Mathematica 11.3 Integration Test Results

Test results for the 142 problems in "4.7.6 f^(a+b x+c x^2) trig(d+e x+f x^2)^n.m"

Problem 1: Unable to integrate problem.

$$\int F^{c (a+b x)} \operatorname{Sin}[d+e x]^n \, dx$$

Optimal (type 5, 107 leaves, 2 steps):

$$-\left(\left(\left(1-e^{2 i (d+e x)}\right)^{-n} F^{c (a+b x)} \text{Hypergeometric2F1}\left[-n,-\frac{e n+i b c \operatorname{Log}[F]}{2 e}, \frac{1}{2}\left(2-n-\frac{i b c \operatorname{Log}[F]}{e}\right), e^{2 i (d+e x)}\right] \operatorname{Sin}[d+e x]^n\right) \Big/ (i e n-b c \operatorname{Log}[F])\right)$$

Result (type 8, 20 leaves):

$$\int F^{c (a+b x)} \operatorname{Sin}[d+e x]^n \, dx$$

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

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

Optimal (type 5, 137 leaves, 2 steps):

$$-\frac{F^{c (a+b x)} \operatorname{Cot}[d+e x] \operatorname{Csc}[d+e x]}{2 e}-\frac{b c F^{c (a+b x)} \operatorname{Csc}[d+e x] \operatorname{Log}[F]}{2 e^2}-\frac{1}{e^2} e^{i (d+e x)} F^{c (a+b x)} \text{Hypergeometric2F1}\left[1, \frac{e-i b c \operatorname{Log}[F]}{2 e}, \frac{1}{2}\left(3-\frac{i b c \operatorname{Log}[F]}{e}\right), e^{2 i (d+e x)}\right] (e+i b c \operatorname{Log}[F])$$

Result (type 5, 450 leaves):

$$-\frac{F^{a\,c+b\,c\,x}\,\mathrm{Csc}\left[\frac{d}{2}+\frac{e\,x}{2}\right]^2}{8\,e}-\frac{b\,c\,F^{a\,c+b\,c\,x}\,\mathrm{Csc}[d]\,\mathrm{Log}[F]}{2\,e^2}+\frac{F^{c\,(a+b\,x)}\,\mathrm{Csc}[d]\,\left(e^2+b^2\,c^2\,\mathrm{Log}[F]^2\right)}{2\,b\,c\,e^2\,\mathrm{Log}[F]}+\frac{F^{a\,c+b\,c\,x}\,\mathrm{Sec}\left[\frac{d}{2}+\frac{e\,x}{2}\right]^2}{8\,e}-$$

$$\left(\mathrm{i}\,F^{c\,(a+b\,x)}\,\left(e^2+b^2\,c^2\,\mathrm{Log}[F]^2\right)\,\left(1+\mathrm{Hypergeometric2F1}\left[1,-\frac{\mathrm{i}\,b\,c\,\mathrm{Log}[F]}{e},1-\frac{\mathrm{i}\,b\,c\,\mathrm{Log}[F]}{e},\right.\right.\right.$$
$$\left.\left.\left.\mathrm{Cos}[d+e\,x]+\mathrm{i}\,\mathrm{Sin}[d+e\,x]\right]\,\left(-1+\mathrm{Cos}[d]+\mathrm{i}\,\mathrm{Sin}[d]\right)\right)\right)\Big/$$
$$\left(2\,b\,c\,e^2\,\mathrm{Log}[F]\,\left(-1+\mathrm{Cos}[d]+\mathrm{i}\,\mathrm{Sin}[d]\right)\right)-\left(\mathrm{i}\,F^{c\,(a+b\,x)}\,\left(e^2+b^2\,c^2\,\mathrm{Log}[F]^2\right)\right.$$
$$\left(1-\mathrm{Hypergeometric2F1}\left[1,-\frac{\mathrm{i}\,b\,c\,\mathrm{Log}[F]}{e},1-\frac{\mathrm{i}\,b\,c\,\mathrm{Log}[F]}{e},-\mathrm{Cos}[d+e\,x]-\mathrm{i}\,\mathrm{Sin}[d+e\,x]\right]\right.$$
$$\left.\left.\left(1+\mathrm{Cos}[d]+\mathrm{i}\,\mathrm{Sin}[d]\right)\right)\right)\Big/\left(2\,b\,c\,e^2\,\mathrm{Log}[F]\,\left(1+\mathrm{Cos}[d]+\mathrm{i}\,\mathrm{Sin}[d]\right)\right)+$$
$$\frac{b\,c\,F^{a\,c+b\,c\,x}\,\mathrm{Csc}\left[\frac{d}{2}\right]\,\mathrm{Csc}\left[\frac{d}{2}+\frac{e\,x}{2}\right]\,\mathrm{Log}[F]\,\mathrm{Sin}\left[\frac{e\,x}{2}\right]}{4\,e^2}-\frac{b\,c\,F^{a\,c+b\,c\,x}\,\mathrm{Log}[F]\,\mathrm{Sec}\left[\frac{d}{2}\right]\,\mathrm{Sec}\left[\frac{d}{2}+\frac{e\,x}{2}\right]\,\mathrm{Sin}\left[\frac{e\,x}{2}\right]}{4\,e^2}$$

Problem 10: Unable to integrate problem.

$$\int F^{c\,(a+b\,x)}\,\mathrm{Cos}[d+e\,x]^n\,dx$$

Optimal (type 5, 107 leaves, 2 steps):

$$-\left(\left(\left(1+e^{2\,\mathrm{i}\,(d+e\,x)}\right)^{-n}\,F^{c\,(a+b\,x)}\,\mathrm{Cos}[d+e\,x]^n\,\mathrm{Hypergeometric2F1}\left[-n,\right.\right.\right.$$
$$\left.\left.\left.-\frac{e\,n+\mathrm{i}\,b\,c\,\mathrm{Log}[F]}{2\,e},\frac{1}{2}\left(2-n-\frac{\mathrm{i}\,b\,c\,\mathrm{Log}[F]}{e}\right),-e^{2\,\mathrm{i}\,(d+e\,x)}\right]\right)\Big/\left(\mathrm{i}\,e\,n-b\,c\,\mathrm{Log}[F]\right)\right)$$

Result (type 8, 20 leaves):

$$\int F^{c\,(a+b\,x)}\,\mathrm{Cos}[d+e\,x]^n\,dx$$

Problem 14: Unable to integrate problem.

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

Optimal (type 5, 84 leaves, 1 step):

$$\frac{1}{\mathrm{i}\,e+b\,c\,\mathrm{Log}[F]}$$
$$2\,e^{\mathrm{i}\,(d+e\,x)}\,F^{c\,(a+b\,x)}\,\mathrm{Hypergeometric2F1}\left[1,\frac{e-\mathrm{i}\,b\,c\,\mathrm{Log}[F]}{2\,e},\frac{1}{2}\left(3-\frac{\mathrm{i}\,b\,c\,\mathrm{Log}[F]}{e}\right),-e^{2\,\mathrm{i}\,(d+e\,x)}\right]$$

Result (type 8, 18 leaves):

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

Problem 16: Unable to integrate problem.

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

Optimal (type 5, 141 leaves, 2 steps):

$$-\frac{1}{e^2}e^{i\,(d+e\,x)}\,F^{c\,(a+b\,x)}\,\mathrm{Hypergeometric2F1}\left[1,\,\frac{e-i\,b\,c\,\mathrm{Log}[F]}{2\,e},\,\frac{1}{2}\left(3-\frac{i\,b\,c\,\mathrm{Log}[F]}{e}\right),\,-e^{2\,i\,(d+e\,x)}\right]\left(i\,e-b\,c\,\mathrm{Log}[F]\right)-\frac{b\,c\,F^{c\,(a+b\,x)}\,\mathrm{Log}[F]\,\mathrm{Sec}[d+e\,x]}{2\,e^2}+\frac{F^{c\,(a+b\,x)}\,\mathrm{Sec}[d+e\,x]\,\mathrm{Tan}[d+e\,x]}{2\,e}$$

Result (type 8, 20 leaves):

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

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

$$\int e^{c\,(a+b\,x)}\,\mathrm{Tan}[d+e\,x]\,dx$$

Optimal (type 5, 78 leaves, 4 steps):

$$-\frac{i\,e^{c\,(a+b\,x)}}{b\,c}+\frac{2\,i\,e^{c\,(a+b\,x)}\,\mathrm{Hypergeometric2F1}\left[1,\,-\frac{i\,b\,c}{2\,e},\,1-\frac{i\,b\,c}{2\,e},\,-e^{2\,i\,(d+e\,x)}\right]}{b\,c}$$

Result (type 5, 166 leaves):

$$\left(e^{c\,(a+b\,x)}\left(2\,b\,c\,e^{2\,i\,(d+e\,x)}\,\mathrm{Hypergeometric2F1}\left[1,\,1-\frac{i\,b\,c}{2\,e},\,2-\frac{i\,b\,c}{2\,e},\,-e^{2\,i\,(d+e\,x)}\right]-\left(b\,c+2\,i\,e\right)\left(1-e^{2\,i\,d}+2\,e^{2\,i\,d}\,\mathrm{Hypergeometric2F1}\left[1,\,-\frac{i\,b\,c}{2\,e},\,1-\frac{i\,b\,c}{2\,e},\,-e^{2\,i\,(d+e\,x)}\right]\right)\right)\right)\Big/\left(b\,c\,\left(i\,b\,c-2\,e\right)\left(1+e^{2\,i\,d}\right)\right)$$

Problem 22: Result more than twice size of optimal antiderivative.

$$\int e^{c\,(a+b\,x)}\,\mathrm{Cot}[d+e\,x]\,dx$$

Optimal (type 5, 76 leaves, 4 steps):

$$\frac{i\,e^{c\,(a+b\,x)}}{b\,c}-\frac{2\,i\,e^{c\,(a+b\,x)}\,\mathrm{Hypergeometric2F1}\left[1,\,-\frac{i\,b\,c}{2\,e},\,1-\frac{i\,b\,c}{2\,e},\,e^{2\,i\,(d+e\,x)}\right]}{b\,c}$$

Result (type 5, 163 leaves):

$$\left(e^{c\,(a+b\,x)}\left(2\,i\,b\,c\,e^{2\,i\,(d+e\,x)}\,\mathrm{Hypergeometric2F1}\left[1,\,1-\frac{i\,b\,c}{2\,e},\,2-\frac{i\,b\,c}{2\,e},\,e^{2\,i\,(d+e\,x)}\right]+i\left(b\,c+2\,i\,e\right)\left(1+e^{2\,i\,d}-2\,e^{2\,i\,d}\,\mathrm{Hypergeometric2F1}\left[1,\,-\frac{i\,b\,c}{2\,e},\,1-\frac{i\,b\,c}{2\,e},\,e^{2\,i\,(d+e\,x)}\right]\right)\right)\right)\Big/\left(b\,c\,\left(b\,c+2\,i\,e\right)\left(-1+e^{2\,i\,d}\right)\right)$$

Problem 26: Unable to integrate problem.

$$\int F^{c\,(a+b\,x)}\,\mathrm{Sec}[d+e\,x]^n\,dx$$

Optimal (type 5, 100 leaves, 2 steps):

$$\frac{1}{i\,e\,n+b\,c\,\mathrm{Log}[F]}\left(1+e^{2\,i\,(d+e\,x)}\right)^n F^{a\,c+b\,c\,x}\,\mathrm{Hypergeometric2F1}\left[n,\frac{e\,n-i\,b\,c\,\mathrm{Log}[F]}{2\,e},\frac{1}{2}\left(2+n-\frac{i\,b\,c\,\mathrm{Log}[F]}{e}\right),-e^{2\,i\,(d+e\,x)}\right]\mathrm{Sec}[d+e\,x]^n$$

Result (type 8, 20 leaves):

$$\int F^{c\,(a+b\,x)}\,\mathrm{Sec}[d+e\,x]^n\,dx$$

Problem 27: Unable to integrate problem.

$$\int F^{c\,(a+b\,x)}\,\mathrm{Csc}[d+e\,x]^n\,dx$$

Optimal (type 5, 102 leaves, 2 steps):

$$-\frac{1}{i\,e\,n-b\,c\,\mathrm{Log}[F]}\left(1-e^{-2\,i\,(d+e\,x)}\right)^n F^{a\,c+b\,c\,x}\,\mathrm{Csc}[d+e\,x]^n\,\mathrm{Hypergeometric2F1}\left[n,\frac{e\,n+i\,b\,c\,\mathrm{Log}[F]}{2\,e},\frac{1}{2}\left(2+n+\frac{i\,b\,c\,\mathrm{Log}[F]}{e}\right),e^{-2\,i\,(d+e\,x)}\right]$$

Result (type 8, 20 leaves):

$$\int F^{c\,(a+b\,x)}\,\mathrm{Csc}[d+e\,x]^n\,dx$$

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

$$\int e^x\,\mathrm{Csc}\left[e^x\right]\,\mathrm{Sec}\left[e^x\right]\,dx$$

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

$$\mathrm{Log}\left[\mathrm{Tan}\left[e^x\right]\right]$$

Result (type 3, 21 leaves):

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

Problem 70: Result more than twice size of optimal antiderivative.

$$\int e^x\,\mathrm{Sec}\left[e^x\right]\,dx$$

Optimal (type 3, 5 leaves, 2 steps):

$$\text{ArcTanh}\left[\text{Sin}\left[e^x\right]\right]$$

Result (type 3, 41 leaves):

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

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

$$\int f^{a+c x^2}\,\text{Sin}\left[d+e x+f x^2\right]^3\,dx$$

Optimal (type 4, 377 leaves, 14 steps):

$$\frac{3\,i\,e^{-i d-\frac{e^2}{4 i f-4 c \text{Log}[f]}}\,f^a\sqrt{\pi}\,\text{Erf}\left[\frac{i e+2 x (i f-c \text{Log}[f])}{2\sqrt{i f-c \text{Log}[f]}}\right]}{16\sqrt{i f-c \text{Log}[f]}}-\frac{i\,e^{-3 i d-\frac{9 e^2}{4 (3 i f-c \text{Log}[f])}}\,f^a\sqrt{\pi}\,\text{Erf}\left[\frac{3 i e+2 x (3 i f-c \text{Log}[f])}{2\sqrt{3 i f-c \text{Log}[f]}}\right]}{16\sqrt{3 i f-c \text{Log}[f]}}-\frac{3\,i\,e^{i d+\frac{e^2}{4 i f+4 c \text{Log}[f]}}\,f^a\sqrt{\pi}\,\text{Erfi}\left[\frac{i e+2 x (i f+c \text{Log}[f])}{2\sqrt{i f+c \text{Log}[f]}}\right]}{16\sqrt{i f+c \text{Log}[f]}}+\frac{i\,e^{3 i d+\frac{9 e^2}{4 (3 i f+c \text{Log}[f])}}\,f^a\sqrt{\pi}\,\text{Erfi}\left[\frac{3 i e+2 x (3 i f+c \text{Log}[f])}{2\sqrt{3 i f+c \text{Log}[f]}}\right]}{16\sqrt{3 i f+c \text{Log}[f]}}$$

Result (type 4, 3003 leaves):

$$\Bigg(f^a\sqrt{\pi}$$

$$\Bigg(-27\,(-1)^{3/4}\,e^{-\frac{i e^2}{4 (f-i c \text{Log}[f])}}\,f^3\,\text{Cos}[d]\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(e+2 f x-2 i c x \text{Log}[f])}{2\sqrt{f-i c \text{Log}[f]}}\right]\sqrt{f-i c \text{Log}[f]}+$$

$$27\,(-1)^{1/4}\,c\,e^{-\frac{i e^2}{4 (f-i c \text{Log}[f])}}\,f^2\,\text{Cos}[d]\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(e+2 f x-2 i c x \text{Log}[f])}{2\sqrt{f-i c \text{Log}[f]}}\right]$$

$$\text{Log}[f]\sqrt{f-i c \text{Log}[f]}-3\,(-1)^{3/4}\,c^2\,e^{-\frac{i e^2}{4 (f-i c \text{Log}[f])}}\,f\,\text{Cos}[d]$$

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

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

$$\text{Log}[f]^3\sqrt{f-i c \text{Log}[f]}+3\,(-1)^{3/4}\,e^{-\frac{9 i e^2}{4 (3 f-i c \text{Log}[f])}}\,f^3\,\text{Cos}[3 d]$$

$$\text{Erfi}\left[\frac{(-1)^{1/4}\,(3\,e+6\,f\,x-2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f-i\,c\,\text{Log}[f]}}\right]\sqrt{3\,f-i\,c\,\text{Log}[f]}-(-1)^{1/4}\,c\,e^{-\frac{9\,i\,e^2}{4\,(3\,f-i\,c\,\text{Log}[f])}}$$
$$f^2\,\text{Cos}[3\,d]\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(3\,e+6\,f\,x-2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f-i\,c\,\text{Log}[f]}}\right]\text{Log}[f]\,\sqrt{3\,f-i\,c\,\text{Log}[f]}+$$
$$3\,(-1)^{3/4}\,c^2\,e^{-\frac{9\,i\,e^2}{4\,(3\,f-i\,c\,\text{Log}[f])}}\,f\,\text{Cos}[3\,d]\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(3\,e+6\,f\,x-2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f-i\,c\,\text{Log}[f]}}\right]$$
$$\text{Log}[f]^2\,\sqrt{3\,f-i\,c\,\text{Log}[f]}-(-1)^{1/4}\,c^3\,e^{-\frac{9\,i\,e^2}{4\,(3\,f-i\,c\,\text{Log}[f])}}\,\text{Cos}[3\,d]$$
$$\text{Erfi}\left[\frac{(-1)^{1/4}\,(3\,e+6\,f\,x-2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f-i\,c\,\text{Log}[f]}}\right]\text{Log}[f]^3\,\sqrt{3\,f-i\,c\,\text{Log}[f]}+$$
$$27\,(-1)^{1/4}\,e^{\frac{i\,e^2}{4\,(f+i\,c\,\text{Log}[f])}}\,f^3\,\text{Cos}[d]\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(e+2\,f\,x+2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{f+i\,c\,\text{Log}[f]}}\right]\sqrt{f+i\,c\,\text{Log}[f]}-$$
$$27\,(-1)^{3/4}\,c\,e^{\frac{i\,e^2}{4\,(f+i\,c\,\text{Log}[f])}}\,f^2\,\text{Cos}[d]\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(e+2\,f\,x+2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{f+i\,c\,\text{Log}[f]}}\right]$$
$$\text{Log}[f]\,\sqrt{f+i\,c\,\text{Log}[f]}+3\,(-1)^{1/4}\,c^2\,e^{\frac{i\,e^2}{4\,(f+i\,c\,\text{Log}[f])}}\,f\,\text{Cos}[d]$$
$$\text{Erfi}\left[\frac{(-1)^{3/4}\,(e+2\,f\,x+2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{f+i\,c\,\text{Log}[f]}}\right]\text{Log}[f]^2\,\sqrt{f+i\,c\,\text{Log}[f]}-$$
$$3\,(-1)^{3/4}\,c^3\,e^{\frac{i\,e^2}{4\,(f+i\,c\,\text{Log}[f])}}\,\text{Cos}[d]\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(e+2\,f\,x+2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{f+i\,c\,\text{Log}[f]}}\right]$$
$$\text{Log}[f]^3\,\sqrt{f+i\,c\,\text{Log}[f]}-3\,(-1)^{1/4}\,e^{\frac{9\,i\,e^2}{4\,(3\,f+i\,c\,\text{Log}[f])}}\,f^3\,\text{Cos}[3\,d]$$
$$\text{Erfi}\left[\frac{(-1)^{3/4}\,(3\,e+6\,f\,x+2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f+i\,c\,\text{Log}[f]}}\right]\sqrt{3\,f+i\,c\,\text{Log}[f]}+(-1)^{3/4}\,c\,e^{\frac{9\,i\,e^2}{4\,(3\,f+i\,c\,\text{Log}[f])}}$$
$$f^2\,\text{Cos}[3\,d]\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(3\,e+6\,f\,x+2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f+i\,c\,\text{Log}[f]}}\right]\text{Log}[f]\,\sqrt{3\,f+i\,c\,\text{Log}[f]}-$$
$$3\,(-1)^{1/4}\,c^2\,e^{\frac{9\,i\,e^2}{4\,(3\,f+i\,c\,\text{Log}[f])}}\,f\,\text{Cos}[3\,d]\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(3\,e+6\,f\,x+2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f+i\,c\,\text{Log}[f]}}\right]$$
$$\text{Log}[f]^2\,\sqrt{3\,f+i\,c\,\text{Log}[f]}+(-1)^{3/4}\,c^3\,e^{\frac{9\,i\,e^2}{4\,(3\,f+i\,c\,\text{Log}[f])}}\,\text{Cos}[3\,d]$$
$$\text{Erfi}\left[\frac{(-1)^{3/4}\,(3\,e+6\,f\,x+2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f+i\,c\,\text{Log}[f]}}\right]\text{Log}[f]^3\,\sqrt{3\,f+i\,c\,\text{Log}[f]}+$$
$$27\,(-1)^{1/4}\,e^{-\frac{i\,e^2}{4\,(f-i\,c\,\text{Log}[f])}}\,f^3\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(e+2\,f\,x-2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{f-i\,c\,\text{Log}[f]}}\right]\sqrt{f-i\,c\,\text{Log}[f]}\,\text{Sin}[d]+$$
$$27\,(-1)^{3/4}\,c\,e^{-\frac{i\,e^2}{4\,(f-i\,c\,\text{Log}[f])}}\,f^2\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(e+2\,f\,x-2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{f-i\,c\,\text{Log}[f]}}\right]\text{Log}[f]\,\sqrt{f-i\,c\,\text{Log}[f]}$$
$$\text{Sin}[d]+3\,(-1)^{1/4}\,c^2\,e^{-\frac{i\,e^2}{4\,(f-i\,c\,\text{Log}[f])}}\,f\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(e+2\,f\,x-2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{f-i\,c\,\text{Log}[f]}}\right]$$

$$\text{Log}[f]^2 \sqrt{f - i c \,\text{Log}[f]}\; \text{Sin}[d] + 3 (-1)^{3/4} c^3 e^{-\frac{i e^2}{4 (f - i c \,\text{Log}[f])}}$$

$$\text{Erfi}\Big[\frac{(-1)^{1/4} (e + 2 f x - 2 i c x \,\text{Log}[f])}{2 \sqrt{f - i c \,\text{Log}[f]}}\Big]\, \text{Log}[f]^3 \sqrt{f - i c \,\text{Log}[f]}\; \text{Sin}[d] -$$

$$27 (-1)^{3/4} e^{\frac{i e^2}{4 (f + i c \,\text{Log}[f])}} f^3\, \text{Erfi}\Big[\frac{(-1)^{3/4} (e + 2 f x + 2 i c x \,\text{Log}[f])}{2 \sqrt{f + i c \,\text{Log}[f]}}\Big] \sqrt{f + i c \,\text{Log}[f]}\; \text{Sin}[d] -$$

$$27 (-1)^{1/4} c\, e^{\frac{i e^2}{4 (f + i c \,\text{Log}[f])}} f^2\, \text{Erfi}\Big[\frac{(-1)^{3/4} (e + 2 f x + 2 i c x \,\text{Log}[f])}{2 \sqrt{f + i c \,\text{Log}[f]}}\Big]\, \text{Log}[f] \sqrt{f + i c \,\text{Log}[f]}$$

$$\text{Sin}[d] - 3 (-1)^{3/4} c^2 e^{\frac{i e^2}{4 (f + i c \,\text{Log}[f])}} f\, \text{Erfi}\Big[\frac{(-1)^{3/4} (e + 2 f x + 2 i c x \,\text{Log}[f])}{2 \sqrt{f + i c \,\text{Log}[f]}}\Big]$$

$$\text{Log}[f]^2 \sqrt{f + i c \,\text{Log}[f]}\; \text{Sin}[d] - 3 (-1)^{1/4} c^3 e^{\frac{i e^2}{4 (f + i c \,\text{Log}[f])}}$$

$$\text{Erfi}\Big[\frac{(-1)^{3/4} (e + 2 f x + 2 i c x \,\text{Log}[f])}{2 \sqrt{f + i c \,\text{Log}[f]}}\Big]\, \text{Log}[f]^3 \sqrt{f + i c \,\text{Log}[f]}\; \text{Sin}[d] -$$

$$3 (-1)^{1/4} e^{-\frac{9 i e^2}{4 (3 f - i c \,\text{Log}[f])}} f^3\, \text{Erfi}\Big[\frac{(-1)^{1/4} (3 e + 6 f x - 2 i c x \,\text{Log}[f])}{2 \sqrt{3 f - i c \,\text{Log}[f]}}\Big] \sqrt{3 f - i c \,\text{Log}[f]}$$

$$\text{Sin}[3 d] - (-1)^{3/4} c\, e^{-\frac{9 i e^2}{4 (3 f - i c \,\text{Log}[f])}} f^2\, \text{Erfi}\Big[\frac{(-1)^{1/4} (3 e + 6 f x - 2 i c x \,\text{Log}[f])}{2 \sqrt{3 f - i c \,\text{Log}[f]}}\Big]$$

$$\text{Log}[f] \sqrt{3 f - i c \,\text{Log}[f]}\; \text{Sin}[3 d] - 3 (-1)^{1/4} c^2 e^{-\frac{9 i e^2}{4 (3 f - i c \,\text{Log}[f])}} f$$

$$\text{Erfi}\Big[\frac{(-1)^{1/4} (3 e + 6 f x - 2 i c x \,\text{Log}[f])}{2 \sqrt{3 f - i c \,\text{Log}[f]}}\Big]\, \text{Log}[f]^2 \sqrt{3 f - i c \,\text{Log}[f]}\; \text{Sin}[3 d] -$$

$$(-1)^{3/4} c^3 e^{-\frac{9 i e^2}{4 (3 f - i c \,\text{Log}[f])}}\, \text{Erfi}\Big[\frac{(-1)^{1/4} (3 e + 6 f x - 2 i c x \,\text{Log}[f])}{2 \sqrt{3 f - i c \,\text{Log}[f]}}\Big]$$

$$\text{Log}[f]^3 \sqrt{3 f - i c \,\text{Log}[f]}\; \text{Sin}[3 d] + 3 (-1)^{3/4} e^{\frac{9 i e^2}{4 (3 f + i c \,\text{Log}[f])}} f^3$$

$$\text{Erfi}\Big[\frac{(-1)^{3/4} (3 e + 6 f x + 2 i c x \,\text{Log}[f])}{2 \sqrt{3 f + i c \,\text{Log}[f]}}\Big] \sqrt{3 f + i c \,\text{Log}[f]}\; \text{Sin}[3 d] +$$

$$(-1)^{1/4} c\, e^{\frac{9 i e^2}{4 (3 f + i c \,\text{Log}[f])}} f^2\, \text{Erfi}\Big[\frac{(-1)^{3/4} (3 e + 6 f x + 2 i c x \,\text{Log}[f])}{2 \sqrt{3 f + i c \,\text{Log}[f]}}\Big]\, \text{Log}[f] \sqrt{3 f + i c \,\text{Log}[f]}$$

$$\text{Sin}[3 d] + 3 (-1)^{3/4} c^2 e^{\frac{9 i e^2}{4 (3 f + i c \,\text{Log}[f])}} f\, \text{Erfi}\Big[\frac{(-1)^{3/4} (3 e + 6 f x + 2 i c x \,\text{Log}[f])}{2 \sqrt{3 f + i c \,\text{Log}[f]}}\Big]$$

$$\text{Log}[f]^2 \sqrt{3 f + i c \,\text{Log}[f]}\; \text{Sin}[3 d] + (-1)^{1/4} c^3 e^{\frac{9 i e^2}{4 (3 f + i c \,\text{Log}[f])}}$$

$$\text{Erfi}\Big[\frac{(-1)^{3/4} (3 e + 6 f x + 2 i c x \,\text{Log}[f])}{2 \sqrt{3 f + i c \,\text{Log}[f]}}\Big]\, \text{Log}[f]^3 \sqrt{3 f + i c \,\text{Log}[f]}\; \text{Sin}[3 d] \Big)\Big) \Big/$$

$$\big(16 (i f - c \,\text{Log}[f]) (f - i c \,\text{Log}[f]) (3 f - i c \,\text{Log}[f]) (3 f + i c \,\text{Log}[f])\big)$$

Problem 99: Result more than twice size of optimal antiderivative.

$$\int f^{a+b x+c x^2} \operatorname{Sin}\left[d+f x^2\right]^3 \, dx$$

Optimal (type 4, 386 leaves, 14 steps):

$$-\frac{3 i e^{-i d+\frac{b^2 \operatorname{Log}[f]^2}{4 i f-4 c \operatorname{Log}[f]}} f^a \sqrt{\pi } \operatorname{Erf}\left[\frac{b \operatorname{Log}[f]-2 x (i f-c \operatorname{Log}[f])}{2 \sqrt{i f-c \operatorname{Log}[f]}}\right]}{16 \sqrt{i f-c \operatorname{Log}[f]}}+\frac{i e^{-3 i d+\frac{b^2 \operatorname{Log}[f]^2}{12 i f-4 c \operatorname{Log}[f]}} f^a \sqrt{\pi } \operatorname{Erf}\left[\frac{b \operatorname{Log}[f]-2 x (3 i f-c \operatorname{Log}[f])}{2 \sqrt{3 i f-c \operatorname{Log}[f]}}\right]}{16 \sqrt{3 i f-c \operatorname{Log}[f]}}-\frac{3 i e^{i d-\frac{b^2 \operatorname{Log}[f]^2}{4 i f+4 c \operatorname{Log}[f]}} f^a \sqrt{\pi } \operatorname{Erfi}\left[\frac{b \operatorname{Log}[f]+2 x (i f+c \operatorname{Log}[f])}{2 \sqrt{i f+c \operatorname{Log}[f]}}\right]}{16 \sqrt{i f+c \operatorname{Log}[f]}}+\frac{i e^{3 i d-\frac{b^2 \operatorname{Log}[f]^2}{4 (3 i f+c \operatorname{Log}[f])}} f^a \sqrt{\pi } \operatorname{Erfi}\left[\frac{b \operatorname{Log}[f]+2 x (3 i f+c \operatorname{Log}[f])}{2 \sqrt{3 i f+c \operatorname{Log}[f]}}\right]}{16 \sqrt{3 i f+c \operatorname{Log}[f]}}$$

Result (type 4, 3291 leaves):

$$\Bigg(f^a \sqrt{\pi } \Bigg(-27 (-1)^{3/4} e^{\frac{i b^2 \operatorname{Log}[f]^2}{4 (f-i c \operatorname{Log}[f])}} f^3 \operatorname{Cos}[d] \operatorname{Erfi}\left[\frac{(-1)^{1/4} (2 f x-i b \operatorname{Log}[f]-2 i c x \operatorname{Log}[f])}{2 \sqrt{f-i c \operatorname{Log}[f]}}\right] \sqrt{f-i c \operatorname{Log}[f]}+$$
$$27 (-1)^{1/4} c\, e^{\frac{i b^2 \operatorname{Log}[f]^2}{4 (f-i c \operatorname{Log}[f])}} f^2 \operatorname{Cos}[d] \operatorname{Erfi}\left[\frac{(-1)^{1/4} (2 f x-i b \operatorname{Log}[f]-2 i c x \operatorname{Log}[f])}{2 \sqrt{f-i c \operatorname{Log}[f]}}\right]$$
$$\operatorname{Log}[f] \sqrt{f-i c \operatorname{Log}[f]}-3 (-1)^{3/4} c^2 e^{\frac{i b^2 \operatorname{Log}[f]^2}{4 (f-i c \operatorname{Log}[f])}} f \operatorname{Cos}[d]$$
$$\operatorname{Erfi}\left[\frac{(-1)^{1/4} (2 f x-i b \operatorname{Log}[f]-2 i c x \operatorname{Log}[f])}{2 \sqrt{f-i c \operatorname{Log}[f]}}\right] \operatorname{Log}[f]^2 \sqrt{f-i c \operatorname{Log}[f]}+$$
$$3 (-1)^{1/4} c^3 e^{\frac{i b^2 \operatorname{Log}[f]^2}{4 (f-i c \operatorname{Log}[f])}} \operatorname{Cos}[d] \operatorname{Erfi}\left[\frac{(-1)^{1/4} (2 f x-i b \operatorname{Log}[f]-2 i c x \operatorname{Log}[f])}{2 \sqrt{f-i c \operatorname{Log}[f]}}\right]$$
$$\operatorname{Log}[f]^3 \sqrt{f-i c \operatorname{Log}[f]}+3 (-1)^{3/4} e^{\frac{i b^2 \operatorname{Log}[f]^2}{4 (3 f-i c \operatorname{Log}[f])}} f^3 \operatorname{Cos}[3 d]$$
$$\operatorname{Erfi}\left[\frac{(-1)^{1/4} (6 f x-i b \operatorname{Log}[f]-2 i c x \operatorname{Log}[f])}{2 \sqrt{3 f-i c \operatorname{Log}[f]}}\right] \sqrt{3 f-i c \operatorname{Log}[f]}-$$
$$(-1)^{1/4} c\, e^{\frac{i b^2 \operatorname{Log}[f]^2}{4 (3 f-i c \operatorname{Log}[f])}} f^2 \operatorname{Cos}[3 d] \operatorname{Erfi}\left[\frac{(-1)^{1/4} (6 f x-i b \operatorname{Log}[f]-2 i c x \operatorname{Log}[f])}{2 \sqrt{3 f-i c \operatorname{Log}[f]}}\right]$$
$$\operatorname{Log}[f] \sqrt{3 f-i c \operatorname{Log}[f]}+3 (-1)^{3/4} c^2 e^{\frac{i b^2 \operatorname{Log}[f]^2}{4 (3 f-i c \operatorname{Log}[f])}} f \operatorname{Cos}[3 d]$$
$$\operatorname{Erfi}\left[\frac{(-1)^{1/4} (6 f x-i b \operatorname{Log}[f]-2 i c x \operatorname{Log}[f])}{2 \sqrt{3 f-i c \operatorname{Log}[f]}}\right] \operatorname{Log}[f]^2 \sqrt{3 f-i c \operatorname{Log}[f]}-$$

$$(-1)^{1/4}\, c^3\, e^{\frac{i\, b^2 \operatorname{Log}[f]^2}{4\, (3\, f-i\, c \operatorname{Log}[f])}} \operatorname{Cos}[3\, d] \operatorname{Erfi}\left[\frac{(-1)^{1/4}\, (6\, f\, x-i\, b \operatorname{Log}[f]-2\, i\, c\, x \operatorname{Log}[f])}{2\, \sqrt{3\, f-i\, c \operatorname{Log}[f]}}\right]$$

$$\operatorname{Log}[f]^3 \sqrt{3\, f-i\, c \operatorname{Log}[f]}+27\, (-1)^{1/4}\, e^{-\frac{i\, b^2 \operatorname{Log}[f]^2}{4\, (f+i\, c \operatorname{Log}[f])}}\, f^3 \operatorname{Cos}[d]$$

$$\operatorname{Erfi}\left[\frac{(-1)^{3/4}\, (2\, f\, x+i\, b \operatorname{Log}[f]+2\, i\, c\, x \operatorname{Log}[f])}{2\, \sqrt{f+i\, c \operatorname{Log}[f]}}\right] \sqrt{f+i\, c \operatorname{Log}[f]}-$$

$$27\, (-1)^{3/4}\, c\, e^{-\frac{i\, b^2 \operatorname{Log}[f]^2}{4\, (f+i\, c \operatorname{Log}[f])}}\, f^2 \operatorname{Cos}[d] \operatorname{Erfi}\left[\frac{(-1)^{3/4}\, (2\, f\, x+i\, b \operatorname{Log}[f]+2\, i\, c\, x \operatorname{Log}[f])}{2\, \sqrt{f+i\, c \operatorname{Log}[f]}}\right]$$

$$\operatorname{Log}[f] \sqrt{f+i\, c \operatorname{Log}[f]}+3\, (-1)^{1/4}\, c^2\, e^{-\frac{i\, b^2 \operatorname{Log}[f]^2}{4\, (f+i\, c \operatorname{Log}[f])}}\, f \operatorname{Cos}[d]$$

$$\operatorname{Erfi}\left[\frac{(-1)^{3/4}\, (2\, f\, x+i\, b \operatorname{Log}[f]+2\, i\, c\, x \operatorname{Log}[f])}{2\, \sqrt{f+i\, c \operatorname{Log}[f]}}\right] \operatorname{Log}[f]^2 \sqrt{f+i\, c \operatorname{Log}[f]}-$$

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

$$\operatorname{Log}[f]^3 \sqrt{f+i\, c \operatorname{Log}[f]}-3\, (-1)^{1/4}\, e^{-\frac{i\, b^2 \operatorname{Log}[f]^2}{4\, (3\, f+i\, c \operatorname{Log}[f])}}\, f^3 \operatorname{Cos}[3\, d]$$

$$\operatorname{Erfi}\left[\frac{(-1)^{3/4}\, (6\, f\, x+i\, b \operatorname{Log}[f]+2\, i\, c\, x \operatorname{Log}[f])}{2\, \sqrt{3\, f+i\, c \operatorname{Log}[f]}}\right] \sqrt{3\, f+i\, c \operatorname{Log}[f]}+$$

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

$$\operatorname{Log}[f] \sqrt{3\, f+i\, c \operatorname{Log}[f]}-3\, (-1)^{1/4}\, c^2\, e^{-\frac{i\, b^2 \operatorname{Log}[f]^2}{4\, (3\, f+i\, c \operatorname{Log}[f])}}\, f \operatorname{Cos}[3\, d]$$

$$\operatorname{Erfi}\left[\frac{(-1)^{3/4}\, (6\, f\, x+i\, b \operatorname{Log}[f]+2\, i\, c\, x \operatorname{Log}[f])}{2\, \sqrt{3\, f+i\, c \operatorname{Log}[f]}}\right] \operatorname{Log}[f]^2 \sqrt{3\, f+i\, c \operatorname{Log}[f]}+$$

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

$$\operatorname{Log}[f]^3 \sqrt{3\, f+i\, c \operatorname{Log}[f]}+27\, (-1)^{1/4}\, e^{\frac{i\, b^2 \operatorname{Log}[f]^2}{4\, (f-i\, c \operatorname{Log}[f])}}\, f^3$$

$$\operatorname{Erfi}\left[\frac{(-1)^{1/4}\, (2\, f\, x-i\, b \operatorname{Log}[f]-2\, i\, c\, x \operatorname{Log}[f])}{2\, \sqrt{f-i\, c \operatorname{Log}[f]}}\right] \sqrt{f-i\, c \operatorname{Log}[f]} \operatorname{Sin}[d]+$$

$$27\, (-1)^{3/4}\, c\, e^{\frac{i\, b^2 \operatorname{Log}[f]^2}{4\, (f-i\, c \operatorname{Log}[f])}}\, f^2 \operatorname{Erfi}\left[\frac{(-1)^{1/4}\, (2\, f\, x-i\, b \operatorname{Log}[f]-2\, i\, c\, x \operatorname{Log}[f])}{2\, \sqrt{f-i\, c \operatorname{Log}[f]}}\right]$$

$$\operatorname{Log}[f] \sqrt{f-i\, c \operatorname{Log}[f]} \operatorname{Sin}[d]+3\, (-1)^{1/4}\, c^2\, e^{\frac{i\, b^2 \operatorname{Log}[f]^2}{4\, (f-i\, c \operatorname{Log}[f])}}\, f$$

$$\operatorname{Erfi}\left[\frac{(-1)^{1/4}\, (2\, f\, x-i\, b \operatorname{Log}[f]-2\, i\, c\, x \operatorname{Log}[f])}{2\, \sqrt{f-i\, c \operatorname{Log}[f]}}\right] \operatorname{Log}[f]^2 \sqrt{f-i\, c \operatorname{Log}[f]} \operatorname{Sin}[d]+$$

$$3\, (-1)^{3/4}\, c^3\, e^{\frac{i\, b^2 \operatorname{Log}[f]^2}{4\, (f-i\, c \operatorname{Log}[f])}} \operatorname{Erfi}\left[\frac{(-1)^{1/4}\, (2\, f\, x-i\, b \operatorname{Log}[f]-2\, i\, c\, x \operatorname{Log}[f])}{2\, \sqrt{f-i\, c \operatorname{Log}[f]}}\right]$$

$$\operatorname{Log}[f]^3 \sqrt{f-i\, c \operatorname{Log}[f]} \operatorname{Sin}[d]-27\, (-1)^{3/4}\, e^{-\frac{i\, b^2 \operatorname{Log}[f]^2}{4\, (f+i\, c \operatorname{Log}[f])}}\, f^3$$

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

$$27\,(-1)^{1/4}\,c\,e^{-\frac{i\,b^2\,\mathrm{Log}[f]^2}{4\,(f+i\,c\,\mathrm{Log}[f])}}\,f^2\,\mathrm{Erfi}\left[\frac{(-1)^{3/4}\left(2\,f\,x+i\,b\,\mathrm{Log}[f]+2\,i\,c\,x\,\mathrm{Log}[f]\right)}{2\sqrt{f+i\,c\,\mathrm{Log}[f]}}\right]$$

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

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

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

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

$$\mathrm{Erfi}\left[\frac{(-1)^{1/4}\left(6\,f\,x-i\,b\,\mathrm{Log}[f]-2\,i\,c\,x\,\mathrm{Log}[f]\right)}{2\sqrt{3\,f-i\,c\,\mathrm{Log}[f]}}\right]\sqrt{3\,f-i\,c\,\mathrm{Log}[f]}\,\mathrm{Sin}[3\,d]-$$

$$(-1)^{3/4}\,c\,e^{\frac{i\,b^2\,\mathrm{Log}[f]^2}{4\,(3\,f-i\,c\,\mathrm{Log}[f])}}\,f^2\,\mathrm{Erfi}\left[\frac{(-1)^{1/4}\left(6\,f\,x-i\,b\,\mathrm{Log}[f]-2\,i\,c\,x\,\mathrm{Log}[f]\right)}{2\sqrt{3\,f-i\,c\,\mathrm{Log}[f]}}\right]$$

$$\mathrm{Log}[f]\,\sqrt{3\,f-i\,c\,\mathrm{Log}[f]}\,\mathrm{Sin}[3\,d]-3\,(-1)^{1/4}\,c^2\,e^{\frac{i\,b^2\,\mathrm{Log}[f]^2}{4\,(3\,f-i\,c\,\mathrm{Log}[f])}}\,f$$

$$\mathrm{Erfi}\left[\frac{(-1)^{1/4}\left(6\,f\,x-i\,b\,\mathrm{Log}[f]-2\,i\,c\,x\,\mathrm{Log}[f]\right)}{2\sqrt{3\,f-i\,c\,\mathrm{Log}[f]}}\right]\mathrm{Log}[f]^2\,\sqrt{3\,f-i\,c\,\mathrm{Log}[f]}\,\mathrm{Sin}[3\,d]-$$

$$(-1)^{3/4}\,c^3\,e^{\frac{i\,b^2\,\mathrm{Log}[f]^2}{4\,(3\,f-i\,c\,\mathrm{Log}[f])}}\,\mathrm{Erfi}\left[\frac{(-1)^{1/4}\left(6\,f\,x-i\,b\,\mathrm{Log}[f]-2\,i\,c\,x\,\mathrm{Log}[f]\right)}{2\sqrt{3\,f-i\,c\,\mathrm{Log}[f]}}\right]$$

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

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

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

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

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

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

$$\left.\left.\mathrm{Log}[f]^3\,\sqrt{3\,f+i\,c\,\mathrm{Log}[f]}\,\mathrm{Sin}[3\,d]\right)\right)\Big/$$

$$\left(16\,\left(i\,f-c\,\mathrm{Log}[f]\right)\,\left(f-i\,c\,\mathrm{Log}[f]\right)\,\left(3\,f-i\,c\,\mathrm{Log}[f]\right)\,\left(3\,f+i\,c\,\mathrm{Log}[f]\right)\right)$$

Problem 101: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 268 leaves, 10 steps):

$$\frac{f^{a-\frac{b^2}{4c}}\sqrt{\pi}\,\mathrm{Erfi}\left[\frac{(b+2\,c\,x)\sqrt{\mathrm{Log}[f]}}{2\sqrt{c}}\right]}{4\sqrt{c}\,\sqrt{\mathrm{Log}[f]}}-\frac{e^{-2\,i\,d-\frac{(2\,e+i\,b\,\mathrm{Log}[f])^2}{8\,i\,f-4\,c\,\mathrm{Log}[f]}}\,f^a\sqrt{\pi}\,\mathrm{Erf}\left[\frac{2\,i\,e-b\,\mathrm{Log}[f]+2\,x\,(2\,i\,f-c\,\mathrm{Log}[f])}{2\sqrt{2\,i\,f-c\,\mathrm{Log}[f]}}\right]}{8\sqrt{2\,i\,f-c\,\mathrm{Log}[f]}}-\frac{e^{2\,i\,d+\frac{(2\,e-i\,b\,\mathrm{Log}[f])^2}{8\,i\,f+4\,c\,\mathrm{Log}[f]}}\,f^a\sqrt{\pi}\,\mathrm{Erfi}\left[\frac{2\,i\,e+b\,\mathrm{Log}[f]+2\,x\,(2\,i\,f+c\,\mathrm{Log}[f])}{2\sqrt{2\,i\,f+c\,\mathrm{Log}[f]}}\right]}{8\sqrt{2\,i\,f+c\,\mathrm{Log}[f]}}$$

Result (type 4, 1120 leaves):

$$\frac{1}{8\,c\,\text{Log}[f]\,\left(2\,f-\mathrm{i}\,c\,\text{Log}[f]\right)\,\left(2\,f+\mathrm{i}\,c\,\text{Log}[f]\right)}$$

$$f^{a}\,\sqrt{\pi}\,\left(8\,\sqrt{c}\,f^{2-\frac{b^2}{4\,c}}\,\text{Erfi}\left[\frac{\left(b+2\,c\,x\right)\,\sqrt{\text{Log}[f]}}{2\,\sqrt{c}}\right]\,\sqrt{\text{Log}[f]}\,+\right.$$

$$2\,c^{5/2}\,f^{-\frac{b^2}{4\,c}}\,\text{Erfi}\left[\frac{\left(b+2\,c\,x\right)\,\sqrt{\text{Log}[f]}}{2\,\sqrt{c}}\right]\,\text{Log}[f]^{5/2}+2\,\left(-1\right)^{1/4}\,c\,e^{\frac{\mathrm{i}\,\left(-4\,e^2+4\,\mathrm{i}\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2\right)}{4\,\left(2\,f-\mathrm{i}\,c\,\text{Log}[f]\right)}}\,f\,\text{Cos}[2\,d]$$

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

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

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

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

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

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

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

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

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

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

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

$$\left.\text{Log}[f]^2\,\sqrt{2\,f+\mathrm{i}\,c\,\text{Log}[f]}\,\text{Sin}[2\,d]\right)$$

Problem 102: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 430 leaves, 14 steps):

$$\frac{3\,i\,e^{-i\,d-\frac{(e+i\,b\,Log[f])^2}{4\,i\,f-4\,c\,Log[f]}}\,f^a\,\sqrt{\pi}\,Erf\left[\frac{i\,e-b\,Log[f]+2\,x\,(i\,f-c\,Log[f])}{2\,\sqrt{i\,f-c\,Log[f]}}\right]}{16\,\sqrt{i\,f-c\,Log[f]}}-$$
$$\frac{i\,e^{-3\,i\,d-\frac{(3\,e+i\,b\,Log[f])^2}{4\,(3\,i\,f-c\,Log[f])}}\,f^a\,\sqrt{\pi}\,Erf\left[\frac{3\,i\,e-b\,Log[f]+2\,x\,(3\,i\,f-c\,Log[f])}{2\,\sqrt{3\,i\,f-c\,Log[f]}}\right]}{16\,\sqrt{3\,i\,f-c\,Log[f]}}-$$
$$\frac{3\,i\,e^{i\,d+\frac{(e-i\,b\,Log[f])^2}{4\,i\,f+4\,c\,Log[f]}}\,f^a\,\sqrt{\pi}\,Erfi\left[\frac{i\,e+b\,Log[f]+2\,x\,(i\,f+c\,Log[f])}{2\,\sqrt{i\,f+c\,Log[f]}}\right]}{16\,\sqrt{i\,f+c\,Log[f]}}+$$
$$\frac{i\,e^{3\,i\,d-\frac{(3\,i\,e+b\,Log[f])^2}{4\,(3\,i\,f+c\,Log[f])}}\,f^a\,\sqrt{\pi}\,Erfi\left[\frac{3\,i\,e+b\,Log[f]+2\,x\,(3\,i\,f+c\,Log[f])}{2\,\sqrt{3\,i\,f+c\,Log[f]}}\right]}{16\,\sqrt{3\,i\,f+c\,Log[f]}}$$

Result (type 4, 3835 leaves) :

$$\Bigg(f^a\,\sqrt{\pi}$$
$$\Bigg(-27\,(-1)^{3/4}\,e^{\frac{i\,(-e^2+2\,i\,b\,e\,Log[f]+b^2\,Log[f]^2)}{4\,(f-i\,c\,Log[f])}}\,f^3\,Cos[d]\,Erfi\left[\frac{(-1)^{1/4}\,(e+2\,f\,x-i\,b\,Log[f]-2\,i\,c\,x\,Log[f])}{2\,\sqrt{f-i\,c\,Log[f]}}\right]$$
$$\sqrt{f-i\,c\,Log[f]}+27\,(-1)^{1/4}\,c\,e^{\frac{i\,(-e^2+2\,i\,b\,e\,Log[f]+b^2\,Log[f]^2)}{4\,(f-i\,c\,Log[f])}}\,f^2\,Cos[d]$$
$$Erfi\left[\frac{(-1)^{1/4}\,(e+2\,f\,x-i\,b\,Log[f]-2\,i\,c\,x\,Log[f])}{2\,\sqrt{f-i\,c\,Log[f]}}\right]\,Log[f]\,\sqrt{f-i\,c\,Log[f]}-$$
$$3\,(-1)^{3/4}\,c^2\,e^{\frac{i\,(-e^2+2\,i\,b\,e\,Log[f]+b^2\,Log[f]^2)}{4\,(f-i\,c\,Log[f])}}\,f\,Cos[d]$$
$$Erfi\left[\frac{(-1)^{1/4}\,(e+2\,f\,x-i\,b\,Log[f]-2\,i\,c\,x\,Log[f])}{2\,\sqrt{f-i\,c\,Log[f]}}\right]\,Log[f]^2\,\sqrt{f-i\,c\,Log[f]}+$$
$$3\,(-1)^{1/4}\,c^3\,e^{\frac{i\,(-e^2+2\,i\,b\,e\,Log[f]+b^2\,Log[f]^2)}{4\,(f-i\,c\,Log[f])}}\,Cos[d]\,Erfi\left[\frac{(-1)^{1/4}\,(e+2\,f\,x-i\,b\,Log[f]-2\,i\,c\,x\,Log[f])}{2\,\sqrt{f-i\,c\,Log[f]}}\right]$$
$$Log[f]^3\,\sqrt{f-i\,c\,Log[f]}+3\,(-1)^{3/4}\,e^{\frac{i\,(-9\,e^2+6\,i\,b\,e\,Log[f]+b^2\,Log[f]^2)}{4\,(3\,f-i\,c\,Log[f])}}\,f^3\,Cos[3\,d]$$
$$Erfi\left[\frac{(-1)^{1/4}\,(3\,e+6\,f\,x-i\,b\,Log[f]-2\,i\,c\,x\,Log[f])}{2\,\sqrt{3\,f-i\,c\,Log[f]}}\right]\,\sqrt{3\,f-i\,c\,Log[f]}-(-1)^{1/4}\,c$$
$$e^{\frac{i\,(-9\,e^2+6\,i\,b\,e\,Log[f]+b^2\,Log[f]^2)}{4\,(3\,f-i\,c\,Log[f])}}\,f^2\,Cos[3\,d]\,Erfi\left[\frac{(-1)^{1/4}\,(3\,e+6\,f\,x-i\,b\,Log[f]-2\,i\,c\,x\,Log[f])}{2\,\sqrt{3\,f-i\,c\,Log[f]}}\right]$$
$$Log[f]\,\sqrt{3\,f-i\,c\,Log[f]}+3\,(-1)^{3/4}\,c^2\,e^{\frac{i\,(-9\,e^2+6\,i\,b\,e\,Log[f]+b^2\,Log[f]^2)}{4\,(3\,f-i\,c\,Log[f])}}\,f\,Cos[3\,d]$$
$$Erfi\left[\frac{(-1)^{1/4}\,(3\,e+6\,f\,x-i\,b\,Log[f]-2\,i\,c\,x\,Log[f])}{2\,\sqrt{3\,f-i\,c\,Log[f]}}\right]\,Log[f]^2\,\sqrt{3\,f-i\,c\,Log[f]}-(-1)^{1/4}$$

$$c^3\, e^{\frac{i\left(-9 e^2+6 i b e \operatorname{Log}[f]+b^2 \operatorname{Log}[f]^2\right)}{4\left(3 f-i c \operatorname{Log}[f]\right)}} \operatorname{Cos}[3 d]\operatorname{Erfi}\left[\frac{(-1)^{1/4}\left(3 e+6 f x-i b \operatorname{Log}[f]-2 i c x \operatorname{Log}[f]\right)}{2\sqrt{3 f-i c \operatorname{Log}[f]}}\right]$$

$$\operatorname{Log}[f]^3\sqrt{3 f-i c \operatorname{Log}[f]}+27(-1)^{1/4} e^{-\frac{i\left(-e^2-2 i b e \operatorname{Log}[f]+b^2 \operatorname{Log}[f]^2\right)}{4\left(f+i c \operatorname{Log}[f]\right)}} f^3 \operatorname{Cos}[d]$$

$$\operatorname{Erfi}\left[\frac{(-1)^{3/4}\left(e+2 f x+i b \operatorname{Log}[f]+2 i c x \operatorname{Log}[f]\right)}{2\sqrt{f+i c \operatorname{Log}[f]}}\right]\sqrt{f+i c \operatorname{Log}[f]}-27(-1)^{3/4} c$$

$$e^{-\frac{i\left(-e^2-2 i b e \operatorname{Log}[f]+b^2 \operatorname{Log}[f]^2\right)}{4\left(f+i c \operatorname{Log}[f]\right)}} f^2 \operatorname{Cos}[d]\operatorname{Erfi}\left[\frac{(-1)^{3/4}\left(e+2 f x+i b \operatorname{Log}[f]+2 i c x \operatorname{Log}[f]\right)}{2\sqrt{f+i c \operatorname{Log}[f]}}\right]$$

$$\operatorname{Log}[f]\sqrt{f+i c \operatorname{Log}[f]}+3(-1)^{1/4} c^2 e^{-\frac{i\left(-e^2-2 i b e \operatorname{Log}[f]+b^2 \operatorname{Log}[f]^2\right)}{4\left(f+i c \operatorname{Log}[f]\right)}} f \operatorname{Cos}[d]$$

$$\operatorname{Erfi}\left[\frac{(-1)^{3/4}\left(e+2 f x+i b \operatorname{Log}[f]+2 i c x \operatorname{Log}[f]\right)}{2\sqrt{f+i c \operatorname{Log}[f]}}\right]\operatorname{Log}[f]^2\sqrt{f+i c \operatorname{Log}[f]}-$$

$$3(-1)^{3/4} c^3 e^{-\frac{i\left(-e^2-2 i b e \operatorname{Log}[f]+b^2 \operatorname{Log}[f]^2\right)}{4\left(f+i c \operatorname{Log}[f]\right)}} \operatorname{Cos}[d]\operatorname{Erfi}\left[\frac{(-1)^{3/4}\left(e+2 f x+i b \operatorname{Log}[f]+2 i c x \operatorname{Log}[f]\right)}{2\sqrt{f+i c \operatorname{Log}[f]}}\right]$$

$$\operatorname{Log}[f]^3\sqrt{f+i c \operatorname{Log}[f]}-3(-1)^{1/4} e^{-\frac{i\left(-9 e^2-6 i b e \operatorname{Log}[f]+b^2 \operatorname{Log}[f]^2\right)}{4\left(3 f+i c \operatorname{Log}[f]\right)}} f^3 \operatorname{Cos}[3 d]$$

$$\operatorname{Erfi}\left[\frac{(-1)^{3/4}\left(3 e+6 f x+i b \operatorname{Log}[f]+2 i c x \operatorname{Log}[f]\right)}{2\sqrt{3 f+i c \operatorname{Log}[f]}}\right]\sqrt{3 f+i c \operatorname{Log}[f]}+(-1)^{3/4} c$$

$$e^{-\frac{i\left(-9 e^2-6 i b e \operatorname{Log}[f]+b^2 \operatorname{Log}[f]^2\right)}{4\left(3 f+i c \operatorname{Log}[f]\right)}} f^2 \operatorname{Cos}[3 d]\operatorname{Erfi}\left[\frac{(-1)^{3/4}\left(3 e+6 f x+i b \operatorname{Log}[f]+2 i c x \operatorname{Log}[f]\right)}{2\sqrt{3 f+i c \operatorname{Log}[f]}}\right]$$

$$\operatorname{Log}[f]\sqrt{3 f+i c \operatorname{Log}[f]}-3(-1)^{1/4} c^2 e^{-\frac{i\left(-9 e^2-6 i b e \operatorname{Log}[f]+b^2 \operatorname{Log}[f]^2\right)}{4\left(3 f+i c \operatorname{Log}[f]\right)}} f \operatorname{Cos}[3 d]$$

$$\operatorname{Erfi}\left[\frac{(-1)^{3/4}\left(3 e+6 f x+i b \operatorname{Log}[f]+2 i c x \operatorname{Log}[f]\right)}{2\sqrt{3 f+i c \operatorname{Log}[f]}}\right]\operatorname{Log}[f]^2\sqrt{3 f+i c \operatorname{Log}[f]}+(-1)^{3/4}$$

$$c^3 e^{-\frac{i\left(-9 e^2-6 i b e \operatorname{Log}[f]+b^2 \operatorname{Log}[f]^2\right)}{4\left(3 f+i c \operatorname{Log}[f]\right)}} \operatorname{Cos}[3 d]\operatorname{Erfi}\left[\frac{(-1)^{3/4}\left(3 e+6 f x+i b \operatorname{Log}[f]+2 i c x \operatorname{Log}[f]\right)}{2\sqrt{3 f+i c \operatorname{Log}[f]}}\right]$$

$$\operatorname{Log}[f]^3\sqrt{3 f+i c \operatorname{Log}[f]}+27(-1)^{1/4} e^{\frac{i\left(-e^2+2 i b e \operatorname{Log}[f]+b^2 \operatorname{Log}[f]^2\right)}{4\left(f-i c \operatorname{Log}[f]\right)}} f^3$$

$$\operatorname{Erfi}\left[\frac{(-1)^{1/4}\left(e+2 f x-i b \operatorname{Log}[f]-2 i c x \operatorname{Log}[f]\right)}{2\sqrt{f-i c \operatorname{Log}[f]}}\right]\sqrt{f-i c \operatorname{Log}[f]}\operatorname{Sin}[d]+$$

$$27(-1)^{3/4} c\, e^{\frac{i\left(-e^2+2 i b e \operatorname{Log}[f]+b^2 \operatorname{Log}[f]^2\right)}{4\left(f-i c \operatorname{Log}[f]\right)}} f^2 \operatorname{Erfi}\left[\frac{(-1)^{1/4}\left(e+2 f x-i b \operatorname{Log}[f]-2 i c x \operatorname{Log}[f]\right)}{2\sqrt{f-i c \operatorname{Log}[f]}}\right]$$

$$\operatorname{Log}[f]\sqrt{f-i c \operatorname{Log}[f]}\operatorname{Sin}[d]+3(-1)^{1/4} c^2 e^{\frac{i\left(-e^2+2 i b e \operatorname{Log}[f]+b^2 \operatorname{Log}[f]^2\right)}{4\left(f-i c \operatorname{Log}[f]\right)}} f$$

$$\operatorname{Erfi}\left[\frac{(-1)^{1/4}\left(e+2 f x-i b \operatorname{Log}[f]-2 i c x \operatorname{Log}[f]\right)}{2\sqrt{f-i c \operatorname{Log}[f]}}\right]\operatorname{Log}[f]^2\sqrt{f-i c \operatorname{Log}[f]}\operatorname{Sin}[d]+$$

$$3(-1)^{3/4} c^3 e^{\frac{i\left(-e^2+2 i b e \operatorname{Log}[f]+b^2 \operatorname{Log}[f]^2\right)}{4\left(f-i c \operatorname{Log}[f]\right)}} \operatorname{Erfi}\left[\frac{(-1)^{1/4}\left(e+2 f x-i b \operatorname{Log}[f]-2 i c x \operatorname{Log}[f]\right)}{2\sqrt{f-i c \operatorname{Log}[f]}}\right]$$

$$\text{Log}[f]^3 \sqrt{f - i\, c\, \text{Log}[f]}\ \text{Sin}[d] - 27\, (-1)^{3/4}\, e^{-\frac{i\left(-e^2 - 2\, i\, b\, e\, \text{Log}[f] + b^2\, \text{Log}[f]^2\right)}{4\,(f + i\, c\, \text{Log}[f])}}\, f^3$$

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

$$27\, (-1)^{1/4}\, c\, e^{-\frac{i\left(-e^2 - 2\, i\, b\, e\, \text{Log}[f] + b^2\, \text{Log}[f]^2\right)}{4\,(f + i\, c\, \text{Log}[f])}}\, f^2\, \text{Erfi}\left[\frac{(-1)^{3/4}\,(e + 2\, f\, x + i\, b\, \text{Log}[f] + 2\, i\, c\, x\, \text{Log}[f])}{2\sqrt{f + i\, c\, \text{Log}[f]}}\right]$$

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

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

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

$$\text{Log}[f]^3 \sqrt{f + i\, c\, \text{Log}[f]}\ \text{Sin}[d] - 3\, (-1)^{1/4}\, e^{\frac{i\left(-9\, e^2 + 6\, i\, b\, e\, \text{Log}[f] + b^2\, \text{Log}[f]^2\right)}{4\,(3\, f - i\, c\, \text{Log}[f])}}\, f^3$$

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

$$(-1)^{3/4}\, c\, e^{\frac{i\left(-9\, e^2 + 6\, i\, b\, e\, \text{Log}[f] + b^2\, \text{Log}[f]^2\right)}{4\,(3\, f - i\, c\, \text{Log}[f])}}\, f^2\, \text{Erfi}\left[\frac{(-1)^{1/4}\,(3\, e + 6\, f\, x - i\, b\, \text{Log}[f] - 2\, i\, c\, x\, \text{Log}[f])}{2\sqrt{3\, f - i\, c\, \text{Log}[f]}}\right]$$

$$\text{Log}[f] \sqrt{3\, f - i\, c\, \text{Log}[f]}\ \text{Sin}[3\, d] - 3\, (-1)^{1/4}\, c^2\, e^{\frac{i\left(-9\, e^2 + 6\, i\, b\, e\, \text{Log}[f] + b^2\, \text{Log}[f]^2\right)}{4\,(3\, f - i\, c\, \text{Log}[f])}}\, f$$

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

$$(-1)^{3/4}\, c^3\, e^{\frac{i\left(-9\, e^2 + 6\, i\, b\, e\, \text{Log}[f] + b^2\, \text{Log}[f]^2\right)}{4\,(3\, f - i\, c\, \text{Log}[f])}}\ \text{Erfi}\left[\frac{(-1)^{1/4}\,(3\, e + 6\, f\, x - i\, b\, \text{Log}[f] - 2\, i\, c\, x\, \text{Log}[f])}{2\sqrt{3\, f - i\, c\, \text{Log}[f]}}\right]$$

$$\text{Log}[f]^3 \sqrt{3\, f - i\, c\, \text{Log}[f]}\ \text{Sin}[3\, d] + 3\, (-1)^{3/4}\, e^{-\frac{i\left(-9\, e^2 - 6\, i\, b\, e\, \text{Log}[f] + b^2\, \text{Log}[f]^2\right)}{4\,(3\, f + i\, c\, \text{Log}[f])}}\, f^3$$

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

$$(-1)^{1/4}\, c\, e^{-\frac{i\left(-9\, e^2 - 6\, i\, b\, e\, \text{Log}[f] + b^2\, \text{Log}[f]^2\right)}{4\,(3\, f + i\, c\, \text{Log}[f])}}\, f^2\, \text{Erfi}\left[\frac{(-1)^{3/4}\,(3\, e + 6\, f\, x + i\, b\, \text{Log}[f] + 2\, i\, c\, x\, \text{Log}[f])}{2\sqrt{3\, f + i\, c\, \text{Log}[f]}}\right]$$

$$\text{Log}[f] \sqrt{3\, f + i\, c\, \text{Log}[f]}\ \text{Sin}[3\, d] + 3\, (-1)^{3/4}\, c^2\, e^{-\frac{i\left(-9\, e^2 - 6\, i\, b\, e\, \text{Log}[f] + b^2\, \text{Log}[f]^2\right)}{4\,(3\, f + i\, c\, \text{Log}[f])}}\, f$$

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

$$(-1)^{1/4}\, c^3\, e^{-\frac{i\left(-9\, e^2 - 6\, i\, b\, e\, \text{Log}[f] + b^2\, \text{Log}[f]^2\right)}{4\,(3\, f + i\, c\, \text{Log}[f])}}\ \text{Erfi}\left[\frac{(-1)^{3/4}\,(3\, e + 6\, f\, x + i\, b\, \text{Log}[f] + 2\, i\, c\, x\, \text{Log}[f])}{2\sqrt{3\, f + i\, c\, \text{Log}[f]}}\right]$$

$$\left.\left.\text{Log}[f]^3 \sqrt{3\, f + i\, c\, \text{Log}[f]}\ \text{Sin}[3\, d]\right)\right) \Big/$$

$$\left(16\,(i\, f - c\, \text{Log}[f])\,(f - i\, c\, \text{Log}[f])\,(3\, f - i\, c\, \text{Log}[f])\,(3\, f + i\, c\, \text{Log}[f])\right)$$

Problem 124: Result more than twice size of optimal antiderivative.

$$\int f^{a+c x^2} \text{Cos}\left[d+e x+f x^2\right]^3 dx$$

Optimal (type 4, 369 leaves, 14 steps):

$$\frac{3 e^{-i d-\frac{e^2}{4 i f-4 c \text{Log}[f]}} f^a \sqrt{\pi}\, \text{Erf}\left[\frac{i e+2 x (i f-c \text{Log}[f])}{2 \sqrt{i f-c \text{Log}[f]}}\right]}{16 \sqrt{i f-c \text{Log}[f]}}+\frac{e^{-3 i d-\frac{9 e^2}{4 (3 i f-c \text{Log}[f])}} f^a \sqrt{\pi}\, \text{Erf}\left[\frac{3 i e+2 x (3 i f-c \text{Log}[f])}{2 \sqrt{3 i f-c \text{Log}[f]}}\right]}{16 \sqrt{3 i f-c \text{Log}[f]}}+$$

$$\frac{3 e^{i d+\frac{e^2}{4 i f+4 c \text{Log}[f]}} f^a \sqrt{\pi}\, \text{Erfi}\left[\frac{i e+2 x (i f+c \text{Log}[f])}{2 \sqrt{i f+c \text{Log}[f]}}\right]}{16 \sqrt{i f+c \text{Log}[f]}}+\frac{e^{3 i d+\frac{9 e^2}{4 (3 i f+c \text{Log}[f])}} f^a \sqrt{\pi}\, \text{Erfi}\left[\frac{3 i e+2 x (3 i f+c \text{Log}[f])}{2 \sqrt{3 i f+c \text{Log}[f]}}\right]}{16 \sqrt{3 i f+c \text{Log}[f]}}$$

Result (type 4, 2997 leaves):

$$\Bigg(f^a \sqrt{\pi}$$

$$\Bigg(-27 (-1)^{3/4} e^{-\frac{i e^2}{4 (f-i c \text{Log}[f])}} f^3 \text{Cos}[d]\, \text{Erfi}\left[\frac{(-1)^{1/4} (e+2 f x-2 i c x \text{Log}[f])}{2 \sqrt{f-i c \text{Log}[f]}}\right] \sqrt{f-i c \text{Log}[f]}+$$

$$27 (-1)^{1/4} c\, e^{-\frac{i e^2}{4 (f-i c \text{Log}[f])}} f^2 \text{Cos}[d]\, \text{Erfi}\left[\frac{(-1)^{1/4} (e+2 f x-2 i c x \text{Log}[f])}{2 \sqrt{f-i c \text{Log}[f]}}\right]$$

$$\text{Log}[f] \sqrt{f-i c \text{Log}[f]}-3 (-1)^{3/4} c^2 e^{-\frac{i e^2}{4 (f-i c \text{Log}[f])}} f\, \text{Cos}[d]$$

$$\text{Erfi}\left[\frac{(-1)^{1/4} (e+2 f x-2 i c x \text{Log}[f])}{2 \sqrt{f-i c \text{Log}[f]}}\right] \text{Log}[f]^2 \sqrt{f-i c \text{Log}[f]}+$$

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

$$\text{Log}[f]^3 \sqrt{f-i c \text{Log}[f]}-3 (-1)^{3/4} e^{-\frac{9 i e^2}{4 (3 f-i c \text{Log}[f])}} f^3 \text{Cos}[3 d]$$

$$\text{Erfi}\left[\frac{(-1)^{1/4} (3 e+6 f x-2 i c x \text{Log}[f])}{2 \sqrt{3 f-i c \text{Log}[f]}}\right] \sqrt{3 f-i c \text{Log}[f]}+(-1)^{1/4} c\, e^{-\frac{9 i e^2}{4 (3 f-i c \text{Log}[f])}}$$

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

$$3 (-1)^{3/4} c^2 e^{-\frac{9 i e^2}{4 (3 f-i c \text{Log}[f])}} f\, \text{Cos}[3 d]\, \text{Erfi}\left[\frac{(-1)^{1/4} (3 e+6 f x-2 i c x \text{Log}[f])}{2 \sqrt{3 f-i c \text{Log}[f]}}\right]$$

$$\text{Log}[f]^2 \sqrt{3 f-i c \text{Log}[f]}+(-1)^{1/4} c^3 e^{-\frac{9 i e^2}{4 (3 f-i c \text{Log}[f])}} \text{Cos}[3 d]$$

$$\text{Erfi}\left[\frac{(-1)^{1/4} (3 e+6 f x-2 i c x \text{Log}[f])}{2 \sqrt{3 f-i c \text{Log}[f]}}\right] \text{Log}[f]^3 \sqrt{3 f-i c \text{Log}[f]}-$$

$$27 (-1)^{1/4} e^{\frac{i e^2}{4 (f+i c \text{Log}[f])}} f^3 \text{Cos}[d]\, \text{Erfi}\left[\frac{(-1)^{3/4} (e+2 f x+2 i c x \text{Log}[f])}{2 \sqrt{f+i c \text{Log}[f]}}\right] \sqrt{f+i c \text{Log}[f]}+$$

$$27\,(-1)^{3/4}\,c\,e^{\frac{i e^2}{4(f+i c \text{Log}[f])}}\,f^2\,\text{Cos}[d]\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(e+2 f x+2 i c x \text{Log}[f])}{2\sqrt{f+i c \text{Log}[f]}}\right]$$

$$\text{Log}[f]\,\sqrt{f+i c \text{Log}[f]}-3\,(-1)^{1/4}\,c^2\,e^{\frac{i e^2}{4(f+i c \text{Log}[f])}}\,f\,\text{Cos}[d]$$

$$\text{Erfi}\left[\frac{(-1)^{3/4}\,(e+2 f x+2 i c x \text{Log}[f])}{2\sqrt{f+i c \text{Log}[f]}}\right]\text{Log}[f]^2\,\sqrt{f+i c \text{Log}[f]}+$$

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

$$\text{Log}[f]^3\,\sqrt{f+i c \text{Log}[f]}-3\,(-1)^{1/4}\,e^{\frac{9 i e^2}{4(3 f+i c \text{Log}[f])}}\,f^3\,\text{Cos}[3 d]$$

$$\text{Erfi}\left[\frac{(-1)^{3/4}\,(3 e+6 f x+2 i c x \text{Log}[f])}{2\sqrt{3 f+i c \text{Log}[f]}}\right]\sqrt{3 f+i c \text{Log}[f]}+(-1)^{3/4}\,c\,e^{\frac{9 i e^2}{4(3 f+i c \text{Log}[f])}}$$

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

$$3\,(-1)^{1/4}\,c^2\,e^{\frac{9 i e^2}{4(3 f+i c \text{Log}[f])}}\,f\,\text{Cos}[3 d]\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(3 e+6 f x+2 i c x \text{Log}[f])}{2\sqrt{3 f+i c \text{Log}[f]}}\right]$$

$$\text{Log}[f]^2\,\sqrt{3 f+i c \text{Log}[f]}+(-1)^{3/4}\,c^3\,e^{\frac{9 i e^2}{4(3 f+i c \text{Log}[f])}}\,\text{Cos}[3 d]$$

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

$$27\,(-1)^{1/4}\,e^{-\frac{i e^2}{4(f-i c \text{Log}[f])}}\,f^3\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(e+2 f x-2 i c x \text{Log}[f])}{2\sqrt{f-i c \text{Log}[f]}}\right]\sqrt{f-i c \text{Log}[f]}\,\text{Sin}[d]+$$

$$27\,(-1)^{3/4}\,c\,e^{-\frac{i e^2}{4(f-i c \text{Log}[f])}}\,f^2\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(e+2 f x-2 i c x \text{Log}[f])}{2\sqrt{f-i c \text{Log}[f]}}\right]\text{Log}[f]\,\sqrt{f-i c \text{Log}[f]}$$

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

$$\text{Log}[f]^2\,\sqrt{f-i c \text{Log}[f]}\,\text{Sin}[d]+3\,(-1)^{3/4}\,c^3\,e^{-\frac{i e^2}{4(f-i c \text{Log}[f])}}$$

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

$$27\,(-1)^{3/4}\,e^{\frac{i e^2}{4(f+i c \text{Log}[f])}}\,f^3\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(e+2 f x+2 i c x \text{Log}[f])}{2\sqrt{f+i c \text{Log}[f]}}\right]\sqrt{f+i c \text{Log}[f]}\,\text{Sin}[d]+$$

$$27\,(-1)^{1/4}\,c\,e^{\frac{i e^2}{4(f+i c \text{Log}[f])}}\,f^2\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(e+2 f x+2 i c x \text{Log}[f])}{2\sqrt{f+i c \text{Log}[f]}}\right]\text{Log}[f]\,\sqrt{f+i c \text{Log}[f]}$$

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

$$\text{Log}[f]^2\,\sqrt{f+i c \text{Log}[f]}\,\text{Sin}[d]+3\,(-1)^{1/4}\,c^3\,e^{\frac{i e^2}{4(f+i c \text{Log}[f])}}$$

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

$$3\,(-1)^{1/4}\,e^{-\frac{9\,\mathrm{i}\,e^2}{4\,(3\,f-\mathrm{i}\,c\,\text{Log}[f])}}\,f^3\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(3\,e+6\,f\,x-2\,\mathrm{i}\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f-\mathrm{i}\,c\,\text{Log}[f]}}\right]\,\sqrt{3\,f-\mathrm{i}\,c\,\text{Log}[f]}$$

$$\text{Sin}[3\,d]\,+\,(-1)^{3/4}\,c\,e^{-\frac{9\,\mathrm{i}\,e^2}{4\,(3\,f-\mathrm{i}\,c\,\text{Log}[f])}}\,f^2\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(3\,e+6\,f\,x-2\,\mathrm{i}\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f-\mathrm{i}\,c\,\text{Log}[f]}}\right]$$

$$\text{Log}[f]\,\sqrt{3\,f-\mathrm{i}\,c\,\text{Log}[f]}\,\,\text{Sin}[3\,d]+3\,(-1)^{1/4}\,c^2\,e^{-\frac{9\,\mathrm{i}\,e^2}{4\,(3\,f-\mathrm{i}\,c\,\text{Log}[f])}}\,f$$

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

$$(-1)^{3/4}\,c^3\,e^{-\frac{9\,\mathrm{i}\,e^2}{4\,(3\,f-\mathrm{i}\,c\,\text{Log}[f])}}\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(3\,e+6\,f\,x-2\,\mathrm{i}\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f-\mathrm{i}\,c\,\text{Log}[f]}}\right]$$

$$\text{Log}[f]^3\,\sqrt{3\,f-\mathrm{i}\,c\,\text{Log}[f]}\,\,\text{Sin}[3\,d]+3\,(-1)^{3/4}\,e^{\frac{9\,\mathrm{i}\,e^2}{4\,(3\,f+\mathrm{i}\,c\,\text{Log}[f])}}\,f^3$$

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

$$(-1)^{1/4}\,c\,e^{\frac{9\,\mathrm{i}\,e^2}{4\,(3\,f+\mathrm{i}\,c\,\text{Log}[f])}}\,f^2\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(3\,e+6\,f\,x+2\,\mathrm{i}\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f+\mathrm{i}\,c\,\text{Log}[f]}}\right]\,\text{Log}[f]\,\sqrt{3\,f+\mathrm{i}\,c\,\text{Log}[f]}$$

$$\text{Sin}[3\,d]\,+3\,(-1)^{3/4}\,c^2\,e^{\frac{9\,\mathrm{i}\,e^2}{4\,(3\,f+\mathrm{i}\,c\,\text{Log}[f])}}\,f\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(3\,e+6\,f\,x+2\,\mathrm{i}\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f+\mathrm{i}\,c\,\text{Log}[f]}}\right]$$

$$\text{Log}[f]^2\,\sqrt{3\,f+\mathrm{i}\,c\,\text{Log}[f]}\,\,\text{Sin}[3\,d]\,+\,(-1)^{1/4}\,c^3\,e^{\frac{9\,\mathrm{i}\,e^2}{4\,(3\,f+\mathrm{i}\,c\,\text{Log}[f])}}$$

$$\left.\left.\text{Erfi}\left[\frac{(-1)^{3/4}\,(3\,e+6\,f\,x+2\,\mathrm{i}\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f+\mathrm{i}\,c\,\text{Log}[f]}}\right]\,\text{Log}[f]^3\,\sqrt{3\,f+\mathrm{i}\,c\,\text{Log}[f]}\,\,\text{Sin}[3\,d]\right)\right)\Big/$$

$$\left(16\,(f-\mathrm{i}\,c\,\text{Log}[f])\,(3\,f-\mathrm{i}\,c\,\text{Log}[f])\,(f+\mathrm{i}\,c\,\text{Log}[f])\,(3\,f+\mathrm{i}\,c\,\text{Log}[f])\right)$$

Problem 130: Result more than twice size of optimal antiderivative.

$$\int f^{a+b\,x+c\,x^2}\,\text{Cos}\left[d+f\,x^2\right]^3\,\mathrm{d}x$$

Optimal (type 4, 378 leaves, 14 steps):

$$-\frac{3\, e^{-i d+\frac{b^2 \text{Log}[f]^2}{4 i f-4 c \text{Log}[f]}} f^a \sqrt{\pi}\, \text{Erf}\left[\frac{b \text{Log}[f]-2 x (i f-c \text{Log}[f])}{2 \sqrt{i f-c \text{Log}[f]}}\right]}{16 \sqrt{i f-c \text{Log}[f]}}-\frac{e^{-3 i d+\frac{b^2 \text{Log}[f]^2}{12 i f-4 c \text{Log}[f]}} f^a \sqrt{\pi}\, \text{Erf}\left[\frac{b \text{Log}[f]-2 x (3 i f-c \text{Log}[f])}{2 \sqrt{3 i f-c \text{Log}[f]}}\right]}{16 \sqrt{3 i f-c \text{Log}[f]}}+\frac{3\, e^{i d-\frac{b^2 \text{Log}[f]^2}{4 i f+4 c \text{Log}[f]}} f^a \sqrt{\pi}\, \text{Erfi}\left[\frac{b \text{Log}[f]+2 x (i f+c \text{Log}[f])}{2 \sqrt{i f+c \text{Log}[f]}}\right]}{16 \sqrt{i f+c \text{Log}[f]}}+\frac{e^{3 i d-\frac{b^2 \text{Log}[f]^2}{4 (3 i f+c \text{Log}[f])}} f^a \sqrt{\pi}\, \text{Erfi}\left[\frac{b \text{Log}[f]+2 x (3 i f+c \text{Log}[f])}{2 \sqrt{3 i f+c \text{Log}[f]}}\right]}{16 \sqrt{3 i f+c \text{Log}[f]}}$$

Result (type 4, 3285 leaves) :

$$\Bigg(f^a \sqrt{\pi} \Bigg(-27 (-1)^{3/4} e^{\frac{i b^2 \text{Log}[f]^2}{4 (f-i c \text{Log}[f])}} f^3 \text{Cos}[d]\, \text{Erfi}\left[\frac{(-1)^{1/4} (2 f x-i b \text{Log}[f]-2 i c x \text{Log}[f])}{2 \sqrt{f-i c \text{Log}[f]}}\right] \sqrt{f-i c \text{Log}[f]}+$$
$$27 (-1)^{1/4} c\, e^{\frac{i b^2 \text{Log}[f]^2}{4 (f-i c \text{Log}[f])}} f^2 \text{Cos}[d]\, \text{Erfi}\left[\frac{(-1)^{1/4} (2 f x-i b \text{Log}[f]-2 i c x \text{Log}[f])}{2 \sqrt{f-i c \text{Log}[f]}}\right] \text{Log}[f] \sqrt{f-i c \text{Log}[f]}-3 (-1)^{3/4} c^2 e^{\frac{i b^2 \text{Log}[f]^2}{4 (f-i c \text{Log}[f])}} f\, \text{Cos}[d]$$
$$\text{Erfi}\left[\frac{(-1)^{1/4} (2 f x-i b \text{Log}[f]-2 i c x \text{Log}[f])}{2 \sqrt{f-i c \text{Log}[f]}}\right] \text{Log}[f]^2 \sqrt{f-i c \text{Log}[f]}+$$
$$3 (-1)^{1/4} c^3 e^{\frac{i b^2 \text{Log}[f]^2}{4 (f-i c \text{Log}[f])}} \text{Cos}[d]\, \text{Erfi}\left[\frac{(-1)^{1/4} (2 f x-i b \text{Log}[f]-2 i c x \text{Log}[f])}{2 \sqrt{f-i c \text{Log}[f]}}\right]$$
$$\text{Log}[f]^3 \sqrt{f-i c \text{Log}[f]}-3 (-1)^{3/4} e^{\frac{i b^2 \text{Log}[f]^2}{4 (3 f-i c \text{Log}[f])}} f^3 \text{Cos}[3 d]$$
$$\text{Erfi}\left[\frac{(-1)^{1/4} (6 f x-i b \text{Log}[f]-2 i c x \text{Log}[f])}{2 \sqrt{3 f-i c \text{Log}[f]}}\right] \sqrt{3 f-i c \text{Log}[f]}+$$
$$(-1)^{1/4} c\, e^{\frac{i b^2 \text{Log}[f]^2}{4 (3 f-i c \text{Log}[f])}} f^2 \text{Cos}[3 d]\, \text{Erfi}\left[\frac{(-1)^{1/4} (6 f x-i b \text{Log}[f]-2 i c x \text{Log}[f])}{2 \sqrt{3 f-i c \text{Log}[f]}}\right]$$
$$\text{Log}[f] \sqrt{3 f-i c \text{Log}[f]}-3 (-1)^{3/4} c^2 e^{\frac{i b^2 \text{Log}[f]^2}{4 (3 f-i c \text{Log}[f])}} f\, \text{Cos}[3 d]$$
$$\text{Erfi}\left[\frac{(-1)^{1/4} (6 f x-i b \text{Log}[f]-2 i c x \text{Log}[f])}{2 \sqrt{3 f-i c \text{Log}[f]}}\right] \text{Log}[f]^2 \sqrt{3 f-i c \text{Log}[f]}+$$
$$(-1)^{1/4} c^3 e^{\frac{i b^2 \text{Log}[f]^2}{4 (3 f-i c \text{Log}[f])}} \text{Cos}[3 d]\, \text{Erfi}\left[\frac{(-1)^{1/4} (6 f x-i b \text{Log}[f]-2 i c x \text{Log}[f])}{2 \sqrt{3 f-i c \text{Log}[f]}}\right]$$

$$\text{Log}[f]^3 \sqrt{3 f - i c \text{Log}[f]} - 27 (-1)^{1/4} e^{-\frac{i b^2 \text{Log}[f]^2}{4 (f + i c \text{Log}[f])}} f^3 \text{Cos}[d]$$

$$\text{Erfi}\left[\frac{(-1)^{3/4} (2 f x + i b \text{Log}[f] + 2 i c x \text{Log}[f])}{2 \sqrt{f + i c \text{Log}[f]}}\right] \sqrt{f + i c \text{Log}[f]} +$$

$$27 (-1)^{3/4} c\, e^{-\frac{i b^2 \text{Log}[f]^2}{4 (f + i c \text{Log}[f])}} f^2 \text{Cos}[d] \,\text{Erfi}\left[\frac{(-1)^{3/4} (2 f x + i b \text{Log}[f] + 2 i c x \text{Log}[f])}{2 \sqrt{f + i c \text{Log}[f]}}\right]$$

$$\text{Log}[f] \sqrt{f + i c \text{Log}[f]} - 3 (-1)^{1/4} c^2 e^{-\frac{i b^2 \text{Log}[f]^2}{4 (f + i c \text{Log}[f])}} f \,\text{Cos}[d]$$

$$\text{Erfi}\left[\frac{(-1)^{3/4} (2 f x + i b \text{Log}[f] + 2 i c x \text{Log}[f])}{2 \sqrt{f + i c \text{Log}[f]}}\right] \text{Log}[f]^2 \sqrt{f + i c \text{Log}[f]} +$$

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

$$\text{Log}[f]^3 \sqrt{f + i c \text{Log}[f]} - 3 (-1)^{1/4} e^{-\frac{i b^2 \text{Log}[f]^2}{4 (3 f + i c \text{Log}[f])}} f^3 \text{Cos}[3 d]$$

$$\text{Erfi}\left[\frac{(-1)^{3/4} (6 f x + i b \text{Log}[f] + 2 i c x \text{Log}[f])}{2 \sqrt{3 f + i c \text{Log}[f]}}\right] \sqrt{3 f + i c \text{Log}[f]} +$$

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

$$\text{Log}[f] \sqrt{3 f + i c \text{Log}[f]} - 3 (-1)^{1/4} c^2 e^{-\frac{i b^2 \text{Log}[f]^2}{4 (3 f + i c \text{Log}[f])}} f \,\text{Cos}[3 d]$$

$$\text{Erfi}\left[\frac{(-1)^{3/4} (6 f x + i b \text{Log}[f] + 2 i c x \text{Log}[f])}{2 \sqrt{3 f + i c \text{Log}[f]}}\right] \text{Log}[f]^2 \sqrt{3 f + i c \text{Log}[f]} +$$

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

$$\text{Log}[f]^3 \sqrt{3 f + i c \text{Log}[f]} + 27 (-1)^{1/4} e^{\frac{i b^2 \text{Log}[f]^2}{4 (f - i c \text{Log}[f])}} f^3$$

$$\text{Erfi}\left[\frac{(-1)^{1/4} (2 f x - i b \text{Log}[f] - 2 i c x \text{Log}[f])}{2 \sqrt{f - i c \text{Log}[f]}}\right] \sqrt{f - i c \text{Log}[f]} \,\text{Sin}[d] +$$

$$27 (-1)^{3/4} c\, e^{\frac{i b^2 \text{Log}[f]^2}{4 (f - i c \text{Log}[f])}} f^2 \,\text{Erfi}\left[\frac{(-1)^{1/4} (2 f x - i b \text{Log}[f] - 2 i c x \text{Log}[f])}{2 \sqrt{f - i c \text{Log}[f]}}\right]$$

$$\text{Log}[f] \sqrt{f - i c \text{Log}[f]} \,\text{Sin}[d] + 3 (-1)^{1/4} c^2 e^{\frac{i b^2 \text{Log}[f]^2}{4 (f - i c \text{Log}[f])}} f$$

$$\text{Erfi}\left[\frac{(-1)^{1/4} (2 f x - i b \text{Log}[f] - 2 i c x \text{Log}[f])}{2 \sqrt{f - i c \text{Log}[f]}}\right] \text{Log}[f]^2 \sqrt{f - i c \text{Log}[f]} \,\text{Sin}[d] +$$

$$3 (-1)^{3/4} c^3 e^{\frac{i b^2 \text{Log}[f]^2}{4 (f - i c \text{Log}[f])}} \text{Erfi}\left[\frac{(-1)^{1/4} (2 f x - i b \text{Log}[f] - 2 i c x \text{Log}[f])}{2 \sqrt{f - i c \text{Log}[f]}}\right]$$

$$\text{Log}[f]^3 \sqrt{f - i c \text{Log}[f]} \,\text{Sin}[d] + 27 (-1)^{3/4} e^{-\frac{i b^2 \text{Log}[f]^2}{4 (f + i c \text{Log}[f])}} f^3$$

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

$$27\,(-1)^{1/4}\,c\,e^{-\frac{i b^2 \text{Log}[f]^2}{4 (f+i c \text{Log}[f])}}\,f^2\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(2 f x+i b \text{Log}[f]+2 i c x \text{Log}[f])}{2 \sqrt{f+i c \text{Log}[f]}}\right]$$
$$\text{Log}[f]\,\sqrt{f+i c \text{Log}[f]}\,\text{Sin}[d]+3\,(-1)^{3/4}\,c^2\,e^{-\frac{i b^2 \text{Log}[f]^2}{4 (f+i c \text{Log}[f])}}\,f$$
$$\text{Erfi}\left[\frac{(-1)^{3/4}\,(2 f x+i b \text{Log}[f]+2 i c x \text{Log}[f])}{2 \sqrt{f+i c \text{Log}[f]}}\right]\,\text{Log}[f]^2\,\sqrt{f+i c \text{Log}[f]}\,\text{Sin}[d]+$$
$$3\,(-1)^{1/4}\,c^3\,e^{-\frac{i b^2 \text{Log}[f]^2}{4 (f+i c \text{Log}[f])}}\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(2 f x+i b \text{Log}[f]+2 i c x \text{Log}[f])}{2 \sqrt{f+i c \text{Log}[f]}}\right]$$
$$\text{Log}[f]^3\,\sqrt{f+i c \text{Log}[f]}\,\text{Sin}[d]+3\,(-1)^{1/4}\,e^{\frac{i b^2 \text{Log}[f]^2}{4 (3 f-i c \text{Log}[f])}}\,f^3$$
$$\text{Erfi}\left[\frac{(-1)^{1/4}\,(6 f x-i b \text{Log}[f]-2 i c x \text{Log}[f])}{2 \sqrt{3 f-i c \text{Log}[f]}}\right]\,\sqrt{3 f-i c \text{Log}[f]}\,\text{Sin}[3 d]+$$
$$(-1)^{3/4}\,c\,e^{\frac{i b^2 \text{Log}[f]^2}{4 (3 f-i c \text{Log}[f])}}\,f^2\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(6 f x-i b \text{Log}[f]-2 i c x \text{Log}[f])}{2 \sqrt{3 f-i c \text{Log}[f]}}\right]$$
$$\text{Log}[f]\,\sqrt{3 f-i c \text{Log}[f]}\,\text{Sin}[3 d]+3\,(-1)^{1/4}\,c^2\,e^{\frac{i b^2 \text{Log}[f]^2}{4 (3 f-i c \text{Log}[f])}}\,f$$
$$\text{Erfi}\left[\frac{(-1)^{1/4}\,(6 f x-i b \text{Log}[f]-2 i c x \text{Log}[f])}{2 \sqrt{3 f-i c \text{Log}[f]}}\right]\,\text{Log}[f]^2\,\sqrt{3 f-i c \text{Log}[f]}\,\text{Sin}[3 d]+$$
$$(-1)^{3/4}\,c^3\,e^{\frac{i b^2 \text{Log}[f]^2}{4 (3 f-i c \text{Log}[f])}}\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(6 f x-i b \text{Log}[f]-2 i c x \text{Log}[f])}{2 \sqrt{3 f-i c \text{Log}[f]}}\right]$$
$$\text{Log}[f]^3\,\sqrt{3 f-i c \text{Log}[f]}\,\text{Sin}[3 d]+3\,(-1)^{3/4}\,e^{-\frac{i b^2 \text{Log}[f]^2}{4 (3 f+i c \text{Log}[f])}}\,f^3$$
$$\text{Erfi}\left[\frac{(-1)^{3/4}\,(6 f x+i b \text{Log}[f]+2 i c x \text{Log}[f])}{2 \sqrt{3 f+i c \text{Log}[f]}}\right]\,\sqrt{3 f+i c \text{Log}[f]}\,\text{Sin}[3 d]+$$
$$(-1)^{1/4}\,c\,e^{-\frac{i b^2 \text{Log}[f]^2}{4 (3 f+i c \text{Log}[f])}}\,f^2\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(6 f x+i b \text{Log}[f]+2 i c x \text{Log}[f])}{2 \sqrt{3 f+i c \text{Log}[f]}}\right]$$
$$\text{Log}[f]\,\sqrt{3 f+i c \text{Log}[f]}\,\text{Sin}[3 d]+3\,(-1)^{3/4}\,c^2\,e^{-\frac{i b^2 \text{Log}[f]^2}{4 (3 f+i c \text{Log}[f])}}\,f$$
$$\text{Erfi}\left[\frac{(-1)^{3/4}\,(6 f x+i b \text{Log}[f]+2 i c x \text{Log}[f])}{2 \sqrt{3 f+i c \text{Log}[f]}}\right]\,\text{Log}[f]^2\,\sqrt{3 f+i c \text{Log}[f]}\,\text{Sin}[3 d]+$$
$$(-1)^{1/4}\,c^3\,e^{-\frac{i b^2 \text{Log}[f]^2}{4 (3 f+i c \text{Log}[f])}}\,\text{Erfi}\left[\frac{(-1)^{3/4}\,(6 f x+i b \text{Log}[f]+2 i c x \text{Log}[f])}{2 \sqrt{3 f+i c \text{Log}[f]}}\right]$$
$$\left.\left.\text{Log}[f]^3\,\sqrt{3 f+i c \text{Log}[f]}\,\text{Sin}[3 d]\right)\right)\Big/$$
$$\big(16\,(f-i c \text{Log}[f])\,(3 f-i c \text{Log}[f])\,(f+i c \text{Log}[f])\,(3 f+i c \text{Log}[f])\big)$$

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

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

Optimal (type 4, 268 leaves, 10 steps):

$$\frac{f^{a-\frac{b^2}{4c}}\sqrt{\pi}\,\text{Erfi}\left[\frac{(b+2cx)\sqrt{\text{Log}[f]}}{2\sqrt{c}}\right]}{4\sqrt{c}\,\sqrt{\text{Log}[f]}}+\frac{e^{-2\,i\,d-\frac{(2e+i\,b\,\text{Log}[f])^2}{8\,i\,f-4\,c\,\text{Log}[f]}}f^a\sqrt{\pi}\,\text{Erf}\left[\frac{2\,i\,e-b\,\text{Log}[f]+2x\,(2\,i\,f-c\,\text{Log}[f])}{2\sqrt{2\,i\,f-c\,\text{Log}[f]}}\right]}{8\sqrt{2\,i\,f-c\,\text{Log}[f]}}+$$
$$\frac{e^{2\,i\,d+\frac{(2e-i\,b\,\text{Log}[f])^2}{8\,i\,f+4\,c\,\text{Log}[f]}}f^a\sqrt{\pi}\,\text{Erfi}\left[\frac{2\,i\,e+b\,\text{Log}[f]+2x\,(2\,i\,f+c\,\text{Log}[f])}{2\sqrt{2\,i\,f+c\,\text{Log}[f]}}\right]}{8\sqrt{2\,i\,f+c\,\text{Log}[f]}}$$

Result (type 4, 1118 leaves):

$$
\begin{aligned}
&\frac{1}{8\,c\,\text{Log}[f]\,\left(2\,f-i\,c\,\text{Log}[f]\right)\,\left(2\,f+i\,c\,\text{Log}[f]\right)}\\
&f^a\,\sqrt{\pi}\,\Bigg(8\,\sqrt{c}\,f^{2-\frac{b^2}{4\,c}}\,\text{Erfi}\Big[\frac{(b+2\,c\,x)\,\sqrt{\text{Log}[f]}}{2\,\sqrt{c}}\Big]\,\sqrt{\text{Log}[f]}\,+\\
&\quad 2\,c^{5/2}\,f^{-\frac{b^2}{4\,c}}\,\text{Erfi}\Big[\frac{(b+2\,c\,x)\,\sqrt{\text{Log}[f]}}{2\,\sqrt{c}}\Big]\,\text{Log}[f]^{5/2}-2\,(-1)^{3/4}\,c\,\mathrm{e}^{\frac{i\left(-4\,e^2+4\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2\right)}{4\left(2\,f-i\,c\,\text{Log}[f]\right)}}\,f\,\text{Cos}[2\,d]\\
&\quad \text{Erfi}\Big[\frac{(-1)^{1/4}\,\left(2\,e+4\,f\,x-i\,b\,\text{Log}[f]-2\,i\,c\,x\,\text{Log}[f]\right)}{2\,\sqrt{2\,f-i\,c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{2\,f-i\,c\,\text{Log}[f]}\,+\\
&\quad (-1)^{1/4}\,c^2\,\mathrm{e}^{\frac{i\left(-4\,e^2+4\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2\right)}{4\left(2\,f-i\,c\,\text{Log}[f]\right)}}\,\text{Cos}[2\,d]\,\text{Erfi}\Big[\frac{(-1)^{1/4}\,\left(2\,e+4\,f\,x-i\,b\,\text{Log}[f]-2\,i\,c\,x\,\text{Log}[f]\right)}{2\,\sqrt{2\,f-i\,c\,\text{Log}[f]}}\Big]\\
&\quad \text{Log}[f]^2\,\sqrt{2\,f-i\,c\,\text{Log}[f]}\,-2\,(-1)^{1/4}\,c\,\mathrm{e}^{-\frac{i\left(-4\,e^2-4\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2\right)}{4\left(2\,f+i\,c\,\text{Log}[f]\right)}}\,f\,\text{Cos}[2\,d]\\
&\quad \text{Erfi}\Big[\frac{(-1)^{3/4}\,\left(2\,e+4\,f\,x+i\,b\,\text{Log}[f]+2\,i\,c\,x\,\text{Log}[f]\right)}{2\,\sqrt{2\,f+i\,c\,\text{Log}[f]}}\Big]\,\text{Log}[f]\,\sqrt{2\,f+i\,c\,\text{Log}[f]}\,+\\
&\quad (-1)^{3/4}\,c^2\,\mathrm{e}^{-\frac{i\left(-4\,e^2-4\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2\right)}{4\left(2\,f+i\,c\,\text{Log}[f]\right)}}\,\text{Cos}[2\,d]\\
&\quad \text{Erfi}\Big[\frac{(-1)^{3/4}\,\left(2\,e+4\,f\,x+i\,b\,\text{Log}[f]+2\,i\,c\,x\,\text{Log}[f]\right)}{2\,\sqrt{2\,f+i\,c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{2\,f+i\,c\,\text{Log}[f]}\,+\\
&\quad 2\,(-1)^{1/4}\,c\,\mathrm{e}^{\frac{i\left(-4\,e^2+4\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2\right)}{4\left(2\,f-i\,c\,\text{Log}[f]\right)}}\,f\,\text{Erfi}\Big[\frac{(-1)^{1/4}\,\left(2\,e+4\,f\,x-i\,b\,\text{Log}[f]-2\,i\,c\,x\,\text{Log}[f]\right)}{2\,\sqrt{2\,f-i\,c\,\text{Log}[f]}}\Big]\\
&\quad \text{Log}[f]\,\sqrt{2\,f-i\,c\,\text{Log}[f]}\,\text{Sin}[2\,d]+(-1)^{3/4}\,c^2\,\mathrm{e}^{\frac{i\left(-4\,e^2+4\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2\right)}{4\left(2\,f-i\,c\,\text{Log}[f]\right)}}\\
&\quad \text{Erfi}\Big[\frac{(-1)^{1/4}\,\left(2\,e+4\,f\,x-i\,b\,\text{Log}[f]-2\,i\,c\,x\,\text{Log}[f]\right)}{2\,\sqrt{2\,f-i\,c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{2\,f-i\,c\,\text{Log}[f]}\,\text{Sin}[2\,d]+\\
&\quad 2\,(-1)^{3/4}\,c\,\mathrm{e}^{-\frac{i\left(-4\,e^2-4\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2\right)}{4\left(2\,f+i\,c\,\text{Log}[f]\right)}}\,f\,\text{Erfi}\Big[\frac{(-1)^{3/4}\,\left(2\,e+4\,f\,x+i\,b\,\text{Log}[f]+2\,i\,c\,x\,\text{Log}[f]\right)}{2\,\sqrt{2\,f+i\,c\,\text{Log}[f]}}\Big]\\
&\quad \text{Log}[f]\,\sqrt{2\,f+i\,c\,\text{Log}[f]}\,\text{Sin}[2\,d]+(-1)^{1/4}\,c^2\,\mathrm{e}^{-\frac{i\left(-4\,e^2-4\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2\right)}{4\left(2\,f+i\,c\,\text{Log}[f]\right)}}\\
&\quad \text{Erfi}\Big[\frac{(-1)^{3/4}\,\left(2\,e+4\,f\,x+i\,b\,\text{Log}[f]+2\,i\,c\,x\,\text{Log}[f]\right)}{2\,\sqrt{2\,f+i\,c\,\text{Log}[f]}}\Big]\,\text{Log}[f]^2\,\sqrt{2\,f+i\,c\,\text{Log}[f]}\,\text{Sin}[2\,d]\Bigg)
\end{aligned}
$$

Problem 133: Result more than twice size of optimal antiderivative.

$$\int f^{a+b\,x+c\,x^2}\,\text{Cos}\left[d+e\,x+f\,x^2\right]^3\,dx$$

Optimal (type 4, 422 leaves, 14 steps):

$$\frac{3\,e^{-i\,d-\frac{(e+i\,b\,\text{Log}[f])^2}{4\,i\,f-4\,c\,\text{Log}[f]}}\,f^a\,\sqrt{\pi}\,\text{Erf}\left[\frac{i\,e-b\,\text{Log}[f]+2\,x\,(i\,f-c\,\text{Log}[f])}{2\,\sqrt{i\,f-c\,\text{Log}[f]}}\right]}{16\,\sqrt{i\,f-c\,\text{Log}[f]}}+$$

$$\frac{e^{-3\,i\,d-\frac{(3\,e+i\,b\,\text{Log}[f])^2}{4\,(3\,i\,f-c\,\text{Log}[f])}}\,f^a\,\sqrt{\pi}\,\text{Erf}\left[\frac{3\,i\,e-b\,\text{Log}[f]+2\,x\,(3\,i\,f-c\,\text{Log}[f])}{2\,\sqrt{3\,i\,f-c\,\text{Log}[f]}}\right]}{16\,\sqrt{3\,i\,f-c\,\text{Log}[f]}}+$$

$$\frac{3\,e^{i\,d+\frac{(e-i\,b\,\text{Log}[f])^2}{4\,i\,f+4\,c\,\text{Log}[f]}}\,f^a\,\sqrt{\pi}\,\text{Erfi}\left[\frac{i\,e+b\,\text{Log}[f]+2\,x\,(i\,f+c\,\text{Log}[f])}{2\,\sqrt{i\,f+c\,\text{Log}[f]}}\right]}{16\,\sqrt{i\,f+c\,\text{Log}[f]}}+$$

$$\frac{e^{3\,i\,d-\frac{(3\,i\,e+b\,\text{Log}[f])^2}{4\,(3\,i\,f+c\,\text{Log}[f])}}\,f^a\,\sqrt{\pi}\,\text{Erfi}\left[\frac{3\,i\,e+b\,\text{Log}[f]+2\,x\,(3\,i\,f+c\,\text{Log}[f])}{2\,\sqrt{3\,i\,f+c\,\text{Log}[f]}}\right]}{16\,\sqrt{3\,i\,f+c\,\text{Log}[f]}}$$

Result (type 4, 3829 leaves):

$$\Bigg(f^a\,\sqrt{\pi}$$

$$\Bigg(-27\,(-1)^{3/4}\,e^{\frac{i\,(-e^2+2\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2)}{4\,(f-i\,c\,\text{Log}[f])}}\,f^3\,\text{Cos}[d]\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(e+2\,f\,x-i\,b\,\text{Log}[f]-2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{f-i\,c\,\text{Log}[f]}}\right]$$

$$\sqrt{f-i\,c\,\text{Log}[f]}+27\,(-1)^{1/4}\,c\,e^{\frac{i\,(-e^2+2\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2)}{4\,(f-i\,c\,\text{Log}[f])}}\,f^2\,\text{Cos}[d]$$

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

$$3\,(-1)^{3/4}\,c^2\,e^{\frac{i\,(-e^2+2\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2)}{4\,(f-i\,c\,\text{Log}[f])}}\,f\,\text{Cos}[d]$$

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

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

$$\text{Log}[f]^3\,\sqrt{f-i\,c\,\text{Log}[f]}-3\,(-1)^{3/4}\,e^{\frac{i\,(-9\,e^2+6\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2)}{4\,(3\,f-i\,c\,\text{Log}[f])}}\,f^3\,\text{Cos}[3\,d]$$

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

$$e^{\frac{i\,(-9\,e^2+6\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2)}{4\,(3\,f-i\,c\,\text{Log}[f])}}\,f^2\,\text{Cos}[3\,d]\,\text{Erfi}\left[\frac{(-1)^{1/4}\,(3\,e+6\,f\,x-i\,b\,\text{Log}[f]-2\,i\,c\,x\,\text{Log}[f])}{2\,\sqrt{3\,f-i\,c\,\text{Log}[f]}}\right]$$

$$\text{Log}[f]\,\sqrt{3\,f-i\,c\,\text{Log}[f]}-3\,(-1)^{3/4}\,c^2\,e^{\frac{i\,(-9\,e^2+6\,i\,b\,e\,\text{Log}[f]+b^2\,\text{Log}[f]^2)}{4\,(3\,f-i\,c\,\text{Log}[f])}}\,f\,\text{Cos}[3\,d]$$

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

$$c^3\, e^{\frac{i\left(-9 e^2+6 i b e \mathrm{Log}[f]+b^2 \mathrm{Log}[f]^2\right)}{4\left(3 f-i c \mathrm{Log}[f]\right)}} \mathrm{Cos}[3 d]\, \mathrm{Erfi}\left[\frac{(-1)^{1/4}\left(3 e+6 f x-i b \mathrm{Log}[f]-2 i c x \mathrm{Log}[f]\right)}{2 \sqrt{3 f-i c \mathrm{Log}[f]}}\right]$$

$$\mathrm{Log}[f]^3 \sqrt{3 f-i c \mathrm{Log}[f]}-27 (-1)^{1/4} e^{-\frac{i\left(-e^2-2 i b e \mathrm{Log}[f]+b^2 \mathrm{Log}[f]^2\right)}{4\left(f+i c \mathrm{Log}[f]\right)}} f^3 \mathrm{Cos}[d]$$

$$\mathrm{Erfi}\left[\frac{(-1)^{3/4}\left(e+2 f x+i b \mathrm{Log}[f]+2 i c x \mathrm{Log}[f]\right)}{2 \sqrt{f+i c \mathrm{Log}[f]}}\right] \sqrt{f+i c \mathrm{Log}[f]}+27 (-1)^{3/4} c$$

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

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

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

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

$$\mathrm{Log}[f]^3 \sqrt{f+i c \mathrm{Log}[f]}-3 (-1)^{1/4} e^{-\frac{i\left(-9 e^2-6 i b e \mathrm{Log}[f]+b^2 \mathrm{Log}[f]^2\right)}{4\left(3 f+i c \mathrm{Log}[f]\right)}} f^3 \mathrm{Cos}[3 d]$$

$$\mathrm{Erfi}\left[\frac{(-1)^{3/4}\left(3 e+6 f x+i b \mathrm{Log}[f]+2 i c x \mathrm{Log}[f]\right)}{2 \sqrt{3 f+i c \mathrm{Log}[f]}}\right] \sqrt{3 f+i c \mathrm{Log}[f]}+(-1)^{3/4} c$$

$$e^{-\frac{i\left(-9 e^2-6 i b e \mathrm{Log}[f]+b^2 \mathrm{Log}[f]^2\right)}{4\left(3 f+i c \mathrm{Log}[f]\right)}} f^2 \mathrm{Cos}[3 d]\, \mathrm{Erfi}\left[\frac{(-1)^{3/4}\left(3 e+6 f x+i b \mathrm{Log}[f]+2 i c x \mathrm{Log}[f]\right)}{2 \sqrt{3 f+i c \mathrm{Log}[f]}}\right]$$

$$\mathrm{Log}[f] \sqrt{3 f+i c \mathrm{Log}[f]}-3 (-1)^{1/4} c^2 e^{-\frac{i\left(-9 e^2-6 i b e \mathrm{Log}[f]+b^2 \mathrm{Log}[f]^2\right)}{4\left(3 f+i c \mathrm{Log}[f]\right)}} f \mathrm{Cos}[3 d]$$

$$\mathrm{Erfi}\left[\frac{(-1)^{3/4}\left(3 e+6 f x+i b \mathrm{Log}[f]+2 i c x \mathrm{Log}[f]\right)}{2 \sqrt{3 f+i c \mathrm{Log}[f]}}\right] \mathrm{Log}[f]^2 \sqrt{3 f+i c \mathrm{Log}[f]}+(-1)^{3/4}$$

$$c^3\, e^{-\frac{i\left(-9 e^2-6 i b e \mathrm{Log}[f]+b^2 \mathrm{Log}[f]^2\right)}{4\left(3 f+i c \mathrm{Log}[f]\right)}} \mathrm{Cos}[3 d]\, \mathrm{Erfi}\left[\frac{(-1)^{3/4}\left(3 e+6 f x+i b \mathrm{Log}[f]+2 i c x \mathrm{Log}[f]\right)}{2 \sqrt{3 f+i c \mathrm{Log}[f]}}\right]$$

$$\mathrm{Log}[f]^3 \sqrt{3 f+i c \mathrm{Log}[f]}+27 (-1)^{1/4} e^{\frac{i\left(-e^2+2 i b e \mathrm{Log}[f]+b^2 \mathrm{Log}[f]^2\right)}{4\left(f-i c \mathrm{Log}[f]\right)}} f^3$$

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

$$27 (-1)^{3/4} c\, e^{\frac{i\left(-e^2+2 i b e \mathrm{Log}[f]+b^2 \mathrm{Log}[f]^2\right)}{4\left(f-i c \mathrm{Log}[f]\right)}} f^2 \mathrm{Erfi}\left[\frac{(-1)^{1/4}\left(e+2 f x-i b \mathrm{Log}[f]-2 i c x \mathrm{Log}[f]\right)}{2 \sqrt{f-i c \mathrm{Log}[f]}}\right]$$

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

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

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

$$\text{Log}[f]^3 \sqrt{f - i c \text{Log}[f]} \, \text{Sin}[d] + 27 (-1)^{3/4} e^{-\frac{i \left(-e^2 - 2 i b e \text{Log}[f] + b^2 \text{Log}[f]^2\right)}{4 (f + i c \text{Log}[f])}} f^3$$

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

$$27 (-1)^{1/4} c \, e^{-\frac{i \left(-e^2 - 2 i b e \text{Log}[f] + b^2 \text{Log}[f]^2\right)}{4 (f + i c \text{Log}[f])}} f^2 \, \text{Erfi}\left[\frac{(-1)^{3/4} (e + 2 f x + i b \text{Log}[f] + 2 i c x \text{Log}[f])}{2 \sqrt{f + i c \text{Log}[f]}}\right]$$

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

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

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

$$\text{Log}[f]^3 \sqrt{f + i c \text{Log}[f]} \, \text{Sin}[d] + 3 (-1)^{1/4} e^{\frac{i \left(-9 e^2 + 6 i b e \text{Log}[f] + b^2 \text{Log}[f]^2\right)}{4 (3 f - i c \text{Log}[f])}} f^3$$

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

$$(-1)^{3/4} c \, e^{\frac{i \left(-9 e^2 + 6 i b e \text{Log}[f] + b^2 \text{Log}[f]^2\right)}{4 (3 f - i c \text{Log}[f])}} f^2 \, \text{Erfi}\left[\frac{(-1)^{1/4} (3 e + 6 f x - i b \text{Log}[f] - 2 i c x \text{Log}[f])}{2 \sqrt{3 f - i c \text{Log}[f]}}\right]$$

$$\text{Log}[f] \sqrt{3 f - i c \text{Log}[f]} \, \text{Sin}[3 d] + 3 (-1)^{1/4} c^2 e^{\frac{i \left(-9 e^2 + 6 i b e \text{Log}[f] + b^2 \text{Log}[f]^2\right)}{4 (3 f - i c \text{Log}[f])}} f$$

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

$$(-1)^{3/4} c^3 e^{\frac{i \left(-9 e^2 + 6 i b e \text{Log}[f] + b^2 \text{Log}[f]^2\right)}{4 (3 f - i c \text{Log}[f])}} \text{Erfi}\left[\frac{(-1)^{1/4} (3 e + 6 f x - i b \text{Log}[f] - 2 i c x \text{Log}[f])}{2 \sqrt{3 f - i c \text{Log}[f]}}\right]$$

$$\text{Log}[f]^3 \sqrt{3 f - i c \text{Log}[f]} \, \text{Sin}[3 d] + 3 (-1)^{3/4} e^{-\frac{i \left(-9 e^2 - 6 i b e \text{Log}[f] + b^2 \text{Log}[f]^2\right)}{4 (3 f + i c \text{Log}[f])}} f^3$$

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

$$(-1)^{1/4} c \, e^{-\frac{i \left(-9 e^2 - 6 i b e \text{Log}[f] + b^2 \text{Log}[f]^2\right)}{4 (3 f + i c \text{Log}[f])}} f^2 \, \text{Erfi}\left[\frac{(-1)^{3/4} (3 e + 6 f x + i b \text{Log}[f] + 2 i c x \text{Log}[f])}{2 \sqrt{3 f + i c \text{Log}[f]}}\right]$$

$$\text{Log}[f] \sqrt{3 f + i c \text{Log}[f]} \, \text{Sin}[3 d] + 3 (-1)^{3/4} c^2 e^{-\frac{i \left(-9 e^2 - 6 i b e \text{Log}[f] + b^2 \text{Log}[f]^2\right)}{4 (3 f + i c \text{Log}[f])}} f$$

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

$$(-1)^{1/4} c^3 e^{-\frac{i \left(-9 e^2 - 6 i b e \text{Log}[f] + b^2 \text{Log}[f]^2\right)}{4 (3 f + i c \text{Log}[f])}} \text{Erfi}\left[\frac{(-1)^{3/4} (3 e + 6 f x + i b \text{Log}[f] + 2 i c x \text{Log}[f])}{2 \sqrt{3 f + i c \text{Log}[f]}}\right]$$

$$\left.\left.\text{Log}[f]^3 \sqrt{3 f + i c \text{Log}[f]} \, \text{Sin}[3 d]\right)\right) \Big/$$

$$\left(16 (f - i c \text{Log}[f]) (3 f - i c \text{Log}[f]) (f + i c \text{Log}[f]) (3 f + i c \text{Log}[f])\right)$$

Problem 141: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 79 leaves, 2 steps):

$$\left(2\,e^{i\,(d+e\,x)}\,F^{c\,(a+b\,x)}\,\mathrm{Hypergeometric2F1}\left[2,\,1-\frac{i\,b\,c\,\mathrm{Log}[F]}{e},\,2-\frac{i\,b\,c\,\mathrm{Log}[F]}{e},\,-e^{i\,(d+e\,x)}\right]\right)\Big/\left(f\,\left(i\,e+b\,c\,\mathrm{Log}[F]\right)\right)$$

Result (type 5, 248 leaves):

$$\frac{1}{e\,f\,\left(1+\mathrm{Cos}[d+e\,x]\right)\,\left(e-i\,b\,c\,\mathrm{Log}[F]\right)}\,2\,F^{-\frac{b\,c\,d}{e}}\,\mathrm{Cos}\left[\frac{1}{2}\,(d+e\,x)\right]\,\left(b\,c\,e^{\frac{(d+e\,x)\,(i\,e+b\,c\,\mathrm{Log}[F])}{e}}\,F^{a\,c}\,\mathrm{Cos}\left[\frac{1}{2}\,(d+e\,x)\right]\right.$$
$$\mathrm{Hypergeometric2F1}\left[1,\,1-\frac{i\,b\,c\,\mathrm{Log}[F]}{e},\,2-\frac{i\,b\,c\,\mathrm{Log}[F]}{e},\,-e^{i\,(d+e\,x)}\right]\,\mathrm{Log}[F]-$$
$$i\,F^{c\,\left(a+b\,\left(\frac{d}{e}+x\right)\right)}\,\mathrm{Cos}\left[\frac{1}{2}\,(d+e\,x)\right]\,\mathrm{Hypergeometric2F1}\left[1,\,-\frac{i\,b\,c\,\mathrm{Log}[F]}{e},\,1-\frac{i\,b\,c\,\mathrm{Log}[F]}{e},\right.$$
$$\left.\left.-e^{i\,(d+e\,x)}\right]\,\left(e-i\,b\,c\,\mathrm{Log}[F]\right)+F^{c\,\left(a+b\,\left(\frac{d}{e}+x\right)\right)}\,\left(e-i\,b\,c\,\mathrm{Log}[F]\right)\,\mathrm{Sin}\left[\frac{1}{2}\,(d+e\,x)\right]\right)$$

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

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

Optimal (type 5, 169 leaves, 3 steps):

$$-\frac{1}{3\,e^2\,f^2}2\,e^{i\,(d+e\,x)}\,F^{c\,(a+b\,x)}$$
$$\mathrm{Hypergeometric2F1}\left[2,\,1-\frac{i\,b\,c\,\mathrm{Log}[F]}{e},\,2-\frac{i\,b\,c\,\mathrm{Log}[F]}{e},\,-e^{i\,(d+e\,x)}\right]\,\left(i\,e-b\,c\,\mathrm{Log}[F]\right)-$$
$$\frac{b\,c\,F^{c\,(a+b\,x)}\,\mathrm{Log}[F]\,\mathrm{Sec}\left[\frac{d}{2}+\frac{e\,x}{2}\right]^2}{6\,e^2\,f^2}+\frac{F^{c\,(a+b\,x)}\,\mathrm{Sec}\left[\frac{d}{2}+\frac{e\,x}{2}\right]^2\,\mathrm{Tan}\left[\frac{d}{2}+\frac{e\,x}{2}\right]}{6\,e\,f^2}$$

Result (type 5, 749 leaves):

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

$$\frac{1}{3\,e^4\,\left(f+f\,\mathrm{Cos}[d+e\,x]\right)^2}\,8\,\mathrm{i}\,b\,c\,F^{\frac{c\,(-b\,d+a\,e)}{e}}\,\mathrm{Cos}\left[\frac{d}{2}+\frac{e\,x}{2}\right]^4\,\mathrm{Log}[F]\,\left(-\mathrm{i}\,e+b\,c\,\mathrm{Log}[F]\right)$$

$$\left(\mathrm{i}\,e+b\,c\,\mathrm{Log}[F]\right)\,\left(-\frac{1}{2\,b\,c\,\mathrm{Log}[F]}\,e\,F^{a\,c-\frac{b\,c\,d}{e}-\frac{c\,(-b\,d+a\,e)}{e}+\frac{2\,b\,c\,\left(\frac{d}{2}+\frac{e\,x}{2}\right)}{e}}\,\mathrm{Hypergeometric2F1}\left[1,\right.\right.$$

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

$$\left(e^{2\,\mathrm{i}\,\left(\frac{d}{2}+\frac{e\,x}{2}\right)}\right)^{1-\frac{\mathrm{i}\,\left(a\,c-\frac{b\,c\,d}{e}-\frac{c\,(-b\,d+a\,e)}{e}+\frac{2\,b\,c\,\left(\frac{d}{2}+\frac{e\,x}{2}\right)}{e}\right)\,\mathrm{Log}[F]}{2\,\left(\frac{d}{2}+\frac{e\,x}{2}\right)}+\frac{1}{2}\,\mathrm{i}\,\left(2\,\mathrm{i}+\frac{\left(a\,c-\frac{b\,c\,d}{e}-\frac{c\,(-b\,d+a\,e)}{e}+\frac{2\,b\,c\,\left(\frac{d}{2}+\frac{e\,x}{2}\right)}{e}\right)\,\mathrm{Log}[F]}{\frac{d}{2}+\frac{e\,x}{2}}\right)}\,\mathrm{Hypergeometric2F1}\Big[$$

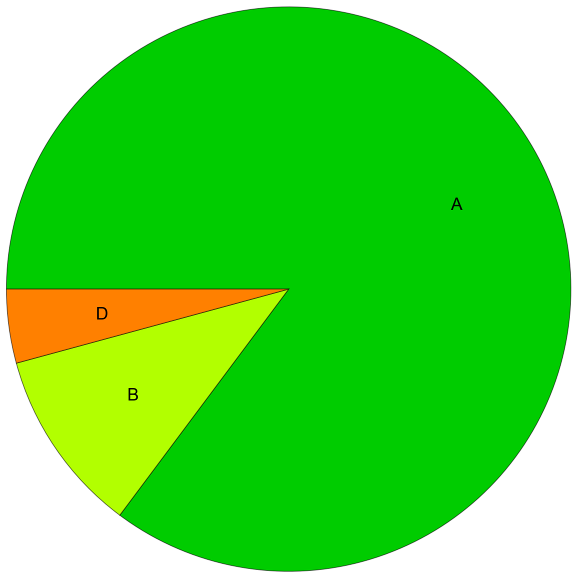
$$\left.\left.1,\,\frac{e-\mathrm{i}\,b\,c\,\mathrm{Log}[F]}{e},\,1+\frac{e-\mathrm{i}\,b\,c\,\mathrm{Log}[F]}{e},\,-e^{2\,\mathrm{i}\,\left(\frac{d}{2}+\frac{e\,x}{2}\right)}\right]\right)\Big/\left(2\,\left(e-\mathrm{i}\,b\,c\,\mathrm{Log}[F]\right)\right)\right)+$$

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

$$\left.\left(e^2+b^2\,c^2\,\mathrm{Log}[F]^2\right)\,\mathrm{Sin}\left[\frac{d}{2}+\frac{e\,x}{2}\right]\right)\Big/\left(3\,e^3\,\left(f+f\,\mathrm{Cos}[d+e\,x]\right)^2\right)$$

Summary of Integration Test Results

142 integration problems



A - 121 optimal antiderivatives

B - 15 more than twice size of optimal antiderivatives

C - 0 unnecessarily complex antiderivatives

D - 6 unable to integrate problems

E - 0 integration timeouts