Mathematica 11.3 Integration Test Results

Test results for the 46 problems in "4.5.10 (c+d x)^m (a+b sec)^n.m"

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

$$\int (c+d x)^3 (a+a \operatorname{Sec}[e+f x])^2 \, dx$$

Optimal (type 4, 371 leaves, 17 steps):

$$-\frac{i a^2 (c+d x)^3}{f}+\frac{a^2 (c+d x)^4}{4 d}-\frac{4 i a^2 (c+d x)^3 \operatorname{ArcTan}\left[e^{i (e+f x)}\right]}{f}+\frac{3 a^2 d (c+d x)^2 \operatorname{Log}\left[1+e^{2 i (e+f x)}\right]}{f^2}+\frac{6 i a^2 d (c+d x)^2 \operatorname{PolyLog}\left[2,-i e^{i (e+f x)}\right]}{f^2}-\frac{6 i a^2 d (c+d x)^2 \operatorname{PolyLog}\left[2,i e^{i (e+f x)}\right]}{f^2}-\frac{3 i a^2 d^2 (c+d x) \operatorname{PolyLog}\left[2,-e^{2 i (e+f x)}\right]}{f^3}-\frac{12 a^2 d^2 (c+d x) \operatorname{PolyLog}\left[3,-i e^{i (e+f x)}\right]}{f^3}+\frac{12 a^2 d^2 (c+d x) \operatorname{PolyLog}\left[3,i e^{i (e+f x)}\right]}{f^3}+\frac{3 a^2 d^3 \operatorname{PolyLog}\left[3,-e^{2 i (e+f x)}\right]}{2 f^4}-\frac{12 i a^2 d^3 \operatorname{PolyLog}\left[4,-i e^{i (e+f x)}\right]}{f^4}+\frac{12 i a^2 d^3 \operatorname{PolyLog}\left[4,i e^{i (e+f x)}\right]}{f^4}+\frac{a^2 (c+d x)^3 \operatorname{Tan}[e+f x]}{f}$$

Result (type 4, 1027 leaves):

$$\frac{1}{16} x \left(4 c^3+6 c^2 d x+4 c d^2 x^2+d^3 x^3\right) \text{Cos}[e+f x]^2 \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a \text{Sec}[e+f x])^2+$$
$$\left(\text{Cos}[e+f x]^2 \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a \text{Sec}[e+f x])^2\right.$$
$$\left.\left(c^3 \text{Sin}\left[\frac{f x}{2}\right]+3 c^2 d x \text{Sin}\left[\frac{f x}{2}\right]+3 c d^2 x^2 \text{Sin}\left[\frac{f x}{2}\right]+d^3 x^3 \text{Sin}\left[\frac{f x}{2}\right]\right)\right)\Big/$$
$$\left(4 f \left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right) \left(\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)\right)+$$
$$\left(\text{Cos}[e+f x]^2 \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a \text{Sec}[e+f x])^2\right.$$
$$\left.\left(c^3 \text{Sin}\left[\frac{f x}{2}\right]+3 c^2 d x \text{Sin}\left[\frac{f x}{2}\right]+3 c d^2 x^2 \text{Sin}\left[\frac{f x}{2}\right]+d^3 x^3 \text{Sin}\left[\frac{f x}{2}\right]\right)\right)\Big/$$
$$\left(4 f \left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right) \left(\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)\right)-$$
$$\frac{1}{8 f^4} i \text{Cos}[e+f x]^2 \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a \text{Sec}[e+f x])^2$$
$$\left(6 c^2 d f^3 x+6 c d^2 f^3 x^2+2 d^3 f^3 x^3+8 c^3 f^3 \text{ArcTan}[\text{Cos}[e+f x]+i \text{Sin}[e+f x]]+\right.$$
$$24 c^2 d f^3 x \text{ArcTan}[\text{Cos}[e+f x]+i \text{Sin}[e+f x]]+24 c d^2 f^3 x^2$$
$$\text{ArcTan}[\text{Cos}[e+f x]+i \text{Sin}[e+f x]]+8 d^3 f^3 x^3 \text{ArcTan}[\text{Cos}[e+f x]+i \text{Sin}[e+f x]]+$$
$$6 i c^2 d f^2 \text{Log}[1+\text{Cos}[2 (e+f x)]+i \text{Sin}[2 (e+f x)]]+$$
$$12 i c d^2 f^2 x \text{Log}[1+\text{Cos}[2 (e+f x)]+i \text{Sin}[2 (e+f x)]]+$$
$$6 i d^3 f^2 x^2 \text{Log}[1+\text{Cos}[2 (e+f x)]+i \text{Sin}[2 (e+f x)]]+$$
$$12 d f^2 (c+d x)^2 \text{PolyLog}[2, i \text{Cos}[e+f x]-\text{Sin}[e+f x]]-$$
$$12 d f^2 (c+d x)^2 \text{PolyLog}[2, -i \text{Cos}[e+f x]+\text{Sin}[e+f x]]+$$
$$6 c d^2 f \text{PolyLog}[2, -\text{Cos}[2 (e+f x)]-i \text{Sin}[2 (e+f x)]]+$$
$$6 d^3 f x \text{PolyLog}[2, -\text{Cos}[2 (e+f x)]-i \text{Sin}[2 (e+f x)]]+$$
$$24 i c d^2 f \text{PolyLog}[3, i \text{Cos}[e+f x]-\text{Sin}[e+f x]]+$$
$$24 i d^3 f x \text{PolyLog}[3, i \text{Cos}[e+f x]-\text{Sin}[e+f x]]-$$
$$24 i c d^2 f \text{PolyLog}[3, -i \text{Cos}[e+f x]+\text{Sin}[e+f x]]-$$
$$24 i d^3 f x \text{PolyLog}[3, -i \text{Cos}[e+f x]+\text{Sin}[e+f x]]+$$
$$3 i d^3 \text{PolyLog}[3, -\text{Cos}[2 (e+f x)]-i \text{Sin}[2 (e+f x)]]-24 d^3$$
$$\text{PolyLog}[4, i \text{Cos}[e+f x]-\text{Sin}[e+f x]]+24 d^3 \text{PolyLog}[4, -i \text{Cos}[e+f x]+\text{Sin}[e+f x]]+$$
$$\left.6 i c^2 d f^3 x \text{Tan}[e]+6 i c d^2 f^3 x^2 \text{Tan}[e]+2 i d^3 f^3 x^3 \text{Tan}[e]\right)$$

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

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

Optimal (type 4, 262 leaves, 14 steps):

$$-\frac{i a^2 (c+d x)^2}{f}+\frac{a^2 (c+d x)^3}{3 d}-\frac{4 i a^2 (c+d x)^2 \text{ArcTan}\left[e^{i (e+f x)}\right]}{f}+$$
$$\frac{2 a^2 d (c+d x) \text{Log}\left[1+e^{2 i (e+f x)}\right]}{f^2}+\frac{4 i a^2 d (c+d x) \text{PolyLog}\left[2,-i e^{i (e+f x)}\right]}{f^2}-$$
$$\frac{4 i a^2 d (c+d x) \text{PolyLog}\left[2,i e^{i (e+f x)}\right]}{f^2}-\frac{i a^2 d^2 \text{PolyLog}\left[2,-e^{2 i (e+f x)}\right]}{f^3}-$$
$$\frac{4 a^2 d^2 \text{PolyLog}\left[3,-i e^{i (e+f x)}\right]}{f^3}+\frac{4 a^2 d^2 \text{PolyLog}\left[3,i e^{i (e+f x)}\right]}{f^3}+\frac{a^2 (c+d x)^2 \text{Tan}[e+f x]}{f}$$

Result (type 4, 685 leaves):

$$\frac{1}{12} x \left(3 c^2+3 c d x+d^2 x^2\right) \text{Cos}[e+f x]^2 \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a \text{Sec}[e+f x])^2+$$
$$\frac{\text{Cos}[e+f x]^2 \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a \text{Sec}[e+f x])^2 \left(c^2 \text{Sin}\left[\frac{f x}{2}\right]+2 c d x \text{Sin}\left[\frac{f x}{2}\right]+d^2 x^2 \text{Sin}\left[\frac{f x}{2}\right]\right)}{4 f \left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right) \left(\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)}+$$
$$\frac{\text{Cos}[e+f x]^2 \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a \text{Sec}[e+f x])^2 \left(c^2 \text{Sin}\left[\frac{f x}{2}\right]+2 c d x \text{Sin}\left[\frac{f x}{2}\right]+d^2 x^2 \text{Sin}\left[\frac{f x}{2}\right]\right)}{4 f \left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right) \left(\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)}-$$
$$\frac{1}{4 f^3} i \text{Cos}[e+f x]^2 \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a \text{Sec}[e+f x])^2$$
$$\Big(2 c d f^2 x+d^2 f^2 x^2+4 c^2 f^2 \text{ArcTan}[\text{Cos}[e+f x]+i \text{Sin}[e+f x]]+$$
$$8 c d f^2 x \text{ArcTan}[\text{Cos}[e+f x]+i \text{Sin}[e+f x]]+4 d^2 f^2 x^2$$
$$\text{ArcTan}[\text{Cos}[e+f x]+i \text{Sin}[e+f x]]+2 i c d f \text{Log}[1+\text{Cos}[2 (e+f x)]+i \text{Sin}[2 (e+f x)]]+$$
$$2 i d^2 f x \text{Log}[1+\text{Cos}[2 (e+f x)]+i \text{Sin}[2 (e+f x)]]+$$
$$4 d f (c+d x) \text{PolyLog}[2,i \text{Cos}[e+f x]-\text{Sin}[e+f x]]-$$
$$4 d f (c+d x) \text{PolyLog}[2,-i \text{Cos}[e+f x]+\text{Sin}[e+f x]]+d^2 \text{PolyLog}[2,$$
$$-\text{Cos}[2 (e+f x)]-i \text{Sin}[2 (e+f x)]]+4 i d^2 \text{PolyLog}[3,i \text{Cos}[e+f x]-\text{Sin}[e+f x]]-$$
$$4 i d^2 \text{PolyLog}[3,-i \text{Cos}[e+f x]+\text{Sin}[e+f x]]+2 i c d f^2 x \text{Tan}[e]+i d^2 f^2 x^2 \text{Tan}[e]\Big)$$

Problem 8: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 134 leaves, 9 steps):

$$\frac{a^2 (c+d x)^2}{2 d}-\frac{4 i a^2 (c+d x) \text{ArcTan}\left[e^{i (e+f x)}\right]}{f}+\frac{a^2 d \text{Log}[\text{Cos}[e+f x]]}{f^2}+$$
$$\frac{2 i a^2 d \text{PolyLog}\left[2,-i e^{i (e+f x)}\right]}{f^2}-\frac{2 i a^2 d \text{PolyLog}\left[2,i e^{i (e+f x)}\right]}{f^2}+\frac{a^2 (c+d x) \text{Tan}[e+f x]}{f}$$

Result (type 4, 728 leaves):

$$\left(x \,\text{Cos}[e+f x]^2\, \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a\,\text{Sec}[e+f x])^2 (2 c f \,\text{Cos}[e]+d f x \,\text{Cos}[e]+2 d \,\text{Sin}[e])\right) \Big/ \left(8 f \left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right)\right)+$$

$$\left(d \,\text{Cos}[e+f x]^2\, \text{Sec}[e]\, \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a\,\text{Sec}[e+f x])^2 (\text{Cos}[e]\,\text{Log}[\text{Cos}[e]\,\text{Cos}[f x]-\text{Sin}[e]\,\text{Sin}[f x]]+f x \,\text{Sin}[e])\right) \Big/ \left(4 f^2 \left(\text{Cos}[e]^2+\text{Sin}[e]^2\right)\right)+$$

$$\left(i\, c\, \text{ArcTan}\left[\frac{-i\, \text{Sin}[e]-i\, \text{Cos}[e]\, \text{Tan}\left[\frac{f x}{2}\right]}{\sqrt{\text{Cos}[e]^2+\text{Sin}[e]^2}}\right] \text{Cos}[e+f x]^2\, \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a\,\text{Sec}[e+f x])^2\right) \Big/ \left(f \sqrt{\text{Cos}[e]^2+\text{Sin}[e]^2}\right)+\frac{1}{2 f^2} d \,\text{Cos}[e+f x]^2\, \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a\,\text{Sec}[e+f x])^2 \left(-\frac{1}{\sqrt{1+\text{Cot}[e]^2}}\right.$$

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

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

$$\left(\text{Cos}[e+f x]^2\, \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a\,\text{Sec}[e+f x])^2 \left(c \,\text{Sin}\left[\frac{f x}{2}\right]+d x \,\text{Sin}\left[\frac{f x}{2}\right]\right)\right) \Big/ \left(4 f \left(\text{Cos}\left[\frac{e}{2}\right]-\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]-\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)\right)+$$

$$\left(\text{Cos}[e+f x]^2\, \text{Sec}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 (a+a\,\text{Sec}[e+f x])^2 \left(c \,\text{Sin}\left[\frac{f x}{2}\right]+d x \,\text{Sin}\left[\frac{f x}{2}\right]\right)\right) \Big/ \left(4 f \left(\text{Cos}\left[\frac{e}{2}\right]+\text{Sin}\left[\frac{e}{2}\right]\right)\left(\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\text{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right)\right)-$$

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

Problem 12: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 119 leaves, 8 steps):

$$\frac{i (c+d x)^2}{a f}+\frac{(c+d x)^3}{3 a d}-\frac{4 d (c+d x)\, \text{Log}\left[1+e^{i (e+f x)}\right]}{a f^2}+\frac{4 i d^2\, \text{PolyLog}\left[2,-e^{i (e+f x)}\right]}{a f^3}-\frac{(c+d x)^2\, \text{Tan}\left[\frac{e}{2}+\frac{f x}{2}\right]}{a f}$$

Result (type 4, 528 leaves):

$$\frac{2\,x\,\left(3\,c^2+3\,c\,d\,x+d^2\,x^2\right)\,\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]^2\,\mathrm{Sec}[e+f\,x]}{3\,\left(a+a\,\mathrm{Sec}[e+f\,x]\right)}-\left(8\,c\,d\,\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]^2\,\mathrm{Sec}\left[\frac{e}{2}\right]\,\mathrm{Sec}[e+f\,x]\,\left(\mathrm{Cos}\left[\frac{e}{2}\right]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{e}{2}\right]\,\mathrm{Cos}\left[\frac{f\,x}{2}\right]-\mathrm{Sin}\left[\frac{e}{2}\right]\,\mathrm{Sin}\left[\frac{f\,x}{2}\right]\right]+\frac{1}{2}\,f\,x\,\mathrm{Sin}\left[\frac{e}{2}\right]\right)\right)\Big/\left(f^2\,\left(a+a\,\mathrm{Sec}[e+f\,x]\right)\,\left(\mathrm{Cos}\left[\frac{e}{2}\right]^2+\mathrm{Sin}\left[\frac{e}{2}\right]^2\right)\right)-$$

$$\left(8\,d^2\,\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]^2\,\mathrm{Csc}\left[\frac{e}{2}\right]\,\left(\frac{1}{4}\,e^{-i\,\mathrm{ArcTan}\left[\mathrm{Cot}\left[\frac{e}{2}\right]\right]}\,f^2\,x^2-\frac{1}{\sqrt{1+\mathrm{Cot}\left[\frac{e}{2}\right]^2}}\right.\right.$$
$$\mathrm{Cot}\left[\frac{e}{2}\right]\,\left(\frac{1}{2}\,i\,f\,x\,\left(-\pi-2\,\mathrm{ArcTan}\left[\mathrm{Cot}\left[\frac{e}{2}\right]\right]\right)-\pi\,\mathrm{Log}\left[1+e^{-i\,f\,x}\right]-2\,\left(\frac{f\,x}{2}-\mathrm{ArcTan}\left[\mathrm{Cot}\left[\frac{e}{2}\right]\right]\right)\right.$$
$$\mathrm{Log}\left[1-e^{2\,i\,\left(\frac{f\,x}{2}-\mathrm{ArcTan}\left[\mathrm{Cot}\left[\frac{e}{2}\right]\right]\right)}\right]+\pi\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{f\,x}{2}\right]\right]-2\,\mathrm{ArcTan}\left[\mathrm{Cot}\left[\frac{e}{2}\right]\right]$$
$$\left.\left.\mathrm{Log}\left[\mathrm{Sin}\left[\frac{f\,x}{2}-\mathrm{ArcTan}\left[\mathrm{Cot}\left[\frac{e}{2}\right]\right]\right]\right]+i\,\mathrm{PolyLog}\left[2,\,e^{2\,i\,\left(\frac{f\,x}{2}-\mathrm{ArcTan}\left[\mathrm{Cot}\left[\frac{e}{2}\right]\right]\right)}\right]\right)\right)$$
$$\left.\mathrm{Sec}\left[\frac{e}{2}\right]\,\mathrm{Sec}[e+f\,x]\right)\Big/\left(f^3\,\left(a+a\,\mathrm{Sec}[e+f\,x]\right)\,\sqrt{\mathrm{Csc}\left[\frac{e}{2}\right]^2\,\left(\mathrm{Cos}\left[\frac{e}{2}\right]^2+\mathrm{Sin}\left[\frac{e}{2}\right]^2\right)}\right)-$$

$$\left(2\,\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\,\mathrm{Sec}\left[\frac{e}{2}\right]\,\mathrm{Sec}[e+f\,x]\,\left(c^2\,\mathrm{Sin}\left[\frac{f\,x}{2}\right]+2\,c\,d\,x\,\mathrm{Sin}\left[\frac{f\,x}{2}\right]+d^2\,x^2\,\mathrm{Sin}\left[\frac{f\,x}{2}\right]\right)\right)\Big/\left(f\,\left(a+a\,\mathrm{Sec}[e+f\,x]\right)\right)$$

Problem 16: Result more than twice size of optimal antiderivative.

$$\int\frac{(c+d\,x)^3}{\left(a+a\,\mathrm{Sec}[e+f\,x]\right)^2}\,dx$$

Optimal (type 4, 288 leaves, 19 steps):

$$\frac{5\,i\,(c+d\,x)^3}{3\,a^2\,f}+\frac{(c+d\,x)^4}{4\,a^2\,d}-\frac{10\,d\,(c+d\,x)^2\,\mathrm{Log}\left[1+e^{i\,(e+f\,x)}\right]}{a^2\,f^2}+\frac{4\,d^3\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{e}{2}+\frac{f\,x}{2}\right]\right]}{a^2\,f^4}+$$
$$\frac{20\,i\,d^2\,(c+d\,x)\,\mathrm{PolyLog}\left[2,\,-e^{i\,(e+f\,x)}\right]}{a^2\,f^3}-\frac{20\,d^3\,\mathrm{PolyLog}\left[3,\,-e^{i\,(e+f\,x)}\right]}{a^2\,f^4}-\frac{d\,(c+d\,x)^2\,\mathrm{Sec}\left[\frac{e}{2}+\frac{f\,x}{2}\right]^2}{2\,a^2\,f^2}+$$
$$\frac{2\,d^2\,(c+d\,x)\,\mathrm{Tan}\left[\frac{e}{2}+\frac{f\,x}{2}\right]}{a^2\,f^3}-\frac{5\,(c+d\,x)^3\,\mathrm{Tan}\left[\frac{e}{2}+\frac{f\,x}{2}\right]}{3\,a^2\,f}+\frac{(c+d\,x)^3\,\mathrm{Sec}\left[\frac{e}{2}+\frac{f\,x}{2}\right]^2\,\mathrm{Tan}\left[\frac{e}{2}+\frac{f\,x}{2}\right]}{6\,a^2\,f}$$

Result (type 4, 1455 leaves) :

$$\left(20\, d^3\, e^{-\frac{i e}{2}} \text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 \left(i f^2 x^2 \left(e^{i e} f x+3 i \left(1+e^{i e}\right) \text{Log}\left[1+e^{i (e+f x)}\right]\right)+6 i \left(1+e^{i e}\right) f x\, \text{PolyLog}\left[2,-e^{i (e+f x)}\right]-6 \left(1+e^{i e}\right) \text{PolyLog}\left[3,-e^{i (e+f x)}\right]\right) \text{Sec}\left[\frac{e}{2}\right] \text{Sec}[e+f x]^2\right)\Big/\left(3 f^4 (a+a\, \text{Sec}[e+f x])^2\right)+\left(16\, d^3 \text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 \text{Sec}\left[\frac{e}{2}\right] \text{Sec}[e+f x]^2 \left(\text{Cos}\left[\frac{e}{2}\right] \text{Log}\left[\text{Cos}\left[\frac{e}{2}\right] \text{Cos}\left[\frac{f x}{2}\right]-\text{Sin}\left[\frac{e}{2}\right] \text{Sin}\left[\frac{f x}{2}\right]\right]+\frac{1}{2} f x\, \text{Sin}\left[\frac{e}{2}\right]\right)\right)\Big/\left(f^4 (a+a\, \text{Sec}[e+f x])^2 \left(\text{Cos}\left[\frac{e}{2}\right]^2+\text{Sin}\left[\frac{e}{2}\right]^2\right)\right)-\left(40\, c^2 d\, \text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 \text{Sec}\left[\frac{e}{2}\right] \text{Sec}[e+f x]^2 \left(\text{Cos}\left[\frac{e}{2}\right] \text{Log}\left[\text{Cos}\left[\frac{e}{2}\right] \text{Cos}\left[\frac{f x}{2}\right]-\text{Sin}\left[\frac{e}{2}\right] \text{Sin}\left[\frac{f x}{2}\right]\right]+\frac{1}{2} f x\, \text{Sin}\left[\frac{e}{2}\right]\right)\right)\Big/\left(f^2 (a+a\, \text{Sec}[e+f x])^2 \left(\text{Cos}\left[\frac{e}{2}\right]^2+\text{Sin}\left[\frac{e}{2}\right]^2\right)\right)-\left(80\, c\, d^2 \text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 \text{Csc}\left[\frac{e}{2}\right] \left(\frac{1}{4} e^{-i \text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right]} f^2 x^2-\frac{1}{\sqrt{1+\text{Cot}\left[\frac{e}{2}\right]^2}} \text{Cot}\left[\frac{e}{2}\right] \left(\frac{1}{2} i f x \left(-\pi-2 \text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right]\right)-\pi \text{Log}\left[1+e^{-i f x}\right]-2 \left(\frac{f x}{2}-\text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right]\right) \text{Log}\left[1-e^{2 i \left(\frac{f x}{2}-\text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right]\right)}\right]+\pi \text{Log}\left[\text{Cos}\left[\frac{f x}{2}\right]\right]-2 \text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right] \text{Log}\left[\text{Sin}\left[\frac{f x}{2}-\text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right]\right]\right]+i \text{PolyLog}\left[2, e^{2 i \left(\frac{f x}{2}-\text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right]\right)}\right]\right)\right) \text{Sec}\left[\frac{e}{2}\right] \text{Sec}[e+f x]^2\right)\Big/\left(f^3 (a+a\, \text{Sec}[e+f x])^2 \sqrt{\text{Csc}\left[\frac{e}{2}\right]^2 \left(\text{Cos}\left[\frac{e}{2}\right]^2+\text{Sin}\left[\frac{e}{2}\right]^2\right)}\right)+$$

$$\frac{1}{24 f^3 (a+a\, \text{Sec}[e+f x])^2} \text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right] \text{Sec}\left[\frac{e}{2}\right] \text{Sec}[e+f x]^2 \left(-24 c^2 d f \text{Cos}\left[\frac{f x}{2}\right]-48 c d^2 f x \text{Cos}\left[\frac{f x}{2}\right]+36 c^3 f^3 x \text{Cos}\left[\frac{f x}{2}\right]-24 d^3 f x^2 \text{Cos}\left[\frac{f x}{2}\right]+54 c^2 d f^3 x^2 \text{Cos}\left[\frac{f x}{2}\right]+36 c d^2 f^3 x^3 \text{Cos}\left[\frac{f x}{2}\right]+9 d^3 f^3 x^4 \text{Cos}\left[\frac{f x}{2}\right]-24 c^2 d f \text{Cos}\left[e+\frac{f x}{2}\right]-48 c d^2 f x \text{Cos}\left[e+\frac{f x}{2}\right]+36 c^3 f^3 x \text{Cos}\left[e+\frac{f x}{2}\right]-24 d^3 f x^2 \text{Cos}\left[e+\frac{f x}{2}\right]+\right.$$

$$54\,c^2\,d\,f^3\,x^2\,\mathrm{Cos}\left[e+\frac{f\,x}{2}\right]+36\,c\,d^2\,f^3\,x^3\,\mathrm{Cos}\left[e+\frac{f\,x}{2}\right]+9\,d^3\,f^3\,x^4\,\mathrm{Cos}\left[e+\frac{f\,x}{2}\right]+$$
$$12\,c^3\,f^3\,x\,\mathrm{Cos}\left[e+\frac{3\,f\,x}{2}\right]+18\,c^2\,d\,f^3\,x^2\,\mathrm{Cos}\left[e+\frac{3\,f\,x}{2}\right]+12\,c\,d^2\,f^3\,x^3\,\mathrm{Cos}\left[e+\frac{3\,f\,x}{2}\right]+$$
$$3\,d^3\,f^3\,x^4\,\mathrm{Cos}\left[e+\frac{3\,f\,x}{2}\right]+12\,c^3\,f^3\,x\,\mathrm{Cos}\left[2\,e+\frac{3\,f\,x}{2}\right]+18\,c^2\,d\,f^3\,x^2\,\mathrm{Cos}\left[2\,e+\frac{3\,f\,x}{2}\right]+$$
$$12\,c\,d^2\,f^3\,x^3\,\mathrm{Cos}\left[2\,e+\frac{3\,f\,x}{2}\right]+3\,d^3\,f^3\,x^4\,\mathrm{Cos}\left[2\,e+\frac{3\,f\,x}{2}\right]+96\,c\,d^2\,\mathrm{Sin}\left[\frac{f\,x}{2}\right]-$$
$$72\,c^3\,f^2\,\mathrm{Sin}\left[\frac{f\,x}{2}\right]+96\,d^3\,x\,\mathrm{Sin}\left[\frac{f\,x}{2}\right]-216\,c^2\,d\,f^2\,x\,\mathrm{Sin}\left[\frac{f\,x}{2}\right]-216\,c\,d^2\,f^2\,x^2\,\mathrm{Sin}\left[\frac{f\,x}{2}\right]-$$
$$72\,d^3\,f^2\,x^3\,\mathrm{Sin}\left[\frac{f\,x}{2}\right]-48\,c\,d^2\,\mathrm{Sin}\left[e+\frac{f\,x}{2}\right]+48\,c^3\,f^2\,\mathrm{Sin}\left[e+\frac{f\,x}{2}\right]-48\,d^3\,x\,\mathrm{Sin}\left[e+\frac{f\,x}{2}\right]+$$
$$144\,c^2\,d\,f^2\,x\,\mathrm{Sin}\left[e+\frac{f\,x}{2}\right]+144\,c\,d^2\,f^2\,x^2\,\mathrm{Sin}\left[e+\frac{f\,x}{2}\right]+48\,d^3\,f^2\,x^3\,\mathrm{Sin}\left[e+\frac{f\,x}{2}\right]+$$
$$48\,c\,d^2\,\mathrm{Sin}\left[e+\frac{3\,f\,x}{2}\right]-40\,c^3\,f^2\,\mathrm{Sin}\left[e+\frac{3\,f\,x}{2}\right]+48\,d^3\,x\,\mathrm{Sin}\left[e+\frac{3\,f\,x}{2}\right]-$$
$$120\,c^2\,d\,f^2\,x\,\mathrm{Sin}\left[e+\frac{3\,f\,x}{2}\right]-120\,c\,d^2\,f^2\,x^2\,\mathrm{Sin}\left[e+\frac{3\,f\,x}{2}\right]-40\,d^3\,f^2\,x^3\,\mathrm{Sin}\left[e+\frac{3\,f\,x}{2}\right]\Bigg)$$

Problem 17: Result more than twice size of optimal antiderivative.

$$\int\frac{(c+d\,x)^2}{(a+a\,\mathrm{Sec}[e+f\,x])^2}\,dx$$

Optimal (type 4, 229 leaves, 17 steps):

$$\frac{5\,i\,(c+d\,x)^2}{3\,a^2\,f}+\frac{(c+d\,x)^3}{3\,a^2\,d}-\frac{20\,d\,(c+d\,x)\,\mathrm{Log}\left[1+e^{i\,(e+f\,x)}\right]}{3\,a^2\,f^2}+$$
$$\frac{20\,i\,d^2\,\mathrm{PolyLog}\left[2,-e^{i\,(e+f\,x)}\right]}{3\,a^2\,f^3}-\frac{d\,(c+d\,x)\,\mathrm{Sec}\left[\frac{e}{2}+\frac{f\,x}{2}\right]^2}{3\,a^2\,f^2}+\frac{2\,d^2\,\mathrm{Tan}\left[\frac{e}{2}+\frac{f\,x}{2}\right]}{3\,a^2\,f^3}-$$
$$\frac{5\,(c+d\,x)^2\,\mathrm{Tan}\left[\frac{e}{2}+\frac{f\,x}{2}\right]}{3\,a^2\,f}+\frac{(c+d\,x)^2\,\mathrm{Sec}\left[\frac{e}{2}+\frac{f\,x}{2}\right]^2\,\mathrm{Tan}\left[\frac{e}{2}+\frac{f\,x}{2}\right]}{6\,a^2\,f}$$

Result (type 4, 925 leaves):

$$- \left(\left(80\, c\, d\, \text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 \text{Sec}\left[\frac{e}{2}\right] \text{Sec}[e+f x]^2 \left(\text{Cos}\left[\frac{e}{2}\right] \text{Log}\left[\text{Cos}\left[\frac{e}{2}\right] \text{Cos}\left[\frac{f x}{2}\right] - \text{Sin}\left[\frac{e}{2}\right] \text{Sin}\left[\frac{f x}{2}\right]\right] + \frac{1}{2} f x \,\text{Sin}\left[\frac{e}{2}\right]\right)\right) \Big/ \left(3 f^2 \left(a + a\, \text{Sec}[e+f x]\right)^2 \left(\text{Cos}\left[\frac{e}{2}\right]^2 + \text{Sin}\left[\frac{e}{2}\right]^2\right)\right)\right) -$$

$$\left(80\, d^2 \,\text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]^4 \text{Csc}\left[\frac{e}{2}\right] \left(\frac{1}{4} e^{-i \,\text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right]} f^2 x^2 - \frac{1}{\sqrt{1+\text{Cot}\left[\frac{e}{2}\right]^2}} \text{Cot}\left[\frac{e}{2}\right] \left(\frac{1}{2} i f x \left(-\pi - 2\, \text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right]\right) - \pi\, \text{Log}\left[1 + e^{-i f x}\right] - 2 \left(\frac{f x}{2} - \text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right]\right) \text{Log}\left[1 - e^{2 i \left(\frac{f x}{2} - \text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right]\right)}\right] + \pi\, \text{Log}\left[\text{Cos}\left[\frac{f x}{2}\right]\right] - 2\, \text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right] \text{Log}\left[\text{Sin}\left[\frac{f x}{2} - \text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right]\right]\right] + i\, \text{PolyLog}\left[2, e^{2 i \left(\frac{f x}{2} - \text{ArcTan}\left[\text{Cot}\left[\frac{e}{2}\right]\right]\right)}\right]\right)\right) \text{Sec}\left[\frac{e}{2}\right] \text{Sec}[e+f x]^2\right) \Big/ \left(3 f^3 \left(a + a\, \text{Sec}[e+f x]\right)^2 \sqrt{\text{Csc}\left[\frac{e}{2}\right]^2 \left(\text{Cos}\left[\frac{e}{2}\right]^2 + \text{Sin}\left[\frac{e}{2}\right]^2\right)}\right) +$$

$$\frac{1}{6 f^3 \left(a + a\, \text{Sec}[e+f x]\right)^2} \text{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right] \text{Sec}\left[\frac{e}{2}\right] \text{Sec}[e+f x]^2 \left(-4 c d f \,\text{Cos}\left[\frac{f x}{2}\right] - 4 d^2 f x \,\text{Cos}\left[\frac{f x}{2}\right] + 9 c^2 f^3 x \,\text{Cos}\left[\frac{f x}{2}\right] + 9 c d f^3 x^2 \,\text{Cos}\left[\frac{f x}{2}\right] + 3 d^2 f^3 x^3 \,\text{Cos}\left[\frac{f x}{2}\right] - 4 c d f \,\text{Cos}\left[e + \frac{f x}{2}\right] - 4 d^2 f x \,\text{Cos}\left[e + \frac{f x}{2}\right] + 9 c^2 f^3 x \,\text{Cos}\left[e + \frac{f x}{2}\right] + 9 c d f^3 x^2 \,\text{Cos}\left[e + \frac{f x}{2}\right] + 3 d^2 f^3 x^3 \,\text{Cos}\left[e + \frac{f x}{2}\right] + 3 c^2 f^3 x \,\text{Cos}\left[e + \frac{3 f x}{2}\right] + 3 c d f^3 x^2 \,\text{Cos}\left[e + \frac{3 f x}{2}\right] + d^2 f^3 x^3 \,\text{Cos}\left[e + \frac{3 f x}{2}\right] + 3 c^2 f^3 x \,\text{Cos}\left[2 e + \frac{3 f x}{2}\right] + 3 c d f^3 x^2 \,\text{Cos}\left[2 e + \frac{3 f x}{2}\right] + d^2 f^3 x^3 \,\text{Cos}\left[2 e + \frac{3 f x}{2}\right] + 8 d^2 \,\text{Sin}\left[\frac{f x}{2}\right] - 18 c^2 f^2 \,\text{Sin}\left[\frac{f x}{2}\right] - 36 c d f^2 x \,\text{Sin}\left[\frac{f x}{2}\right] - 18 d^2 f^2 x^2 \,\text{Sin}\left[\frac{f x}{2}\right] - 4 d^2 \,\text{Sin}\left[e + \frac{f x}{2}\right] + 12 c^2 f^2 \,\text{Sin}\left[e + \frac{f x}{2}\right] + 24 c d f^2 x \,\text{Sin}\left[e + \frac{f x}{2}\right] + 12 d^2 f^2 x^2 \,\text{Sin}\left[e + \frac{f x}{2}\right] + 4 d^2 \,\text{Sin}\left[e + \frac{3 f x}{2}\right] - 10 c^2 f^2 \,\text{Sin}\left[e + \frac{3 f x}{2}\right] - 20 c d f^2 x \,\text{Sin}\left[e + \frac{3 f x}{2}\right] - 10 d^2 f^2 x^2 \,\text{Sin}\left[e + \frac{3 f x}{2}\right]\right)$$

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

$$\int (c+d x)^3 (a+b \operatorname{Sec}[e+f x]) \, dx$$

Optimal (type 4, 227 leaves, 11 steps):

$$\frac{a (c+d x)^4}{4 d}-\frac{2 i b (c+d x)^3 \operatorname{ArcTan}\left[e^{i (e+f x)}\right]}{f}+\frac{3 i b d (c+d x)^2 \operatorname{PolyLog}\left[2,-i e^{i (e+f x)}\right]}{f^2}-\frac{3 i b d (c+d x)^2 \operatorname{PolyLog}\left[2, i e^{i (e+f x)}\right]}{f^2}-\frac{6 b d^2 (c+d x) \operatorname{PolyLog}\left[3,-i e^{i (e+f x)}\right]}{f^3}+\frac{6 b d^2 (c+d x) \operatorname{PolyLog}\left[3, i e^{i (e+f x)}\right]}{f^3}-\frac{6 i b d^3 \operatorname{PolyLog}\left[4,-i e^{i (e+f x)}\right]}{f^4}+\frac{6 i b d^3 \operatorname{PolyLog}\left[4, i e^{i (e+f x)}\right]}{f^4}$$

Result (type 4, 474 leaves):

$$\frac{1}{4 f^4}\Big(4 a c^3 f^4 x+6 a c^2 d f^4 x^2+4 a c d^2 f^4 x^3+a d^3 f^4 x^4-8 i b c^3 f^3 \operatorname{ArcTan}\left[e^{i (e+f x)}\right]+12 b c^2 d f^3 x \operatorname{Log}\left[1-i e^{i (e+f x)}\right]+12 b c d^2 f^3 x^2 \operatorname{Log}\left[1-i e^{i (e+f x)}\right]+4 b d^3 f^3 x^3 \operatorname{Log}\left[1-i e^{i (e+f x)}\right]-12 b c^2 d f^3 x \operatorname{Log}\left[1+i e^{i (e+f x)}\right]-12 b c d^2 f^3 x^2 \operatorname{Log}\left[1+i e^{i (e+f x)}\right]-4 b d^3 f^3 x^3 \operatorname{Log}\left[1+i e^{i (e+f x)}\right]+12 i b d f^2 (c+d x)^2 \operatorname{PolyLog}\left[2,-i e^{i (e+f x)}\right]-12 i b d f^2 (c+d x)^2 \operatorname{PolyLog}\left[2, i e^{i (e+f x)}\right]-24 b c d^2 f \operatorname{PolyLog}\left[3,-i e^{i (e+f x)}\right]-24 b d^3 f x \operatorname{PolyLog}\left[3,-i e^{i (e+f x)}\right]+24 b c d^2 f \operatorname{PolyLog}\left[3, i e^{i (e+f x)}\right]+24 b d^3 f x \operatorname{PolyLog}\left[3, i e^{i (e+f x)}\right]-24 i b d^3 \operatorname{PolyLog}\left[4,-i e^{i (e+f x)}\right]+24 i b d^3 \operatorname{PolyLog}\left[4, i e^{i (e+f x)}\right]\Big)$$

Problem 26: Result more than twice size of optimal antiderivative.

$$\int (c+d x) (a+b \operatorname{Sec}[e+f x]) \, dx$$

Optimal (type 4, 93 leaves, 7 steps):

$$\frac{a (c+d x)^2}{2 d}-\frac{2 i b (c+d x) \operatorname{ArcTan}\left[e^{i (e+f x)}\right]}{f}+\frac{i b d \operatorname{PolyLog}\left[2,-i e^{i (e+f x)}\right]}{f^2}-\frac{i b d \operatorname{PolyLog}\left[2, i e^{i (e+f x)}\right]}{f^2}$$

Result (type 4, 236 leaves):

$$a c x+\frac{1}{2} a d x^2-\frac{b c \operatorname{Log}\left[\operatorname{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]-\operatorname{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right]}{f}+\frac{b c \operatorname{Log}\left[\operatorname{Cos}\left[\frac{e}{2}+\frac{f x}{2}\right]+\operatorname{Sin}\left[\frac{e}{2}+\frac{f x}{2}\right]\right]}{f}+\frac{1}{f^2} b d \left(\left(-e+\frac{\pi}{2}-f x\right)\left(\operatorname{Log}\left[1-e^{i \left(-e+\frac{\pi}{2}-f x\right)}\right]-\operatorname{Log}\left[1+e^{i \left(-e+\frac{\pi}{2}-f x\right)}\right]\right)-\left(-e+\frac{\pi}{2}\right) \operatorname{Log}\left[\operatorname{Tan}\left[\frac{1}{2}\left(-e+\frac{\pi}{2}-f x\right)\right]\right]+i \left(\operatorname{PolyLog}\left[2,-e^{i \left(-e+\frac{\pi}{2}-f x\right)}\right]-\operatorname{PolyLog}\left[2, e^{i \left(-e+\frac{\pi}{2}-f x\right)}\right]\right)\right)$$

Problem 29: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 364 leaves, 17 steps):

$$-\frac{i b^2 (c+d x)^3}{f}+\frac{a^2 (c+d x)^4}{4 d}-\frac{4 i a b (c+d x)^3 \operatorname{ArcTan}\left[e^{i (e+f x)}\right]}{f}+\frac{3 b^2 d (c+d x)^2 \operatorname{Log}\left[1+e^{2 i (e+f x)}\right]}{f^2}+\frac{6 i a b d (c+d x)^2 \operatorname{PolyLog}\left[2,-i e^{i (e+f x)}\right]}{f^2}-\frac{6 i a b d (c+d x)^2 \operatorname{PolyLog}\left[2, i e^{i (e+f x)}\right]}{f^2}-\frac{3 i b^2 d^2 (c+d x) \operatorname{PolyLog}\left[2,-e^{2 i (e+f x)}\right]}{f^3}-\frac{12 a b d^2 (c+d x) \operatorname{PolyLog}\left[3,-i e^{i (e+f x)}\right]}{f^3}+\frac{12 a b d^2 (c+d x) \operatorname{PolyLog}\left[3, i e^{i (e+f x)}\right]}{f^3}+\frac{3 b^2 d^3 \operatorname{PolyLog}\left[3,-e^{2 i (e+f x)}\right]}{2 f^4}-\frac{12 i a b d^3 \operatorname{PolyLog}\left[4,-i e^{i (e+f x)}\right]}{f^4}+\frac{12 i a b d^3 \operatorname{PolyLog}\left[4, i e^{i (e+f x)}\right]}{f^4}+\frac{b^2 (c+d x)^3 \operatorname{Tan}[e+f x]}{f}$$

Result (type 4, 1700 leaves):

$$\frac{a^2 x \left(4 c^3+6 c^2 d x+4 c d^2 x^2+d^3 x^3\right) \text{Cos}[e+f x]^2 \left(a+b\,\text{Sec}[e+f x]\right)^2}{4 \left(b+a\,\text{Cos}[e+f x]\right)^2}+$$

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

$$\Big(-12\, i\, b\, c^2 d\, e^{2 i e} f^3 x-12\, i\, b\, c\, d^2 e^{2 i e} f^3 x^2-4\, i\, b\, d^3 e^{2 i e} f^3 x^3-8\, i\, a\, c^3 f^3\, \text{ArcTan}\left[e^{i (e+f x)}\right]-$$
$$8\, i\, a\, c^3 e^{2 i e} f^3\, \text{ArcTan}\left[e^{i (e+f x)}\right]+12\, a\, c^2 d\, f^3 x\, \text{Log}\left[1-i\, e^{i (e+f x)}\right]+$$
$$12\, a\, c^2 d\, e^{2 i e} f^3 x\, \text{Log}\left[1-i\, e^{i (e+f x)}\right]+12\, a\, c\, d^2 f^3 x^2\, \text{Log}\left[1-i\, e^{i (e+f x)}\right]+$$
$$12\, a\, c\, d^2 e^{2 i e} f^3 x^2\, \text{Log}\left[1-i\, e^{i (e+f x)}\right]+4\, a\, d^3 f^3 x^3\, \text{Log}\left[1-i\, e^{i (e+f x)}\right]+$$
$$4\, a\, d^3 e^{2 i e} f^3 x^3\, \text{Log}\left[1-i\, e^{i (e+f x)}\right]-12\, a\, c^2 d\, f^3 x\, \text{Log}\left[1+i\, e^{i (e+f x)}\right]-$$
$$12\, a\, c^2 d\, e^{2 i e} f^3 x\, \text{Log}\left[1+i\, e^{i (e+f x)}\right]-12\, a\, c\, d^2 f^3 x^2\, \text{Log}\left[1+i\, e^{i (e+f x)}\right]-$$
$$12\, a\, c\, d^2 e^{2 i e} f^3 x^2\, \text{Log}\left[1+i\, e^{i (e+f x)}\right]-4\, a\, d^3 f^3 x^3\, \text{Log}\left[1+i\, e^{i (e+f x)}\right]-$$
$$4\, a\, d^3 e^{2 i e} f^3 x^3\, \text{Log}\left[1+i\, e^{i (e+f x)}\right]+6\, b\, c^2 d\, f^2\, \text{Log}\left[1+e^{2 i (e+f x)}\right]+$$
$$6\, b\, c^2 d\, e^{2 i e} f^2\, \text{Log}\left[1+e^{2 i (e+f x)}\right]+12\, b\, c\, d^2 f^2 x\, \text{Log}\left[1+e^{2 i (e+f x)}\right]+$$
$$12\, b\, c\, d^2 e^{2 i e} f^2 x\, \text{Log}\left[1+e^{2 i (e+f x)}\right]+6\, b\, d^3 f^2 x^2\, \text{Log}\left[1+e^{2 i (e+f x)}\right]+$$
$$6\, b\, d^3 e^{2 i e} f^2 x^2\, \text{Log}\left[1+e^{2 i (e+f x)}\right]+12\, i\, a\, d \left(1+e^{2 i e}\right) f^2 (c+d x)^2\, \text{PolyLog}\left[2,-i\, e^{i (e+f x)}\right]-$$
$$12\, i\, a\, d \left(1+e^{2 i e}\right) f^2 (c+d x)^2\, \text{PolyLog}\left[2,\, i\, e^{i (e+f x)}\right]-$$
$$6\, i\, b\, c\, d^2 f\, \text{PolyLog}\left[2,-e^{2 i (e+f x)}\right]-6\, i\, b\, c\, d^2 e^{2 i e} f\, \text{PolyLog}\left[2,-e^{2 i (e+f x)}\right]-$$
$$6\, i\, b\, d^3 f x\, \text{PolyLog}\left[2,-e^{2 i (e+f x)}\right]-6\, i\, b\, d^3 e^{2 i e} f x\, \text{PolyLog}\left[2,-e^{2 i (e+f x)}\right]-$$
$$24\, a\, c\, d^2 f\, \text{PolyLog}\left[3,-i\, e^{i (e+f x)}\right]-24\, a\, c\, d^2 e^{2 i e} f\, \text{PolyLog}\left[3,-i\, e^{i (e+f x)}\right]-$$
$$24\, a\, d^3 f x\, \text{PolyLog}\left[3,-i\, e^{i (e+f x)}\right]-24\, a\, d^3 e^{2 i e} f x\, \text{PolyLog}\left[3,-i\, e^{i (e+f x)}\right]+$$
$$24\, a\, c\, d^2 f\, \text{PolyLog}\left[3,\, i\, e^{i (e+f x)}\right]+24\, a\, c\, d^2 e^{2 i e} f\, \text{PolyLog}\left[3,\, i\, e^{i (e+f x)}\right]+$$
$$24\, a\, d^3 f x\, \text{PolyLog}\left[3,\, i\, e^{i (e+f x)}\right]+24\, a\, d^3 e^{2 i e} f x\, \text{PolyLog}\left[3,\, i\, e^{i (e+f x)}\right]+$$
$$3\, b\, d^3\, \text{PolyLog}\left[3,-e^{2 i (e+f x)}\right]+3\, b\, d^3 e^{2 i e}\, \text{PolyLog}\left[3,-e^{2 i (e+f x)}\right]-$$
$$24\, i\, a\, d^3\, \text{PolyLog}\left[4,-i\, e^{i (e+f x)}\right]-24\, i\, a\, d^3 e^{2 i e}\, \text{PolyLog}\left[4,-i\, e^{i (e+f x)}\right]+$$
$$24\, i\, a\, d^3\, \text{PolyLog}\left[4,\, i\, e^{i (e+f x)}\right]+24\, i\, a\, d^3 e^{2 i e}\, \text{PolyLog}\left[4,\, i\, e^{i (e+f x)}\right]\Big)$$

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

Problem 30: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 257 leaves, 14 steps):

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

Result (type 4, 703 leaves):

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

Problem 31: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 131 leaves, 9 steps):

$$\frac{a^2 (c+d x)^2}{2 d}-\frac{4 i a b (c+d x) \text{ArcTan}\left[e^{i (e+f x)}\right]}{f}+\frac{b^2 d \text{Log}[\text{Cos}[e+f x]]}{f^2}+\frac{2 i a b d \text{PolyLog}\left[2,-i e^{i (e+f x)}\right]}{f^2}-\frac{2 i a b d \text{PolyLog}\left[2,i e^{i (e+f x)}\right]}{f^2}+\frac{b^2 (c+d x) \text{Tan}[e+f x]}{f}$$

Result (type 4, 554 leaves):

$$\frac{1}{2 f^2}\left(-a^2 (e+f x) (-2 c f+d (e-f x))+\right.$$
$$2 b \left(-2 a d (e+f x) \left(\text{Log}\left[1-\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right]-\text{Log}\left[1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right]\right)+\right.$$
$$a (d e-c f) \left(e+f x+\text{Log}\left[-1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right]-\text{Log}\left[1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right]\right)-$$
$$a (d e-c f) \left(e+f x-\text{Log}\left[1-\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right]+\text{Log}\left[1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right]\right)+$$
$$b d \left(-\text{Log}\left[\text{Sec}\left[\frac{1}{2} (e+f x)\right]^2\right]+\text{Log}\left[-1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right]+\text{Log}\left[4 \left(1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right)\right]\right)-$$
$$2 i a d \left(\text{Log}\left[1-\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right] \text{Log}\left[\left(\frac{1}{2}+\frac{i}{2}\right) \left(-i+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right)\right]-\right.$$
$$\text{Log}\left[1-\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right] \text{Log}\left[\left(\frac{1}{2}-\frac{i}{2}\right) \left(i+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right)\right]-$$
$$\text{Log}\left[\frac{1}{2} \left((1+i)-(1-i) \text{Tan}\left[\frac{1}{2} (e+f x)\right]\right)\right] \text{Log}\left[1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right]+$$
$$\text{Log}\left[\left(-\frac{1}{2}-\frac{i}{2}\right) \left(i+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right)\right] \text{Log}\left[1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right]+\text{PolyLog}\left[2,\left(-\frac{1}{2}-\frac{i}{2}\right)\right.$$
$$\left.\left(-1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right)\right]-\text{PolyLog}\left[2,\left(-\frac{1}{2}+\frac{i}{2}\right) \left(-1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right)\right]-\text{PolyLog}\Big[$$
$$\left.\left.2,\left(\frac{1}{2}-\frac{i}{2}\right) \left(1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right)\right]+\text{PolyLog}\left[2,\left(\frac{1}{2}+\frac{i}{2}\right) \left(1+\text{Tan}\left[\frac{1}{2} (e+f x)\right]\right)\right]\right)\right)+$$
$$\left.\frac{2 b^2 f (c+d x) \text{Sin}\left[\frac{1}{2} (e+f x)\right]}{\text{Cos}\left[\frac{1}{2} (e+f x)\right]-\text{Sin}\left[\frac{1}{2} (e+f x)\right]}+\frac{2 b^2 f (c+d x) \text{Sin}\left[\frac{1}{2} (e+f x)\right]}{\text{Cos}\left[\frac{1}{2} (e+f x)\right]+\text{Sin}\left[\frac{1}{2} (e+f x)\right]}\right)$$

Problem 34: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 526 leaves, 14 steps):

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

Result (type 4, 1356 leaves):

$$\frac{x \left(4 c^3+6 c^2 d x+4 c d^2 x^2+d^3 x^3\right) \left(b+a \operatorname{Cos}[e+f x]\right) \operatorname{Sec}[e+f x]}{4 a \left(a+b \operatorname{Sec}[e+f x]\right)}+$$

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

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

$$3 i \sqrt{a^2-b^2} c^2 d e^{i e} f^3 x \operatorname{Log}\left[1+\frac{a e^{i (2 e+f x)}}{b e^{i e}-\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]+$$

$$3 i \sqrt{a^2-b^2} c d^2 e^{i e} f^3 x^2 \operatorname{Log}\left[1+\frac{a e^{i (2 e+f x)}}{b e^{i e}-\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]+$$

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

$$3 i \sqrt{a^2-b^2} c^2 d e^{i e} f^3 x \operatorname{Log}\left[1+\frac{a e^{i (2 e+f x)}}{b e^{i e}+\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]-$$

$$3 i \sqrt{a^2-b^2} c d^2 e^{i e} f^3 x^2 \operatorname{Log}\left[1+\frac{a e^{i (2 e+f x)}}{b e^{i e}+\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]-$$

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

$$3 \sqrt{a^2-b^2} d e^{i e} f^2 (c+d x)^2 \operatorname{PolyLog}\left[2,-\frac{a e^{i (2 e+f x)}}{b e^{i e}-\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]-$$

$$3 \sqrt{a^2-b^2} d e^{i e} f^2 (c+d x)^2 \operatorname{PolyLog}\left[2,-\frac{a e^{i (2 e+f x)}}{b e^{i e}+\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]+$$

$$6 i \sqrt{a^2-b^2} c d^2 e^{i e} f \operatorname{PolyLog}\left[3,-\frac{a e^{i (2 e+f x)}}{b e^{i e}-\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]+$$

$$6 i \sqrt{a^2-b^2} d^3 e^{i e} f x \operatorname{PolyLog}\left[3,-\frac{a e^{i (2 e+f x)}}{b e^{i e}-\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]-$$

$$6 i \sqrt{a^2-b^2} c d^2 e^{i e} f \operatorname{PolyLog}\left[3,-\frac{a e^{i (2 e+f x)}}{b e^{i e}+\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]-$$

$$6 i \sqrt{a^2-b^2} d^3 e^{i e} f x \operatorname{PolyLog}\left[3,-\frac{a e^{i (2 e+f x)}}{b e^{i e}+\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]-$$

$$6 \sqrt{a^2-b^2} d^3 e^{i e} \operatorname{PolyLog}\left[4,-\frac{a e^{i (2 e+f x)}}{b e^{i e}-\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]+$$

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

Problem 39: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 1523 leaves, 36 steps) :

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

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

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

$$\frac{2\,i\,b\,(c+d\,x)^3\,\mathrm{Log}\left[1+\frac{a\,e^{i\,(e+f\,x)}}{b+\sqrt{-a^2+b^2}}\right]}{a^2\,\sqrt{-a^2+b^2}\,f}-\frac{6\,i\,b^2\,d^2\,(c+d\,x)\,\mathrm{PolyLog}\left[2,-\frac{a\,e^{i\,(e+f\,x)}}{b-i\,\sqrt{a^2-b^2}}\right]}{a^2\,(a^2-b^2)\,f^3}-$$

$$\frac{6\,i\,b^2\,d^2\,(c+d\,x)\,\mathrm{PolyLog}\left[2,-\frac{a\,e^{i\,(e+f\,x)}}{b+i\,\sqrt{a^2-b^2}}\right]}{a^2\,(a^2-b^2)\,f^3}-\frac{3\,b^3\,d\,(c+d\,x)^2\,\mathrm{PolyLog}\left[2,-\frac{a\,e^{i\,(e+f\,x)}}{b-\sqrt{-a^2+b^2}}\right]}{a^2\,(-a^2+b^2)^{3/2}\,f^2}+$$

$$\frac{6\,b\,d\,(c+d\,x)^2\,\mathrm{PolyLog}\left[2,-\frac{a\,e^{i\,(e+f\,x)}}{b-\sqrt{-a^2+b^2}}\right]}{a^2\,\sqrt{-a^2+b^2}\,f^2}+\frac{3\,b^3\,d\,(c+d\,x)^2\,\mathrm{PolyLog}\left[2,-\frac{a\,e^{i\,(e+f\,x)}}{b+\sqrt{-a^2+b^2}}\right]}{a^2\,(-a^2+b^2)^{3/2}\,f^2}-$$

$$\frac{6\,b\,d\,(c+d\,x)^2\,\mathrm{PolyLog}\left[2,-\frac{a\,e^{i\,(e+f\,x)}}{b+\sqrt{-a^2+b^2}}\right]}{a^2\,\sqrt{-a^2+b^2}\,f^2}+\frac{6\,b^2\,d^3\,\mathrm{PolyLog}\left[3,-\frac{a\,e^{i\,(e+f\,x)}}{b-i\,\sqrt{a^2-b^2}}\right]}{a^2\,(a^2-b^2)\,f^4}+$$

$$\frac{6\,b^2\,d^3\,\mathrm{PolyLog}\left[3,-\frac{a\,e^{i\,(e+f\,x)}}{b+i\,\sqrt{a^2-b^2}}\right]}{a^2\,(a^2-b^2)\,f^4}-\frac{6\,i\,b^3\,d^2\,(c+d\,x)\,\mathrm{PolyLog}\left[3,-\frac{a\,e^{i\,(e+f\,x)}}{b-\sqrt{-a^2+b^2}}\right]}{a^2\,(-a^2+b^2)^{3/2}\,f^3}+$$

$$\frac{12\,i\,b\,d^2\,(c+d\,x)\,\mathrm{PolyLog}\left[3,-\frac{a\,e^{i\,(e+f\,x)}}{b-\sqrt{-a^2+b^2}}\right]}{a^2\,\sqrt{-a^2+b^2}\,f^3}+\frac{6\,i\,b^3\,d^2\,(c+d\,x)\,\mathrm{PolyLog}\left[3,-\frac{a\,e^{i\,(e+f\,x)}}{b+\sqrt{-a^2+b^2}}\right]}{a^2\,(-a^2+b^2)^{3/2}\,f^3}-$$

$$\frac{12\,i\,b\,d^2\,(c+d\,x)\,\mathrm{PolyLog}\left[3,-\frac{a\,e^{i\,(e+f\,x)}}{b+\sqrt{-a^2+b^2}}\right]}{a^2\,\sqrt{-a^2+b^2}\,f^3}+\frac{6\,b^3\,d^3\,\mathrm{PolyLog}\left[4,-\frac{a\,e^{i\,(e+f\,x)}}{b-\sqrt{-a^2+b^2}}\right]}{a^2\,(-a^2+b^2)^{3/2}\,f^4}-$$

$$\frac{12\,b\,d^3\,\mathrm{PolyLog}\left[4,-\frac{a\,e^{i\,(e+f\,x)}}{b-\sqrt{-a^2+b^2}}\right]}{a^2\,\sqrt{-a^2+b^2}\,f^4}-\frac{6\,b^3\,d^3\,\mathrm{PolyLog}\left[4,-\frac{a\,e^{i\,(e+f\,x)}}{b+\sqrt{-a^2+b^2}}\right]}{a^2\,(-a^2+b^2)^{3/2}\,f^4}+$$

$$\frac{12\,b\,d^3\,\mathrm{PolyLog}\left[4,-\frac{a\,e^{i\,(e+f\,x)}}{b+\sqrt{-a^2+b^2}}\right]}{a^2\,\sqrt{-a^2+b^2}\,f^4}+\frac{b^2\,(c+d\,x)^3\,\mathrm{Sin}[e+f\,x]}{a\,(a^2-b^2)\,f\,(b+a\,\mathrm{Cos}[e+f\,x])}$$

Result (type 4, 9003 leaves):

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

$$6\,b\,c^2\,d\,(b+a\,\mathrm{Cos}[e+f\,x])^2\,\Bigg(2\,(e+f\,x)\,\mathrm{ArcTanh}\Big[\frac{(a+b)\,\mathrm{Cot}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{a^2-b^2}}\Big]-$$

$$2\,\Big(e+\mathrm{ArcCos}\Big[-\frac{b}{a}\Big]\Big)\,\mathrm{ArcTanh}\Big[\frac{(a-b)\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{a^2-b^2}}\Big]+\Bigg(\mathrm{ArcCos}\Big[-\frac{b}{a}\Big]-$$

$$2\,i\,\Bigg(\mathrm{ArcTanh}\Big[\frac{(a+b)\,\mathrm{Cot}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{a^2-b^2}}\Big]-\mathrm{ArcTanh}\Big[\frac{(a-b)\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{a^2-b^2}}\Big]\Bigg)\Bigg)$$

$$\mathrm{Log}\Big[\frac{\sqrt{a^2-b^2}\;e^{-\frac{1}{2}\,i\,(e+f\,x)}}{\sqrt{2}\,\sqrt{a}\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]}}\Big]+\Bigg(\mathrm{ArcCos}\Big[-\frac{b}{a}\Big]+$$

$$2\,i\,\Bigg(\mathrm{ArcTanh}\Big[\frac{(a+b)\,\mathrm{Cot}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{a^2-b^2}}\Big]-\mathrm{ArcTanh}\Big[\frac{(a-b)\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{a^2-b^2}}\Big]\Bigg)\Bigg)$$

$$\mathrm{Log}\Big[\frac{\sqrt{a^2-b^2}\;e^{\frac{1}{2}\,i\,(e+f\,x)}}{\sqrt{2}\,\sqrt{a}\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]}}\Big]-\Bigg(\mathrm{ArcCos}\Big[-\frac{b}{a}\Big]+2\,i\,\mathrm{ArcTanh}\Big[\frac{(a-b)\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{a^2-b^2}}\Big]\Bigg)$$

$$\mathrm{Log}\Big[1-\frac{\big(b-i\,\sqrt{a^2-b^2}\big)\,\big(a+b-\sqrt{a^2-b^2}\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]\big)}{a\,\big(a+b+\sqrt{a^2-b^2}\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]\big)}\Big]+$$

$$\Bigg(-\mathrm{ArcCos}\Big[-\frac{b}{a}\Big]+2\,i\,\mathrm{ArcTanh}\Big[\frac{(a-b)\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{a^2-b^2}}\Big]\Bigg)$$

$$\mathrm{Log}\Big[1-\frac{\big(b+i\,\sqrt{a^2-b^2}\big)\,\big(a+b-\sqrt{a^2-b^2}\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]\big)}{a\,\big(a+b+\sqrt{a^2-b^2}\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]\big)}\Big]+$$

$$i\,\Bigg(\mathrm{PolyLog}\Big[2,\,\frac{\big(b-i\,\sqrt{a^2-b^2}\big)\,\big(a+b-\sqrt{a^2-b^2}\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]\big)}{a\,\big(a+b+\sqrt{a^2-b^2}\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]\big)}\Big]-$$

$$\mathrm{PolyLog}\Big[2,\,\frac{\big(b+i\,\sqrt{a^2-b^2}\big)\,\big(a+b-\sqrt{a^2-b^2}\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]\big)}{a\,\big(a+b+\sqrt{a^2-b^2}\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]\big)}\Big]\Bigg)\Bigg)\,\mathrm{Sec}[e+f\,x]^2+$$

$$\frac{1}{a^2\,(a^2-b^2)^{3/2}\,f^2\,(a+b\,\mathrm{Sec}[e+f\,x])^2}\,3\,b^3\,c^2\,d\,(b+a\,\mathrm{Cos}[e+f\,x])^2$$

$$\Bigg(2\,(e+f\,x)\,\mathrm{ArcTanh}\Big[\frac{(a+b)\,\mathrm{Cot}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{a^2-b^2}}\Big]-$$

$$2\,\Big(e+\mathrm{ArcCos}\Big[-\frac{b}{a}\Big]\Big)\,\mathrm{ArcTanh}\Big[\frac{(a-b)\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{a^2-b^2}}\Big]+$$

$$\Bigg(\mathrm{ArcCos}\Big[-\frac{b}{a}\Big]-2\,i\,\Bigg(\mathrm{ArcTanh}\Big[\frac{(a+b)\,\mathrm{Cot}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{a^2-b^2}}\Big]-\mathrm{ArcTanh}\Big[\frac{(a-b)\,\mathrm{Tan}\big[\frac{1}{2}\,(e+f\,x)\big]}{\sqrt{a^2-b^2}}\Big]\Bigg)\Bigg)$$

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

$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]+2 i \left(\text{ArcTanh}\left[\frac{(a+b) \text{Cot}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]-\text{ArcTanh}\left[\frac{(a-b) \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)$$

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

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

$$\left(-\text{ArcCos}\left[-\frac{b}{a}\right]+2 i \text{ArcTanh}\left[\frac{(a-b) \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]\right)$$

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

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

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

$$\left(6 b c d^2 e^{i e} (b+a \text{Cos}[e+f x])^2 \left(-2 f x \text{PolyLog}\left[2,-\frac{a e^{i (2 e+f x)}}{b e^{i e}-\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]-\right.\right.$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$6 i f x \text{PolyLog}\left[3,-\frac{a e^{i (2 e+f x)}}{b e^{i e}-\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]+$$

$$6 i f x \text{PolyLog}\left[3,-\frac{a e^{i (2 e+f x)}}{b e^{i e}+\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]+6 \text{PolyLog}\left[4,-\frac{a e^{i (2 e+f x)}}{b e^{i e}-\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]-$$

$$\left.6 \text{PolyLog}\left[4,-\frac{a e^{i (2 e+f x)}}{b e^{i e}+\sqrt{\left(-a^2+b^2\right) e^{2 i e}}}\right]\right) \text{Sec}[e+f x]^2+$$

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

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

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

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

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

$$6 i f x \text{PolyLog}\left[3, -\frac{a e^{i (2 e+f x)}}{b e^{i e} - \sqrt{(-a^2+b^2) e^{2 i e}}}\right] +$$

$$6 i f x \text{PolyLog}\left[3, -\frac{a e^{i (2 e+f x)}}{b e^{i e} + \sqrt{(-a^2+b^2) e^{2 i e}}}\right] + 6 \text{PolyLog}\left[4, -\frac{a e^{i (2 e+f x)}}{b e^{i e} - \sqrt{(-a^2+b^2) e^{2 i e}}}\right] -$$

$$6 \text{PolyLog}\left[4, -\frac{a e^{i (2 e+f x)}}{b e^{i e} + \sqrt{(-a^2+b^2) e^{2 i e}}}\right]\Bigg) \text{Sec}[e+f x]^2 -$$

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

$$b^2 d^3 e^{-i e} (b+a \text{Cos}[e+f x])^2$$

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

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

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

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

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

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

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

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

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

$$\text{PolyLog}\left[2, -\frac{a e^{i (2 e+f x)}}{b e^{i e} - \sqrt{(-a^2+b^2) e^{2 i e}}}\right] + 6 i \left(\sqrt{(-a^2+b^2) e^{2 i e}} (1+e^{2 i e}) + b (e^{i e} - e^{3 i e})\right)$$

$$f\,x\,\text{PolyLog}\left[2,-\frac{a\,e^{i\,(2e+f x)}}{b\,e^{i e}+\sqrt{\left(-a^2+b^2\right)e^{2 i e}}}\right]+6\,b\,e^{i e}$$

$$\text{PolyLog}\left[3,-\frac{a\,e^{i\,(2e+f x)}}{b\,e^{i e}-\sqrt{\left(-a^2+b^2\right)e^{2 i e}}}\right]-6\,b\,e^{3 i e}\,\text{PolyLog}\left[3,-\frac{a\,e^{i\,(2e+f x)}}{b\,e^{i e}-\sqrt{\left(-a^2+b^2\right)e^{2 i e}}}\right]-$$

$$6\sqrt{\left(-a^2+b^2\right)e^{2 i e}}\,\text{PolyLog}\left[3,-\frac{a\,e^{i\,(2e+f x)}}{b\,e^{i e}-\sqrt{\left(-a^2+b^2\right)e^{2 i e}}}\right]-$$

$$6\,e^{2 i e}\sqrt{\left(-a^2+b^2\right)e^{2 i e}}\,\text{PolyLog}\left[3,-\frac{a\,e^{i\,(2e+f x)}}{b\,e^{i e}-\sqrt{\left(-a^2+b^2\right)e^{2 i e}}}\right]-$$

$$6\,b\,e^{i e}\,\text{PolyLog}\left[3,-\frac{a\,e^{i\,(2e+f x)}}{b\,e^{i e}+\sqrt{\left(-a^2+b^2\right)e^{2 i e}}}\right]+$$

$$6\,b\,e^{3 i e}\,\text{PolyLog}\left[3,-\frac{a\,e^{i\,(2e+f x)}}{b\,e^{i e}+\sqrt{\left(-a^2+b^2\right)e^{2 i e}}}\right]-$$

$$6\sqrt{\left(-a^2+b^2\right)e^{2 i e}}\,\text{PolyLog}\left[3,-\frac{a\,e^{i\,(2e+f x)}}{b\,e^{i e}+\sqrt{\left(-a^2+b^2\right)e^{2 i e}}}\right]-$$

$$\left.6\,e^{2 i e}\sqrt{\left(-a^2+b^2\right)e^{2 i e}}\,\text{PolyLog}\left[3,-\frac{a\,e^{i\,(2e+f x)}}{b\,e^{i e}+\sqrt{\left(-a^2+b^2\right)e^{2 i e}}}\right]\right)\text{Sec}[e]\,\text{Sec}[e+f x]^2-$$

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

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

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

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

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

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

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

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

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

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

$$\Bigg(\frac{x^2\,\mathrm{Sin}[e]}{2\,a}-\frac{1}{a\,f}x\,\Bigg(\mathrm{Cos}[e]\,\mathrm{Log}[b+a\,\mathrm{Cos}[e+f\,x]]+f\,x\,\mathrm{Sin}[e]+$$

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

$$\left.\left(\sqrt{a^2-b^2}\,\sqrt{\left(\mathrm{Cos}[e]-i\,\mathrm{Sin}[e]\right)^2}\right)\right]\left(2\,\mathrm{Sin}[e]^2+i\,\mathrm{Sin}[2\,e]\right)\Bigg)\Bigg/$$

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

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

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

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

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

$$2,-\frac{\left(b-\sqrt{-a^2+b^2}\right)e^{i(e+fx)}}{a}]+\text{PolyLog}\left[2,-\frac{\left(b+\sqrt{-a^2+b^2}\right)e^{i(e+fx)}}{a}\right]\Bigg)\Bigg)\Bigg)+$$

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

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

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

$$b\left(2(e+fx)\,\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}(e+fx)\right]}{\sqrt{a^2-b^2}}\right]-2\left(e+\text{ArcCos}\left[-\frac{b}{a}\right]\right)\text{ArcTanh}\left[\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{\sqrt{a^2-b^2}}\right]+\left(\text{ArcCos}\left[-\frac{b}{a}\right]-2\,i\,\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}(e+fx)\right]}{\sqrt{a^2-b^2}}\right]+\right.$$

$$\left.2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{\sqrt{a^2-b^2}}\right]\right)\text{Log}\left[\frac{\sqrt{a^2-b^2}\,e^{-\frac{1}{2}i(e+fx)}}{\sqrt{2}\sqrt{a}\sqrt{b+a\,\text{Cos}[e+fx]}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]+2\,i\left(\text{ArcTanh}\left[\frac{(a+b)\,\text{Cot}\left[\frac{1}{2}(e+fx)\right]}{\sqrt{a^2-b^2}}\right]-\text{ArcTanh}\left[\right.\right.\right.$$

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

$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]-2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{\sqrt{a^2-b^2}}\right]\right)$$

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

$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]+2\,i\,\text{ArcTanh}\left[\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]}{\sqrt{a^2-b^2}}\right]\right)$$

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

$$i\left(\text{PolyLog}\left[2,\left(\left(b-i\sqrt{a^2-b^2}\right)\left(a+b-\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)\Big/\right.\right.$$

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

$$\left.\left.\left.\left.\left.\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)\Big/\left(a\left(a+b+\sqrt{a^2-b^2}\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)\right]\right)\right)$$

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

$$\left(b+a\,\mathrm{Cos}[e+f\,x]\right)\mathrm{Sec}[e]\,\mathrm{Sec}[e+f\,x]^2\left(8\,a^2\,b\,c^3\,f\,x\,\mathrm{Cos}[e]-8\,b^3\,c^3\,f\,x\,\mathrm{Cos}[e]+\right.$$
$$12\,a^2\,b\,c^2\,d\,f\,x^2\,\mathrm{Cos}[e]-12\,b^3\,c^2\,d\,f\,x^2\,\mathrm{Cos}[e]+8\,a^2\,b\,c\,d^2\,f\,x^3\,\mathrm{Cos}[e]-$$
$$8\,b^3\,c\,d^2\,f\,x^3\,\mathrm{Cos}[e]+2\,a^2\,b\,d^3\,f\,x^4\,\mathrm{Cos}[e]-2\,b^3\,d^3\,f\,x^4\,\mathrm{Cos}[e]+$$
$$4\,a^3\,c^3\,f\,x\,\mathrm{Cos}[f\,x]-4\,a\,b^2\,c^3\,f\,x\,\mathrm{Cos}[f\,x]+6\,a^3\,c^2\,d\,f\,x^2\,\mathrm{Cos}[f\,x]-$$
$$6\,a\,b^2\,c^2\,d\,f\,x^2\,\mathrm{Cos}[f\,x]+4\,a^3\,c\,d^2\,f\,x^3\,\mathrm{Cos}[f\,x]-4\,a\,b^2\,c\,d^2\,f\,x^3\,\mathrm{Cos}[f\,x]+$$
$$a^3\,d^3\,f\,x^4\,\mathrm{Cos}[f\,x]-a\,b^2\,d^3\,f\,x^4\,\mathrm{Cos}[f\,x]+4\,a^3\,c^3\,f\,x\,\mathrm{Cos}[2\,e+f\,x]-$$
$$4\,a\,b^2\,c^3\,f\,x\,\mathrm{Cos}[2\,e+f\,x]+6\,a^3\,c^2\,d\,f\,x^2\,\mathrm{Cos}[2\,e+f\,x]-$$
$$6\,a\,b^2\,c^2\,d\,f\,x^2\,\mathrm{Cos}[2\,e+f\,x]+4\,a^3\,c\,d^2\,f\,x^3\,\mathrm{Cos}[2\,e+f\,x]-$$
$$4\,a\,b^2\,c\,d^2\,f\,x^3\,\mathrm{Cos}[2\,e+f\,x]+a^3\,d^3\,f\,x^4\,\mathrm{Cos}[2\,e+f\,x]-$$
$$a\,b^2\,d^3\,f\,x^4\,\mathrm{Cos}[2\,e+f\,x]-8\,b^3\,c^3\,\mathrm{Sin}[e]-24\,b^3\,c^2\,d\,x\,\mathrm{Sin}[e]-$$
$$24\,b^3\,c\,d^2\,x^2\,\mathrm{Sin}[e]-8\,b^3\,d^3\,x^3\,\mathrm{Sin}[e]+8\,a\,b^2\,c^3\,\mathrm{Sin}[f\,x]+$$
$$\left.24\,a\,b^2\,c^2\,d\,x\,\mathrm{Sin}[f\,x]+24\,a\,b^2\,c\,d^2\,x^2\,\mathrm{Sin}[f\,x]+8\,a\,b^2\,d^3\,x^3\,\mathrm{Sin}[f\,x]\right)+$$

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

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

$$\left(2\left(e+f\,x\right)\mathrm{ArcTanh}\left[\frac{(a+b)\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]-\right.$$

$$2\left(e+\mathrm{ArcCos}\left[-\frac{b}{a}\right]\right)\mathrm{ArcTanh}\left[\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]+$$

$$\left(\mathrm{ArcCos}\left[-\frac{b}{a}\right]-2\,\mathrm{i}\left(\mathrm{ArcTanh}\left[\frac{(a+b)\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]-\mathrm{ArcTanh}\left[\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)$$

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

$$\left(\mathrm{ArcCos}\left[-\frac{b}{a}\right]+2\,\mathrm{i}\left(\mathrm{ArcTanh}\left[\frac{(a+b)\,\mathrm{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]-\mathrm{ArcTanh}\left[\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)$$

$$\mathrm{Log}\left[\frac{\sqrt{a^2-b^2}\;e^{\frac{1}{2}\mathrm{i}\,(e+f\,x)}}{\sqrt{2}\,\sqrt{a}\,\sqrt{b+a\,\mathrm{Cos}[e+f\,x]}}\right]-\left(\mathrm{ArcCos}\left[-\frac{b}{a}\right]+2\,\mathrm{i}\,\mathrm{ArcTanh}\left[\frac{(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]\right)$$

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

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

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

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

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

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

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

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

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

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

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

$$\left(6\,i\,b^3\,c^2\,d\,\text{ArcTan}\left[\frac{-i\,a\,\text{Sin}[e]-i\,\left(-b+a\,\text{Cos}[e]\right)\,\text{Tan}\left[\frac{f\,x}{2}\right]}{\sqrt{-b^2+a^2\,\text{Cos}[e]^2+a^2\,\text{Sin}[e]^2}}\right]\,\left(b+a\,\text{Cos}[e+f\,x]\right)^2\right.$$

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

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

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

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

Optimal (type 4, 1117 leaves, 30 steps):

$$-\frac{i b^2 (c+d x)^2}{a^2 (a^2-b^2) f}+\frac{(c+d x)^3}{3 a^2 d}+\frac{2 b^2 d (c+d x) \operatorname{Log}\left[1+\frac{a e^{i (e+f x)}}{b-i \sqrt{a^2-b^2}}\right]}{a^2 (a^2-b^2) f^2}+$$

$$\frac{2 b^2 d (c+d x) \operatorname{Log}\left[1+\frac{a e^{i (e+f x)}}{b+i \sqrt{a^2-b^2}}\right]}{a^2 (a^2-b^2) f^2}-\frac{i b^3 (c+d x)^2 \operatorname{Log}\left[1+\frac{a e^{i (e+f x)}}{b-\sqrt{-a^2+b^2}}\right]}{a^2 (-a^2+b^2)^{3/2} f}+$$

$$\frac{2 i b (c+d x)^2 \operatorname{Log}\left[1+\frac{a e^{i (e+f x)}}{b-\sqrt{-a^2+b^2}}\right]}{a^2 \sqrt{-a^2+b^2}\, f}+\frac{i b^3 (c+d x)^2 \operatorname{Log}\left[1+\frac{a e^{i (e+f x)}}{b+\sqrt{-a^2+b^2}}\right]}{a^2 (-a^2+b^2)^{3/2} f}-$$

$$\frac{2 i b (c+d x)^2 \operatorname{Log}\left[1+\frac{a e^{i (e+f x)}}{b+\sqrt{-a^2+b^2}}\right]}{a^2 \sqrt{-a^2+b^2}\, f}-\frac{2 i b^2 d^2 \operatorname{PolyLog}\left[2,-\frac{a e^{i (e+f x)}}{b-i \sqrt{a^2-b^2}}\right]}{a^2 (a^2-b^2) f^3}-$$

$$\frac{2 i b^2 d^2 \operatorname{PolyLog}\left[2,-\frac{a e^{i (e+f x)}}{b+i \sqrt{a^2-b^2}}\right]}{a^2 (a^2-b^2) f^3}-\frac{2 b^3 d (c+d x) \operatorname{PolyLog}\left[2,-\frac{a e^{i (e+f x)}}{b-\sqrt{-a^2+b^2}}\right]}{a^2 (-a^2+b^2)^{3/2} f^2}+$$

$$\frac{4 b d (c+d x) \operatorname{PolyLog}\left[2,-\frac{a e^{i (e+f x)}}{b-\sqrt{-a^2+b^2}}\right]}{a^2 \sqrt{-a^2+b^2}\, f^2}+\frac{2 b^3 d (c+d x) \operatorname{PolyLog}\left[2,-\frac{a e^{i (e+f x)}}{b+\sqrt{-a^2+b^2}}\right]}{a^2 (-a^2+b^2)^{3/2} f^2}-$$

$$\frac{4 b d (c+d x) \operatorname{PolyLog}\left[2,-\frac{a e^{i (e+f x)}}{b+\sqrt{-a^2+b^2}}\right]}{a^2 \sqrt{-a^2+b^2}\, f^2}-\frac{2 i b^3 d^2 \operatorname{PolyLog}\left[3,-\frac{a e^{i (e+f x)}}{b-\sqrt{-a^2+b^2}}\right]}{a^2 (-a^2+b^2)^{3/2} f^3}+$$

$$\frac{4 i b d^2 \operatorname{PolyLog}\left[3,-\frac{a e^{i (e+f x)}}{b-\sqrt{-a^2+b^2}}\right]}{a^2 \sqrt{-a^2+b^2}\, f^3}+\frac{2 i b^3 d^2 \operatorname{PolyLog}\left[3,-\frac{a e^{i (e+f x)}}{b+\sqrt{-a^2+b^2}}\right]}{a^2 (-a^2+b^2)^{3/2} f^3}-$$

$$\frac{4 i b d^2 \operatorname{PolyLog}\left[3,-\frac{a e^{i (e+f x)}}{b+\sqrt{-a^2+b^2}}\right]}{a^2 \sqrt{-a^2+b^2}\, f^3}+\frac{b^2 (c+d x)^2 \operatorname{Sin}[e+f x]}{a (a^2-b^2) f (b+a \operatorname{Cos}[e+f x])}$$

Result (type 4, 5576 leaves):

$$\frac{x (3 c^2+3 c d x+d^2 x^2) (b+a \operatorname{Cos}[e+f x])^2 \operatorname{Sec}[e+f x]^2}{3 a^2 (a+b \operatorname{Sec}[e+f x])^2}-\frac{1}{(a^2-b^2)^{3/2} f^2 (a+b \operatorname{Sec}[e+f x])^2}$$

$$4 b c d (b+a \operatorname{Cos}[e+f x])^2 \left(2 (e+f x) \operatorname{ArcTanh}\left[\frac{(a+b) \operatorname{Cot}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]-\right.$$

$$2 \left(e+\operatorname{ArcCos}\left[-\frac{b}{a}\right]\right) \operatorname{ArcTanh}\left[\frac{(a-b) \operatorname{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]+$$

$$\left.\left(\operatorname{ArcCos}\left[-\frac{b}{a}\right]-2 i \left(\operatorname{ArcTanh}\left[\frac{(a+b) \operatorname{Cot}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]-\operatorname{ArcTanh}\left[\frac{(a-b) \operatorname{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)\right.$$

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

$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]+2 i \left(\text{ArcTanh}\left[\frac{(a+b) \text{Cot}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]-\text{ArcTanh}\left[\frac{(a-b) \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)$$

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

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

$$\left(-\text{ArcCos}\left[-\frac{b}{a}\right]+2 i \text{ArcTanh}\left[\frac{(a-b) \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]\right)$$

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

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

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

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

$$\left(2 (e+f x) \text{ArcTanh}\left[\frac{(a+b) \text{Cot}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]-\right.$$

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

$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]-2 i \left(\text{ArcTanh}\left[\frac{(a+b) \text{Cot}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]-\text{ArcTanh}\left[\frac{(a-b) \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)$$

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

$$\left(\text{ArcCos}\left[-\frac{b}{a}\right]+2 i \left(\text{ArcTanh}\left[\frac{(a+b) \text{Cot}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]-\text{ArcTanh}\left[\frac{(a-b) \text{Tan}\left[\frac{1}{2} (e+f x)\right]}{\sqrt{a^2-b^2}}\right]\right)\right)$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\Bigg(2 b^2 c d \left(b+a \text{Cos}[e+f x]\right)^2 \text{Sec}[e] \text{Sec}[e+f x]^2$$

$$\Bigg(a \text{Cos}[e] \text{Log}[b+a \text{Cos}[e] \text{Cos}[f x] - a \text{Sin}[e] \text{Sin}[f x]] +$$

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

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

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

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

$$\Bigg(\frac{x^2 \text{Sin}[e]}{2 a} - \frac{1}{a f} x \Bigg(\text{Cos}[e] \text{Log}[b+a \text{Cos}[e+f x]] + f x \text{Sin}[e] +$$

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

$$\left.\left.\left(\sqrt{a^2-b^2} \sqrt{\left(\text{Cos}[e] - i \text{Sin}[e]\right)^2}\right)\right] \left(2 \text{Sin}[e]^2 + i \text{Sin}[2 e]\right)\right) \Big/$$

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

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

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

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

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

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

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

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

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

$$b\left(2\,(e+f\,x)\ \text{ArcTanh}\left[\frac{(a+b)\ \text{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]-2\left(e+\text{ArcCos}\left[-\frac{b}{a}\right]\right)\text{ArcTanh}\left[\right.\right.$$

$$\left.\frac{(a-b)\ \text{Tan}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]+\left(\text{ArcCos}\left[-\frac{b}{a}\right]-2\,\text{i}\,\text{ArcTanh}\left[\frac{(a+b)\ \text{Cot}\left[\frac{1}{2}(e+f\,x)\right]}{\sqrt{a^2-b^2}}\right]+\right.$$

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

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

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

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

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

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

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

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

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

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

$$2$$

$$b^3$$

$$d^2$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

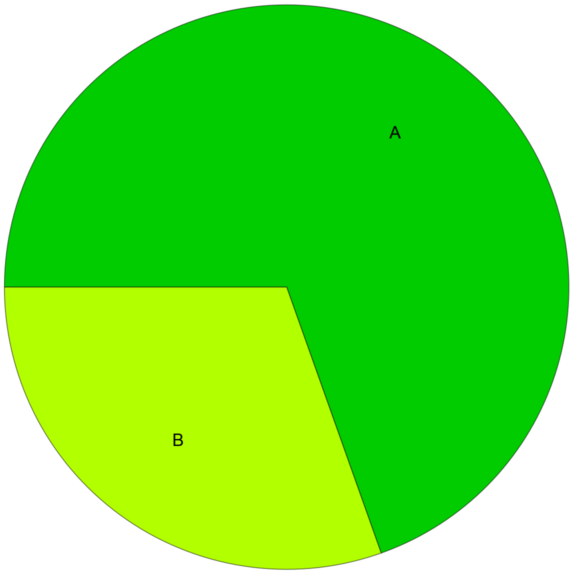
$$\text{Sec}[e+f\,x]^2$$

$$\left.\text{Tan}[e]\right)\Big/$$

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

Summary of Integration Test Results

46 integration problems



A - 32 optimal antiderivatives

B - 14 more than twice size of optimal antiderivatives

C - 0 unnecessarily complex antiderivatives

D - 0 unable to integrate problems

E - 0 integration timeouts