\,\&\right]\right)$$

Problem 462: Result is not expressed in closed-form.

$$\int\frac{\text{Cot}[e+f\,x]^3}{a+b\,\text{Sec}[e+f\,x]^3}\,dx$$

Optimal (type 3, 393 leaves, 11 steps):

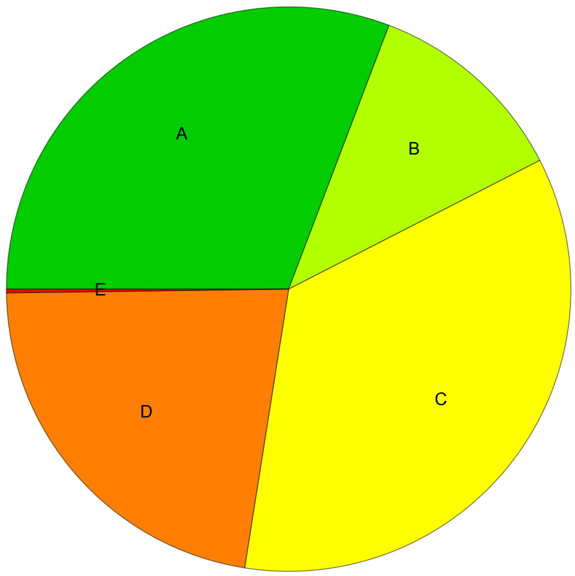
$$\frac{b^{4/3}\,\left(a^2-3\,a^{2/3}\,b^{4/3}+2\,b^2\right)\,\text{ArcTan}\left[\frac{b^{1/3}-2\,a^{1/3}\,\text{Cos}[e+f\,x]}{\sqrt{3}\,b^{1/3}}\right]}{\sqrt{3}\,a^{1/3}\,\left(a^2-b^2\right)^2\,f}-\frac{1}{4\,(a+b)\,f\,(1-\text{Cos}[e+f\,x])}-$$
$$\frac{1}{4\,(a-b)\,f\,(1+\text{Cos}[e+f\,x])}-\frac{(2\,a+5\,b)\,\text{Log}[1-\text{Cos}[e+f\,x]]}{4\,(a+b)^2\,f}-$$
$$\frac{(2\,a-5\,b)\,\text{Log}[1+\text{Cos}[e+f\,x]]}{4\,(a-b)^2\,f}-\frac{b^{4/3}\,\left(a^2+3\,a^{2/3}\,b^{4/3}+2\,b^2\right)\,\text{Log}\left[b^{1/3}+a^{1/3}\,\text{Cos}[e+f\,x]\right]}{3\,a^{1/3}\,\left(a^2-b^2\right)^2\,f}+$$
$$\frac{b^{4/3}\,\left(a^2+3\,a^{2/3}\,b^{4/3}+2\,b^2\right)\,\text{Log}\left[b^{2/3}-a^{1/3}\,b^{1/3}\,\text{Cos}[e+f\,x]+a^{2/3}\,\text{Cos}[e+f\,x]^2\right]}{6\,a^{1/3}\,\left(a^2-b^2\right)^2\,f}-$$
$$\frac{b^2\,\left(2\,a^2+b^2\right)\,\text{Log}\left[b+a\,\text{Cos}[e+f\,x]^3\right]}{3\,a\,\left(a^2-b^2\right)^2\,f}$$

Result (type 7, 336 leaves):

$$\frac{1}{24 f}\left(-\frac{3 \operatorname{Csc}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}+\frac{12(-2 a+5 b) \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(e+f x)\right]\right]}{(a-b)^2}-\frac{12(2 a+5 b) \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(e+f x)\right]\right]}{(a+b)^2}+\frac{1}{a\left(a^2-b^2\right)^2} 8 b^2\left(3\left(2 a^2+b^2\right) \operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right]+(-a+b) \operatorname{RootSum}\left[-8 a+12 a \#1-6 a \#1^2+a \#1^3-b \#1^3 \&,\left(8 a^2 \operatorname{Log}\left[1-\#1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-4 a b \operatorname{Log}\left[1-\#1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-6 a^2 \operatorname{Log}\left[1-\#1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \#1+2 a^2 \operatorname{Log}\left[1-\#1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \#1^2+b^2 \operatorname{Log}\left[1-\#1+\operatorname{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \#1^2\right) \Big/\left(4 a-4 a \#1+a \#1^2-b \#1^2\right) \&\right]\right)-\frac{3 \operatorname{Sec}\left[\frac{1}{2}(e+f x)\right]^2}{a-b}\right)$$

Summary of Integration Test Results

471 integration problems



A - 145 optimal antiderivatives

B - 55 more than twice size of optimal antiderivatives

C - 165 unnecessarily complex antiderivatives

D - 105 unable to integrate problems

E - 1 integration timeouts