Mathematica 11.3 Integration Test Results

on the problems in the test-suite directory "3 Logarithms"

Test results for the 193 problems in "3.1.2 (d x)^m (a+b log(c x^n))^p.m"

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

$$\int \frac{(a+b \operatorname{Log}[c x^n])^2}{x} \, dx$$

Optimal (type 3, 22 leaves, 2 steps):

$$\frac{(a+b \operatorname{Log}[c x^n])^3}{3 b n}$$

Result (type 3, 46 leaves):

$$\frac{a^2 \operatorname{Log}[c x^n]}{n}+\frac{a b \operatorname{Log}[c x^n]^2}{n}+\frac{b^2 \operatorname{Log}[c x^n]^3}{3 n}$$

Problem 61: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b \operatorname{Log}[c x^n])^3}{x} \, dx$$

Optimal (type 3, 22 leaves, 2 steps):

$$\frac{(a+b \operatorname{Log}[c x^n])^4}{4 b n}$$

Result (type 3, 67 leaves):

$$\frac{a^3 \operatorname{Log}[c x^n]}{n}+\frac{3 a^2 b \operatorname{Log}[c x^n]^2}{2 n}+\frac{a b^2 \operatorname{Log}[c x^n]^3}{n}+\frac{b^3 \operatorname{Log}[c x^n]^4}{4 n}$$

Test results for the 456 problems in "3.1.4 (f x)^m (d+e x^r)^q (a+b log(c x^n))^p.m"

Problem 56: Result more than twice size of optimal antiderivative.

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

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

$$\frac{b d n}{6 e^3 (d+e x)^2}-\frac{2 b n}{3 e^3 (d+e x)}+\frac{x^3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{3 d (d+e x)^3}-\frac{b n \operatorname{Log}[d+e x]}{3 d e^3}$$

Result (type 3, 170 leaves):

$$-\frac{1}{6 d e^3 (d+e x)^3}\Big(2 a d^3+3 b d^3 n+6 a d^2 e x+7 b d^2 e n x+6 a d e^2 x^2+4 b d e^2 n x^2-2 b n (d+e x)^3 \operatorname{Log}[x]+ 2 b d \left(d^2+3 d e x+3 e^2 x^2\right) \operatorname{Log}\left[c x^n\right]+2 b d^3 n \operatorname{Log}[d+e x]+6 b d^2 e n x \operatorname{Log}[d+e x]+6 b d e^2 n x^2 \operatorname{Log}[d+e x]+2 b e^3 n x^3 \operatorname{Log}[d+e x]\Big)$$

Problem 64: Result more than twice size of optimal antiderivative.

$$\int \frac{x^6 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{(d+e x)^7} \, dx$$

Optimal (type 4, 243 leaves, 8 steps):

$$-\frac{x^6 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{6 e (d+e x)^6}-\frac{x^5 \left(6 a+b n+6 b \operatorname{Log}\left[c x^n\right]\right)}{30 e^2 (d+e x)^5}-\frac{x^2 \left(20 a+19 b n+20 b \operatorname{Log}\left[c x^n\right]\right)}{40 e^5 (d+e x)^2}-\frac{x \left(20 a+29 b n+20 b \operatorname{Log}\left[c x^n\right]\right)}{20 e^6 (d+e x)}- \frac{x^4 \left(30 a+11 b n+30 b \operatorname{Log}\left[c x^n\right]\right)}{120 e^3 (d+e x)^4}-\frac{x^3 \left(60 a+37 b n+60 b \operatorname{Log}\left[c x^n\right]\right)}{180 e^4 (d+e x)^3}+\frac{\left(20 a+49 b n+20 b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x}{d}\right]}{20 e^7}+\frac{b n \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]}{e^7}$$

Result (type 4, 673 leaves):

$$\frac{1}{360 e^7 (d+e x)^6}\Big(882 a d^6+812 b d^6 n+4932 a d^5 e x+4350 b d^5 e n x+11250 a d^4 e^2 x^2+9399 b d^4 e^2 n x^2+13200 a d^3 e^3 x^3+10262 b d^3 e^3 n x^3+8100 a d^2 e^4 x^4+5679 b d^2 e^4 n x^4+2160 a d e^5 x^5+1278 b d e^5 n x^5+882 b d^6 \text{Log}[c x^n]+4932 b d^5 e x \text{Log}[c x^n]+11250 b d^4 e^2 x^2 \text{Log}[c x^n]+13200 b d^3 e^3 x^3 \text{Log}[c x^n]+8100 b d^2 e^4 x^4 \text{Log}[c x^n]+2160 b d e^5 x^5 \text{Log}[c x^n]+360 a d^6 \text{Log}[d+e x]+882 b d^6 n \text{Log}[d+e x]+2160 a d^5 e x \text{Log}[d+e x]+5292 b d^5 e n x \text{Log}[d+e x]+5400 a d^4 e^2 x^2 \text{Log}[d+e x]+13230 b d^4 e^2 n x^2 \text{Log}[d+e x]+7200 a d^3 e^3 x^3 \text{Log}[d+e x]+17640 b d^3 e^3 n x^3 \text{Log}[d+e x]+5400 a d^2 e^4 x^4 \text{Log}[d+e x]+13230 b d^2 e^4 n x^4 \text{Log}[d+e x]+2160 a d e^5 x^5 \text{Log}[d+e x]+5292 b d e^5 n x^5 \text{Log}[d+e x]+360 a e^6 x^6 \text{Log}[d+e x]+882 b e^6 n x^6 \text{Log}[d+e x]+360 b d^6 \text{Log}[c x^n] \text{Log}[d+e x]+2160 b d^5 e x \text{Log}[c x^n] \text{Log}[d+e x]+5400 b d^4 e^2 x^2 \text{Log}[c x^n] \text{Log}[d+e x]+7200 b d^3 e^3 x^3 \text{Log}[c x^n] \text{Log}[d+e x]+5400 b d^2 e^4 x^4 \text{Log}[c x^n] \text{Log}[d+e x]+2160 b d e^5 x^5 \text{Log}[c x^n] \text{Log}[d+e x]+360 b e^6 x^6 \text{Log}[c x^n] \text{Log}[d+e x]-18 b n (d+e x)^6 \text{Log}[x] \left(49+20 \text{Log}[d+e x]-20 \text{Log}\left[1+\frac{e x}{d}\right]\right)+360 b n (d+e x)^6 \text{PolyLog}\left[2,-\frac{e x}{d}\right]\Big)$$

Problem 65: Result more than twice size of optimal antiderivative.

$$\int \frac{x^5 (a+b \text{Log}[c x^n])}{(d+e x)^7} \, dx$$

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

$$-\frac{b d^4 n}{30 e^6 (d+e x)^5}+\frac{5 b d^3 n}{24 e^6 (d+e x)^4}-\frac{5 b d^2 n}{9 e^6 (d+e x)^3}+\frac{5 b d n}{6 e^6 (d+e x)^2}-\frac{5 b n}{6 e^6 (d+e x)}+\frac{x^6 (a+b \text{Log}[c x^n])}{6 d (d+e x)^6}-\frac{b n \text{Log}[d+e x]}{6 d e^6}$$

Result (type 3, 335 leaves):

$$-\frac{1}{360 d e^6 (d+e x)^6}\Big(60 a d^6+137 b d^6 n+360 a d^5 e x+762 b d^5 e n x+900 a d^4 e^2 x^2+1725 b d^4 e^2 n x^2+1200 a d^3 e^3 x^3+2000 b d^3 e^3 n x^3+900 a d^2 e^4 x^4+1200 b d^2 e^4 n x^4+360 a d e^5 x^5+300 b d e^5 n x^5-60 b n (d+e x)^6 \text{Log}[x]+60 b d (d^5+6 d^4 e x+15 d^3 e^2 x^2+20 d^2 e^3 x^3+15 d e^4 x^4+6 e^5 x^5) \text{Log}[c x^n]+60 b d^6 n \text{Log}[d+e x]+360 b d^5 e n x \text{Log}[d+e x]+900 b d^4 e^2 n x^2 \text{Log}[d+e x]+1200 b d^3 e^3 n x^3 \text{Log}[d+e x]+900 b d^2 e^4 n x^4 \text{Log}[d+e x]+360 b d e^5 n x^5 \text{Log}[d+e x]+60 b e^6 n x^6 \text{Log}[d+e x]\Big)$$

Problem 75: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{x}{c}\right]}{c-x} \, dx$$

Optimal (type 4, 10 leaves, 1 step):

$$\text{PolyLog}\left[2, 1-\frac{x}{c}\right]$$

Result (type 4, 27 leaves):

$$-\text{Log}\left[\frac{x}{c}\right]\text{Log}\left[1-\frac{x}{c}\right]-\text{PolyLog}\left[2,\frac{x}{c}\right]$$

Problem 115: Result more than twice size of optimal antiderivative.

$$\int\frac{x^2\,(a+b\,\text{Log}[c\,x^n])^2}{(d+e\,x)^4}\,dx$$

Optimal (type 4, 161 leaves, 5 steps):

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

Result (type 4, 612 leaves):

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

Problem 116: Result more than twice size of optimal antiderivative.

$$\int \frac{x\,(a+b\,\mathrm{Log}[c\,x^n])^2}{(d+e\,x)^4}\,dx$$

Optimal (type 4, 210 leaves, 8 steps):

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

Result (type 4, 441 leaves):

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

Problem 121: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 113 leaves, 4 steps):

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

Result (type 4, 243 leaves):

$$\frac{1}{4\,d}\Big(4\,\text{Log}[x]\,(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])^3-4\,(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])^3\,\text{Log}[d+e\,x]+6\,b\,n\,(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])^2\Big(\text{Log}[x]^2-2\Big(\text{Log}[x]\,\text{Log}\Big[1+\frac{e\,x}{d}\Big]+\text{PolyLog}\Big[2,-\frac{e\,x}{d}\Big]\Big)\Big)-4\,b^2\,n^2\,(-a+b\,n\,\text{Log}[x]-b\,\text{Log}[c\,x^n])\Big(\text{Log}[x]^2\Big(\text{Log}[x]-3\,\text{Log}\Big[1+\frac{e\,x}{d}\Big]\Big)-6\,\text{Log}[x]\,\text{PolyLog}\Big[2,-\frac{e\,x}{d}\Big]+6\,\text{PolyLog}\Big[3,-\frac{e\,x}{d}\Big]\Big)+b^3\,n^3\Big(\text{Log}[x]^4-4\,\text{Log}[x]^3\,\text{Log}\Big[1+\frac{e\,x}{d}\Big]-12\,\text{Log}[x]^2\,\text{PolyLog}\Big[2,-\frac{e\,x}{d}\Big]+24\,\text{Log}[x]\,\text{PolyLog}\Big[3,-\frac{e\,x}{d}\Big]-24\,\text{PolyLog}\Big[4,-\frac{e\,x}{d}\Big]\Big)\Big)$$

Problem 134: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{d+e\,x}\,(a+b\,\text{Log}[c\,x^n])}{x}\,dx$$

Optimal (type 4, 211 leaves, 12 steps):

$$-4\,b\,n\,\sqrt{d+e\,x}+4\,b\,\sqrt{d}\,n\,\text{ArcTanh}\Big[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\Big]+2\,b\,\sqrt{d}\,n\,\text{ArcTanh}\Big[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\Big]^2+2\,\sqrt{d+e\,x}\,(a+b\,\text{Log}[c\,x^n])-2\,\sqrt{d}\,\text{ArcTanh}\Big[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\Big]\,(a+b\,\text{Log}[c\,x^n])-4\,b\,\sqrt{d}\,n\,\text{ArcTanh}\Big[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\Big]\,\text{Log}\Big[\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x}}\Big]-2\,b\,\sqrt{d}\,n\,\text{PolyLog}\Big[2,1-\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x}}\Big]$$

Result (type 5, 177 leaves):

$$\frac{1}{\sqrt{1+\frac{d}{e\,x}}}b\,n\,\sqrt{d+e\,x}\left(-4\,\text{HypergeometricPFQ}\Big[\Big\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\Big\},\Big\{\frac{1}{2},\frac{1}{2}\Big\},-\frac{d}{e\,x}\Big]+2\,\sqrt{1+\frac{d}{e\,x}}\,\text{Log}[x]-\frac{2\,\sqrt{d}\,\text{ArcSinh}\Big[\frac{\sqrt{d}}{\sqrt{e}\,\sqrt{x}}\Big]\,\text{Log}[x]}{\sqrt{e}\,\sqrt{x}}\right)+2\,\sqrt{d+e\,x}\,(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])-2\,\sqrt{d}\,\text{ArcTanh}\Big[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\Big]\,(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])$$

Problem 135: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{d+e\,x}\,(a+b\,\text{Log}[c\,x^n])}{x^2}\,dx$$

Optimal (type 4, 221 leaves, 11 steps):

$$-\frac{b\,n\,\sqrt{d+e\,x}}{x}-\frac{b\,e\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]}{\sqrt{d}}+\frac{b\,e\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]^2}{\sqrt{d}}-\frac{\sqrt{d+e\,x}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x}-\frac{e\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{\sqrt{d}}-\frac{2\,b\,e\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]\,\text{Log}\left[\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x}}\right]}{\sqrt{d}}-\frac{b\,e\,n\,\text{PolyLog}\left[2,1-\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x}}\right]}{\sqrt{d}}$$

Result (type 5, 193 leaves):

$$\frac{1}{\sqrt{d}\,\sqrt{1+\frac{d}{e\,x}}\,x}\left(-2\,b\,\sqrt{d}\,n\,\sqrt{d+e\,x}\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\},\left\{\frac{3}{2},\frac{3}{2}\right\},-\frac{d}{e\,x}\right]-b\,\sqrt{e}\,n\,\sqrt{x}\,\sqrt{d+e\,x}\,\text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\,\sqrt{x}}\right]\,\left(1+\text{Log}[x]\right)-\sqrt{1+\frac{d}{e\,x}}\,\left(\sqrt{d}\,\sqrt{d+e\,x}\,\left(a+b\,n+b\,\text{Log}\left[c\,x^n\right]\right)+e\,x\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]\,\left(a-b\,n\,\text{Log}[x]+b\,\text{Log}\left[c\,x^n\right]\right)\right)\right)$$

Problem 136: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{d+e\,x}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x^3}\,dx$$

Optimal (type 4, 298 leaves, 16 steps):

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

Result (type 5, 208 leaves):

$$\frac{1}{36\, d^{3/2} \sqrt{1+\frac{d}{e\,x}}\; x^2}$$

$$\left(-16\, b\, d^{3/2}\, n \sqrt{d+e\,x}\; \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-\frac{d}{e\,x}\right]+9\, e^2 \sqrt{1+\frac{d}{e\,x}}\; x^2\, \text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right] \left(a-b\, n\, \text{Log}[x]+b\, \text{Log}[c\, x^n]\right)-\right.$$

$$\left.9 \sqrt{d+e\,x} \left(-b\, e^{3/2}\, n\, x^{3/2}\, \text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\,\sqrt{x}}\right] \text{Log}[x]+\sqrt{d} \sqrt{1+\frac{d}{e\,x}} \,(2\,d+e\,x)\,\left(a+b\,\text{Log}[c\,x^n]\right)\right)\right)$$

Problem 141: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 255 leaves, 18 steps):

$$-\frac{16}{3}\, b\, d\, n \sqrt{d+e\,x}-\frac{4}{9}\, b\, n\, (d+e\,x)^{3/2}+\frac{16}{3}\, b\, d^{3/2}\, n\, \text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]+2\, b\, d^{3/2}\, n\, \text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]^2+$$

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

$$4\, b\, d^{3/2}\, n\, \text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right] \text{Log}\left[\frac{2\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x}}\right]-2\, b\, d^{3/2}\, n\, \text{PolyLog}\left[2,\, 1-\frac{2\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x}}\right]$$

Result (type 5, 272 leaves):

$$\frac{1}{3\sqrt{1+\frac{e\,x}{d}}}\, b\, n \sqrt{d+e\,x}\left(-3\, e\, x\, \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},-\frac{e\,x}{d}\right]+2\left(e\,x\sqrt{1+\frac{e\,x}{d}}+d\left(-1+\sqrt{1+\frac{e\,x}{d}}\right)\right)\text{Log}[x]\right)+\frac{1}{\sqrt{1+\frac{d}{e\,x}}}$$

$$b\, d\, n \sqrt{d+e\,x}\left(-4\, \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},-\frac{d}{e\,x}\right]+2\sqrt{1+\frac{d}{e\,x}}\; \text{Log}[x]-\frac{2\sqrt{d}\; \text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\,\sqrt{x}}\right] \text{Log}[x]}{\sqrt{e}\,\sqrt{x}}\right)+$$

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

Problem 142: Result unnecessarily involves higher level functions.

$$\int \frac{(d+e x)^{3/2} \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^2} \, dx$$

Optimal (type 4, 259 leaves, 14 steps):

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

Result (type 5, 331 leaves):

$$-\frac{1}{\sqrt{1+\frac{d}{e x}}\, \sqrt{x}} 2 b \sqrt{e}\, n \sqrt{d+e x}$$
$$\left(2 \sqrt{e}\, \sqrt{x} \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},-\frac{d}{e x}\right]-\sqrt{e}\, \sqrt{1+\frac{d}{e x}}\, \sqrt{x} \operatorname{Log}[x]+\sqrt{d} \operatorname{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\, \sqrt{x}}\right] \operatorname{Log}[x]\right)-\frac{1}{\sqrt{1+\frac{d}{e x}}\, x}$$
$$b \sqrt{d}\, n \sqrt{d+e x} \left(2 \sqrt{d} \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\},\left\{\frac{3}{2},\frac{3}{2}\right\},-\frac{d}{e x}\right]+\left(\sqrt{d}\, \sqrt{1+\frac{d}{e x}}+\sqrt{e}\, \sqrt{x} \operatorname{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\, \sqrt{x}}\right]\right) (1+\operatorname{Log}[x])\right)-$$
$$\frac{(d-2 e x) \sqrt{d+e x} \left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right)}{x}-3 \sqrt{d}\, e \operatorname{ArcTanh}\left[\frac{\sqrt{d+e x}}{\sqrt{d}}\right] \left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right)$$

Problem 143: Result unnecessarily involves higher level functions.

$$\int \frac{(d+e x)^{3/2} \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^3} \, dx$$

Optimal (type 4, 293 leaves, 16 steps):

$$-\frac{b\,d\,n\sqrt{d+e\,x}}{4\,x^2}-\frac{11\,b\,e\,n\sqrt{d+e\,x}}{8\,x}-\frac{9\,b\,e^2\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]}{8\sqrt{d}}+\frac{3\,b\,e^2\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]^2}{4\sqrt{d}}-\frac{3\,e\sqrt{d+e\,x}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{4\,x}-\frac{(d+e\,x)^{3/2}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{2\,x^2}-\frac{3\,e^2\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{4\sqrt{d}}-\frac{3\,b\,e^2\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]\,\text{Log}\left[\frac{2\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x}}\right]}{2\sqrt{d}}-\frac{3\,b\,e^2\,n\,\text{PolyLog}\left[2,1-\frac{2\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x}}\right]}{4\sqrt{d}}$$

Result (type 5, 270 leaves):

$$\frac{1}{36\sqrt{d}\sqrt{1+\frac{d}{e\,x}}\,x^2}\left(-16\,b\,d^{3/2}\,n\sqrt{d+e\,x}\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-\frac{d}{e\,x}\right]-9\left(8\,b\sqrt{d}\,e\,n\,x\sqrt{d+e\,x}\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\},\left\{\frac{3}{2},\frac{3}{2}\right\},-\frac{d}{e\,x}\right]+b\,e^{3/2}\,n\,x^{3/2}\sqrt{d+e\,x}\,\text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\sqrt{x}}\right]\,(4+3\,\text{Log}[x])+\sqrt{1+\frac{d}{e\,x}}\left(3\,e^2\,x^2\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]\,\left(a-b\,n\,\text{Log}[x]+b\,\text{Log}\left[c\,x^n\right]\right)+\sqrt{d}\sqrt{d+e\,x}\,\left(2\,a\,d+5\,a\,e\,x+4\,b\,e\,n\,x+b\,(2\,d+5\,e\,x)\,\text{Log}\left[c\,x^n\right]\right)\right)\right)\right)$$

Problem 148: Result unnecessarily involves higher level functions.

$$\int\frac{a+b\,\text{Log}\left[c\,x^n\right]}{x\sqrt{d+e\,x}}\,dx$$

Optimal (type 4, 152 leaves, 7 steps):

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

Result (type 5, 132 leaves):

$$\frac{b\,n\sqrt{1+\frac{d}{e\,x}}\left(-4\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\},\left\{\frac{3}{2},\frac{3}{2}\right\},-\frac{d}{e\,x}\right]-\frac{2\sqrt{e}\sqrt{x}\,\text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\sqrt{x}}\right]\,\text{Log}[x]}{\sqrt{d}}\right)}{\sqrt{d+e\,x}}-\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]\,\left(a+b\,\left(-n\,\text{Log}[x]+\text{Log}\left[c\,x^n\right]\right)\right)}{\sqrt{d}}$$

Problem 149: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 226 leaves, 11 steps):

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

Result (type 5, 191 leaves):

$$\frac{1}{9\,d^{3/2}\,x\,\sqrt{d+e\,x}}\left(2\,b\,d^{3/2}\,n\,\sqrt{1+\frac{d}{e\,x}}\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-\frac{d}{e\,x}\right]+9\,b\,e^{3/2}\,n\,\sqrt{1+\frac{d}{e\,x}}\,x^{3/2}\,\text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\,\sqrt{x}}\right]\,\left(1+\text{Log}[x]\right)-9\,\sqrt{d}\,\left(d+e\,x\right)\,\left(a+b\,n+b\,\text{Log}[c\,x^n]\right)+9\,e\,x\,\sqrt{d+e\,x}\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]\,\left(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n]\right)\right)$$

Problem 150: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 304 leaves, 16 steps):

$$-\frac{b\,n\,\sqrt{d+e\,x}}{4\,d\,x^2}+\frac{5\,b\,e\,n\,\sqrt{d+e\,x}}{8\,d^2\,x}+\frac{7\,b\,e^2\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]}{8\,d^{5/2}}+\frac{3\,b\,e^2\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]^2}{4\,d^{5/2}}-\frac{\sqrt{d+e\,x}\,\left(a+b\,\text{Log}[c\,x^n]\right)}{2\,d\,x^2}+\frac{3\,e\,\sqrt{d+e\,x}\,\left(a+b\,\text{Log}[c\,x^n]\right)}{4\,d^2\,x}-\frac{3\,e^2\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]\,\left(a+b\,\text{Log}[c\,x^n]\right)}{4\,d^{5/2}}-\frac{3\,b\,e^2\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]\,\text{Log}\left[\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x}}\right]}{2\,d^{5/2}}-\frac{3\,b\,e^2\,n\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x}}\right]}{4\,d^{5/2}}$$

Result (type 5, 206 leaves):

$$\frac{1}{100\, d^{5/2}\, x^2\, \sqrt{d+e\,x}}\left(-16\, b\, d^{5/2}\, n\, \sqrt{1+\frac{d}{e\,x}}\ \text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\frac{5}{2},\frac{5}{2}\right\},\left\{\frac{7}{2},\frac{7}{2}\right\},-\frac{d}{e\,x}\right]-25\left(3\, b\, e^{5/2}\, n\, \sqrt{1+\frac{d}{e\,x}}\ x^{5/2}\, \text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\ \sqrt{x}}\right]\, \text{Log}[x]+\sqrt{d}\ \left(2\, d^2-d\, e\, x-3\, e^2\, x^2\right)\ \left(a+b\, \text{Log}\left[c\, x^n\right]\right)+3\, e^2\, x^2\, \sqrt{d+e\,x}\ \text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]\ \left(a-b\, n\, \text{Log}[x]+b\, \text{Log}\left[c\, x^n\right]\right)\right)\right)$$

Problem 155: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 201 leaves, 11 steps):

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

Result (type 5, 185 leaves):

$$-\frac{1}{9\, d^{3/2}\, e\, x\, \sqrt{d+e\,x}}2\left(2\, b\, d^{3/2}\, n\, \sqrt{1+\frac{d}{e\,x}}\ \text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-\frac{d}{e\,x}\right]+9\, e\, x\left(b\,\sqrt{e}\ n\, \sqrt{1+\frac{d}{e\,x}}\ \sqrt{x}\ \text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\ \sqrt{x}}\right]\, \text{Log}[x]-\sqrt{d}\ \left(a+b\,\text{Log}\left[c\, x^n\right]\right)+\sqrt{d+e\,x}\ \text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]\ \left(a-b\, n\, \text{Log}[x]+b\,\text{Log}\left[c\, x^n\right]\right)\right)\right)$$

Problem 156: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 253 leaves, 15 steps):

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

Result (type 5, 186 leaves):

$$\frac{1}{25\,d^{5/2}\,e\,x^2\,\sqrt{d+e\,x}}\left(6\,b\,d^{5/2}\,n\,\sqrt{1+\frac{d}{e\,x}}\,\text{HypergeometricPFQ}\left[\left\{\frac{5}{2},\frac{5}{2},\frac{5}{2}\right\},\left\{\frac{7}{2},\frac{7}{2}\right\},-\frac{d}{e\,x}\right]-5\left(2\,b\,d^{5/2}\,n\,\sqrt{1+\frac{d}{e\,x}}\,\text{Hypergeometric2F1}\left[\frac{3}{2},\frac{5}{2},\frac{7}{2},-\frac{d}{e\,x}\right]\,(1+\text{Log}[x])+\right.\right.$$
$$\left.\left.5\,e\,x\left(\sqrt{d}\,(d+3\,e\,x)-3\,e\,x\,\sqrt{d+e\,x}\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x}}{\sqrt{d}}\right]\right)\,(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])\right)\right)$$

Problem 210: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^5\,(a+b\,\text{Log}[c\,x^n])}{d+e\,x^2}\,dx$$

Optimal (type 4, 121 leaves, 6 steps):

$$\frac{b\,d\,n\,x^2}{4\,e^2}-\frac{b\,n\,x^4}{16\,e}-\frac{d\,x^2\,(a+b\,\text{Log}[c\,x^n])}{2\,e^2}+\frac{x^4\,(a+b\,\text{Log}[c\,x^n])}{4\,e}+\frac{d^2\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}\left[1+\frac{e\,x^2}{d}\right]}{2\,e^3}+\frac{b\,d^2\,n\,\text{PolyLog}\left[2,-\frac{e\,x^2}{d}\right]}{4\,e^3}$$

Result (type 4, 226 leaves):

$$\frac{1}{16\,e^3}\left(-8\,a\,d\,e\,x^2+4\,b\,d\,e\,n\,x^2+4\,a\,e^2\,x^4-b\,e^2\,n\,x^4-8\,b\,d\,e\,x^2\,\text{Log}[c\,x^n]+\right.$$
$$4\,b\,e^2\,x^4\,\text{Log}[c\,x^n]+8\,b\,d^2\,n\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]+8\,b\,d^2\,n\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]+8\,a\,d^2\,\text{Log}[d+e\,x^2]-$$
$$\left.8\,b\,d^2\,n\,\text{Log}[x]\,\text{Log}[d+e\,x^2]+8\,b\,d^2\,\text{Log}[c\,x^n]\,\text{Log}[d+e\,x^2]+8\,b\,d^2\,n\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]+8\,b\,d^2\,n\,\text{PolyLog}\left[2,\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]\right)$$

Problem 211: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{x^3 \left(a + b \operatorname{Log}[c x^n]\right)}{d + e x^2} \, dx$$

Optimal (type 4, 83 leaves, 5 steps):

$$-\frac{b n x^2}{4 e} + \frac{x^2 \left(a + b \operatorname{Log}[c x^n]\right)}{2 e} - \frac{d \left(a + b \operatorname{Log}[c x^n]\right) \operatorname{Log}\left[1 + \frac{e x^2}{d}\right]}{2 e^2} - \frac{b d n \operatorname{PolyLog}\left[2, -\frac{e x^2}{d}\right]}{4 e^2}$$

Result (type 4, 174 leaves):

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

Problem 212: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{x \left(a + b \operatorname{Log}[c x^n]\right)}{d + e x^2} \, dx$$

Optimal (type 4, 49 leaves, 2 steps):

$$\frac{\left(a + b \operatorname{Log}[c x^n]\right) \operatorname{Log}\left[1 + \frac{e x^2}{d}\right]}{2 e} + \frac{b n \operatorname{PolyLog}\left[2, -\frac{e x^2}{d}\right]}{4 e}$$

Result (type 4, 111 leaves):

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

Problem 213: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{a + b \operatorname{Log}[c x^n]}{x \left(d + e x^2\right)} \, dx$$

Optimal (type 4, 49 leaves, 2 steps):

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

Result (type 4, 157 leaves):

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

Problem 214: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 83 leaves, 4 steps):

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

Result (type 4, 217 leaves):

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

Problem 215: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 121 leaves, 6 steps):

$$-\frac{b n}{16 d x^4}+\frac{b e n}{4 d^2 x^2}-\frac{a+b\,\text{Log}\left[c x^n\right]}{4 d x^4}+\frac{e\left(a+b\,\text{Log}\left[c x^n\right]\right)}{2 d^2 x^2}-\frac{e^2\,\text{Log}\left[1+\frac{d}{e x^2}\right]\left(a+b\,\text{Log}\left[c x^n\right]\right)}{2 d^3}+\frac{b\,e^2\,n\,\text{PolyLog}\left[2,-\frac{d}{e x^2}\right]}{4 d^3}$$

Result (type 4, 276 leaves):

$$\frac{-a-b\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)}{4\,d\,x^4}+\frac{e\left(a+b\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)}{2\,d^2\,x^2}+\frac{e^2\,\text{Log}[x]\left(a+b\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)}{d^3}-$$
$$\frac{e^2\left(a+b\left(-n\,\text{Log}[x]+\text{Log}[c\,x^n]\right)\right)\text{Log}\left[d+e\,x^2\right]}{2\,d^3}+b\,n\left(\frac{e^2\,\text{Log}[x]^2}{2\,d^3}+\frac{-\frac{1}{16\,x^4}-\frac{\text{Log}[x]}{4\,x^4}}{d}-\frac{e\left(-\frac{1}{4\,x^2}-\frac{\text{Log}[x]}{2\,x^2}\right)}{d^2}-\right.$$
$$\left.\frac{e^2\left(\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+\text{PolyLog}\left[2,-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]\right)}{2\,d^3}-\frac{e^2\left(\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+\text{PolyLog}\left[2,\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]\right)}{2\,d^3}\right)$$

Problem 221: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 129 leaves, 7 steps):

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

Result (type 4, 426 leaves):

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

Problem 222: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 95 leaves, 6 steps):

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

Result (type 4, 336 leaves):

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

Problem 224: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 82 leaves, 3 steps):

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

Result (type 4, 401 leaves):

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

Problem 225: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 126 leaves, 5 steps):

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

Result (type 4, 337 leaves):

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

Problem 227: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 164 leaves, 14 steps):

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

Result (type 4, 391 leaves):

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

$$b\,n\left(\frac{\frac{\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}{\sqrt{d}\,\sqrt{e}}+\frac{i\,\text{Log}[x]}{\sqrt{d}\,\sqrt{e}}-\frac{\text{Log}[x]}{\sqrt{e}\left(-i\sqrt{d}+\sqrt{e}\,x\right)}-\frac{i\,\text{Log}[d+e\,x^2]}{2\sqrt{d}\,\sqrt{e}}}{4\,e}+\frac{\frac{\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}{\sqrt{d}\,\sqrt{e}}-\frac{i\,\text{Log}[x]}{\sqrt{d}\,\sqrt{e}}-\frac{\text{Log}[x]}{\sqrt{e}\left(i\sqrt{d}+\sqrt{e}\,x\right)}+\frac{i\,\text{Log}[d+e\,x^2]}{2\sqrt{d}\,\sqrt{e}}}{4\,e}-\right.$$

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

Problem 228: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 164 leaves, 7 steps):

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

Result (type 4, 391 leaves):

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

$$b\,n\left(-\frac{\frac{\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}{\sqrt{d}\,\sqrt{e}}+\frac{i\,\text{Log}[x]}{\sqrt{d}\,\sqrt{e}}-\frac{\text{Log}[x]}{\sqrt{e}\left(-i\sqrt{d}+\sqrt{e}\,x\right)}-\frac{i\,\text{Log}[d+e\,x^2]}{2\sqrt{d}\,\sqrt{e}}}{4\,d}-\frac{\frac{\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}{\sqrt{d}\,\sqrt{e}}-\frac{i\,\text{Log}[x]}{\sqrt{d}\,\sqrt{e}}-\frac{\text{Log}[x]}{\sqrt{e}\left(i\sqrt{d}+\sqrt{e}\,x\right)}+\frac{i\,\text{Log}[d+e\,x^2]}{2\sqrt{d}\,\sqrt{e}}}{4\,d}-\right.$$

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

Problem 229: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 183 leaves, 8 steps):

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

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

Result (type 4, 398 leaves):

$$\frac{1}{4\,d^{5/2}}\left(-\frac{4\,a\sqrt{d}}{x}-\frac{4\,b\sqrt{d}\,n}{x}-\frac{2\,a\sqrt{d}\,e\,x}{d+e\,x^2}-6\,a\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]+2\,b\sqrt{e}\,n\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]+\frac{b\sqrt{d}\,\sqrt{e}\,n\,\text{Log}[x]}{i\sqrt{d}-\sqrt{e}\,x}-\frac{b\sqrt{d}\,\sqrt{e}\,n\,\text{Log}[x]}{i\sqrt{d}+\sqrt{e}\,x}+\right.$$

$$\frac{2\,b\sqrt{d}\,e\,n\,x\,\text{Log}[x]}{d+e\,x^2}+6\,b\sqrt{e}\,n\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}[x]-\frac{4\,b\sqrt{d}\,\text{Log}[c\,x^n]}{x}-\frac{2\,b\sqrt{d}\,e\,x\,\text{Log}[c\,x^n]}{d+e\,x^2}-6\,b\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}[c\,x^n]-$$

$$\left.3\,i\,b\sqrt{e}\,n\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+3\,i\,b\sqrt{e}\,n\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+3\,i\,b\sqrt{e}\,n\,\text{PolyLog}\left[2,-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]-3\,i\,b\sqrt{e}\,n\,\text{PolyLog}\left[2,\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]\right)$$

Problem 231: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{x^5 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{\left(d+e x^2\right)^3} \, dx$$

Optimal (type 4, 152 leaves, 10 steps):

$$\frac{b d n}{8 e^3 \left(d+e x^2\right)}+\frac{b n \operatorname{Log}[x]}{4 e^3}-\frac{d^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{4 e^3 \left(d+e x^2\right)^2}-\frac{x^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{e^2 \left(d+e x^2\right)}+\frac{3 b n \operatorname{Log}\left[d+e x^2\right]}{8 e^3}+\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[1+\frac{e x^2}{d}\right]}{2 e^3}+\frac{b n \operatorname{PolyLog}\left[2,-\frac{e x^2}{d}\right]}{4 e^3}$$

Result (type 4, 553 leaves):

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

Problem 234: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{a+b \operatorname{Log}\left[c x^n\right]}{x \left(d+e x^2\right)^3} \, dx$$

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

$$\frac{a+b \operatorname{Log}\left[c x^n\right]}{4 d \left(d+e x^2\right)^2}-\frac{\operatorname{Log}\left[1+\frac{d}{e x^2}\right] \left(4 a-3 b n+4 b \operatorname{Log}\left[c x^n\right]\right)}{8 d^3}+\frac{4 a-b n+4 b \operatorname{Log}\left[c x^n\right]}{8 d^2 \left(d+e x^2\right)}+\frac{b n \operatorname{PolyLog}\left[2,-\frac{d}{e x^2}\right]}{4 d^3}$$

Result (type 4, 444 leaves):

$$-\frac{1}{16 d^3}\left(\frac{b d n}{d-\mathrm{i}\sqrt{d}\sqrt{e}\,x}+\frac{b d n}{d+\mathrm{i}\sqrt{d}\sqrt{e}\,x}-\frac{4 a d^2}{(d+e x^2)^2}-\frac{8 a d}{d+e x^2}-16 a \,\text{Log}[x]+12 b n \,\text{Log}[x]-\frac{b d n \,\text{Log}[x]}{(\sqrt{d}-\mathrm{i}\sqrt{e}\,x)^2}-\frac{b d n \,\text{Log}[x]}{(\sqrt{d}+\mathrm{i}\sqrt{e}\,x)^2}+\frac{5\mathrm{i} b\sqrt{d}\, n \,\text{Log}[x]}{-\mathrm{i}\sqrt{d}+\sqrt{e}\,x}-\frac{5\mathrm{i} b\sqrt{d}\, n \,\text{Log}[x]}{\mathrm{i}\sqrt{d}+\sqrt{e}\,x}+\frac{4 b d^2 n \,\text{Log}[x]}{(d+e x^2)^2}+\frac{8 b d n \,\text{Log}[x]}{d+e x^2}+8 b n \,\text{Log}[x]^2-\frac{4 b d^2 \,\text{Log}[c x^n]}{(d+e x^2)^2}-\frac{8 b d \,\text{Log}[c x^n]}{d+e x^2}-16 b \,\text{Log}[x]\,\text{Log}[c x^n]+8 b n \,\text{Log}[x]\,\text{Log}\left[1-\frac{\mathrm{i}\sqrt{e}\,x}{\sqrt{d}}\right]+8 b n \,\text{Log}[x]\,\text{Log}\left[1+\frac{\mathrm{i}\sqrt{e}\,x}{\sqrt{d}}\right]+8 a \,\text{Log}[d+e x^2]-6 b n \,\text{Log}[d+e x^2]-8 b n \,\text{Log}[x]\,\text{Log}[d+e x^2]+8 b \,\text{Log}[c x^n]\,\text{Log}[d+e x^2]+8 b n \,\text{PolyLog}\left[2,-\frac{\mathrm{i}\sqrt{e}\,x}{\sqrt{d}}\right]+8 b n \,\text{PolyLog}\left[2,\frac{\mathrm{i}\sqrt{e}\,x}{\sqrt{d}}\right]\right)$$

Problem 235: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 162 leaves, 6 steps):

$$-\frac{3 b n}{4 d^3 x^2}+\frac{a+b \,\text{Log}[c x^n]}{4 d x^2 (d+e x^2)^2}+\frac{6 a-b n+6 b \,\text{Log}[c x^n]}{8 d^2 x^2 (d+e x^2)}-\frac{12 a-5 b n+12 b \,\text{Log}[c x^n]}{8 d^3 x^2}+\frac{e \,\text{Log}\left[1+\frac{d}{e x^2}\right]\left(12 a-5 b n+12 b \,\text{Log}[c x^n]\right)}{8 d^4}-\frac{3 b e n \,\text{PolyLog}\left[2,-\frac{d}{e x^2}\right]}{4 d^4}$$

Result (type 4, 468 leaves):

$$\frac{1}{16 d^4}\left(24 b e n \,\text{PolyLog}\left[2,-\frac{\mathrm{i}\sqrt{e}\,x}{\sqrt{d}}\right]-\frac{1}{x^2 (d+e x^2)^2} 2\left(4 a d^3+2 b d^3 n+18 a d^2 e x^2+3 b d^2 e n x^2+12 a d e^2 x^4+b d e^2 n x^4-12 b e n x^2 (d+e x^2)^2 \,\text{Log}[x]^2+4 b d^3 \,\text{Log}[c x^n]+18 b d^2 e x^2 \,\text{Log}[c x^n]+12 b d e^2 x^4 \,\text{Log}[c x^n]-12 a d^2 e x^2 \,\text{Log}[d+e x^2]+5 b d^2 e n x^2 \,\text{Log}[d+e x^2]-24 a d e^2 x^4 \,\text{Log}[d+e x^2]+10 b d e^2 n x^4 \,\text{Log}[d+e x^2]-12 a e^3 x^6 \,\text{Log}[d+e x^2]+5 b e^3 n x^6 \,\text{Log}[d+e x^2]-12 b d^2 e x^2 \,\text{Log}[c x^n]\,\text{Log}[d+e x^2]-24 b d e^2 x^4 \,\text{Log}[c x^n]\,\text{Log}[d+e x^2]-12 b e^3 x^6 \,\text{Log}[c x^n]\,\text{Log}[d+e x^2]+2 e x^2 (d+e x^2)^2 \,\text{Log}[x]\left(12 a-5 b n+12 b \,\text{Log}[c x^n]-6 b n \,\text{Log}\left[1-\frac{\mathrm{i}\sqrt{e}\,x}{\sqrt{d}}\right]-6 b n \,\text{Log}\left[1+\frac{\mathrm{i}\sqrt{e}\,x}{\sqrt{d}}\right]+6 b n \,\text{Log}[d+e x^2]\right)-12 b e n x^2 (d+e x^2)^2 \,\text{PolyLog}\left[2,\frac{\mathrm{i}\sqrt{e}\,x}{\sqrt{d}}\right]\right)\right)$$

Problem 236: Result more than twice size of optimal antiderivative.

$$\int \frac{x^4 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{\left(d+e x^2\right)^3} \, dx$$

Optimal (type 4, 211 leaves, 24 steps):

$$-\frac{b n x}{8 e^2 \left(d+e x^2\right)}+\frac{b n \operatorname{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right]}{2 \sqrt{d} e^{5/2}}+\frac{d x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{4 e^2 \left(d+e x^2\right)^2}-\frac{5 x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{8 e^2 \left(d+e x^2\right)}+\frac{3 \operatorname{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right] \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{8 \sqrt{d} e^{5/2}}-\frac{3 i b n \operatorname{PolyLog}\left[2,-\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{16 \sqrt{d} e^{5/2}}+\frac{3 i b n \operatorname{PolyLog}\left[2,\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{16 \sqrt{d} e^{5/2}}$$

Result (type 4, 509 leaves):

$$\frac{1}{16 e^{5/2}}\left(\frac{b n}{i \sqrt{d}-\sqrt{e} x}-\frac{b n}{i \sqrt{d}+\sqrt{e} x}+\frac{4 a d \sqrt{e} x}{\left(d+e x^2\right)^2}-\frac{10 a \sqrt{e} x}{d+e x^2}+\frac{6 a \operatorname{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{d}}+\frac{8 b n \operatorname{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{d}}-\frac{i b \sqrt{d} n \operatorname{Log}[x]}{\left(\sqrt{d}-i \sqrt{e} x\right)^2}+\frac{i b \sqrt{d} n \operatorname{Log}[x]}{\left(\sqrt{d}+i \sqrt{e} x\right)^2}-\frac{5 b n \operatorname{Log}[x]}{-i \sqrt{d}+\sqrt{e} x}-\frac{5 b n \operatorname{Log}[x]}{i \sqrt{d}+\sqrt{e} x}-\frac{4 b d \sqrt{e} n x \operatorname{Log}[x]}{\left(d+e x^2\right)^2}+\frac{10 b \sqrt{e} n x \operatorname{Log}[x]}{d+e x^2}-\frac{6 b n \operatorname{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right] \operatorname{Log}[x]}{\sqrt{d}}+\frac{4 b d \sqrt{e} x \operatorname{Log}\left[c x^n\right]}{\left(d+e x^2\right)^2}-\frac{10 b \sqrt{e} x \operatorname{Log}\left[c x^n\right]}{d+e x^2}+\frac{6 b \operatorname{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right] \operatorname{Log}\left[c x^n\right]}{\sqrt{d}}+\frac{3 i b n \operatorname{Log}[x] \operatorname{Log}\left[1-\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{d}}-\frac{3 i b n \operatorname{Log}[x] \operatorname{Log}\left[1+\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{d}}-\frac{3 i b n \operatorname{PolyLog}\left[2,-\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{d}}+\frac{3 i b n \operatorname{PolyLog}\left[2,\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{d}}\right)$$

Problem 237: Result more than twice size of optimal antiderivative.

$$\int \frac{x^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{\left(d+e x^2\right)^3} \, dx$$

Optimal (type 4, 187 leaves, 19 steps):

$$\frac{b n x}{8 d e \left(d+e x^2\right)}-\frac{x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{4 e \left(d+e x^2\right)^2}+\frac{x \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{8 d e \left(d+e x^2\right)}+\frac{\operatorname{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right] \left(a+b \operatorname{Log}\left[c x^n\right]\right)}{8 d^{3/2} e^{3/2}}-\frac{i b n \operatorname{PolyLog}\left[2,-\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{16 d^{3/2} e^{3/2}}+\frac{i b n \operatorname{PolyLog}\left[2,\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{16 d^{3/2} e^{3/2}}$$

Result (type 4, 589 leaves):

$$\frac{1}{16\, d^{3/2}\, e^{3/2}\, \left(d+e\, x^2\right)^2}\left(-2\, a\, d^{3/2}\, \sqrt{e}\, x+2\, b\, d^{3/2}\, \sqrt{e}\, n\, x+2\, a\, \sqrt{d}\, e^{3/2}\, x^3+2\, b\, \sqrt{d}\, e^{3/2}\, n\, x^3+2\, a\, d^2\, \text{ArcTan}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]+4\, a\, d\, e\, x^2\, \text{ArcTan}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]+2\, a\, e^2\, x^4\, \text{ArcTan}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]-\right.$$
$$2\, b\, d^2\, n\, \text{ArcTan}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]\, \text{Log}[x]-4\, b\, d\, e\, n\, x^2\, \text{ArcTan}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]\, \text{Log}[x]-2\, b\, e^2\, n\, x^4\, \text{ArcTan}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]\, \text{Log}[x]-2\, b\, d^{3/2}\, \sqrt{e}\, x\, \text{Log}\left[c\, x^n\right]+$$
$$2\, b\, \sqrt{d}\, e^{3/2}\, x^3\, \text{Log}\left[c\, x^n\right]+2\, b\, d^2\, \text{ArcTan}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]\, \text{Log}\left[c\, x^n\right]+4\, b\, d\, e\, x^2\, \text{ArcTan}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]\, \text{Log}\left[c\, x^n\right]+$$
$$2\, b\, e^2\, x^4\, \text{ArcTan}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]\, \text{Log}\left[c\, x^n\right]+i\, b\, d^2\, n\, \text{Log}[x]\, \text{Log}\left[1-\frac{i\, \sqrt{e}\, x}{\sqrt{d}}\right]+2\, i\, b\, d\, e\, n\, x^2\, \text{Log}[x]\, \text{Log}\left[1-\frac{i\, \sqrt{e}\, x}{\sqrt{d}}\right]+$$
$$i\, b\, e^2\, n\, x^4\, \text{Log}[x]\, \text{Log}\left[1-\frac{i\, \sqrt{e}\, x}{\sqrt{d}}\right]-i\, b\, d^2\, n\, \text{Log}[x]\, \text{Log}\left[1+\frac{i\, \sqrt{e}\, x}{\sqrt{d}}\right]-2\, i\, b\, d\, e\, n\, x^2\, \text{Log}[x]\, \text{Log}\left[1+\frac{i\, \sqrt{e}\, x}{\sqrt{d}}\right]-$$
$$\left.i\, b\, e^2\, n\, x^4\, \text{Log}[x]\, \text{Log}\left[1+\frac{i\, \sqrt{e}\, x}{\sqrt{d}}\right]-i\, b\, n\, \left(d+e\, x^2\right)^2\, \text{PolyLog}\left[2,-\frac{i\, \sqrt{e}\, x}{\sqrt{d}}\right]+i\, b\, n\, \left(d+e\, x^2\right)^2\, \text{PolyLog}\left[2,\frac{i\, \sqrt{e}\, x}{\sqrt{d}}\right]\right)$$

Problem 238: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 210 leaves, 10 steps):

$$-\frac{b\, n\, x}{8\, d^2\, \left(d+e\, x^2\right)}-\frac{b\, n\, \text{ArcTan}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]}{2\, d^{5/2}\, \sqrt{e}}+\frac{x\, \left(a+b\, \text{Log}\left[c\, x^n\right]\right)}{4\, d\, \left(d+e\, x^2\right)^2}+\frac{3\, x\, \left(a+b\, \text{Log}\left[c\, x^n\right]\right)}{8\, d^2\, \left(d+e\, x^2\right)}+$$
$$\frac{3\, \text{ArcTan}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]\, \left(a+b\, \text{Log}\left[c\, x^n\right]\right)}{8\, d^{5/2}\, \sqrt{e}}-\frac{3\, i\, b\, n\, \text{PolyLog}\left[2,-\frac{i\, \sqrt{e}\, x}{\sqrt{d}}\right]}{16\, d^{5/2}\, \sqrt{e}}+\frac{3\, i\, b\, n\, \text{PolyLog}\left[2,\frac{i\, \sqrt{e}\, x}{\sqrt{d}}\right]}{16\, d^{5/2}\, \sqrt{e}}$$

Result (type 4, 533 leaves):

$$\frac{1}{16 d^{5/2}}\left(-\frac{b\sqrt{d}\,n}{-i\sqrt{d}\sqrt{e}+e x}-\frac{b\sqrt{d}\,n}{i\sqrt{d}\sqrt{e}+e x}+\frac{4 a d^{3/2} x}{\left(d+e x^2\right)^2}+\frac{6 a\sqrt{d}\,x}{d+e x^2}+\frac{6 a \text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}-\right.$$

$$\frac{8 b n \text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}+\frac{i b d n \text{Log}[x]}{\sqrt{e}\left(\sqrt{d}+i\sqrt{e} x\right)^2}+\frac{i b d n \text{Log}[x]}{\sqrt{e}\left(i\sqrt{d}+\sqrt{e} x\right)^2}+\frac{3 b\sqrt{d}\,n \text{Log}[x]}{-i\sqrt{d}\sqrt{e}+e x}+\frac{3 b\sqrt{d}\,n \text{Log}[x]}{i\sqrt{d}\sqrt{e}+e x}-\frac{4 b d^{3/2} n x \text{Log}[x]}{\left(d+e x^2\right)^2}-$$

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

$$\left.\frac{3 i b n \text{Log}[x]\text{Log}\left[1-\frac{i\sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}-\frac{3 i b n \text{Log}[x]\text{Log}\left[1+\frac{i\sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}-\frac{3 i b n \text{PolyLog}\left[2,-\frac{i\sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}+\frac{3 i b n \text{PolyLog}\left[2,\frac{i\sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}\right)$$

Problem 239: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 219 leaves, 9 steps):

$$-\frac{15 b n}{8 d^3 x}+\frac{a+b \text{Log}\left[c x^n\right]}{4 d x\left(d+e x^2\right)^2}+\frac{5 a-b n+5 b \text{Log}\left[c x^n\right]}{8 d^2 x\left(d+e x^2\right)}-\frac{15 a-8 b n+15 b \text{Log}\left[c x^n\right]}{8 d^3 x}-$$

$$\frac{\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right]\left(15 a-8 b n+15 b \text{Log}\left[c x^n\right]\right)}{8 d^{7/2}}+\frac{15 i b\sqrt{e}\,n \text{PolyLog}\left[2,-\frac{i\sqrt{e} x}{\sqrt{d}}\right]}{16 d^{7/2}}-\frac{15 i b\sqrt{e}\,n \text{PolyLog}\left[2,\frac{i\sqrt{e} x}{\sqrt{d}}\right]}{16 d^{7/2}}$$

Result (type 4, 591 leaves):

$$\frac{1}{16\,d^{7/2}}\left(-\frac{16\,a\,\sqrt{d}}{x}-\frac{16\,b\,\sqrt{d}\,n}{x}+\frac{b\,\sqrt{d}\,\sqrt{e}\,n}{i\,\sqrt{d}+\sqrt{e}\,x}+\frac{i\,b\,d\,\sqrt{e}\,n}{d+i\,\sqrt{d}\,\sqrt{e}\,x}-\frac{4\,a\,d^{3/2}\,e\,x}{\left(d+e\,x^2\right)^2}-\frac{14\,a\,\sqrt{d}\,e\,x}{d+e\,x^2}-\right.$$

$$30\,a\,\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]+16\,b\,\sqrt{e}\,n\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]+\frac{i\,b\,d\,\sqrt{e}\,n\,\text{Log}[x]}{\left(\sqrt{d}-i\,\sqrt{e}\,x\right)^2}-\frac{i\,b\,d\,\sqrt{e}\,n\,\text{Log}[x]}{\left(\sqrt{d}+i\,\sqrt{e}\,x\right)^2}-\frac{7\,b\,\sqrt{d}\,\sqrt{e}\,n\,\text{Log}[x]}{-i\,\sqrt{d}+\sqrt{e}\,x}-$$

$$\frac{7\,b\,\sqrt{d}\,\sqrt{e}\,n\,\text{Log}[x]}{i\,\sqrt{d}+\sqrt{e}\,x}+\frac{4\,b\,d^{3/2}\,e\,n\,x\,\text{Log}[x]}{\left(d+e\,x^2\right)^2}+\frac{14\,b\,\sqrt{d}\,e\,n\,x\,\text{Log}[x]}{d+e\,x^2}+30\,b\,\sqrt{e}\,n\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}[x]-\frac{16\,b\,\sqrt{d}\,\text{Log}\left[c\,x^n\right]}{x}-$$

$$\frac{4\,b\,d^{3/2}\,e\,x\,\text{Log}\left[c\,x^n\right]}{\left(d+e\,x^2\right)^2}-\frac{14\,b\,\sqrt{d}\,e\,x\,\text{Log}\left[c\,x^n\right]}{d+e\,x^2}-30\,b\,\sqrt{e}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[c\,x^n\right]-15\,i\,b\,\sqrt{e}\,n\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]+$$

$$\left.15\,i\,b\,\sqrt{e}\,n\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]+15\,i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]-15\,i\,b\,\sqrt{e}\,n\,\text{PolyLog}\left[2,\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]\right)$$

Problem 240: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 260 leaves, 11 steps):

$$-\frac{35\,b\,n}{72\,d^3\,x^3}+\frac{35\,b\,e\,n}{8\,d^4\,x}+\frac{a+b\,\text{Log}\left[c\,x^n\right]}{4\,d\,x^3\,\left(d+e\,x^2\right)^2}+\frac{7\,a-b\,n+7\,b\,\text{Log}\left[c\,x^n\right]}{8\,d^2\,x^3\,\left(d+e\,x^2\right)}-\frac{35\,a-12\,b\,n+35\,b\,\text{Log}\left[c\,x^n\right]}{24\,d^3\,x^3}+\frac{e\,\left(35\,a-12\,b\,n+35\,b\,\text{Log}\left[c\,x^n\right]\right)}{8\,d^4\,x}+$$

$$\frac{e^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\left(35\,a-12\,b\,n+35\,b\,\text{Log}\left[c\,x^n\right]\right)}{8\,d^{9/2}}-\frac{35\,i\,b\,e^{3/2}\,n\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{16\,d^{9/2}}+\frac{35\,i\,b\,e^{3/2}\,n\,\text{PolyLog}\left[2,\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]}{16\,d^{9/2}}$$

Result (type 4, 645 leaves):

$$\frac{1}{144\,d^{9/2}}\left(-\frac{48\,a\,d^{3/2}}{x^3}-\frac{16\,b\,d^{3/2}\,n}{x^3}+\frac{432\,a\,\sqrt{d}\,e}{x}+\frac{432\,b\,\sqrt{d}\,e\,n}{x}+\frac{9\,i\,b\,d\,e^{3/2}\,n}{d-i\,\sqrt{d}\,\sqrt{e}\,x}-\frac{9\,i\,b\,d\,e^{3/2}\,n}{d+i\,\sqrt{d}\,\sqrt{e}\,x}+\frac{36\,a\,d^{3/2}\,e^2\,x}{\left(d+e\,x^2\right)^2}+\frac{198\,a\,\sqrt{d}\,e^2\,x}{d+e\,x^2}+630\,a\,e^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]-\right.$$

$$216\,b\,e^{3/2}\,n\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]-\frac{9\,i\,b\,d\,e^{3/2}\,n\,\text{Log}[x]}{\left(\sqrt{d}-i\,\sqrt{e}\,x\right)^2}+\frac{9\,i\,b\,d\,e^{3/2}\,n\,\text{Log}[x]}{\left(\sqrt{d}+i\,\sqrt{e}\,x\right)^2}+\frac{99\,b\,\sqrt{d}\,e^{3/2}\,n\,\text{Log}[x]}{-i\,\sqrt{d}+\sqrt{e}\,x}+\frac{99\,b\,\sqrt{d}\,e^{3/2}\,n\,\text{Log}[x]}{i\,\sqrt{d}+\sqrt{e}\,x}-$$

$$\frac{36\,b\,d^{3/2}\,e^2\,n\,x\,\text{Log}[x]}{\left(d+e\,x^2\right)^2}-\frac{198\,b\,\sqrt{d}\,e^2\,n\,x\,\text{Log}[x]}{d+e\,x^2}-630\,b\,e^{3/2}\,n\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}[x]-\frac{48\,b\,d^{3/2}\,\text{Log}[c\,x^n]}{x^3}+\frac{432\,b\,\sqrt{d}\,e\,\text{Log}[c\,x^n]}{x}+$$

$$\frac{36\,b\,d^{3/2}\,e^2\,x\,\text{Log}[c\,x^n]}{\left(d+e\,x^2\right)^2}+\frac{198\,b\,\sqrt{d}\,e^2\,x\,\text{Log}[c\,x^n]}{d+e\,x^2}+630\,b\,e^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}[c\,x^n]+315\,i\,b\,e^{3/2}\,n\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]-$$

$$\left.315\,i\,b\,e^{3/2}\,n\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]-315\,i\,b\,e^{3/2}\,n\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]+315\,i\,b\,e^{3/2}\,n\,\text{PolyLog}\left[2,\frac{i\,\sqrt{e}\,x}{\sqrt{d}}\right]\right)$$

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

$$\int \frac{x\,\text{Log}\left[\frac{x^2}{c}\right]}{c-x^2}\,dx$$

Optimal (type 4, 16 leaves, 2 steps):

$$\frac{1}{2}\,\text{PolyLog}\left[2,\,1-\frac{x^2}{c}\right]$$

Result (type 4, 37 leaves):

$$-\frac{1}{2}\,\text{Log}\left[\frac{x^2}{c}\right]\,\text{Log}\left[1-\frac{x^2}{c}\right]-\frac{1}{2}\,\text{PolyLog}\left[2,\,\frac{x^2}{c}\right]$$

Problem 247: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 509 leaves, 16 steps):

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

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

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

Result (type 4, 666 leaves):

$$\frac{1}{4\,d^2}$$

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

$$\left(2\,d\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]+2\,e\,x^2\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]-2\sqrt{d}\,\sqrt{e}\,x\,\text{Log}[x]-i\,d\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]-i\,e\,x^2\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+\right.$$

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

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

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

$$\left.\left.\frac{2\,i\sqrt{d}\left(-1+\text{Log}[x]\right)\text{PolyLog}\left[2,\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]}{\sqrt{e}}+\frac{2\,i\sqrt{d}\,\text{PolyLog}\left[3,-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]}{\sqrt{e}}-\frac{2\,i\sqrt{d}\,\text{PolyLog}\left[3,\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]}{\sqrt{e}}\right)\right)$$

Problem 248: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 711 leaves, 20 steps) :

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

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

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

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

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

Result (type 4, 1104 leaves) :

$$
\begin{aligned}
&\frac{1}{4 d^2}\Bigg(\frac{2 d x \left(a-b n \text{Log}[x]+b \text{Log}\left[c x^n\right]\right)^3}{d+e x^2}+\frac{2 \sqrt{d} \text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right] \left(a-b n \text{Log}[x]+b \text{Log}\left[c x^n\right]\right)^3}{\sqrt{e}}+\frac{1}{\sqrt{e} \left(d+e x^2\right)}3 b \sqrt{d} n \left(a-b n \text{Log}[x]+b \text{Log}\left[c x^n\right]\right)^2 \\
&\quad\Bigg(-2 d \text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right]-2 e x^2 \text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right]+2 \sqrt{d} \sqrt{e} x \text{Log}[x]+i d \text{Log}[x] \text{Log}\left[1-\frac{i \sqrt{e} x}{\sqrt{d}}\right]+i e x^2 \text{Log}[x] \text{Log}\left[1-\frac{i \sqrt{e} x}{\sqrt{d}}\right]- \\
&\quad i d \text{Log}[x] \text{Log}\left[1+\frac{i \sqrt{e} x}{\sqrt{d}}\right]-i e x^2 \text{Log}[x] \text{Log}\left[1+\frac{i \sqrt{e} x}{\sqrt{d}}\right]-i \left(d+e x^2\right) \text{PolyLog}\left[2,-\frac{i \sqrt{e} x}{\sqrt{d}}\right]+i \left(d+e x^2\right) \text{PolyLog}\left[2,\frac{i \sqrt{e} x}{\sqrt{d}}\right]\Bigg)+ \\
&\quad 3 b^2 n^2 \left(a-b n \text{Log}[x]+b \text{Log}\left[c x^n\right]\right) \Bigg(\frac{x \text{Log}[x]^2}{1-\frac{i \sqrt{e} x}{\sqrt{d}}}+\frac{x \text{Log}[x]^2}{1+\frac{i \sqrt{e} x}{\sqrt{d}}}-\frac{2 i \sqrt{d} \text{Log}[x] \text{Log}\left[1-\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}+\frac{i \sqrt{d} \text{Log}[x]^2 \text{Log}\left[1-\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}+ \\
&\quad \frac{2 i \sqrt{d} \text{Log}[x] \text{Log}\left[1+\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}-\frac{i \sqrt{d} \text{Log}[x]^2 \text{Log}\left[1+\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}-\frac{2 i \sqrt{d} (-1+\text{Log}[x]) \text{PolyLog}\left[2,-\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}+ \\
&\quad \frac{2 i \sqrt{d} (-1+\text{Log}[x]) \text{PolyLog}\left[2,\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}+\frac{2 i \sqrt{d} \text{PolyLog}\left[3,-\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}-\frac{2 i \sqrt{d} \text{PolyLog}\left[3,\frac{i \sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}\Bigg)+ \\
&\quad \frac{1}{\sqrt{e}}b^3 n^3 \Bigg(\frac{\sqrt{e} x \text{Log}[x]^3}{1-\frac{i \sqrt{e} x}{\sqrt{d}}}+\frac{\sqrt{e} x \text{Log}[x]^3}{1+\frac{i \sqrt{e} x}{\sqrt{d}}}-3 i \sqrt{d} \text{Log}[x]^2 \text{Log}\left[1-\frac{i \sqrt{e} x}{\sqrt{d}}\right]+i \sqrt{d} \text{Log}[x]^3 \text{Log}\left[1-\frac{i \sqrt{e} x}{\sqrt{d}}\right]+ \\
&\quad 3 i \sqrt{d} \text{Log}[x]^2 \text{Log}\left[1+\frac{i \sqrt{e} x}{\sqrt{d}}\right]-i \sqrt{d} \text{Log}[x]^3 \text{Log}\left[1+\frac{i \sqrt{e} x}{\sqrt{d}}\right]-3 i \sqrt{d} (-2+\text{Log}[x]) \text{Log}[x] \text{PolyLog}\left[2,-\frac{i \sqrt{e} x}{\sqrt{d}}\right]+ \\
&\quad 3 i \sqrt{d} (-2+\text{Log}[x]) \text{Log}[x] \text{PolyLog}\left[2,\frac{i \sqrt{e} x}{\sqrt{d}}\right]-6 i \sqrt{d} \text{PolyLog}\left[3,-\frac{i \sqrt{e} x}{\sqrt{d}}\right]+6 i \sqrt{d} \text{Log}[x] \text{PolyLog}\left[3,-\frac{i \sqrt{e} x}{\sqrt{d}}\right]+ \\
&\quad 6 i \sqrt{d} \text{PolyLog}\left[3,\frac{i \sqrt{e} x}{\sqrt{d}}\right]-6 i \sqrt{d} \text{Log}[x] \text{PolyLog}\left[3,\frac{i \sqrt{e} x}{\sqrt{d}}\right]-6 i \sqrt{d} \text{PolyLog}\left[4,-\frac{i \sqrt{e} x}{\sqrt{d}}\right]+6 i \sqrt{d} \text{PolyLog}\left[4,\frac{i \sqrt{e} x}{\sqrt{d}}\right]\Bigg)\Bigg)
\end{aligned}
$$

Problem 254: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 220 leaves, 12 steps):

$$-b n \sqrt{d+e x^2}+b \sqrt{d}\, n \text{ArcTanh}\left[\frac{\sqrt{d+e x^2}}{\sqrt{d}}\right]+\frac{1}{2} b \sqrt{d}\, n \text{ArcTanh}\left[\frac{\sqrt{d+e x^2}}{\sqrt{d}}\right]^2+\left(\sqrt{d+e x^2}-\sqrt{d} \text{ArcTanh}\left[\frac{\sqrt{d+e x^2}}{\sqrt{d}}\right]\right) (a+b \text{Log}[c x^n])-b \sqrt{d}\, n \text{ArcTanh}\left[\frac{\sqrt{d+e x^2}}{\sqrt{d}}\right] \text{Log}\left[\frac{2 \sqrt{d}}{\sqrt{d}-\sqrt{d+e x^2}}\right]-\frac{1}{2} b \sqrt{d}\, n \text{PolyLog}\left[2, 1-\frac{2 \sqrt{d}}{\sqrt{d}-\sqrt{d+e x^2}}\right]$$

Result (type 5, 203 leaves):

$$\frac{1}{\sqrt{1+\frac{d}{e x^2}}} b n \sqrt{d+e x^2} \left(-\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},-\frac{d}{e x^2}\right]+\sqrt{1+\frac{d}{e x^2}} \text{Log}[x]-\frac{\sqrt{d} \text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e} x}\right] \text{Log}[x]}{\sqrt{e} x}\right)+\sqrt{d+e x^2} (a-b n \text{Log}[x]+b \text{Log}[c x^n])+\sqrt{d} \text{Log}[x] (a-b n \text{Log}[x]+b \text{Log}[c x^n])-\sqrt{d} (a-b n \text{Log}[x]+b \text{Log}[c x^n]) \text{Log}\left[d+\sqrt{d} \sqrt{d+e x^2}\right]$$

Problem 255: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 252 leaves, 14 steps):

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

Result (type 5, 303 leaves):

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

Problem 256: Result unnecessarily involves higher level functions.

$$\int x^4 \sqrt{d+e x^2}\,(a+b\,\text{Log}[c x^n])\, dx$$

Optimal (type 4, 469 leaves, 19 steps):

$$\frac{7 b d^2 n x \sqrt{d+e x^2}}{192 e^2} - \frac{5 b d n x^3 \sqrt{d+e x^2}}{288 e} - \frac{1}{36} b n x^5 \sqrt{d+e x^2} + \frac{5 b d^{5/2} n \sqrt{d+e x^2}\,\text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]}{192 e^{5/2}\sqrt{1+\frac{e x^2}{d}}} + \frac{b d^{5/2} n \sqrt{d+e x^2}\,\text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]^2}{32 e^{5/2}\sqrt{1+\frac{e x^2}{d}}} - \frac{b d^{5/2} n \sqrt{d+e x^2}\,\text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]\text{Log}\left[1-e^{2\,\text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]}\right]}{16 e^{5/2}\sqrt{1+\frac{e x^2}{d}}} - \frac{d^2 x \sqrt{d+e x^2}\,(a+b\,\text{Log}[c x^n])}{16 e^2} + \frac{d x^3 \sqrt{d+e x^2}\,(a+b\,\text{Log}[c x^n])}{24 e} + \frac{1}{6} x^5 \sqrt{d+e x^2}\,(a+b\,\text{Log}[c x^n]) + \frac{d^{5/2}\sqrt{d+e x^2}\,\text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right](a+b\,\text{Log}[c x^n])}{16 e^{5/2}\sqrt{1+\frac{e x^2}{d}}} - \frac{b d^{5/2} n \sqrt{d+e x^2}\,\text{PolyLog}\left[2, e^{2\,\text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]}\right]}{32 e^{5/2}\sqrt{1+\frac{e x^2}{d}}}$$

Result (type 5, 276 leaves):

$$\frac{1}{1200\, e^{5/2} \sqrt{1+\frac{e x^2}{d}}}\left(-48\, b\, e^{5/2}\, n\, x^5 \sqrt{d+e x^2}\, \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},\frac{5}{2},\frac{5}{2}\right\},\left\{\frac{7}{2},\frac{7}{2}\right\},-\frac{e x^2}{d}\right]+\right.$$

$$75\, b\, d^{5/2}\, n \sqrt{d+e x^2}\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right] \text{Log}[x]+25 \sqrt{1+\frac{e x^2}{d}} \left(a \sqrt{e}\, x \sqrt{d+e x^2} \left(-3 d^2+2 d e x^2+8 e^2 x^4\right)+\right.$$

$$\left.\left. 3 d^3 (a-b\, n\, \text{Log}[x])\, \text{Log}\left[e x+\sqrt{e} \sqrt{d+e x^2}\right]+b\, \text{Log}[c x^n] \left(\sqrt{e}\, x \sqrt{d+e x^2} \left(-3 d^2+2 d e x^2+8 e^2 x^4\right)+3 d^3\, \text{Log}\left[e x+\sqrt{e} \sqrt{d+e x^2}\right]\right)\right)\right)$$

Problem 257: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 409 leaves, 15 steps):

$$-\frac{3\, b\, d\, n\, x \sqrt{d+e x^2}}{32\, e}-\frac{1}{16} b\, n\, x^3 \sqrt{d+e x^2}-\frac{b\, d^{3/2}\, n \sqrt{d+e x^2}\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]}{32\, e^{3/2} \sqrt{1+\frac{e x^2}{d}}}-\frac{b\, d^{3/2}\, n \sqrt{d+e x^2}\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]^2}{16\, e^{3/2} \sqrt{1+\frac{e x^2}{d}}}+$$

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

$$\frac{d^{3/2} \sqrt{d+e x^2}\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right] (a+b\, \text{Log}[c x^n])}{8\, e^{3/2} \sqrt{1+\frac{e x^2}{d}}}+\frac{b\, d^{3/2}\, n \sqrt{d+e x^2}\, \text{PolyLog}\left[2, e^{2\,\text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]}\right]}{16\, e^{3/2} \sqrt{1+\frac{e x^2}{d}}}$$

Result (type 5, 250 leaves):

$$\frac{1}{72\, e^{3/2} \sqrt{1+\frac{e x^2}{d}}} \left(-8\, b\, e^{3/2}\, n\, x^3 \sqrt{d+e x^2}\ \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-\frac{e x^2}{d}\right] - 9\, b\, d^{3/2}\, n \sqrt{d+e x^2}\ \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right] \text{Log}[x] + 9 \sqrt{1+\frac{e x^2}{d}} \left(a \sqrt{e}\, x \sqrt{d+e x^2} \left(d+2 e x^2\right) + d^2 \left(-a+b\, n\, \text{Log}[x]\right) \text{Log}\left[e x+\sqrt{e} \sqrt{d+e x^2}\right] + b\, \text{Log}\left[c x^n\right] \left(\sqrt{e}\, x \sqrt{d+e x^2} \left(d+2 e x^2\right) - d^2\, \text{Log}\left[e x+\sqrt{e} \sqrt{d+e x^2}\right]\right)\right)\right)$$

Problem 258: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 330 leaves, 11 steps):

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

Result (type 5, 237 leaves):

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

Problem 259: Result unnecessarily involves higher level functions.

$$\int \frac{\sqrt{d+e x^2}\,(a+b \text{Log}[c x^n])}{x^2}\,dx$$

Optimal (type 4, 345 leaves, 11 steps):

$$-\frac{b n \sqrt{d+e x^2}}{x}+\frac{b \sqrt{e}\, n \sqrt{d+e x^2}\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]}{\sqrt{d} \sqrt{1+\frac{e x^2}{d}}}+\frac{b \sqrt{e}\, n \sqrt{d+e x^2}\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]^2}{2 \sqrt{d} \sqrt{1+\frac{e x^2}{d}}}-\frac{b \sqrt{e}\, n \sqrt{d+e x^2}\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right] \text{Log}\left[1-e^{2 \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]}\right]}{\sqrt{d} \sqrt{1+\frac{e x^2}{d}}}-$$
$$\frac{\sqrt{d+e x^2}\,(a+b \text{Log}[c x^n])}{x}+\frac{\sqrt{e} \sqrt{d+e x^2}\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right] (a+b \text{Log}[c x^n])}{\sqrt{d} \sqrt{1+\frac{e x^2}{d}}}-\frac{b \sqrt{e}\, n \sqrt{d+e x^2}\, \text{PolyLog}\left[2, e^{2 \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]}\right]}{2 \sqrt{d} \sqrt{1+\frac{e x^2}{d}}}$$

Result (type 5, 183 leaves):

$$\frac{1}{x \sqrt{1+\frac{e x^2}{d}}} b n \sqrt{d+e x^2} \left(-\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},-\frac{e x^2}{d}\right]-\sqrt{1+\frac{e x^2}{d}}\, \text{Log}[x]+\frac{\sqrt{e}\, x\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right] \text{Log}[x]}{\sqrt{d}}\right)-$$
$$\frac{\sqrt{d+e x^2}\,(a-b n \text{Log}[x]+b \text{Log}[c x^n])}{x}+\sqrt{e}\,(a-b n \text{Log}[x]+b \text{Log}[c x^n]) \text{Log}\left[e x+\sqrt{e} \sqrt{d+e x^2}\right]$$

Problem 266: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 260 leaves, 17 steps):

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

Result (type 5, 315 leaves) :

$$\frac{1}{12\sqrt{1+\frac{e x^2}{d}}} b n \sqrt{d+e x^2} \left(-3 e x^2 \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2}, 1, 1\right\}, \{2, 2\}, -\frac{e x^2}{d}\right] + 4\left(e x^2 \sqrt{1+\frac{e x^2}{d}} + d\left(-1+\sqrt{1+\frac{e x^2}{d}}\right)\right) \operatorname{Log}[x]\right) + \frac{1}{\sqrt{1+\frac{d}{e x^2}}} b d n \sqrt{d+e x^2} \left(-\operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}\right\}, \left\{\frac{1}{2}, \frac{1}{2}\right\}, -\frac{d}{e x^2}\right] + \sqrt{1+\frac{d}{e x^2}} \operatorname{Log}[x] - \frac{\sqrt{d} \operatorname{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e} x}\right] \operatorname{Log}[x]}{\sqrt{e} x}\right) + \frac{1}{3}\sqrt{d+e x^2}\left(4 d+e x^2\right)\left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right) + d^{3/2} \operatorname{Log}[x]\left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right) - d^{3/2}\left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{Log}\left[d+\sqrt{d}\sqrt{d+e x^2}\right]$$

Problem 267: Result unnecessarily involves higher level functions.

$$\int \frac{\left(d+e x^2\right)^{3/2}\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{x^3} \, dx$$

Optimal (type 4, 295 leaves, 18 steps) :

$$-b e n \sqrt{d+e x^2} - \frac{b d n \sqrt{d+e x^2}}{4 x^2} + \frac{3}{4} b \sqrt{d}\, e n \operatorname{ArcTanh}\left[\frac{\sqrt{d+e x^2}}{\sqrt{d}}\right] + \frac{3}{4} b \sqrt{d}\, e n \operatorname{ArcTanh}\left[\frac{\sqrt{d+e x^2}}{\sqrt{d}}\right]^2 + \frac{3}{2} e \sqrt{d+e x^2}\left(a+b \operatorname{Log}\left[c x^n\right]\right) - \frac{\left(d+e x^2\right)^{3/2}\left(a+b \operatorname{Log}\left[c x^n\right]\right)}{2 x^2} - \frac{3}{2}\sqrt{d}\, e \operatorname{ArcTanh}\left[\frac{\sqrt{d+e x^2}}{\sqrt{d}}\right]\left(a+b \operatorname{Log}\left[c x^n\right]\right) - \frac{3}{2} b \sqrt{d}\, e n \operatorname{ArcTanh}\left[\frac{\sqrt{d+e x^2}}{\sqrt{d}}\right] \operatorname{Log}\left[\frac{2\sqrt{d}}{\sqrt{d}-\sqrt{d+e x^2}}\right] - \frac{3}{4} b \sqrt{d}\, e n \operatorname{PolyLog}\left[2, 1-\frac{2\sqrt{d}}{\sqrt{d}-\sqrt{d+e x^2}}\right]$$

Result (type 5, 349 leaves) :

$$\frac{1}{\sqrt{1+\frac{d}{e x^2}}}$$

$$b\,e\,n\,\sqrt{d+e x^2}\left(-\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},-\frac{d}{e x^2}\right]+\sqrt{1+\frac{d}{e x^2}}\,\text{Log}[x]-\frac{\sqrt{d}\,\text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\,x}\right]\text{Log}[x]}{\sqrt{e}\,x}\right)-\frac{1}{4\sqrt{1+\frac{d}{e x^2}}\,x^2}$$

$$b\sqrt{d}\,n\sqrt{d+e x^2}\left(2\sqrt{d}\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\},\left\{\frac{3}{2},\frac{3}{2}\right\},-\frac{d}{e x^2}\right]+\left(\sqrt{d}\sqrt{1+\frac{d}{e x^2}}+\sqrt{e}\,x\,\text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\,x}\right]\right)(1+2\,\text{Log}[x])\right)-$$

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

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

Problem 268: Result unnecessarily involves higher level functions.

$$\int x^2\left(d+e x^2\right)^{3/2}\left(a+b\,\text{Log}\left[c x^n\right]\right)dx$$

Optimal (type 4, 464 leaves, 19 steps):

$$-\frac{11\,b\,d^2\,n\,x\sqrt{d+e x^2}}{192\,e}-\frac{23}{288}\,b\,d\,n\,x^3\sqrt{d+e x^2}-\frac{1}{36}\,b\,e\,n\,x^5\sqrt{d+e x^2}-\frac{b\,d^{5/2}\,n\sqrt{d+e x^2}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}{192\,e^{3/2}\sqrt{1+\frac{e x^2}{d}}}-\frac{b\,d^{5/2}\,n\sqrt{d+e x^2}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]^2}{32\,e^{3/2}\sqrt{1+\frac{e x^2}{d}}}+$$

$$\frac{b\,d^{5/2}\,n\sqrt{d+e x^2}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[1-e^{2\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}\right]}{16\,e^{3/2}\sqrt{1+\frac{e x^2}{d}}}+\frac{d^2\,x\sqrt{d+e x^2}\,\left(a+b\,\text{Log}\left[c x^n\right]\right)}{16\,e}+\frac{1}{8}\,d\,x^3\sqrt{d+e x^2}\,\left(a+b\,\text{Log}\left[c x^n\right]\right)+$$

$$\frac{1}{6}\,x^3\left(d+e x^2\right)^{3/2}\left(a+b\,\text{Log}\left[c x^n\right]\right)-\frac{d^{5/2}\sqrt{d+e x^2}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\left(a+b\,\text{Log}\left[c x^n\right]\right)}{16\,e^{3/2}\sqrt{1+\frac{e x^2}{d}}}+\frac{b\,d^{5/2}\,n\sqrt{d+e x^2}\,\text{PolyLog}\left[2,e^{2\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}\right]}{32\,e^{3/2}\sqrt{1+\frac{e x^2}{d}}}$$

Result (type 5, 331 leaves):

$$\frac{1}{3600\, e^{3/2}\sqrt{1+\frac{e x^2}{d}}}\Bigg(-400\, b\, d\, e^{3/2}\, n\, x^3 \sqrt{d+e x^2}\, \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-\frac{e x^2}{d}\right]-$$

$$144\, b\, e^{5/2}\, n\, x^5 \sqrt{d+e x^2}\, \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},\frac{5}{2},\frac{5}{2}\right\},\left\{\frac{7}{2},\frac{7}{2}\right\},-\frac{e x^2}{d}\right]-$$

$$75\Bigg(3\, b\, d^{5/2}\, n \sqrt{d+e x^2}\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right] \text{Log}[x]+\sqrt{1+\frac{e x^2}{d}}\,\Bigg(-a \sqrt{e}\, x \sqrt{d+e x^2}\, \left(3 d^2+14 d e x^2+8 e^2 x^4\right)+$$

$$3 d^3 \left(a-b\, n\, \text{Log}[x]\right) \text{Log}\left[e x+\sqrt{e}\, \sqrt{d+e x^2}\right]-b\, \text{Log}[c x^n] \left(\sqrt{e}\, x \sqrt{d+e x^2}\, \left(3 d^2+14 d e x^2+8 e^2 x^4\right)-3 d^3\, \text{Log}\left[e x+\sqrt{e}\, \sqrt{d+e x^2}\right]\right)\Bigg)\Bigg)\Bigg)$$

Problem 269: Result unnecessarily involves higher level functions.

$$\int \left(d+e x^2\right)^{3/2} \left(a+b\, \text{Log}[c x^n]\right) dx$$

Optimal (type 4, 378 leaves, 16 steps):

$$-\frac{9}{32} b\, d\, n\, x \sqrt{d+e x^2}-\frac{1}{16} b\, n\, x \left(d+e x^2\right)^{3/2}+\frac{3\, b\, d^{5/2}\, n \sqrt{1+\frac{e x^2}{d}}\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]^2}{16 \sqrt{e}\, \sqrt{d+e x^2}}-\frac{9\, b\, d^2\, n\, \text{ArcTanh}\left[\frac{\sqrt{e}\, x}{\sqrt{d+e x^2}}\right]}{32 \sqrt{e}}-$$

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

$$\frac{3\, d^{5/2} \sqrt{1+\frac{e x^2}{d}}\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right] \left(a+b\, \text{Log}[c x^n]\right)}{8 \sqrt{e}\, \sqrt{d+e x^2}}-\frac{3\, b\, d^{5/2}\, n \sqrt{1+\frac{e x^2}{d}}\, \text{PolyLog}\left[2, e^{2\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]}\right]}{16 \sqrt{e}\, \sqrt{d+e x^2}}$$

Result (type 5, 314 leaves):

$$\frac{1}{72\sqrt{e}\sqrt{1+\frac{e x^2}{d}}}\Bigg(-8 b e^{3/2} n x^3 \sqrt{d+e x^2}\, \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-\frac{e x^2}{d}\right]+$$

$$9\Bigg(-4 b d \sqrt{e}\, n x \sqrt{d+e x^2}\, \text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\},\left\{\frac{3}{2},\frac{3}{2}\right\},-\frac{e x^2}{d}\right]+$$

$$b d^{3/2} n \sqrt{d+e x^2}\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right](-2+3\,\text{Log}[x])+\sqrt{1+\frac{e x^2}{d}}\left(\sqrt{e}\, x\sqrt{d+e x^2}\,(5 a d-2 b d n+2 a e x^2)+\right.$$

$$\left.\left.3 d^2 (a-b n\,\text{Log}[x])\,\text{Log}\left[e x+\sqrt{e}\sqrt{d+e x^2}\right]+b\,\text{Log}[c x^n]\left(\sqrt{e}\, x\sqrt{d+e x^2}\,(5 d+2 e x^2)+3 d^2\,\text{Log}\left[e x+\sqrt{e}\sqrt{d+e x^2}\right]\right)\right)\Bigg)\Bigg)$$

Problem 270: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 400 leaves, 14 steps):

$$-\frac{b d n\sqrt{d+e x^2}}{x}-\frac{1}{4} b e n x\sqrt{d+e x^2}+\frac{3 b\sqrt{d}\sqrt{e}\, n\sqrt{d+e x^2}\,\text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]}{4\sqrt{1+\frac{e x^2}{d}}}+\frac{3 b\sqrt{d}\sqrt{e}\, n\sqrt{d+e x^2}\,\text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]^2}{4\sqrt{1+\frac{e x^2}{d}}}-$$

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

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

Result (type 5, 329 leaves):

$$-\frac{1}{x\sqrt{1+\frac{e x^2}{d}}}\,b\sqrt{d}\,n\sqrt{d+e x^2}\left(\sqrt{d}\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},-\frac{e x^2}{d}\right]+\left(\sqrt{d}\sqrt{1+\frac{e x^2}{d}}-\sqrt{e}\,x\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\right)\text{Log}[x]\right)+$$

$$\frac{1}{4\sqrt{1+\frac{e x^2}{d}}}\,b\sqrt{e}\,n\sqrt{d+e x^2}\left(-2\sqrt{e}\,x\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\},\left\{\frac{3}{2},\frac{3}{2}\right\},-\frac{e x^2}{d}\right]+\left(\sqrt{e}\,x\sqrt{1+\frac{e x^2}{d}}+\sqrt{d}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\right)(-1+2\,\text{Log}[x])\right)-$$

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

Problem 271: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 400 leaves, 13 steps):

$$-\frac{4\,b\,e\,n\sqrt{d+e x^2}}{3x}-\frac{b\,n\left(d+e x^2\right)^{3/2}}{9x^3}+\frac{4\,b\,e^{3/2}\,n\sqrt{d+e x^2}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}{3\sqrt{d}\sqrt{1+\frac{e x^2}{d}}}+\frac{b\,e^{3/2}\,n\sqrt{d+e x^2}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]^2}{2\sqrt{d}\sqrt{1+\frac{e x^2}{d}}}-$$

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

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

Result (type 5, 269 leaves):

$$\frac{b\,d\,n\,\sqrt{d+e\,x^2}\,\left(-\text{Hypergeometric2F1}\left[-\frac{3}{2},-\frac{3}{2},-\frac{1}{2},-\frac{e\,x^2}{d}\right]-3\left(1+\frac{e\,x^2}{d}\right)^{3/2}\text{Log}[x]\right)}{9\,x^3\,\sqrt{1+\frac{e\,x^2}{d}}}+\frac{1}{x\,\sqrt{1+\frac{e\,x^2}{d}}}$$

$$b\,e\,n\,\sqrt{d+e\,x^2}\,\left(-\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},-\frac{e\,x^2}{d}\right]-\sqrt{1+\frac{e\,x^2}{d}}\,\text{Log}[x]+\frac{\sqrt{e}\,x\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}[x]}{\sqrt{d}}\right)-$$

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

Problem 279: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 166 leaves, 8 steps):

$$\frac{b\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^2}}{\sqrt{d}}\right]^2}{2\,\sqrt{d}}-\frac{\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^2}}{\sqrt{d}}\right]\,\left(a+b\,\text{Log}[c\,x^n]\right)}{\sqrt{d}}-\frac{b\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^2}}{\sqrt{d}}\right]\,\text{Log}\left[\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^2}}\right]}{\sqrt{d}}-\frac{b\,n\,\text{PolyLog}\left[2,1-\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^2}}\right]}{2\,\sqrt{d}}$$

Result (type 5, 162 leaves):

$$\frac{b\,n\,\sqrt{1+\frac{d}{e\,x^2}}\,\left(-\text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\},\left\{\frac{3}{2},\frac{3}{2}\right\},-\frac{d}{e\,x^2}\right]-\frac{\sqrt{e}\,x\,\text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\,x}\right]\,\text{Log}[x]}{\sqrt{d}}\right)}{\sqrt{d+e\,x^2}}-$$

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

Problem 280: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 258 leaves, 14 steps):

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

Result (type 5, 229 leaves):

$$\frac{1}{36\,d^{3/2}}\left(\frac{1}{x^2\,\sqrt{d+e\,x^2}}\right.$$
$$b\,n\,\sqrt{1+\frac{d}{e\,x^2}}\,\left(2\,d^{3/2}\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-\frac{d}{e\,x^2}\right]+9\,e\,x^2\,\left(-\sqrt{d}\,\sqrt{1+\frac{d}{e\,x^2}}+\sqrt{e}\,x\,\text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\,x}\right]\right)\,\left(1+2\,\text{Log}[x]\right)\right)-$$
$$\frac{18\,\sqrt{d}\,\sqrt{d+e\,x^2}\,\left(a-b\,n\,\text{Log}[x]+b\,\text{Log}\left[c\,x^n\right]\right)}{x^2}-18\,e\,\text{Log}[x]\,\left(a-b\,n\,\text{Log}[x]+b\,\text{Log}\left[c\,x^n\right]\right)+$$
$$\left.18\,e\,\left(a-b\,n\,\text{Log}[x]+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[d+\sqrt{d}\,\sqrt{d+e\,x^2}\right]\right)$$

Problem 281: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 359 leaves, 12 steps):

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

Result (type 5, 205 leaves):

$$\frac{1}{36 e^2}\left(\frac{1}{\sqrt{d+e x^2}}\right.$$

$$b n \sqrt{1+\frac{e x^2}{d}} \left(2 e^2 x^3 \text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-\frac{e x^2}{d}\right]+9 d \sqrt{e} \left(\sqrt{e}\, x \sqrt{1+\frac{e x^2}{d}}-\sqrt{d}\, \text{ArcSinh}\left[\frac{\sqrt{e}\, x}{\sqrt{d}}\right]\right) (-1+2 \text{Log}[x])\right)+$$

$$\left.18 e x \sqrt{d+e x^2}\, (a-b n \text{Log}[x]+b \text{Log}[c x^n])-18 d \sqrt{e}\, (a-b n \text{Log}[x]+b \text{Log}[c x^n]) \text{Log}\left[e x+\sqrt{e} \sqrt{d+e x^2}\right]\right)$$

Problem 290: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 209 leaves, 11 steps):

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

$$\frac{b n \text{ArcTanh}\left[\frac{\sqrt{d+e x^2}}{\sqrt{d}}\right] \text{Log}\left[\frac{2 \sqrt{d}}{\sqrt{d}-\sqrt{d+e x^2}}\right]}{d^{3/2}}-\frac{b n \text{PolyLog}\left[2,1-\frac{2 \sqrt{d}}{\sqrt{d}-\sqrt{d+e x^2}}\right]}{2 d^{3/2}}$$

Result (type 5, 241 leaves):

$$\frac{1}{9 d^{3/2} e x^2 \sqrt{d+e x^2}}\left(-b d^{3/2} n \sqrt{1+\frac{d}{e x^2}}\, \text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-\frac{d}{e x^2}\right]+\right.$$

$$9 e x^2 \left(-b \sqrt{e}\, n \sqrt{1+\frac{d}{e x^2}}\, x \,\text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\, x}\right] \text{Log}[x]-b n \sqrt{d+e x^2}\, \text{Log}[x]^2+\right.$$

$$\left.\left.\sqrt{d+e x^2}\, \text{Log}[x] \left(a+b \text{Log}[c x^n]+b n \text{Log}\left[d+\sqrt{d} \sqrt{d+e x^2}\right]\right)+(a+b \text{Log}[c x^n]) \left(\sqrt{d}-\sqrt{d+e x^2}\, \text{Log}\left[d+\sqrt{d} \sqrt{d+e x^2}\right]\right)\right)\right)$$

Problem 291: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 287 leaves, 12 steps):

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

Result (type 5, 218 leaves):

$$\frac{1}{50\,d^{5/2}\,e\,x^4\,\sqrt{d+e\,x^2}}\left(3\,b\,d^{5/2}\,n\,\sqrt{1+\frac{d}{e\,x^2}}\,\text{HypergeometricPFQ}\left[\left\{\frac{5}{2},\frac{5}{2},\frac{5}{2}\right\},\left\{\frac{7}{2},\frac{7}{2}\right\},-\frac{d}{e\,x^2}\right]-5\,b\,d^{5/2}\,n\,\sqrt{1+\frac{d}{e\,x^2}}\,\text{Hypergeometric2F1}\left[\frac{3}{2},\frac{5}{2},\frac{7}{2},-\frac{d}{e\,x^2}\right]\,(1+2\,\text{Log}[x])-\right.$$
$$\left.25\,e\,x^2\,(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])\,\left(\sqrt{d}\,(d+3\,e\,x^2)+3\,e\,x^2\,\sqrt{d+e\,x^2}\,\text{Log}[x]-3\,e\,x^2\,\sqrt{d+e\,x^2}\,\text{Log}\left[d+\sqrt{d}\,\sqrt{d+e\,x^2}\right]\right)\right)$$

Problem 292: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 328 leaves, 11 steps):

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

Result (type 5, 217 leaves) :

$$-\frac{1}{9\,d\,e^{3/2}\,(d+e\,x^2)^{3/2}}\,b\,n\,\sqrt{1+\frac{e\,x^2}{d}}\left(e^{3/2}\,x^3\,(d+e\,x^2)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-\frac{e\,x^2}{d}\right]+9\,d^2\,\sqrt{e}\,x\,\sqrt{1+\frac{e\,x^2}{d}}\,\text{Log}[x]-9\,d^{3/2}\,(d+e\,x^2)\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}[x]\right)-\frac{x\,(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])}{e\,\sqrt{d+e\,x^2}}+\frac{(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])\,\text{Log}\left[e\,x+\sqrt{e}\,\sqrt{d+e\,x^2}\right]}{e^{3/2}}$$

Problem 301: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 251 leaves, 15 steps) :

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

Result (type 5, 273 leaves) :

$$\frac{1}{75\,d^{5/2}\,e^2\,x^4\,(d+e\,x^2)^{5/2}}\,b\,n\,\sqrt{1+\frac{d}{e\,x^2}}\left(-3\,d^{5/2}\,(d+e\,x^2)^2\,\text{HypergeometricPFQ}\left[\left\{\frac{5}{2},\frac{5}{2},\frac{5}{2}\right\},\left\{\frac{7}{2},\frac{7}{2}\right\},-\frac{d}{e\,x^2}\right]+25\,\sqrt{d}\,e^3\,\sqrt{1+\frac{d}{e\,x^2}}\,x^6\,(4\,d+3\,e\,x^2)\,\text{Log}[x]-75\,e^{5/2}\,x^5\,(d+e\,x^2)^2\,\text{ArcSinh}\left[\frac{\sqrt{d}}{\sqrt{e}\,x}\right]\text{Log}[x]\right)+\frac{(4\,d+3\,e\,x^2)\,(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])}{3\,d^2\,(d+e\,x^2)^{3/2}}+\frac{\text{Log}[x]\,(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])}{d^{5/2}}-\frac{(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])\,\text{Log}\left[d+\sqrt{d}\,\sqrt{d+e\,x^2}\right]}{d^{5/2}}$$

Problem 302: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 337 leaves, 14 steps):

$$\frac{b\,e\,n}{3\,d^3\,\sqrt{d+e\,x^2}}-\frac{b\,n\,\sqrt{d+e\,x^2}}{4\,d^3\,x^2}-\frac{31\,b\,e\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^2}}{\sqrt{d}}\right]}{12\,d^{7/2}}-\frac{5\,b\,e\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^2}}{\sqrt{d}}\right]^2}{4\,d^{7/2}}-\frac{5\,e\,(a+b\,\text{Log}[c\,x^n])}{6\,d^2\,(d+e\,x^2)^{3/2}}-\frac{a+b\,\text{Log}[c\,x^n]}{2\,d\,x^2\,(d+e\,x^2)^{3/2}}-$$
$$\frac{5\,e\,(a+b\,\text{Log}[c\,x^n])}{2\,d^3\,\sqrt{d+e\,x^2}}+\frac{5\,e\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^2}}{\sqrt{d}}\right]\,(a+b\,\text{Log}[c\,x^n])}{2\,d^{7/2}}+\frac{5\,b\,e\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^2}}{\sqrt{d}}\right]\,\text{Log}\left[\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^2}}\right]}{2\,d^{7/2}}+\frac{5\,b\,e\,n\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^2}}\right]}{4\,d^{7/2}}$$

Result (type 5, 227 leaves):

$$\frac{1}{98\,e^2\,x^6\,\sqrt{d+e\,x^2}}b\,n\,\sqrt{1+\frac{d}{e\,x^2}}\,\left(5\,\text{HypergeometricPFQ}\left[\left\{\frac{7}{2},\frac{7}{2},\frac{7}{2}\right\},\left\{\frac{9}{2},\frac{9}{2}\right\},-\frac{d}{e\,x^2}\right]-7\,\text{Hypergeometric2F1}\left[\frac{5}{2},\frac{7}{2},\frac{9}{2},-\frac{d}{e\,x^2}\right]\,(1+2\,\text{Log}[x])\right)-$$
$$\frac{(3\,d^2+20\,d\,e\,x^2+15\,e^2\,x^4)\,(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])}{6\,d^3\,x^2\,(d+e\,x^2)^{3/2}}-$$
$$\frac{5\,e\,\text{Log}[x]\,(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])}{2\,d^{7/2}}+\frac{5\,e\,(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n])\,\text{Log}\left[d+\sqrt{d}\,\sqrt{d+e\,x^2}\right]}{2\,d^{7/2}}$$

Problem 303: Result unnecessarily involves higher level functions.

$$\int \frac{x^6\,(a+b\,\text{Log}[c\,x^n])}{(d+e\,x^2)^{5/2}}\,dx$$

Optimal (type 4, 443 leaves, 24 steps):

$$\frac{b\,d\,n\,x}{3\,e^3\,\sqrt{d+e\,x^2}}-\frac{b\,n\,x\,\sqrt{d+e\,x^2}}{4\,e^3}-\frac{31\,b\,d^{3/2}\,n\,\sqrt{1+\frac{e\,x^2}{d}}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}{12\,e^{7/2}\,\sqrt{d+e\,x^2}}-\frac{5\,b\,d^{3/2}\,n\,\sqrt{1+\frac{e\,x^2}{d}}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]^2}{4\,e^{7/2}\,\sqrt{d+e\,x^2}}+$$

$$\frac{5\,b\,d^{3/2}\,n\,\sqrt{1+\frac{e\,x^2}{d}}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}\left[1-e^{2\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}\right]}{2\,e^{7/2}\,\sqrt{d+e\,x^2}}-\frac{x^5\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{3\,e\,\left(d+e\,x^2\right)^{3/2}}-\frac{5\,x^3\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{3\,e^2\,\sqrt{d+e\,x^2}}+$$

$$\frac{5\,x\,\sqrt{d+e\,x^2}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{2\,e^3}-\frac{5\,d^{3/2}\,\sqrt{1+\frac{e\,x^2}{d}}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{2\,e^{7/2}\,\sqrt{d+e\,x^2}}+\frac{5\,b\,d^{3/2}\,n\,\sqrt{1+\frac{e\,x^2}{d}}\,\text{PolyLog}\left[2,\,e^{2\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}\right]}{4\,e^{7/2}\,\sqrt{d+e\,x^2}}$$

Result (type 5, 199 leaves):

$$\frac{1}{98\,d^2\,\sqrt{d+e\,x^2}}b\,n\,x^7\,\sqrt{1+\frac{e\,x^2}{d}}\,\left(5\,\text{HypergeometricPFQ}\left[\left\{\frac{7}{2},\frac{7}{2},\frac{7}{2}\right\},\left\{\frac{9}{2},\frac{9}{2}\right\},-\frac{e\,x^2}{d}\right]+7\,\text{Hypergeometric2F1}\left[\frac{5}{2},\frac{7}{2},\frac{9}{2},-\frac{e\,x^2}{d}\right]\,\left(-1+2\,\text{Log}[x]\right)\right)+$$

$$\frac{x\,\left(15\,d^2+20\,d\,e\,x^2+3\,e^2\,x^4\right)\,\left(a-b\,n\,\text{Log}[x]+b\,\text{Log}\left[c\,x^n\right]\right)}{6\,e^3\,\left(d+e\,x^2\right)^{3/2}}-\frac{5\,d\,\left(a-b\,n\,\text{Log}[x]+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[e\,x+\sqrt{e}\,\sqrt{d+e\,x^2}\right]}{2\,e^{7/2}}$$

Problem 304: Result unnecessarily involves higher level functions.

$$\int\frac{x^4\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{\left(d+e\,x^2\right)^{5/2}}\,dx$$

Optimal (type 4, 383 leaves, 13 steps):

$$-\frac{b\,n\,x}{3\,e^2\,\sqrt{d+e\,x^2}}+\frac{4\,b\,\sqrt{d}\,n\,\sqrt{1+\frac{e\,x^2}{d}}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}{3\,e^{5/2}\,\sqrt{d+e\,x^2}}+\frac{b\,\sqrt{d}\,n\,\sqrt{1+\frac{e\,x^2}{d}}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]^2}{2\,e^{5/2}\,\sqrt{d+e\,x^2}}-$$

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

$$\frac{\sqrt{d}\,\sqrt{1+\frac{e\,x^2}{d}}\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{e^{5/2}\,\sqrt{d+e\,x^2}}-\frac{b\,\sqrt{d}\,n\,\sqrt{1+\frac{e\,x^2}{d}}\,\text{PolyLog}\left[2,\,e^{2\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}\right]}{2\,e^{5/2}\,\sqrt{d+e\,x^2}}$$

Result (type 5, 244 leaves):

$$-\frac{1}{75\,d^2\,e^{5/2}\,\left(d+e\,x^2\right)^{5/2}}b\,n\,\sqrt{1+\frac{e\,x^2}{d}}\left(3\,e^{5/2}\,x^5\,\left(d+e\,x^2\right)^2\,\text{HypergeometricPFQ}\left[\left\{\frac{5}{2},\frac{5}{2},\frac{5}{2}\right\},\left\{\frac{7}{2},\frac{7}{2}\right\},-\frac{e\,x^2}{d}\right]+25\,d^3\,\sqrt{e}\,x\,\left(3\,d+4\,e\,x^2\right)\sqrt{1+\frac{e\,x^2}{d}}\,\text{Log}[x]-75\,d^{5/2}\,\left(d+e\,x^2\right)^2\,\text{ArcSinh}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}[x]\right)-\frac{x\,\left(3\,d+4\,e\,x^2\right)\,\left(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n]\right)}{3\,e^2\,\left(d+e\,x^2\right)^{3/2}}+\frac{\left(a-b\,n\,\text{Log}[x]+b\,\text{Log}[c\,x^n]\right)\,\text{Log}\left[e\,x+\sqrt{e}\,\sqrt{d+e\,x^2}\right]}{e^{5/2}}$$

Problem 312: Result unnecessarily involves higher level functions.

$$\int\frac{a+b\,\text{Log}[c\,x^n]}{x^3\,\sqrt{d-e\,x}\,\sqrt{d+e\,x}}\,dx$$

Optimal (type 4, 489 leaves, 13 steps):

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

Result (type 5, 255 leaves):

$$\frac{1}{36 d^3}\left(\left(b n \left(-d^2+e^2 x^2\right) \left(2 d^3 \text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},\frac{d^2}{e^2 x^2}\right]+9 e^2 x^2 \left(d \sqrt{1-\frac{d^2}{e^2 x^2}}-e x \text{ArcSin}\left[\frac{d}{e x}\right]\right) (1+2 \text{Log}[x])\right)\right) \Big/ \left(e^2 \sqrt{1-\frac{d^2}{e^2 x^2}}\, x^4 \sqrt{d-e x}\, \sqrt{d+e x}\right)-\frac{18 d \sqrt{d-e x}\, \sqrt{d+e x}\, (a-b n \text{Log}[x]+b \text{Log}[c x^n])}{x^2}+18 e^2 \text{Log}[x] (a-b n \text{Log}[x]+b \text{Log}[c x^n])-18 e^2 (a-b n \text{Log}[x]+b \text{Log}[c x^n]) \text{Log}\left[d+\sqrt{d-e x}\, \sqrt{d+e x}\right]\right)$$

Problem 348: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{a}{x}\right]}{a x-x^2}\, dx$$

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

$$\frac{\text{PolyLog}\left[2,1-\frac{a}{x}\right]}{a}$$

Result (type 4, 61 leaves):

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

Problem 349: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{a}{x^2}\right]}{a x-x^3}\, dx$$

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

$$\frac{\text{PolyLog}\left[2,1-\frac{a}{x^2}\right]}{2 a}$$

Result (type 4, 104 leaves):

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

Problem 350: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[a\,x^{1-n}\right]}{a\,x-x^n}\,dx$$

Optimal (type 4, 26 leaves, 3 steps):

$$-\frac{\text{PolyLog}\left[2,1-a\,x^{1-n}\right]}{a\,(1-n)}$$

Result (type 4, 103 leaves):

$$\frac{1}{2\,a\,(-1+n)}\left(\left(-1+n^2\right)\,\text{Log}[x]^2+2\,\text{Log}[x]\,\left(n\,\text{Log}\left[a\,x^{1-n}\right]+(-1+n)\,\left(\text{Log}\left[1-\frac{x^{-1+n}}{a}\right]-\text{Log}\left[-a\,x+x^n\right]\right)\right)-2\,\text{Log}\left[a\,x^{1-n}\right]\,\text{Log}\left[-a\,x+x^n\right]+2\,\text{PolyLog}\left[2,\frac{x^{-1+n}}{a}\right]\right)$$

Problem 363: Result more than twice size of optimal antiderivative.

$$\int\frac{(f\,x)^{-1+m}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{d+e\,x^m}\,dx$$

Optimal (type 4, 129 leaves, 4 steps):

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

Result (type 4, 502 leaves):

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

Problem 430: Result more than twice size of optimal antiderivative.

$$\int \frac{(a + b \text{Log}[c x^n])^2}{x (d + e x^r)} \, dx$$

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

$$-\frac{(a + b \text{Log}[c x^n])^2 \text{Log}\left[1 + \frac{d x^{-r}}{e}\right]}{d r} + \frac{2 b n (a + b \text{Log}[c x^n]) \text{PolyLog}\left[2, -\frac{d x^{-r}}{e}\right]}{d r^2} + \frac{2 b^2 n^2 \text{PolyLog}\left[3, -\frac{d x^{-r}}{e}\right]}{d r^3}$$

Result (type 4, 270 leaves):

$$-\frac{1}{d r^3} \Big(a^2 r^2 \text{Log}[d - d x^r] - 2 a b r^2 (n \text{Log}[x] - \text{Log}[c x^n]) \text{Log}[d - d x^r] + b^2 r^2 (-n \text{Log}[x] + \text{Log}[c x^n])^2 \text{Log}[d - d x^r] - 2 a b n r \left(\frac{1}{2} r^2 \text{Log}[x]^2 + \left(-r \text{Log}[x] + \text{Log}\left[-\frac{e x^r}{d}\right]\right) \text{Log}[d + e x^r] + \text{PolyLog}\left[2, 1 + \frac{e x^r}{d}\right]\right) + 2 b^2 n r (n \text{Log}[x] - \text{Log}[c x^n]) \left(\frac{1}{2} r^2 \text{Log}[x]^2 + \left(-r \text{Log}[x] + \text{Log}\left[-\frac{e x^r}{d}\right]\right) \text{Log}[d + e x^r] + \text{PolyLog}\left[2, 1 + \frac{e x^r}{d}\right]\right) + b^2 n^2 \left(r^2 \text{Log}[x]^2 \text{Log}\left[1 + \frac{d x^{-r}}{e}\right] - 2 r \text{Log}[x] \text{PolyLog}\left[2, -\frac{d x^{-r}}{e}\right] - 2 \text{PolyLog}\left[3, -\frac{d x^{-r}}{e}\right]\right)\Big)$$

Problem 431: Result more than twice size of optimal antiderivative.

$$\int \frac{(a + b \text{Log}[c x^n])^2}{x (d + e x^r)^2} \, dx$$

Optimal (type 4, 182 leaves, 7 steps):

$$\frac{(a+b\,\text{Log}[c\,x^n])^2}{d\,r\,(d+e\,x^r)}+\frac{2\,b\,n\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}\left[1+\frac{d\,x^{-r}}{e}\right]}{d^2\,r^2}-\frac{(a+b\,\text{Log}[c\,x^n])^2\,\text{Log}\left[1+\frac{d\,x^{-r}}{e}\right]}{d^2\,r}-$$
$$\frac{2\,b^2\,n^2\,\text{PolyLog}\left[2,-\frac{d\,x^{-r}}{e}\right]}{d^2\,r^3}+\frac{2\,b\,n\,(a+b\,\text{Log}[c\,x^n])\,\text{PolyLog}\left[2,-\frac{d\,x^{-r}}{e}\right]}{d^2\,r^2}+\frac{2\,b^2\,n^2\,\text{PolyLog}\left[3,-\frac{d\,x^{-r}}{e}\right]}{d^2\,r^3}$$

Result (type 4, 397 leaves):

$$\frac{1}{d^2\,r^3}\left(\frac{d\,r^2\,(a+b\,\text{Log}[c\,x^n])^2}{d+e\,x^r}+2\,a\,b\,n\,r\,\text{Log}[d-d\,x^r]-a^2\,r^2\,\text{Log}[d-d\,x^r]+\right.$$
$$2\,a\,b\,r^2\,(n\,\text{Log}[x]-\text{Log}[c\,x^n])\,\text{Log}[d-d\,x^r]+2\,b^2\,n\,r\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])\,\text{Log}[d-d\,x^r]-$$
$$b^2\,r^2\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])^2\,\text{Log}[d-d\,x^r]-2\,b^2\,n^2\left(\frac{1}{2}\,r^2\,\text{Log}[x]^2+\left(-r\,\text{Log}[x]+\text{Log}\left[-\frac{e\,x^r}{d}\right]\right)\text{Log}[d+e\,x^r]+\text{PolyLog}\left[2,1+\frac{e\,x^r}{d}\right]\right)+$$
$$2\,a\,b\,n\,r\left(\frac{1}{2}\,r^2\,\text{Log}[x]^2+\left(-r\,\text{Log}[x]+\text{Log}\left[-\frac{e\,x^r}{d}\right]\right)\text{Log}[d+e\,x^r]+\text{PolyLog}\left[2,1+\frac{e\,x^r}{d}\right]\right)+$$
$$2\,b^2\,n\,r\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])\left(\frac{1}{2}\,r^2\,\text{Log}[x]^2+\left(-r\,\text{Log}[x]+\text{Log}\left[-\frac{e\,x^r}{d}\right]\right)\text{Log}[d+e\,x^r]+\text{PolyLog}\left[2,1+\frac{e\,x^r}{d}\right]\right)-$$
$$\left.b^2\,n^2\left(r^2\,\text{Log}[x]^2\,\text{Log}\left[1+\frac{d\,x^{-r}}{e}\right]-2\,r\,\text{Log}[x]\,\text{PolyLog}\left[2,-\frac{d\,x^{-r}}{e}\right]-2\,\text{PolyLog}\left[3,-\frac{d\,x^{-r}}{e}\right]\right)\right)$$

Problem 433: Unable to integrate problem.

$$\int\frac{(d+e\,x^r)^{5/2}\,(a+b\,\text{Log}[c\,x^n])}{x}\,dx$$

Optimal (type 4, 327 leaves, 23 steps):

$$-\frac{92\,b\,d^2\,n\,\sqrt{d+e\,x^r}}{15\,r^2}-\frac{32\,b\,d\,n\,(d+e\,x^r)^{3/2}}{45\,r^2}-\frac{4\,b\,n\,(d+e\,x^r)^{5/2}}{25\,r^2}+\frac{92\,b\,d^{5/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]}{15\,r^2}+\frac{2\,b\,d^{5/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]^2}{r^2}+$$
$$\frac{2}{15}\left(\frac{15\,d^2\,\sqrt{d+e\,x^r}}{r}+\frac{5\,d\,(d+e\,x^r)^{3/2}}{r}+\frac{3\,(d+e\,x^r)^{5/2}}{r}-\frac{15\,d^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]}{r}\right)(a+b\,\text{Log}[c\,x^n])-$$
$$\frac{4\,b\,d^{5/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]\text{Log}\left[\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^r}}\right]}{r^2}-\frac{2\,b\,d^{5/2}\,n\,\text{PolyLog}\left[2,1-\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^r}}\right]}{r^2}$$

Result (type 8, 27 leaves):

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

Problem 434: Unable to integrate problem.

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

Optimal (type 4, 284 leaves, 17 steps):

$$-\frac{16\,b\,d\,n\,\sqrt{d+e\,x^r}}{3\,r^2}-\frac{4\,b\,n\,\left(d+e\,x^r\right)^{3/2}}{9\,r^2}+\frac{16\,b\,d^{3/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]}{3\,r^2}+$$
$$\frac{2\,b\,d^{3/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]^2}{r^2}+\frac{2}{3}\left(\frac{3\,d\,\sqrt{d+e\,x^r}}{r}+\frac{\left(d+e\,x^r\right)^{3/2}}{r}-\frac{3\,d^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]}{r}\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)-$$
$$\frac{4\,b\,d^{3/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]\,\text{Log}\left[\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^r}}\right]}{r^2}-\frac{2\,b\,d^{3/2}\,n\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^r}}\right]}{r^2}$$

Result (type 8, 27 leaves):

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

Problem 435: Unable to integrate problem.

$$\int \frac{\sqrt{d+e\,x^r}\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x}\,dx$$

Optimal (type 4, 240 leaves, 12 steps):

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

Result (type 8, 27 leaves):

$$\int \frac{\sqrt{d+e\,x^r}\;\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{x}\,dx$$

Problem 436: Unable to integrate problem.

$$\int \frac{a+b\,\text{Log}\left[c\,x^n\right]}{x\,\sqrt{d+e\,x^r}}\,dx$$

Optimal (type 4, 174 leaves, 8 steps):

$$\frac{2\,b\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]^2}{\sqrt{d}\;r^2}-\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]\;\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{\sqrt{d}\;r}-\frac{4\,b\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]\;\text{Log}\left[\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^r}}\right]}{\sqrt{d}\;r^2}-\frac{2\,b\,n\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^r}}\right]}{\sqrt{d}\;r^2}$$

Result (type 8, 27 leaves):

$$\int \frac{a+b\,\text{Log}\left[c\,x^n\right]}{x\,\sqrt{d+e\,x^r}}\,dx$$

Problem 437: Unable to integrate problem.

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

Optimal (type 4, 225 leaves, 11 steps):

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

$$\frac{4\,b\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]\;\text{Log}\left[\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^r}}\right]}{d^{3/2}\;r^2}-\frac{2\,b\,n\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^r}}\right]}{d^{3/2}\;r^2}$$

Result (type 8, 27 leaves):

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

Problem 438: Unable to integrate problem.

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

Optimal (type 4, 271 leaves, 15 steps):

$$-\frac{4\,b\,n}{3\,d^2\,r^2\,\sqrt{d+e\,x^r}}+\frac{16\,b\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]}{3\,d^{5/2}\,r^2}+\frac{2\,b\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]^2}{d^{5/2}\,r^2}+$$
$$\frac{2}{3}\left(\frac{1}{d\,r\,\left(d+e\,x^r\right)^{3/2}}+\frac{3}{d^2\,r\,\sqrt{d+e\,x^r}}-\frac{3\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]}{d^{5/2}\,r}\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)-$$
$$\frac{4\,b\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]\,\text{Log}\left[\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^r}}\right]}{d^{5/2}\,r^2}-\frac{2\,b\,n\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^r}}\right]}{d^{5/2}\,r^2}$$

Result (type 8, 27 leaves):

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

Problem 439: Unable to integrate problem.

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

Optimal (type 4, 314 leaves, 20 steps):

$$-\frac{4\,b\,n}{15\,d^2\,r^2\,\left(d+e\,x^r\right)^{3/2}}-\frac{32\,b\,n}{15\,d^3\,r^2\,\sqrt{d+e\,x^r}}+\frac{92\,b\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]}{15\,d^{7/2}\,r^2}+\frac{2\,b\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]^2}{d^{7/2}\,r^2}+$$

$$\frac{2}{15}\left(\frac{3}{d\,r\,\left(d+e\,x^r\right)^{5/2}}+\frac{5}{d^2\,r\,\left(d+e\,x^r\right)^{3/2}}+\frac{15}{d^3\,r\,\sqrt{d+e\,x^r}}-\frac{15\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]}{d^{7/2}\,r}\right)\left(a+b\,\text{Log}\left[c\,x^n\right]\right)-$$

$$\frac{4\,b\,n\,\text{ArcTanh}\left[\frac{\sqrt{d+e\,x^r}}{\sqrt{d}}\right]\,\text{Log}\left[\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^r}}\right]}{d^{7/2}\,r^2}-\frac{2\,b\,n\,\text{PolyLog}\left[2,\,1-\frac{2\,\sqrt{d}}{\sqrt{d}-\sqrt{d+e\,x^r}}\right]}{d^{7/2}\,r^2}$$

Result (type 8, 27 leaves) :

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

Problem 456: Result more than twice size of optimal antiderivative.

$$\int\frac{(f+g\,x)\,\left(a+b\,\text{Log}[c\,x^n]\right)^3}{(d+e\,x)^3}\,dx$$

Optimal (type 4, 295 leaves, 11 steps) :

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

$$\frac{3\,b^2\,(e\,f-d\,g)\,n^2\,\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{d^2\,e^2}-\frac{3\,b\,(e\,f+d\,g)\,n\,\left(a+b\,\text{Log}[c\,x^n]\right)^2\,\text{Log}\left[1+\frac{e\,x}{d}\right]}{2\,d^2\,e^2}+$$

$$\frac{3\,b^3\,(e\,f-d\,g)\,n^3\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^2\,e^2}-\frac{3\,b^2\,(e\,f+d\,g)\,n^2\,\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]}{d^2\,e^2}+\frac{3\,b^3\,(e\,f+d\,g)\,n^3\,\text{PolyLog}\left[3,-\frac{e\,x}{d}\right]}{d^2\,e^2}$$

Result (type 4, 674 leaves) :

$$-\frac{1}{2 d^2 e^2 (d+e x)^2}\Big(-3 b (e f+d g) n (d+e x)^2 \text{Log}[x] (a-b n \text{Log}[x]+b \text{Log}[c x^n])^2+$$
$$3 b d^2 n (d g+e (f+2 g x)) \text{Log}[x] (a-b n \text{Log}[x]+b \text{Log}[c x^n])^2-d^2 (-e f+d g) (a-b n \text{Log}[x]+b \text{Log}[c x^n])^3+$$
$$d (d+e x) (a-b n \text{Log}[x]+b \text{Log}[c x^n])^2 (2 a d g-3 b e f n+3 b d g n+2 b d g (-n \text{Log}[x]+\text{Log}[c x^n]))+$$
$$3 b (e f+d g) n (d+e x)^2 (a-b n \text{Log}[x]+b \text{Log}[c x^n])^2 \text{Log}[d+e x]+3 b^2 d g n^2 (a-b n \text{Log}[x]+b \text{Log}[c x^n])$$
$$\Big(-e^2 x^2 \text{Log}[x]^2+2 (d+e x)^2 \text{Log}[1+\frac{e x}{d}]+2 (d+e x) \text{Log}[x] \Big(-e x+(d+e x) \text{Log}[1+\frac{e x}{d}]\Big)+2 (d+e x)^2 \text{PolyLog}[2,-\frac{e x}{d}]\Big)+$$
$$3 b^2 e f n^2 (a-b n \text{Log}[x]+b \text{Log}[c x^n]) \Big(-e x (2 d+e x) \text{Log}[x]^2-2 (d+e x)^2 \text{Log}[1+\frac{e x}{d}]+2 (d+e x) \text{Log}[x] \Big(e x+(d+e x) \text{Log}[1+\frac{e x}{d}]\Big)+$$
$$2 (d+e x)^2 \text{PolyLog}[2,-\frac{e x}{d}]\Big)+b^3 e f n^3 \Big(-e x (2 d+e x) \text{Log}[x]^3+3 (d+e x) \text{Log}[x]^2 \Big(e x+(d+e x) \text{Log}[1+\frac{e x}{d}]\Big)-$$
$$6 (d+e x)^2 \text{Log}[x] \Big(\text{Log}[1+\frac{e x}{d}]-\text{PolyLog}[2,-\frac{e x}{d}]\Big)-6 (d+e x)^2 \text{PolyLog}[2,-\frac{e x}{d}]-6 (d+e x)^2 \text{PolyLog}[3,-\frac{e x}{d}]\Big)+$$
$$b^3 d g n^3 \Big(\text{Log}[x] \Big(-e^2 x^2 \text{Log}[x]^2+6 (d+e x)^2 \text{Log}[1+\frac{e x}{d}]+3 (d+e x) \text{Log}[x] \Big(-e x+(d+e x) \text{Log}[1+\frac{e x}{d}]\Big)\Big)+$$
$$6 (d+e x)^2 (1+\text{Log}[x]) \text{PolyLog}[2,-\frac{e x}{d}]-6 (d+e x)^2 \text{PolyLog}[3,-\frac{e x}{d}]\Big)\Big)$$

Test results for the 249 problems in "3.1.5 u (a+b log(c x^n))^p.m"

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

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

Optimal (type 4, 342 leaves, 14 steps):

$$6 b^3 e n^3 \text{Log}[x]-6 b^2 e n^2 \text{Log}[1+\frac{1}{e x}] (a+b \text{Log}[c x^n])-3 b e n \text{Log}[1+\frac{1}{e x}] (a+b \text{Log}[c x^n])^2-e \text{Log}[1+\frac{1}{e x}] (a+b \text{Log}[c x^n])^3-$$
$$6 b^3 e n^3 \text{Log}[1+e x]-\frac{6 b^3 n^3 \text{Log}[1+e x]}{x}-\frac{6 b^2 n^2 (a+b \text{Log}[c x^n]) \text{Log}[1+e x]}{x}-\frac{3 b n (a+b \text{Log}[c x^n])^2 \text{Log}[1+e x]}{x}-$$
$$\frac{(a+b \text{Log}[c x^n])^3 \text{Log}[1+e x]}{x}+6 b^3 e n^3 \text{PolyLog}[2,-\frac{1}{e x}]+6 b^2 e n^2 (a+b \text{Log}[c x^n]) \text{PolyLog}[2,-\frac{1}{e x}]+$$
$$3 b e n (a+b \text{Log}[c x^n])^2 \text{PolyLog}[2,-\frac{1}{e x}]+6 b^3 e n^3 \text{PolyLog}[3,-\frac{1}{e x}]+6 b^2 e n^2 (a+b \text{Log}[c x^n]) \text{PolyLog}[3,-\frac{1}{e x}]+6 b^3 e n^3 \text{PolyLog}[4,-\frac{1}{e x}]$$

Result (type 4, 770 leaves):

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

Problem 23: Result more than twice size of optimal antiderivative.

$$\int \frac{(a + b \operatorname{Log}[c x^n])^3 \operatorname{Log}[1 + e x]}{x^3} \, dx$$

Optimal (type 4, 470 leaves, 22 steps):

$$-\frac{45 b^3 e n^3}{8 x} - \frac{3}{8} b^3 e^2 n^3 \operatorname{Log}[x] - \frac{21 b^2 e n^2 (a + b \operatorname{Log}[c x^n])}{4 x} + \frac{3}{4} b^2 e^2 n^2 \operatorname{Log}\left[1 + \frac{1}{e x}\right] (a + b \operatorname{Log}[c x^n]) - \frac{9 b e n (a + b \operatorname{Log}[c x^n])^2}{4 x} + \frac{3}{4} b e^2 n \operatorname{Log}\left[1 + \frac{1}{e x}\right] (a + b \operatorname{Log}[c x^n])^2 - \frac{e (a + b \operatorname{Log}[c x^n])^3}{2 x} + \frac{1}{2} e^2 \operatorname{Log}\left[1 + \frac{1}{e x}\right] (a + b \operatorname{Log}[c x^n])^3 + \frac{3}{8} b^3 e^2 n^3 \operatorname{Log}[1 + e x] - \frac{3 b^3 n^3 \operatorname{Log}[1 + e x]}{8 x^2} - \frac{3 b^2 n^2 (a + b \operatorname{Log}[c x^n]) \operatorname{Log}[1 + e x]}{4 x^2} - \frac{3 b n (a + b \operatorname{Log}[c x^n])^2 \operatorname{Log}[1 + e x]}{4 x^2} - \frac{(a + b \operatorname{Log}[c x^n])^3 \operatorname{Log}[1 + e x]}{2 x^2} - \frac{3}{4} b^3 e^2 n^3 \operatorname{PolyLog}\left[2, -\frac{1}{e x}\right] - \frac{3}{2} b^2 e^2 n^2 (a + b \operatorname{Log}[c x^n]) \operatorname{PolyLog}\left[2, -\frac{1}{e x}\right] - \frac{3}{2} b e^2 n (a + b \operatorname{Log}[c x^n])^2 \operatorname{PolyLog}\left[2, -\frac{1}{e x}\right] - \frac{3}{2} b^3 e^2 n^3 \operatorname{PolyLog}\left[3, -\frac{1}{e x}\right] - 3 b^2 e^2 n^2 (a + b \operatorname{Log}[c x^n]) \operatorname{PolyLog}\left[3, -\frac{1}{e x}\right] - 3 b^3 e^2 n^3 \operatorname{PolyLog}\left[4, -\frac{1}{e x}\right]$$

Result (type 4, 1047 leaves):

$$-\frac{1}{8\,x^2}\Big(4\,a^3\,e\,x+18\,a^2\,b\,e\,n\,x+42\,a\,b^2\,e\,n^2\,x+45\,b^3\,e\,n^3\,x+4\,a^3\,e^2\,x^2\,\text{Log}[x]+6\,a^2\,b\,e^2\,n\,x^2\,\text{Log}[x]+6\,a\,b^2\,e^2\,n^2\,x^2\,\text{Log}[x]+3\,b^3\,e^2\,n^3\,x^2\,\text{Log}[x]-$$
$$6\,a^2\,b\,e^2\,n\,x^2\,\text{Log}[x]^2-6\,a\,b^2\,e^2\,n^2\,x^2\,\text{Log}[x]^2-3\,b^3\,e^2\,n^3\,x^2\,\text{Log}[x]^2+4\,a\,b^2\,e^2\,n^2\,x^2\,\text{Log}[x]^3+2\,b^3\,e^2\,n^3\,x^2\,\text{Log}[x]^3-b^3\,e^2\,n^3\,x^2\,\text{Log}[x]^4+$$
$$12\,a^2\,b\,e\,x\,\text{Log}\big[c\,x^n\big]+36\,a\,b^2\,e\,n\,x\,\text{Log}\big[c\,x^n\big]+42\,b^3\,e\,n^2\,x\,\text{Log}\big[c\,x^n\big]+12\,a^2\,b\,e^2\,x^2\,\text{Log}[x]\,\text{Log}\big[c\,x^n\big]+12\,a\,b^2\,e^2\,n\,x^2\,\text{Log}[x]\,\text{Log}\big[c\,x^n\big]+$$
$$6\,b^3\,e^2\,n^2\,x^2\,\text{Log}[x]\,\text{Log}\big[c\,x^n\big]-12\,a\,b^2\,e^2\,n\,x^2\,\text{Log}[x]^2\,\text{Log}\big[c\,x^n\big]-6\,b^3\,e^2\,n^2\,x^2\,\text{Log}[x]^2\,\text{Log}\big[c\,x^n\big]+4\,b^3\,e^2\,n^2\,x^2\,\text{Log}[x]^3\,\text{Log}\big[c\,x^n\big]+$$
$$12\,a\,b^2\,e\,x\,\text{Log}\big[c\,x^n\big]^2+18\,b^3\,e\,n\,x\,\text{Log}\big[c\,x^n\big]^2+12\,a\,b^2\,e^2\,x^2\,\text{Log}[x]\,\text{Log}\big[c\,x^n\big]^2+6\,b^3\,e^2\,n\,x^2\,\text{Log}[x]\,\text{Log}\big[c\,x^n\big]^2-$$
$$6\,b^3\,e^2\,n\,x^2\,\text{Log}[x]^2\,\text{Log}\big[c\,x^n\big]^2+4\,b^3\,e\,x\,\text{Log}\big[c\,x^n\big]^3+4\,b^3\,e^2\,x^2\,\text{Log}[x]\,\text{Log}\big[c\,x^n\big]^3+4\,a^3\,\text{Log}[1+e\,x]+6\,a^2\,b\,n\,\text{Log}[1+e\,x]+$$
$$6\,a\,b^2\,n^2\,\text{Log}[1+e\,x]+3\,b^3\,n^3\,\text{Log}[1+e\,x]-4\,a^3\,e^2\,x^2\,\text{Log}[1+e\,x]-6\,a^2\,b\,e^2\,n\,x^2\,\text{Log}[1+e\,x]-6\,a\,b^2\,e^2\,n^2\,x^2\,\text{Log}[1+e\,x]-$$
$$3\,b^3\,e^2\,n^3\,x^2\,\text{Log}[1+e\,x]+12\,a^2\,b\,\text{Log}\big[c\,x^n\big]\,\text{Log}[1+e\,x]+12\,a\,b^2\,n\,\text{Log}\big[c\,x^n\big]\,\text{Log}[1+e\,x]+6\,b^3\,n^2\,\text{Log}\big[c\,x^n\big]\,\text{Log}[1+e\,x]-$$
$$12\,a^2\,b\,e^2\,x^2\,\text{Log}\big[c\,x^n\big]\,\text{Log}[1+e\,x]-12\,a\,b^2\,e^2\,n\,x^2\,\text{Log}\big[c\,x^n\big]\,\text{Log}[1+e\,x]-6\,b^3\,e^2\,n^2\,x^2\,\text{Log}\big[c\,x^n\big]\,\text{Log}[1+e\,x]+12\,a\,b^2\,\text{Log}\big[c\,x^n\big]^2\,\text{Log}[1+e\,x]+$$
$$6\,b^3\,n\,\text{Log}\big[c\,x^n\big]^2\,\text{Log}[1+e\,x]-12\,a\,b^2\,e^2\,x^2\,\text{Log}\big[c\,x^n\big]^2\,\text{Log}[1+e\,x]-6\,b^3\,e^2\,n\,x^2\,\text{Log}\big[c\,x^n\big]^2\,\text{Log}[1+e\,x]+4\,b^3\,\text{Log}\big[c\,x^n\big]^3\,\text{Log}[1+e\,x]-$$
$$4\,b^3\,e^2\,x^2\,\text{Log}\big[c\,x^n\big]^3\,\text{Log}[1+e\,x]-6\,b\,e^2\,n\,x^2\,\Big(2\,a^2+2\,a\,b\,n+b^2\,n^2+2\,b\,(2\,a+b\,n)\,\text{Log}\big[c\,x^n\big]+2\,b^2\,\text{Log}\big[c\,x^n\big]^2\Big)\,\text{PolyLog}[2,-e\,x]+$$
$$12\,b^2\,e^2\,n^2\,x^2\,\big(2\,a+b\,n+2\,b\,\text{Log}\big[c\,x^n\big]\big)\,\text{PolyLog}[3,-e\,x]-24\,b^3\,e^2\,n^3\,x^2\,\text{PolyLog}[4,-e\,x]\Big)$$

Problem 24: Result unnecessarily involves imaginary or complex numbers.

$$\int x^3\,\big(a+b\,\text{Log}\big[c\,x^n\big]\big)\,\text{Log}\Big[d\,\Big(\frac{1}{d}+f\,x^2\Big)\Big]\,dx$$

Optimal (type 4, 180 leaves, 7 steps):

$$-\frac{3\,b\,n\,x^2}{16\,d\,f}+\frac{1}{16}\,b\,n\,x^4+\frac{x^2\,\big(a+b\,\text{Log}\big[c\,x^n\big]\big)}{4\,d\,f}-\frac{1}{8}\,x^4\,\big(a+b\,\text{Log}\big[c\,x^n\big]\big)+\frac{b\,n\,\text{Log}\big[1+d\,f\,x^2\big]}{16\,d^2\,f^2}-$$
$$\frac{1}{16}\,b\,n\,x^4\,\text{Log}\big[1+d\,f\,x^2\big]-\frac{\big(a+b\,\text{Log}\big[c\,x^n\big]\big)\,\text{Log}\big[1+d\,f\,x^2\big]}{4\,d^2\,f^2}+\frac{1}{4}\,x^4\,\big(a+b\,\text{Log}\big[c\,x^n\big]\big)\,\text{Log}\big[1+d\,f\,x^2\big]-\frac{b\,n\,\text{PolyLog}\big[2,-d\,f\,x^2\big]}{8\,d^2\,f^2}$$

Result (type 4, 356 leaves):

$$\frac{a\,x^2}{4\,d\,f}-\frac{a\,x^4}{8}+\frac{1}{32}\,b\,x^4\,\big(n-4\,\big(-n\,\text{Log}[x]+\text{Log}\big[c\,x^n\big]\big)\big)+\frac{b\,x^2\,\big(-n+4\,\big(-n\,\text{Log}[x]+\text{Log}\big[c\,x^n\big]\big)\big)}{16\,d\,f}-\frac{a\,\text{Log}\big[1+d\,f\,x^2\big]}{4\,d^2\,f^2}+\frac{1}{4}\,a\,x^4\,\text{Log}\big[1+d\,f\,x^2\big]+$$
$$\frac{b\,\big(n-4\,\big(-n\,\text{Log}[x]+\text{Log}\big[c\,x^n\big]\big)\big)\,\text{Log}\big[1+d\,f\,x^2\big]}{16\,d^2\,f^2}+\frac{1}{16}\,b\,x^4\,\big(-n+4\,n\,\text{Log}[x]+4\,\big(-n\,\text{Log}[x]+\text{Log}\big[c\,x^n\big]\big)\big)\,\text{Log}\big[1+d\,f\,x^2\big]-$$
$$\frac{1}{2}\,b\,d\,f\,n\left(-\frac{-\frac{x^2}{4}+\frac{1}{2}\,x^2\,\text{Log}[x]}{d^2\,f^2}+\frac{-\frac{x^4}{16}+\frac{1}{4}\,x^4\,\text{Log}[x]}{d\,f}+\frac{\frac{\text{Log}[x]\,\text{Log}\big[1+i\,\sqrt{d}\,\sqrt{f}\,x\big]+\text{PolyLog}\big[2,-i\,\sqrt{d}\,\sqrt{f}\,x\big]}{2\,d\,f}+\frac{\text{Log}[x]\,\text{Log}\big[1-i\,\sqrt{d}\,\sqrt{f}\,x\big]+\text{PolyLog}\big[2,i\,\sqrt{d}\,\sqrt{f}\,x\big]}{2\,d\,f}}{d^2\,f^2}\right)$$

Problem 25: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int x\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}\left[d\left(\frac{1}{d}+f\,x^2\right)\right]\,dx$$

Optimal (type 4, 114 leaves, 8 steps):

$$\frac{1}{2}\,b\,n\,x^2-\frac{1}{2}\,x^2\,(a+b\,\text{Log}[c\,x^n])-\frac{b\,n\,(1+d\,f\,x^2)\,\text{Log}[1+d\,f\,x^2]}{4\,d\,f}+\frac{(1+d\,f\,x^2)\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}[1+d\,f\,x^2]}{2\,d\,f}+\frac{b\,n\,\text{PolyLog}[2,-d\,f\,x^2]}{4\,d\,f}$$

Result (type 4, 286 leaves):

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

Problem 26: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{(a+b\,\text{Log}[c\,x^n])\,\text{Log}\left[d\left(\frac{1}{d}+f\,x^2\right)\right]}{x}\,dx$$

Optimal (type 4, 39 leaves, 2 steps):

$$-\frac{1}{2}\,(a+b\,\text{Log}[c\,x^n])\,\text{PolyLog}[2,-d\,f\,x^2]+\frac{1}{4}\,b\,n\,\text{PolyLog}[3,-d\,f\,x^2]$$

Result (type 4, 319 leaves):

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

Problem 27: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 141 leaves, 9 steps):

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

Result (type 4, 252 leaves):

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

Problem 32: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 367 leaves, 13 steps):

$$\frac{7 b^2 n^2 x^2}{32 d f} - \frac{3}{64} b^2 n^2 x^4 - \frac{3 b n x^2 (a + b \text{Log}[c x^n])}{8 d f} + \frac{1}{8} b n x^4 (a + b \text{Log}[c x^n]) + \frac{x^2 (a + b \text{Log}[c x^n])^2}{4 d f} - \frac{1}{8} x^4 (a + b \text{Log}[c x^n])^2 - \frac{b^2 n^2 \text{Log}[1 + d f x^2]}{32 d^2 f^2} +$$
$$\frac{1}{32} b^2 n^2 x^4 \text{Log}[1 + d f x^2] + \frac{b n (a + b \text{Log}[c x^n]) \text{Log}[1 + d f x^2]}{8 d^2 f^2} - \frac{1}{8} b n x^4 (a + b \text{Log}[c x^n]) \text{Log}[1 + d f x^2] - \frac{(a + b \text{Log}[c x^n])^2 \text{Log}[1 + d f x^2]}{4 d^2 f^2} +$$
$$\frac{1}{4} x^4 (a + b \text{Log}[c x^n])^2 \text{Log}[1 + d f x^2] + \frac{b^2 n^2 \text{PolyLog}[2, -d f x^2]}{16 d^2 f^2} - \frac{b n (a + b \text{Log}[c x^n]) \text{PolyLog}[2, -d f x^2]}{4 d^2 f^2} + \frac{b^2 n^2 \text{PolyLog}[3, -d f x^2]}{8 d^2 f^2}$$

Result (type 4, 673 leaves):

$$\frac{1}{64 d^2 f^2} \Big(2 d f x^2 \left(8 a^2 - 4 a b n + b^2 n^2 + 4 b^2 n (n \text{Log}[x] - \text{Log}[c x^n]) + 16 a b (-n \text{Log}[x] + \text{Log}[c x^n]) + 8 b^2 (-n \text{Log}[x] + \text{Log}[c x^n])^2\right) -$$
$$d^2 f^2 x^4 \left(8 a^2 - 4 a b n + b^2 n^2 + 4 b^2 n (n \text{Log}[x] - \text{Log}[c x^n]) + 16 a b (-n \text{Log}[x] + \text{Log}[c x^n]) + 8 b^2 (-n \text{Log}[x] + \text{Log}[c x^n])^2\right) +$$
$$2 d^2 f^2 x^4 \left(8 a^2 - 4 a b n + b^2 n^2 - 4 b (-4 a + b n) \text{Log}[c x^n] + 8 b^2 \text{Log}[c x^n]^2\right) \text{Log}[1 + d f x^2] -$$
$$2 \left(8 a^2 - 4 a b n + b^2 n^2 + 4 b^2 n (n \text{Log}[x] - \text{Log}[c x^n]) + 16 a b (-n \text{Log}[x] + \text{Log}[c x^n]) + 8 b^2 (-n \text{Log}[x] + \text{Log}[c x^n])^2\right) \text{Log}[1 + d f x^2] +$$
$$b n (-4 a + b n + 4 b n \text{Log}[x] - 4 b \text{Log}[c x^n]) \Big(4 d f x^2 - d^2 f^2 x^4 - 8 d f x^2 \text{Log}[x] + 4 d^2 f^2 x^4 \text{Log}[x] +$$
$$8 \text{Log}[x] \text{Log}[1 - i \sqrt{d} \sqrt{f} x] + 8 \text{Log}[x] \text{Log}[1 + i \sqrt{d} \sqrt{f} x] + 8 \text{PolyLog}[2, -i \sqrt{d} \sqrt{f} x] + 8 \text{PolyLog}[2, i \sqrt{d} \sqrt{f} x]\Big) -$$
$$b^2 n^2 \Big(-8 d f x^2 + d^2 f^2 x^4 + 16 d f x^2 \text{Log}[x] - 4 d^2 f^2 x^4 \text{Log}[x] - 16 d f x^2 \text{Log}[x]^2 + 8 d^2 f^2 x^4 \text{Log}[x]^2 +$$
$$16 \text{Log}[x]^2 \text{Log}[1 - i \sqrt{d} \sqrt{f} x] + 16 \text{Log}[x]^2 \text{Log}[1 + i \sqrt{d} \sqrt{f} x] + 32 \text{Log}[x] \text{PolyLog}[2, -i \sqrt{d} \sqrt{f} x] +$$
$$32 \text{Log}[x] \text{PolyLog}[2, i \sqrt{d} \sqrt{f} x] - 32 \text{PolyLog}[3, -i \sqrt{d} \sqrt{f} x] - 32 \text{PolyLog}[3, i \sqrt{d} \sqrt{f} x]\Big)\Big)$$

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

$$\int x (a + b \text{Log}[c x^n])^2 \text{Log}\left[d \left(\frac{1}{d} + f x^2\right)\right] dx$$

Optimal (type 4, 241 leaves, 15 steps):

$$-\frac{3}{4} b^2 n^2 x^2 + b n x^2 (a + b \text{Log}[c x^n]) - \frac{1}{2} x^2 (a + b \text{Log}[c x^n])^2 + \frac{b^2 n^2 (1 + d f x^2) \text{Log}[1 + d f x^2]}{4 d f} - \frac{b n (1 + d f x^2) (a + b \text{Log}[c x^n]) \text{Log}[1 + d f x^2]}{2 d f} +$$
$$\frac{(1 + d f x^2) (a + b \text{Log}[c x^n])^2 \text{Log}[1 + d f x^2]}{2 d f} - \frac{b^2 n^2 \text{PolyLog}[2, -d f x^2]}{4 d f} + \frac{b n (a + b \text{Log}[c x^n]) \text{PolyLog}[2, -d f x^2]}{2 d f} - \frac{b^2 n^2 \text{PolyLog}[3, -d f x^2]}{4 d f}$$

Result (type 4, 519 leaves):

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

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

$$\int\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[d\,\left(\frac{1}{d}+f\,x^2\right)\right]}{x}\,dx$$

Optimal (type 4, 70 leaves, 3 steps):

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

Result (type 4, 484 leaves):

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

Problem 35: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 257 leaves, 11 steps):

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

Result (type 4, 488 leaves) :

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

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

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

Optimal (type 4, 591 leaves, 22 steps) :

$$-\frac{45 b^3 n^3 x^2}{128 d f}+\frac{3}{64} b^3 n^3 x^4+\frac{21 b^2 n^2 x^2 \left(a+b \text{Log}\left[c x^n\right]\right)}{32 d f}-\frac{9}{64} b^2 n^2 x^4 \left(a+b \text{Log}\left[c x^n\right]\right)-\frac{9 b n x^2 \left(a+b \text{Log}\left[c x^n\right]\right)^2}{16 d f}+$$
$$\frac{3}{16} b n x^4 \left(a+b \text{Log}\left[c x^n\right]\right)^2+\frac{x^2 \left(a+b \text{Log}\left[c x^n\right]\right)^3}{4 d f}-\frac{1}{8} x^4 \left(a+b \text{Log}\left[c x^n\right]\right)^3+\frac{3 b^3 n^3 \text{Log}\left[1+d f x^2\right]}{128 d^2 f^2}-\frac{3}{128} b^3 n^3 x^4 \text{Log}\left[1+d f x^2\right]-$$
$$\frac{3 b^2 n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[1+d f x^2\right]}{32 d^2 f^2}+\frac{3}{32} b^2 n^2 x^4 \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[1+d f x^2\right]+\frac{3 b n \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[1+d f x^2\right]}{16 d^2 f^2}-$$
$$\frac{3}{16} b n x^4 \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[1+d f x^2\right]-\frac{\left(a+b \text{Log}\left[c x^n\right]\right)^3 \text{Log}\left[1+d f x^2\right]}{4 d^2 f^2}+\frac{1}{4} x^4 \left(a+b \text{Log}\left[c x^n\right]\right)^3 \text{Log}\left[1+d f x^2\right]-$$
$$\frac{3 b^3 n^3 \text{PolyLog}\left[2,-d f x^2\right]}{64 d^2 f^2}+\frac{3 b^2 n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[2,-d f x^2\right]}{16 d^2 f^2}-\frac{3 b n \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{PolyLog}\left[2,-d f x^2\right]}{8 d^2 f^2}-$$
$$\frac{3 b^3 n^3 \text{PolyLog}\left[3,-d f x^2\right]}{32 d^2 f^2}+\frac{3 b^2 n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[3,-d f x^2\right]}{8 d^2 f^2}-\frac{3 b^3 n^3 \text{PolyLog}\left[4,-d f x^2\right]}{16 d^2 f^2}$$

Result (type 4, 1250 leaves) :

$$
\begin{aligned}
&\frac{1}{256\, d^2 f^2}\\
&\Big(2\, d f x^2 \big(32 a^3 - 24 a^2 b n + 12 a b^2 n^2 - 3 b^3 n^3 + 48 a b^2 n\, (n\, \text{Log}[x] - \text{Log}[c\, x^n]) + 96 a^2 b\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n]) + 12 b^3 n^2\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n]) +\\
&\quad 96 a b^2\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n])^2 - 24 b^3 n\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n])^2 + 32 b^3\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n])^3\big) -\\
&d^2 f^2 x^4 \big(32 a^3 - 24 a^2 b n + 12 a b^2 n^2 - 3 b^3 n^3 + 48 a b^2 n\, (n\, \text{Log}[x] - \text{Log}[c\, x^n]) + 96 a^2 b\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n]) +\\
&\quad 12 b^3 n^2\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n]) + 96 a b^2\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n])^2 - 24 b^3 n\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n])^2 + 32 b^3\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n])^3\big) + 2 d^2\\
&f^2 x^4 \big(32 a^3 - 24 a^2 b n + 12 a b^2 n^2 - 3 b^3 n^3 + 12 b\, (8 a^2 - 4 a b n + b^2 n^2)\, \text{Log}[c\, x^n] - 24 b^2\, (-4 a + b n)\, \text{Log}[c\, x^n]^2 + 32 b^3\, \text{Log}[c\, x^n]^3\big)\, \text{Log}[1 + d f x^2] -\\
&2 \big(32 a^3 - 24 a^2 b n + 12 a b^2 n^2 - 3 b^3 n^3 + 48 a b^2 n\, (n\, \text{Log}[x] - \text{Log}[c\, x^n]) + 96 a^2 b\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n]) + 12 b^3 n^2\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n]) +\\
&\quad 96 a b^2\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n])^2 - 24 b^3 n\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n])^2 + 32 b^3\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n])^3\big)\, \text{Log}[1 + d f x^2] -\\
&24 b n\, \big(8 a^2 - 4 a b n + b^2 n^2 + 4 b^2 n\, (n\, \text{Log}[x] - \text{Log}[c\, x^n]) + 16 a b\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n]) + 8 b^2\, (-n\, \text{Log}[x] + \text{Log}[c\, x^n])^2\big)\\
&\quad\Big(\frac{1}{2} d f x^2 - \frac{1}{8} d^2 f^2 x^4 - d f x^2\, \text{Log}[x] + \frac{1}{2} d^2 f^2 x^4\, \text{Log}[x] + \text{Log}[x]\, \text{Log}[1 - \mathrm{i} \sqrt{d} \sqrt{f}\, x] +\\
&\quad \text{Log}[x]\, \text{Log}[1 + \mathrm{i} \sqrt{d} \sqrt{f}\, x] + \text{PolyLog}[2, -\mathrm{i} \sqrt{d} \sqrt{f}\, x] + \text{PolyLog}[2, \mathrm{i} \sqrt{d} \sqrt{f}\, x]\Big) +\\
&3 b^2 n^2\, (-4 a + b n + 4 b n\, \text{Log}[x] - 4 b\, \text{Log}[c\, x^n])\, \big(-8 d f x^2 + d^2 f^2 x^4 + 16 d f x^2\, \text{Log}[x] - 4 d^2 f^2 x^4\, \text{Log}[x] - 16 d f x^2\, \text{Log}[x]^2 +\\
&\quad 8 d^2 f^2 x^4\, \text{Log}[x]^2 + 16\, \text{Log}[x]^2\, \text{Log}[1 - \mathrm{i} \sqrt{d} \sqrt{f}\, x] + 16\, \text{Log}[x]^2\, \text{Log}[1 + \mathrm{i} \sqrt{d} \sqrt{f}\, x] + 32\, \text{Log}[x]\, \text{PolyLog}[2, -\mathrm{i} \sqrt{d} \sqrt{f}\, x] +\\
&\quad 32\, \text{Log}[x]\, \text{PolyLog}[2, \mathrm{i} \sqrt{d} \sqrt{f}\, x] - 32\, \text{PolyLog}[3, -\mathrm{i} \sqrt{d} \sqrt{f}\, x] - 32\, \text{PolyLog}[3, \mathrm{i} \sqrt{d} \sqrt{f}\, x]\big) +\\
&b^3 n^3\, \big(d^2 f^2 x^4\, (3 - 12\, \text{Log}[x] + 24\, \text{Log}[x]^2 - 32\, \text{Log}[x]^3) + 16 d f x^2\, (-3 + 6\, \text{Log}[x] - 6\, \text{Log}[x]^2 + 4\, \text{Log}[x]^3) -\\
&\quad 64\, \big(\text{Log}[x]^3\, \text{Log}[1 - \mathrm{i} \sqrt{d} \sqrt{f}\, x] + \text{Log}[x]^3\, \text{Log}[1 + \mathrm{i} \sqrt{d} \sqrt{f}\, x] + 3\, \text{Log}[x]^2\, \text{PolyLog}[2, -\mathrm{i} \sqrt{d} \sqrt{f}\, x] + 3\, \text{Log}[x]^2\, \text{PolyLog}[2, \mathrm{i} \sqrt{d} \sqrt{f}\, x] -\\
&\qquad 6\, \text{Log}[x]\, \text{PolyLog}[3, -\mathrm{i} \sqrt{d} \sqrt{f}\, x] - 6\, \text{Log}[x]\, \text{PolyLog}[3, \mathrm{i} \sqrt{d} \sqrt{f}\, x] + 6\, \text{PolyLog}[4, -\mathrm{i} \sqrt{d} \sqrt{f}\, x] + 6\, \text{PolyLog}[4, \mathrm{i} \sqrt{d} \sqrt{f}\, x]\big)\big)\Big)
\end{aligned}
$$

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

$$\int x\, (a + b\, \text{Log}[c\, x^n])^3\, \text{Log}\Big[d\, \Big(\frac{1}{d} + f x^2\Big)\Big]\, dx$$

Optimal (type 4, 411 leaves, 24 steps):

$$\frac{3}{2} b^3 n^3 x^2-\frac{9}{4} b^2 n^2 x^2 \left(a+b \text{Log}\left[c x^n\right]\right)+\frac{3}{2} b n x^2 \left(a+b \text{Log}\left[c x^n\right]\right)^2-\frac{1}{2} x^2 \left(a+b \text{Log}\left[c x^n\right]\right)^3-\frac{3 b^3 n^3 \left(1+d f x^2\right) \text{Log}\left[1+d f x^2\right]}{8 d f}+\frac{3 b^2 n^2 \left(1+d f x^2\right) \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[1+d f x^2\right]}{4 d f}-\frac{3 b n \left(1+d f x^2\right) \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[1+d f x^2\right]}{4 d f}+\frac{\left(1+d f x^2\right) \left(a+b \text{Log}\left[c x^n\right]\right)^3 \text{Log}\left[1+d f x^2\right]}{2 d f}+\frac{3 b^3 n^3 \text{PolyLog}\left[2,-d f x^2\right]}{8 d f}-\frac{3 b^2 n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[2,-d f x^2\right]}{4 d f}+\frac{3 b n \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{PolyLog}\left[2,-d f x^2\right]}{4 d f}+\frac{3 b^3 n^3 \text{PolyLog}\left[3,-d f x^2\right]}{8 d f}-\frac{3 b^2 n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[3,-d f x^2\right]}{4 d f}+\frac{3 b^3 n^3 \text{PolyLog}\left[4,-d f x^2\right]}{8 d f}$$

Result (type 4, 990 leaves) :

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

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

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

Optimal (type 4, 101 leaves, 4 steps) :

$$-\frac{1}{2}\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{PolyLog}\left[2,\,-d\,f\,x^2\right]+\frac{3}{4}\,b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{PolyLog}\left[3,\,-d\,f\,x^2\right]-\frac{3}{4}\,b^2\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[4,\,-d\,f\,x^2\right]+\frac{3}{8}\,b^3\,n^3\,\text{PolyLog}\left[5,\,-d\,f\,x^2\right]$$

Result (type 4, 754 leaves):

$$\frac{1}{4}\left(-\text{Log}[x]\,\left(b^3\,n^3\,\text{Log}[x]^3-4\,b^2\,n^2\,\text{Log}[x]^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)+6\,b\,n\,\text{Log}[x]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2-4\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\right)\,\text{Log}\left[1+d\,f\,x^2\right]-4\,\left(a-b\,n\,\text{Log}[x]+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\left(\text{Log}[x]\,\left(\text{Log}\left[1-i\,\sqrt{d}\,\sqrt{f}\,x\right]+\text{Log}\left[1+i\,\sqrt{d}\,\sqrt{f}\,x\right]\right)+\text{PolyLog}\left[2,\,-i\,\sqrt{d}\,\sqrt{f}\,x\right]+\text{PolyLog}\left[2,\,i\,\sqrt{d}\,\sqrt{f}\,x\right]\right)-6\,b\,n\,\left(a-b\,n\,\text{Log}[x]+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\left(\text{Log}[x]^2\,\text{Log}\left[1-i\,\sqrt{d}\,\sqrt{f}\,x\right]+\text{Log}[x]^2\,\text{Log}\left[1+i\,\sqrt{d}\,\sqrt{f}\,x\right]+2\,\text{Log}[x]\,\text{PolyLog}\left[2,\,-i\,\sqrt{d}\,\sqrt{f}\,x\right]+2\,\text{Log}[x]\,\text{PolyLog}\left[2,\,i\,\sqrt{d}\,\sqrt{f}\,x\right]-2\,\text{PolyLog}\left[3,\,-i\,\sqrt{d}\,\sqrt{f}\,x\right]-2\,\text{PolyLog}\left[3,\,i\,\sqrt{d}\,\sqrt{f}\,x\right]\right)+4\,b^2\,n^2\,\left(-a+b\,n\,\text{Log}[x]-b\,\text{Log}\left[c\,x^n\right]\right)\left(\text{Log}[x]^3\,\text{Log}\left[1-i\,\sqrt{d}\,\sqrt{f}\,x\right]+\text{Log}[x]^3\,\text{Log}\left[1+i\,\sqrt{d}\,\sqrt{f}\,x\right]+3\,\text{Log}[x]^2\,\text{PolyLog}\left[2,\,-i\,\sqrt{d}\,\sqrt{f}\,x\right]+3\,\text{Log}[x]^2\,\text{PolyLog}\left[2,\,i\,\sqrt{d}\,\sqrt{f}\,x\right]-6\,\text{Log}[x]\,\text{PolyLog}\left[3,\,-i\,\sqrt{d}\,\sqrt{f}\,x\right]-6\,\text{Log}[x]\,\text{PolyLog}\left[3,\,i\,\sqrt{d}\,\sqrt{f}\,x\right]+6\,\text{PolyLog}\left[4,\,-i\,\sqrt{d}\,\sqrt{f}\,x\right]+6\,\text{PolyLog}\left[4,\,i\,\sqrt{d}\,\sqrt{f}\,x\right]\right)-b^3\,n^3\,\left(\text{Log}[x]^4\,\text{Log}\left[1-i\,\sqrt{d}\,\sqrt{f}\,x\right]+\text{Log}[x]^4\,\text{Log}\left[1+i\,\sqrt{d}\,\sqrt{f}\,x\right]+4\,\text{Log}[x]^3\,\text{PolyLog}\left[2,\,-i\,\sqrt{d}\,\sqrt{f}\,x\right]+4\,\text{Log}[x]^3\,\text{PolyLog}\left[2,\,i\,\sqrt{d}\,\sqrt{f}\,x\right]-12\,\text{Log}[x]^2\,\text{PolyLog}\left[3,\,-i\,\sqrt{d}\,\sqrt{f}\,x\right]-12\,\text{Log}[x]^2\,\text{PolyLog}\left[3,\,i\,\sqrt{d}\,\sqrt{f}\,x\right]+24\,\text{Log}[x]\,\text{PolyLog}\left[4,\,-i\,\sqrt{d}\,\sqrt{f}\,x\right]+24\,\text{Log}[x]\,\text{PolyLog}\left[4,\,i\,\sqrt{d}\,\sqrt{f}\,x\right]-24\,\text{PolyLog}\left[5,\,-i\,\sqrt{d}\,\sqrt{f}\,x\right]-24\,\text{PolyLog}\left[5,\,i\,\sqrt{d}\,\sqrt{f}\,x\right]\right)\right)$$

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

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

Optimal (type 4, 425 leaves, 15 steps):

$$\frac{3}{4}\,b^3\,d\,f\,n^3\,\text{Log}[x]-\frac{3}{4}\,b^2\,d\,f\,n^2\,\text{Log}\left[1+\frac{1}{d\,f\,x^2}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)-\frac{3}{4}\,b\,d\,f\,n\,\text{Log}\left[1+\frac{1}{d\,f\,x^2}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2-\frac{1}{2}\,d\,f\,\text{Log}\left[1+\frac{1}{d\,f\,x^2}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3-\frac{3}{8}\,b^3\,d\,f\,n^3\,\text{Log}\left[1+d\,f\,x^2\right]-\frac{3\,b^3\,n^3\,\text{Log}\left[1+d\,f\,x^2\right]}{8\,x^2}-\frac{3\,b^2\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[1+d\,f\,x^2\right]}{4\,x^2}-\frac{3\,b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[1+d\,f\,x^2\right]}{4\,x^2}-\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{Log}\left[1+d\,f\,x^2\right]}{2\,x^2}+\frac{3}{8}\,b^3\,d\,f\,n^3\,\text{PolyLog}\left[2,\,-\frac{1}{d\,f\,x^2}\right]+\frac{3}{4}\,b^2\,d\,f\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,\,-\frac{1}{d\,f\,x^2}\right]+\frac{3}{4}\,b\,d\,f\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{PolyLog}\left[2,\,-\frac{1}{d\,f\,x^2}\right]+\frac{3}{8}\,b^3\,d\,f\,n^3\,\text{PolyLog}\left[3,\,-\frac{1}{d\,f\,x^2}\right]+\frac{3}{4}\,b^2\,d\,f\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[3,\,-\frac{1}{d\,f\,x^2}\right]+\frac{3}{8}\,b^3\,d\,f\,n^3\,\text{PolyLog}\left[4,\,-\frac{1}{d\,f\,x^2}\right]$$

Result (type 4, 940 leaves):

$$\frac{1}{8}\Big(2\,d\,f\,\text{Log}[x]\,\big(4\,a^3+6\,a^2\,b\,n+6\,a\,b^2\,n^2+3\,b^3\,n^3+12\,a^2\,b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])+12\,a\,b^2\,n\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])+6\,b^3\,n^2\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])+12\,a\,b^2\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])^2+6\,b^3\,n\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])^2+4\,b^3\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])^3\big)-\frac{1}{x^2}\big(4\,a^3+6\,a^2\,b\,n+6\,a\,b^2\,n^2+3\,b^3\,n^3+6\,b\,(2\,a^2+2\,a\,b\,n+b^2\,n^2)\,\text{Log}[c\,x^n]+6\,b^2\,(2\,a+b\,n)\,\text{Log}[c\,x^n]^2+4\,b^3\,\text{Log}[c\,x^n]^3\big)\,\text{Log}[1+d\,f\,x^2]-d\,f\,\big(4\,a^3+6\,a^2\,b\,n+6\,a\,b^2\,n^2+3\,b^3\,n^3+12\,a^2\,b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])+12\,a\,b^2\,n\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])+6\,b^3\,n^2\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])+12\,a\,b^2\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])^2+6\,b^3\,n\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])^2+4\,b^3\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])^3\big)\,\text{Log}[1+d\,f\,x^2]+6\,b\,d\,f\,n\,\big(2\,a^2+2\,a\,b\,n+b^2\,n^2+4\,a\,b\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])+2\,b^2\,n\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])+2\,b^2\,(-n\,\text{Log}[x]+\text{Log}[c\,x^n])^2\big)\,\big(\text{Log}[x]\,(\text{Log}[x]-\text{Log}[1-i\sqrt{d}\,\sqrt{f}\,x]-\text{Log}[1+i\sqrt{d}\,\sqrt{f}\,x])-\text{PolyLog}[2,-i\sqrt{d}\,\sqrt{f}\,x]-\text{PolyLog}[2,i\sqrt{d}\,\sqrt{f}\,x]\big)+12\,b^2\,d\,f\,n^2\,(2\,a+b\,n-2\,b\,n\,\text{Log}[x]+2\,b\,\text{Log}[c\,x^n])\,\Big(\frac{\text{Log}[x]^3}{3}-\frac{1}{2}\text{Log}[x]^2\,\text{Log}[1-i\sqrt{d}\,\sqrt{f}\,x]-\frac{1}{2}\text{Log}[x]^2\,\text{Log}[1+i\sqrt{d}\,\sqrt{f}\,x]-\text{Log}[x]\,\text{PolyLog}[2,-i\sqrt{d}\,\sqrt{f}\,x]-\text{Log}[x]\,\text{PolyLog}[2,i\sqrt{d}\,\sqrt{f}\,x]+\text{PolyLog}[3,-i\sqrt{d}\,\sqrt{f}\,x]+\text{PolyLog}[3,i\sqrt{d}\,\sqrt{f}\,x]\Big)+2\,b^3\,d\,f\,n^3\,\big(\text{Log}[x]^4-2\,\text{Log}[x]^3\,\text{Log}[1-i\sqrt{d}\,\sqrt{f}\,x]-2\,\text{Log}[x]^3\,\text{Log}[1+i\sqrt{d}\,\sqrt{f}\,x]-6\,\text{Log}[x]^2\,\text{PolyLog}[2,-i\sqrt{d}\,\sqrt{f}\,x]-6\,\text{Log}[x]^2\,\text{PolyLog}[2,i\sqrt{d}\,\sqrt{f}\,x]+12\,\text{Log}[x]\,\text{PolyLog}[3,-i\sqrt{d}\,\sqrt{f}\,x]+12\,\text{Log}[x]\,\text{PolyLog}[3,i\sqrt{d}\,\sqrt{f}\,x]-12\,\text{PolyLog}[4,-i\sqrt{d}\,\sqrt{f}\,x]-12\,\text{PolyLog}[4,i\sqrt{d}\,\sqrt{f}\,x]\big)\Big)$$

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

$$\int \frac{\text{Log}\left[d\left(\frac{1}{d}+f\sqrt{x}\right)\right]\,(a+b\,\text{Log}[c\,x^n])^3}{x^3}\,dx$$

Optimal (type 4, 849 leaves, 34 steps) :

$$-\frac{175 b^3 d f n^3}{216 x^{3/2}}+\frac{45 b^3 d^2 f^2 n^3}{16 x}-\frac{255 b^3 d^3 f^3 n^3}{8 \sqrt{x}}+\frac{3}{8} b^3 d^4 f^4 n^3 \text{Log}\left[1+d f \sqrt{x}\right]-\frac{3 b^3 n^3 \text{Log}\left[1+d f \sqrt{x}\right]}{8 x^2}-\frac{3}{16} b^3 d^4 f^4 n^3 \text{Log}[x]+$$

$$\frac{3}{16} b^3 d^4 f^4 n^3 \text{Log}[x]^2-\frac{37 b^2 d f n^2 \left(a+b \text{Log}\left[c x^n\right]\right)}{36 x^{3/2}}+\frac{21 b^2 d^2 f^2 n^2 \left(a+b \text{Log}\left[c x^n\right]\right)}{8 x}-\frac{63 b^2 d^3 f^3 n^2 \left(a+b \text{Log}\left[c x^n\right]\right)}{4 \sqrt{x}}+$$

$$\frac{3}{4} b^2 d^4 f^4 n^2 \text{Log}\left[1+d f \sqrt{x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)-\frac{3 b^2 n^2 \text{Log}\left[1+d f \sqrt{x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)}{4 x^2}-\frac{3}{8} b^2 d^4 f^4 n^2 \text{Log}[x] \left(a+b \text{Log}\left[c x^n\right]\right)-$$

$$\frac{7 b d f n \left(a+b \text{Log}\left[c x^n\right]\right)^2}{12 x^{3/2}}+\frac{9 b d^2 f^2 n \left(a+b \text{Log}\left[c x^n\right]\right)^2}{8 x}-\frac{15 b d^3 f^3 n \left(a+b \text{Log}\left[c x^n\right]\right)^2}{4 \sqrt{x}}+\frac{3}{4} b d^4 f^4 n \text{Log}\left[1+d f \sqrt{x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)^2-$$

$$\frac{3 b n \text{Log}\left[1+d f \sqrt{x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)^2}{4 x^2}-\frac{1}{8} d^4 f^4 \left(a+b \text{Log}\left[c x^n\right]\right)^3-\frac{d f \left(a+b \text{Log}\left[c x^n\right]\right)^3}{6 x^{3/2}}+\frac{d^2 f^2 \left(a+b \text{Log}\left[c x^n\right]\right)^3}{4 x}-$$

$$\frac{d^3 f^3 \left(a+b \text{Log}\left[c x^n\right]\right)^3}{2 \sqrt{x}}+\frac{1}{2} d^4 f^4 \text{Log}\left[1+d f \sqrt{x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)^3-\frac{\text{Log}\left[1+d f \sqrt{x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)^3}{2 x^2}-\frac{d^4 f^4 \left(a+b \text{Log}\left[c x^n\right]\right)^4}{16 b n}+$$

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

$$6 b^3 d^4 f^4 n^3 \text{PolyLog}\left[3,-d f \sqrt{x}\right]-12 b^2 d^4 f^4 n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[3,-d f \sqrt{x}\right]+24 b^3 d^4 f^4 n^3 \text{PolyLog}\left[4,-d f \sqrt{x}\right]$$

Result (type 4, 2009 leaves):

$$-\frac{a^3 d f}{6 x^{3/2}}-\frac{7 a^2 b d f n}{12 x^{3/2}}-\frac{37 a b^2 d f n^2}{36 x^{3/2}}-\frac{175 b^3 d f n^3}{216 x^{3/2}}+\frac{a^3 d^2 f^2}{4 x}+\frac{9 a^2 b d^2 f^2 n}{8 x}+\frac{21 a b^2 d^2 f^2 n^2}{8 x}+\frac{45 b^3 d^2 f^2 n^3}{16 x}-\frac{a^3 d^3 f^3}{2 \sqrt{x}}-\frac{15 a^2 b d^3 f^3 n}{4 \sqrt{x}}-$$

$$\frac{63 a b^2 d^3 f^3 n^2}{4 \sqrt{x}}-\frac{255 b^3 d^3 f^3 n^3}{8 \sqrt{x}}+\frac{1}{2} a^3 d^4 f^4 \text{Log}\left[1+d f \sqrt{x}\right]+\frac{3}{4} a^2 b d^4 f^4 n \text{Log}\left[1+d f \sqrt{x}\right]+\frac{3}{4} a b^2 d^4 f^4 n^2 \text{Log}\left[1+d f \sqrt{x}\right]+$$

$$\frac{3}{8} b^3 d^4 f^4 n^3 \text{Log}\left[1+d f \sqrt{x}\right]-\frac{a^3 \text{Log}\left[1+d f \sqrt{x}\right]}{2 x^2}-\frac{3 a^2 b n \text{Log}\left[1+d f \sqrt{x}\right]}{4 x^2}-\frac{3 a b^2 n^2 \text{Log}\left[1+d f \sqrt{x}\right]}{4 x^2}-\frac{3 b^3 n^3 \text{Log}\left[1+d f \sqrt{x}\right]}{8 x^2}-$$

$$\frac{1}{4} a^3 d^4 f^4 \text{Log}[x]-\frac{3}{8} a^2 b d^4 f^4 n \text{Log}[x]-\frac{3}{8} a b^2 d^4 f^4 n^2 \text{Log}[x]-\frac{3}{16} b^3 d^4 f^4 n^3 \text{Log}[x]+\frac{3}{8} a^2 b d^4 f^4 n \text{Log}[x]^2+$$

$$\frac{3}{8} a b^2 d^4 f^4 n^2 \text{Log}[x]^2+\frac{3}{16} b^3 d^4 f^4 n^3 \text{Log}[x]^2-\frac{1}{4} a b^2 d^4 f^4 n^2 \text{Log}[x]^3-\frac{1}{8} b^3 d^4 f^4 n^3 \text{Log}[x]^3+\frac{1}{2} b^3 d^4 f^4 n^3 \text{Log}\left[1+\frac{1}{d f \sqrt{x}}\right] \text{Log}[x]^3-$$

$$\frac{1}{2} b^3 d^4 f^4 n^3 \text{Log}\left[1+d f \sqrt{x}\right] \text{Log}[x]^3+\frac{1}{8} b^3 d^4 f^4 n^3 \text{Log}[x]^4-\frac{a^2 b d f \text{Log}\left[c x^n\right]}{2 x^{3/2}}-\frac{7 a b^2 d f n \text{Log}\left[c x^n\right]}{6 x^{3/2}}-\frac{37 b^3 d f n^2 \text{Log}\left[c x^n\right]}{36 x^{3/2}}+$$

$$\frac{3 a^2 b d^2 f^2 \text{Log}\left[c x^n\right]}{4 x}+\frac{9 a b^2 d^2 f^2 n \text{Log}\left[c x^n\right]}{4 x}+\frac{21 b^3 d^2 f^2 n^2 \text{Log}\left[c x^n\right]}{8 x}-\frac{3 a^2 b d^3 f^3 \text{Log}\left[c x^n\right]}{2 \sqrt{x}}-\frac{15 a b^2 d^3 f^3 n \text{Log}\left[c x^n\right]}{2 \sqrt{x}}-$$

$$\frac{63 b^3 d^3 f^3 n^2 \text{Log}\left[c x^n\right]}{4 \sqrt{x}}+\frac{3}{2} a^2 b d^4 f^4 \text{Log}\left[1+d f \sqrt{x}\right] \text{Log}\left[c x^n\right]+\frac{3}{2} a b^2 d^4 f^4 n \text{Log}\left[1+d f \sqrt{x}\right] \text{Log}\left[c x^n\right]+\frac{3}{4} b^3 d^4 f^4 n^2 \text{Log}\left[1+d f \sqrt{x}\right] \text{Log}\left[c x^n\right]-$$

$$\frac{3 a^2 b \text{Log}\left[1+d f \sqrt{x}\right] \text{Log}[c x^n]}{2 x^2}-\frac{3 a b^2 n \text{Log}\left[1+d f \sqrt{x}\right] \text{Log}[c x^n]}{2 x^2}-\frac{3 b^3 n^2 \text{Log}\left[1+d f \sqrt{x}\right] \text{Log}[c x^n]}{4 x^2}-\frac{3}{4} a^2 b d^4 f^4 \text{Log}[x] \text{Log}[c x^n]-$$
$$\frac{3}{4} a b^2 d^4 f^4 n \text{Log}[x] \text{Log}[c x^n]-\frac{3}{8} b^3 d^4 f^4 n^2 \text{Log}[x] \text{Log}[c x^n]+\frac{3}{4} a b^2 d^4 f^4 n \text{Log}[x]^2 \text{Log}[c x^n]+\frac{3}{8} b^3 d^4 f^4 n^2 \text{Log}[x]^2 \text{Log}[c x^n]-$$
$$\frac{1}{4} b^3 d^4 f^4 n^2 \text{Log}[x]^3 \text{Log}[c x^n]-\frac{a b^2 d f \text{Log}[c x^n]^2}{2 x^{3/2}}-\frac{7 b^3 d f n \text{Log}[c x^n]^2}{12 x^{3/2}}+\frac{3 a b^2 d^2 f^2 \text{Log}[c x^n]^2}{4 x}+\frac{9 b^3 d^2 f^2 n \text{Log}[c x^n]^2}{8 x}-$$
$$\frac{3 a b^2 d^3 f^3 \text{Log}[c x^n]^2}{2 \sqrt{x}}-\frac{15 b^3 d^3 f^3 n \text{Log}[c x^n]^2}{4 \sqrt{x}}+\frac{3}{2} a b^2 d^4 f^4 \text{Log}\left[1+d f \sqrt{x}\right] \text{Log}[c x^n]^2+\frac{3}{4} b^3 d^4 f^4 n \text{Log}\left[1+d f \sqrt{x}\right] \text{Log}[c x^n]^2-$$
$$\frac{3 a b^2 \text{Log}\left[1+d f \sqrt{x}\right] \text{Log}[c x^n]^2}{2 x^2}-\frac{3 b^3 n \text{Log}\left[1+d f \sqrt{x}\right] \text{Log}[c x^n]^2}{4 x^2}-\frac{3}{4} a b^2 d^4 f^4 \text{Log}[x] \text{Log}[c x^n]^2-\frac{3}{8} b^3 d^4 f^4 n \text{Log}[x] \text{Log}[c x^n]^2+$$
$$\frac{3}{8} b^3 d^4 f^4 n \text{Log}[x]^2 \text{Log}[c x^n]^2-\frac{b^3 d f \text{Log}[c x^n]^3}{6 x^{3/2}}+\frac{b^3 d^2 f^2 \text{Log}[c x^n]^3}{4 x}-\frac{b^3 d^3 f^3 \text{Log}[c x^n]^3}{2 \sqrt{x}}+\frac{1}{2} b^3 d^4 f^4 \text{Log}\left[1+d f \sqrt{x}\right] \text{Log}[c x^n]^3-$$
$$\frac{b^3 \text{Log}\left[1+d f \sqrt{x}\right] \text{Log}[c x^n]^3}{2 x^2}-\frac{1}{4} b^3 d^4 f^4 \text{Log}[x] \text{Log}[c x^n]^3-3 b^3 d^4 f^4 n^3 \text{Log}[x]^2 \text{PolyLog}\left[2,-\frac{1}{d f \sqrt{x}}\right]+$$
$$\frac{3}{2} b d^4 f^4 n \left(2 a^2+2 a b n+b^2 n^2-2 b^2 n^2 \text{Log}[x]^2+2 b (2 a+b n) \text{Log}[c x^n]+2 b^2 \text{Log}[c x^n]^2\right) \text{PolyLog}\left[2,-d f \sqrt{x}\right]-$$
$$12 b^3 d^4 f^4 n^3 \text{Log}[x] \text{PolyLog}\left[3,-\frac{1}{d f \sqrt{x}}\right]-12 a b^2 d^4 f^4 n^2 \text{PolyLog}\left[3,-d f \sqrt{x}\right]-6 b^3 d^4 f^4 n^3 \text{PolyLog}\left[3,-d f \sqrt{x}\right]+$$
$$12 b^3 d^4 f^4 n^3 \text{Log}[x] \text{PolyLog}\left[3,-d f \sqrt{x}\right]-12 b^3 d^4 f^4 n^2 \text{Log}[c x^n] \text{PolyLog}\left[3,-d f \sqrt{x}\right]-24 b^3 d^4 f^4 n^3 \text{PolyLog}\left[4,-\frac{1}{d f \sqrt{x}}\right]$$

Problem 64: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b \text{Log}[c x^n])^4 \text{Log}\left[d \left(\frac{1}{d}+f x^m\right)\right]}{x} \, dx$$

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

$$-\frac{(a+b \text{Log}[c x^n])^4 \text{PolyLog}[2,-d f x^m]}{m}+\frac{4 b n (a+b \text{Log}[c x^n])^3 \text{PolyLog}[3,-d f x^m]}{m^2}-$$
$$\frac{12 b^2 n^2 (a+b \text{Log}[c x^n])^2 \text{PolyLog}[4,-d f x^m]}{m^3}+\frac{24 b^3 n^3 (a+b \text{Log}[c x^n]) \text{PolyLog}[5,-d f x^m]}{m^4}-\frac{24 b^4 n^4 \text{PolyLog}[6,-d f x^m]}{m^5}$$

Result (type 4, 1700 leaves):

$$-\frac{2}{3} a^3 b m n \text{Log}[x]^3+\frac{3}{2} a^2 b^2 m n^2 \text{Log}[x]^4-\frac{6}{5} a b^3 m n^3 \text{Log}[x]^5+\frac{1}{3} b^4 m n^4 \text{Log}[x]^6-2 a^2 b^2 m n \text{Log}[x]^3 \text{Log}\left[c x^n\right]+3 a b^3 m n^2 \text{Log}[x]^4 \text{Log}\left[c x^n\right]-$$

$$\frac{6}{5} b^4 m n^3 \text{Log}[x]^5 \text{Log}\left[c x^n\right]-2 a b^3 m n \text{Log}[x]^3 \text{Log}\left[c x^n\right]^2+\frac{3}{2} b^4 m n^2 \text{Log}[x]^4 \text{Log}\left[c x^n\right]^2-\frac{2}{3} b^4 m n \text{Log}[x]^3 \text{Log}\left[c x^n\right]^3-$$

$$2 a^3 b n \text{Log}[x]^2 \text{Log}\left[1+\frac{x^{-m}}{d f}\right]+4 a^2 b^2 n^2 \text{Log}[x]^3 \text{Log}\left[1+\frac{x^{-m}}{d f}\right]-3 a b^3 n^3 \text{Log}[x]^4 \text{Log}\left[1+\frac{x^{-m}}{d f}\right]+\frac{4}{5} b^4 n^4 \text{Log}[x]^5 \text{Log}\left[1+\frac{x^{-m}}{d f}\right]-$$

$$6 a^2 b^2 n \text{Log}[x]^2 \text{Log}\left[c x^n\right] \text{Log}\left[1+\frac{x^{-m}}{d f}\right]+8 a b^3 n^2 \text{Log}[x]^3 \text{Log}\left[c x^n\right] \text{Log}\left[1+\frac{x^{-m}}{d f}\right]-3 b^4 n^3 \text{Log}[x]^4 \text{Log}\left[c x^n\right] \text{Log}\left[1+\frac{x^{-m}}{d f}\right]-$$

$$6 a b^3 n \text{Log}[x]^2 \text{Log}\left[c x^n\right]^2 \text{Log}\left[1+\frac{x^{-m}}{d f}\right]+4 b^4 n^2 \text{Log}[x]^3 \text{Log}\left[c x^n\right]^2 \text{Log}\left[1+\frac{x^{-m}}{d f}\right]-2 b^4 n \text{Log}[x]^2 \text{Log}\left[c x^n\right]^3 \text{Log}\left[1+\frac{x^{-m}}{d f}\right]+$$

$$2 a^3 b n \text{Log}[x]^2 \text{Log}\left[1+d f x^m\right]-4 a^2 b^2 n^2 \text{Log}[x]^3 \text{Log}\left[1+d f x^m\right]+3 a b^3 n^3 \text{Log}[x]^4 \text{Log}\left[1+d f x^m\right]-\frac{4}{5} b^4 n^4 \text{Log}[x]^5 \text{Log}\left[1+d f x^m\right]+$$

$$\frac{a^4 \text{Log}\left[-d f x^m\right] \text{Log}\left[1+d f x^m\right]}{m}-\frac{4 a^3 b n \text{Log}[x] \text{Log}\left[-d f x^m\right] \text{Log}\left[1+d f x^m\right]}{m}+\frac{6 a^2 b^2 n^2 \text{Log}[x]^2 \text{Log}\left[-d f x^m\right] \text{Log}\left[1+d f x^m\right]}{m}-$$

$$\frac{4 a b^3 n^3 \text{Log}[x]^3 \text{Log}\left[-d f x^m\right] \text{Log}\left[1+d f x^m\right]}{m}+\frac{b^4 n^4 \text{Log}[x]^4 \text{Log}\left[-d f x^m\right] \text{Log}\left[1+d f x^m\right]}{m}+6 a^2 b^2 n \text{Log}[x]^2 \text{Log}\left[c x^n\right] \text{Log}\left[1+d f x^m\right]-$$

$$8 a b^3 n^2 \text{Log}[x]^3 \text{Log}\left[c x^n\right] \text{Log}\left[1+d f x^m\right]+3 b^4 n^3 \text{Log}[x]^4 \text{Log}\left[c x^n\right] \text{Log}\left[1+d f x^m\right]+\frac{4 a^3 b \text{Log}\left[-d f x^m\right] \text{Log}\left[c x^n\right] \text{Log}\left[1+d f x^m\right]}{m}-$$

$$\frac{12 a^2 b^2 n \text{Log}[x] \text{Log}\left[-d f x^m\right] \text{Log}\left[c x^n\right] \text{Log}\left[1+d f x^m\right]}{m}+\frac{12 a b^3 n^2 \text{Log}[x]^2 \text{Log}\left[-d f x^m\right] \text{Log}\left[c x^n\right] \text{Log}\left[1+d f x^m\right]}{m}-$$

$$\frac{4 b^4 n^3 \text{Log}[x]^3 \text{Log}\left[-d f x^m\right] \text{Log}\left[c x^n\right] \text{Log}\left[1+d f x^m\right]}{m}+6 a b^3 n \text{Log}[x]^2 \text{Log}\left[c x^n\right]^2 \text{Log}\left[1+d f x^m\right]-4 b^4 n^2 \text{Log}[x]^3 \text{Log}\left[c x^n\right]^2 \text{Log}\left[1+d f x^m\right]+$$

$$\frac{6 a^2 b^2 \text{Log}\left[-d f x^m\right] \text{Log}\left[c x^n\right]^2 \text{Log}\left[1+d f x^m\right]}{m}-\frac{12 a b^3 n \text{Log}[x] \text{Log}\left[-d f x^m\right] \text{Log}\left[c x^n\right]^2 \text{Log}\left[1+d f x^m\right]}{m}+$$

$$\frac{6 b^4 n^2 \text{Log}[x]^2 \text{Log}\left[-d f x^m\right] \text{Log}\left[c x^n\right]^2 \text{Log}\left[1+d f x^m\right]}{m}+2 b^4 n \text{Log}[x]^2 \text{Log}\left[c x^n\right]^3 \text{Log}\left[1+d f x^m\right]+\frac{4 a b^3 \text{Log}\left[-d f x^m\right] \text{Log}\left[c x^n\right]^3 \text{Log}\left[1+d f x^m\right]}{m}-$$

$$\frac{4 b^4 n \text{Log}[x] \text{Log}\left[-d f x^m\right] \text{Log}\left[c x^n\right]^3 \text{Log}\left[1+d f x^m\right]}{m}+\frac{b^4 \text{Log}\left[-d f x^m\right] \text{Log}\left[c x^n\right]^4 \text{Log}\left[1+d f x^m\right]}{m}+\frac{1}{m}$$

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

$$\frac{\left(a-b n \text{Log}[x]+b \text{Log}\left[c x^n\right]\right)^4 \text{PolyLog}\left[2,1+d f x^m\right]}{m}+\frac{4 a^3 b n \text{PolyLog}\left[3,-\frac{x^{-m}}{d f}\right]}{m^2}+\frac{12 a^2 b^2 n \text{Log}\left[c x^n\right] \text{PolyLog}\left[3,-\frac{x^{-m}}{d f}\right]}{m^2}+$$

$$\frac{12 a b^3 n \text{Log}\left[c x^n\right]^2 \text{PolyLog}\left[3,-\frac{x^{-m}}{d f}\right]}{m^2}+\frac{4 b^4 n \text{Log}\left[c x^n\right]^3 \text{PolyLog}\left[3,-\frac{x^{-m}}{d f}\right]}{m^2}+\frac{12 a^2 b^2 n^2 \text{PolyLog}\left[4,-\frac{x^{-m}}{d f}\right]}{m^3}+\frac{24 a b^3 n^2 \text{Log}\left[c x^n\right] \text{PolyLog}\left[4,-\frac{x^{-m}}{d f}\right]}{m^3}+$$

$$\frac{12 b^4 n^2 \text{Log}\left[c x^n\right]^2 \text{PolyLog}\left[4,-\frac{x^{-m}}{d f}\right]}{m^3}+\frac{24 a b^3 n^3 \text{PolyLog}\left[5,-\frac{x^{-m}}{d f}\right]}{m^4}+\frac{24 b^4 n^3 \text{Log}\left[c x^n\right] \text{PolyLog}\left[5,-\frac{x^{-m}}{d f}\right]}{m^4}+\frac{24 b^4 n^4 \text{PolyLog}\left[6,-\frac{x^{-m}}{d f}\right]}{m^5}$$

Problem 65: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^3 \operatorname{Log}\left[d\left(\frac{1}{d}+f x^m\right)\right]}{x} \, dx$$

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

$$-\frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^3 \operatorname{PolyLog}\left[2,-d f x^m\right]}{m}+\frac{3 b n \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{PolyLog}\left[3,-d f x^m\right]}{m^2}-\frac{6 b^2 n^2 \left(a+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}\left[4,-d f x^m\right]}{m^3}+\frac{6 b^3 n^3 \operatorname{PolyLog}\left[5,-d f x^m\right]}{m^4}$$

Result (type 4, 1035 leaves):

$$-\frac{1}{2} a^2 b m n \operatorname{Log}[x]^3+\frac{3}{4} a b^2 m n^2 \operatorname{Log}[x]^4-\frac{3}{10} b^3 m n^3 \operatorname{Log}[x]^5-a b^2 m n \operatorname{Log}[x]^3 \operatorname{Log}\left[c x^n\right]+\frac{3}{4} b^3 m n^2 \operatorname{Log}[x]^4 \operatorname{Log}\left[c x^n\right]-\frac{1}{2} b^3 m n \operatorname{Log}[x]^3 \operatorname{Log}\left[c x^n\right]^2-\frac{3}{2} a^2 b n \operatorname{Log}[x]^2 \operatorname{Log}\left[1+\frac{x^{-m}}{d f}\right]+2 a b^2 n^2 \operatorname{Log}[x]^3 \operatorname{Log}\left[1+\frac{x^{-m}}{d f}\right]-\frac{3}{4} b^3 n^3 \operatorname{Log}[x]^4 \operatorname{Log}\left[1+\frac{x^{-m}}{d f}\right]-3 a b^2 n \operatorname{Log}[x]^2 \operatorname{Log}\left[c x^n\right] \operatorname{Log}\left[1+\frac{x^{-m}}{d f}\right]+2 b^3 n^2 \operatorname{Log}[x]^3 \operatorname{Log}\left[c x^n\right] \operatorname{Log}\left[1+\frac{x^{-m}}{d f}\right]-\frac{3}{2} b^3 n \operatorname{Log}[x]^2 \operatorname{Log}\left[c x^n\right]^2 \operatorname{Log}\left[1+\frac{x^{-m}}{d f}\right]+\frac{3}{2} a^2 b n \operatorname{Log}[x]^2 \operatorname{Log}\left[1+d f x^m\right]-2 a b^2 n^2 \operatorname{Log}[x]^3 \operatorname{Log}\left[1+d f x^m\right]+\frac{3}{4} b^3 n^3 \operatorname{Log}[x]^4 \operatorname{Log}\left[1+d f x^m\right]+\frac{a^3 \operatorname{Log}\left[-d f x^m\right] \operatorname{Log}\left[1+d f x^m\right]}{m}-\frac{3 a^2 b n \operatorname{Log}[x] \operatorname{Log}\left[-d f x^m\right] \operatorname{Log}\left[1+d f x^m\right]}{m}+\frac{3 a b^2 n^2 \operatorname{Log}[x]^2 \operatorname{Log}\left[-d f x^m\right] \operatorname{Log}\left[1+d f x^m\right]}{m}-\frac{b^3 n^3 \operatorname{Log}[x]^3 \operatorname{Log}\left[-d f x^m\right] \operatorname{Log}\left[1+d f x^m\right]}{m}+3 a b^2 n \operatorname{Log}[x]^2 \operatorname{Log}\left[c x^n\right] \operatorname{Log}\left[1+d f x^m\right]-2 b^3 n^2 \operatorname{Log}[x]^3 \operatorname{Log}\left[c x^n\right] \operatorname{Log}\left[1+d f x^m\right]+\frac{3 a^2 b \operatorname{Log}\left[-d f x^m\right] \operatorname{Log}\left[c x^n\right] \operatorname{Log}\left[1+d f x^m\right]}{m}-\frac{6 a b^2 n \operatorname{Log}[x] \operatorname{Log}\left[-d f x^m\right] \operatorname{Log}\left[c x^n\right] \operatorname{Log}\left[1+d f x^m\right]}{m}+\frac{3 b^3 n^2 \operatorname{Log}[x]^2 \operatorname{Log}\left[-d f x^m\right] \operatorname{Log}\left[c x^n\right] \operatorname{Log}\left[1+d f x^m\right]}{m}+\frac{3}{2} b^3 n \operatorname{Log}[x]^2 \operatorname{Log}\left[c x^n\right]^2 \operatorname{Log}\left[1+d f x^m\right]+\frac{3 a b^2 \operatorname{Log}\left[-d f x^m\right] \operatorname{Log}\left[c x^n\right]^2 \operatorname{Log}\left[1+d f x^m\right]}{m}-\frac{3 b^3 n \operatorname{Log}[x] \operatorname{Log}\left[-d f x^m\right] \operatorname{Log}\left[c x^n\right]^2 \operatorname{Log}\left[1+d f x^m\right]}{m}+\frac{b^3 \operatorname{Log}\left[-d f x^m\right] \operatorname{Log}\left[c x^n\right]^3 \operatorname{Log}\left[1+d f x^m\right]}{m}+\frac{b n \operatorname{Log}[x] \left(b^2 n^2 \operatorname{Log}[x]^2-3 b n \operatorname{Log}[x] \left(a+b \operatorname{Log}\left[c x^n\right]\right)+3 \left(a+b \operatorname{Log}\left[c x^n\right]\right)^2\right) \operatorname{PolyLog}\left[2,-\frac{x^{-m}}{d f}\right]}{m}+\frac{\left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right)^3 \operatorname{PolyLog}\left[2,1+d f x^m\right]}{m}+\frac{3 a^2 b n \operatorname{PolyLog}\left[3,-\frac{x^{-m}}{d f}\right]}{m^2}+\frac{6 a b^2 n \operatorname{Log}\left[c x^n\right] \operatorname{PolyLog}\left[3,-\frac{x^{-m}}{d f}\right]}{m^2}+\frac{3 b^3 n \operatorname{Log}\left[c x^n\right]^2 \operatorname{PolyLog}\left[3,-\frac{x^{-m}}{d f}\right]}{m^2}+\frac{6 a b^2 n^2 \operatorname{PolyLog}\left[4,-\frac{x^{-m}}{d f}\right]}{m^3}+\frac{6 b^3 n^2 \operatorname{Log}\left[c x^n\right] \operatorname{PolyLog}\left[4,-\frac{x^{-m}}{d f}\right]}{m^3}+\frac{6 b^3 n^3 \operatorname{PolyLog}\left[5,-\frac{x^{-m}}{d f}\right]}{m^4}$$

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

$$\int \frac{\left(a+b\,\text{Log}[c\,x^n]\right)^2\,\text{Log}\left[d\,\left(\frac{1}{d}+f\,x^m\right)\right]}{x}\,dx$$

Optimal (type 4, 73 leaves, 3 steps):

$$-\frac{\left(a+b\,\text{Log}[c\,x^n]\right)^2\,\text{PolyLog}[2,-d\,f\,x^m]}{m}+\frac{2\,b\,n\,\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{PolyLog}[3,-d\,f\,x^m]}{m^2}-\frac{2\,b^2\,n^2\,\text{PolyLog}[4,-d\,f\,x^m]}{m^3}$$

Result (type 4, 526 leaves):

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

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

$$\int \frac{\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{Log}\left[d\,\left(\frac{1}{d}+f\,x^m\right)\right]}{x}\,dx$$

Optimal (type 4, 40 leaves, 2 steps):

$$-\frac{\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{PolyLog}[2,-d\,f\,x^m]}{m}+\frac{b\,n\,\text{PolyLog}[3,-d\,f\,x^m]}{m^2}$$

Result (type 4, 207 leaves):

$$\frac{1}{6 m^2}\left(-b m^3 n \operatorname{Log}[x]^3-3 b m^2 n \operatorname{Log}[x]^2 \operatorname{Log}\left[1+\frac{x^{-m}}{d f}\right]+3 b m^2 n \operatorname{Log}[x]^2 \operatorname{Log}\left[1+d f x^m\right]+\right.$$
$$6 a m \operatorname{Log}\left[-d f x^m\right] \operatorname{Log}\left[1+d f x^m\right]-6 b m n \operatorname{Log}[x] \operatorname{Log}\left[-d f x^m\right] \operatorname{Log}\left[1+d f x^m\right]+6 b m \operatorname{Log}\left[-d f x^m\right] \operatorname{Log}\left[c x^n\right] \operatorname{Log}\left[1+d f x^m\right]+$$
$$\left.6 b m n \operatorname{Log}[x] \operatorname{PolyLog}\left[2,-\frac{x^{-m}}{d f}\right]+6 m\left(a-b n \operatorname{Log}[x]+b \operatorname{Log}\left[c x^n\right]\right) \operatorname{PolyLog}\left[2,1+d f x^m\right]+6 b n \operatorname{PolyLog}\left[3,-\frac{x^{-m}}{d f}\right]\right)$$

Problem 81: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 4, 329 leaves):

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

Problem 82: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 248 leaves, 10 steps):

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

Result (type 4, 600 leaves):

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

Problem 83: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 344 leaves, 14 steps):

$$-\frac{7 b^2 f m n^2}{4 e x}-\frac{b^2 f^2 m n^2 \text{Log}[x]}{4 e^2}-\frac{3 b f m n (a+b \text{Log}[c x^n])}{2 e x}+\frac{b f^2 m n \text{Log}\left[1+\frac{e}{f x}\right] (a+b \text{Log}[c x^n])}{2 e^2}-\frac{f m (a+b \text{Log}[c x^n])^2}{2 e x}+\frac{f^2 m \text{Log}\left[1+\frac{e}{f x}\right] (a+b \text{Log}[c x^n])^2}{2 e^2}+\frac{b^2 f^2 m n^2 \text{Log}[e+f x]}{4 e^2}-\frac{b^2 n^2 \text{Log}[d (e+f x)^m]}{4 x^2}-\frac{b n (a+b \text{Log}[c x^n]) \text{Log}[d (e+f x)^m]}{2 x^2}-\frac{(a+b \text{Log}[c x^n])^2 \text{Log}[d (e+f x)^m]}{2 x^2}-\frac{b^2 f^2 m n^2 \text{PolyLog}\left[2,-\frac{e}{f x}\right]}{2 e^2}-\frac{b f^2 m n (a+b \text{Log}[c x^n]) \text{PolyLog}\left[2,-\frac{e}{f x}\right]}{e^2}-\frac{b^2 f^2 m n^2 \text{PolyLog}\left[3,-\frac{e}{f x}\right]}{e^2}$$

Result (type 4, 796 leaves):

$$-\frac{1}{12 e^2 x^2}\Big(6 a^2 e f m x+18 a b e f m n x+21 b^2 e f m n^2 x+6 a^2 f^2 m x^2 \text{Log}[x]+6 a b f^2 m n x^2 \text{Log}[x]+3 b^2 f^2 m n^2 x^2 \text{Log}[x]-6 a b f^2 m n x^2 \text{Log}[x]^2-3 b^2 f^2 m n^2 x^2 \text{Log}[x]^2+2 b^2 f^2 m n^2 x^2 \text{Log}[x]^3+12 a b e f m x \text{Log}[c x^n]+18 b^2 e f m n x \text{Log}[c x^n]+12 a b f^2 m x^2 \text{Log}[x] \text{Log}[c x^n]+6 b^2 f^2 m n x^2 \text{Log}[x] \text{Log}[c x^n]-6 b^2 f^2 m n x^2 \text{Log}[x]^2 \text{Log}[c x^n]+6 b^2 e f m x \text{Log}[c x^n]^2+6 b^2 f^2 m x^2 \text{Log}[x] \text{Log}[c x^n]^2-6 a^2 f^2 m x^2 \text{Log}[e+f x]-6 a b f^2 m n x^2 \text{Log}[e+f x]-3 b^2 f^2 m n^2 x^2 \text{Log}[e+f x]+12 a b f^2 m n x^2 \text{Log}[x] \text{Log}[e+f x]+6 b^2 f^2 m n^2 x^2 \text{Log}[x] \text{Log}[e+f x]-6 b^2 f^2 m n^2 x^2 \text{Log}[x]^2 \text{Log}[e+f x]-12 a b f^2 m x^2 \text{Log}[c x^n] \text{Log}[e+f x]-6 b^2 f^2 m n x^2 \text{Log}[c x^n] \text{Log}[e+f x]+12 b^2 f^2 m n x^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}[e+f x]-6 b^2 f^2 m x^2 \text{Log}[c x^n]^2 \text{Log}[e+f x]+6 a^2 e^2 \text{Log}[d (e+f x)^m]+6 a b e^2 n \text{Log}[d (e+f x)^m]+3 b^2 e^2 n^2 \text{Log}[d (e+f x)^m]+12 a b e^2 \text{Log}[c x^n] \text{Log}[d (e+f x)^m]+6 b^2 e^2 n \text{Log}[c x^n] \text{Log}[d (e+f x)^m]+6 b^2 e^2 \text{Log}[c x^n]^2 \text{Log}[d (e+f x)^m]-12 a b f^2 m n x^2 \text{Log}[x] \text{Log}\left[1+\frac{f x}{e}\right]-6 b^2 f^2 m n^2 x^2 \text{Log}[x] \text{Log}\left[1+\frac{f x}{e}\right]+6 b^2 f^2 m n^2 x^2 \text{Log}[x]^2 \text{Log}\left[1+\frac{f x}{e}\right]-12 b^2 f^2 m n x^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1+\frac{f x}{e}\right]-6 b f^2 m n x^2 (2 a+b n+2 b \text{Log}[c x^n]) \text{PolyLog}\left[2,-\frac{f x}{e}\right]+12 b^2 f^2 m n^2 x^2 \text{PolyLog}\left[3,-\frac{f x}{e}\right]\Big)$$

Problem 84: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b \text{Log}[c x^n])^2 \text{Log}[d (e+f x)^m]}{x^4} \, dx$$

Optimal (type 4, 420 leaves, 19 steps):

$$-\frac{19 b^2 f m n^2}{108 e x^2}+\frac{26 b^2 f^2 m n^2}{27 e^2 x}+\frac{2 b^2 f^3 m n^2 \text{Log}[x]}{27 e^3}-\frac{5 b f m n (a+b \text{Log}[c x^n])}{18 e x^2}+\frac{8 b f^2 m n (a+b \text{Log}[c x^n])}{9 e^2 x}-\frac{2 b f^3 m n \text{Log}\left[1+\frac{e}{f x}\right] (a+b \text{Log}[c x^n])}{9 e^3}-\frac{f m (a+b \text{Log}[c x^n])^2}{6 e x^2}+\frac{f^2 m (a+b \text{Log}[c x^n])^2}{3 e^2 x}-\frac{f^3 m \text{Log}\left[1+\frac{e}{f x}\right] (a+b \text{Log}[c x^n])^2}{3 e^3}-\frac{2 b^2 f^3 m n^2 \text{Log}[e+f x]}{27 e^3}-\frac{2 b^2 n^2 \text{Log}[d (e+f x)^m]}{27 x^3}-\frac{2 b n (a+b \text{Log}[c x^n]) \text{Log}[d (e+f x)^m]}{9 x^3}-\frac{(a+b \text{Log}[c x^n])^2 \text{Log}[d (e+f x)^m]}{3 x^3}+\frac{2 b^2 f^3 m n^2 \text{PolyLog}\left[2,-\frac{e}{f x}\right]}{9 e^3}+\frac{2 b f^3 m n (a+b \text{Log}[c x^n]) \text{PolyLog}\left[2,-\frac{e}{f x}\right]}{3 e^3}+\frac{2 b^2 f^3 m n^2 \text{PolyLog}\left[3,-\frac{e}{f x}\right]}{3 e^3}$$

Result (type 4, 909 leaves):

$$-\frac{1}{108 e^3 x^3}\Big(18 a^2 e^2 f m x + 30 a b e^2 f m n x + 19 b^2 e^2 f m n^2 x - 36 a^2 e f^2 m x^2 - 96 a b e f^2 m n x^2 - 104 b^2 e f^2 m n^2 x^2 - 36 a^2 f^3 m x^3 \text{Log}[x] - 24 a b f^3 m n x^3 \text{Log}[x] - 8 b^2 f^3 m n^2 x^3 \text{Log}[x] + 36 a b f^3 m n x^3 \text{Log}[x]^2 + 12 b^2 f^3 m n^2 x^3 \text{Log}[x]^2 - 12 b^2 f^3 m n^2 x^3 \text{Log}[x]^3 + 36 a b e^2 f m x \text{Log}[c x^n] + 30 b^2 e^2 f m n x \text{Log}[c x^n] - 72 a b e f^2 m x^2 \text{Log}[c x^n] - 96 b^2 e f^2 m n x^2 \text{Log}[c x^n] - 72 a b f^3 m x^3 \text{Log}[x] \text{Log}[c x^n] - 24 b^2 f^3 m n x^3 \text{Log}[x] \text{Log}[c x^n] + 36 b^2 f^3 m n x^3 \text{Log}[x]^2 \text{Log}[c x^n] + 18 b^2 e^2 f m x \text{Log}[c x^n]^2 - 36 b^2 e f^2 m x^2 \text{Log}[c x^n]^2 - 36 b^2 f^3 m x^3 \text{Log}[x] \text{Log}[c x^n]^2 + 36 a^2 f^3 m x^3 \text{Log}[e + f x] + 24 a b f^3 m n x^3 \text{Log}[e + f x] + 8 b^2 f^3 m n^2 x^3 \text{Log}[e + f x] - 72 a b f^3 m n x^3 \text{Log}[x] \text{Log}[e + f x] - 24 b^2 f^3 m n^2 x^3 \text{Log}[x] \text{Log}[e + f x] + 36 b^2 f^3 m n^2 x^3 \text{Log}[x]^2 \text{Log}[e + f x] + 72 a b f^3 m x^3 \text{Log}[c x^n] \text{Log}[e + f x] + 24 b^2 f^3 m n x^3 \text{Log}[c x^n] \text{Log}[e + f x] - 72 b^2 f^3 m n x^3 \text{Log}[x] \text{Log}[c x^n] \text{Log}[e + f x] + 36 b^2 f^3 m x^3 \text{Log}[c x^n]^2 \text{Log}[e + f x] + 36 a^2 e^3 \text{Log}[d (e + f x)^m] + 24 a b e^3 n \text{Log}[d (e + f x)^m] + 8 b^2 e^3 n^2 \text{Log}[d (e + f x)^m] + 72 a b e^3 \text{Log}[c x^n] \text{Log}[d (e + f x)^m] + 24 b^2 e^3 n \text{Log}[c x^n] \text{Log}[d (e + f x)^m] + 36 b^2 e^3 \text{Log}[c x^n]^2 \text{Log}[d (e + f x)^m] + 72 a b f^3 m n x^3 \text{Log}[x] \text{Log}\left[1 + \frac{f x}{e}\right] + 24 b^2 f^3 m n^2 x^3 \text{Log}[x] \text{Log}\left[1 + \frac{f x}{e}\right] - 36 b^2 f^3 m n^2 x^3 \text{Log}[x]^2 \text{Log}\left[1 + \frac{f x}{e}\right] + 72 b^2 f^3 m n x^3 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1 + \frac{f x}{e}\right] + 24 b f^3 m n x^3 (3 a + b n + 3 b \text{Log}[c x^n]) \text{PolyLog}\left[2, -\frac{f x}{e}\right] - 72 b^2 f^3 m n^2 x^3 \text{PolyLog}\left[3, -\frac{f x}{e}\right]\Big)$$

Problem 85: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 603 leaves, 34 steps):

$$\frac{21 a b^2 e m n^2 x}{4 f} - \frac{45 b^3 e m n^3 x}{8 f} + \frac{3}{4} b^3 m n^3 x^2 + \frac{21 b^3 e m n^2 x \text{Log}[c x^n]}{4 f} - \frac{9}{8} b^2 m n^2 x^2 (a + b \text{Log}[c x^n]) - \frac{9 b e m n x (a + b \text{Log}[c x^n])^2}{4 f} + \frac{3}{4} b m n x^2 (a + b \text{Log}[c x^n])^2 + \frac{e m x (a + b \text{Log}[c x^n])^3}{2 f} - \frac{1}{4} m x^2 (a + b \text{Log}[c x^n])^3 + \frac{3 b^3 e^2 m n^3 \text{Log}[e + f x]}{8 f^2} - \frac{3}{8} b^3 n^3 x^2 \text{Log}[d (e + f x)^m] + \frac{3}{4} b^2 n^2 x^2 (a + b \text{Log}[c x^n]) \text{Log}[d (e + f x)^m] - \frac{3}{4} b n x^2 (a + b \text{Log}[c x^n])^2 \text{Log}[d (e + f x)^m] + \frac{1}{2} x^2 (a + b \text{Log}[c x^n])^3 \text{Log}[d (e + f x)^m] - \frac{3 b^2 e^2 m n^2 (a + b \text{Log}[c x^n]) \text{Log}\left[1 + \frac{f x}{e}\right]}{4 f^2} + \frac{3 b e^2 m n (a + b \text{Log}[c x^n])^2 \text{Log}\left[1 + \frac{f x}{e}\right]}{4 f^2} - \frac{e^2 m (a + b \text{Log}[c x^n])^3 \text{Log}\left[1 + \frac{f x}{e}\right]}{2 f^2} - \frac{3 b^3 e^2 m n^3 \text{PolyLog}\left[2, -\frac{f x}{e}\right]}{4 f^2} + \frac{3 b^2 e^2 m n^2 (a + b \text{Log}[c x^n]) \text{PolyLog}\left[2, -\frac{f x}{e}\right]}{2 f^2} - \frac{3 b e^2 m n (a + b \text{Log}[c x^n])^2 \text{PolyLog}\left[2, -\frac{f x}{e}\right]}{2 f^2} - \frac{3 b^3 e^2 m n^3 \text{PolyLog}\left[3, -\frac{f x}{e}\right]}{2 f^2} + \frac{3 b^2 e^2 m n^2 (a + b \text{Log}[c x^n]) \text{PolyLog}\left[3, -\frac{f x}{e}\right]}{f^2} - \frac{3 b^3 e^2 m n^3 \text{PolyLog}\left[4, -\frac{f x}{e}\right]}{f^2}$$

Result (type 4, 1431 leaves):

$$\frac{1}{8 f^2}$$

$$\Big(4 a^3 e f m x-18 a^2 b e f m n x+42 a b^2 e f m n^2 x-45 b^3 e f m n^3 x-2 a^3 f^2 m x^2+6 a^2 b f^2 m n x^2-9 a b^2 f^2 m n^2 x^2+6 b^3 f^2 m n^3 x^2+12 a^2 b e f m x \text{Log}[c x^n]-$$

$$36 a b^2 e f m n x \text{Log}[c x^n]+42 b^3 e f m n^2 x \text{Log}[c x^n]-6 a^2 b f^2 m x^2 \text{Log}[c x^n]+12 a b^2 f^2 m n x^2 \text{Log}[c x^n]-9 b^3 f^2 m n^2 x^2 \text{Log}[c x^n]+$$

$$12 a b^2 e f m x \text{Log}[c x^n]^2-18 b^3 e f m n x \text{Log}[c x^n]^2-6 a b^2 f^2 m x^2 \text{Log}[c x^n]^2+6 b^3 f^2 m n x^2 \text{Log}[c x^n]^2+4 b^3 e f m x \text{Log}[c x^n]^3-$$

$$2 b^3 f^2 m x^2 \text{Log}[c x^n]^3-4 a^3 e^2 m \text{Log}[e+f x]+6 a^2 b e^2 m n \text{Log}[e+f x]-6 a b^2 e^2 m n^2 \text{Log}[e+f x]+3 b^3 e^2 m n^3 \text{Log}[e+f x]+$$

$$12 a^2 b e^2 m n \text{Log}[x] \text{Log}[e+f x]-12 a b^2 e^2 m n^2 \text{Log}[x] \text{Log}[e+f x]+6 b^3 e^2 m n^3 \text{Log}[x] \text{Log}[e+f x]-$$

$$12 a b^2 e^2 m n^2 \text{Log}[x]^2 \text{Log}[e+f x]+6 b^3 e^2 m n^3 \text{Log}[x]^2 \text{Log}[e+f x]+4 b^3 e^2 m n^3 \text{Log}[x]^3 \text{Log}[e+f x]-12 a^2 b e^2 m \text{Log}[c x^n] \text{Log}[e+f x]+$$

$$12 a b^2 e^2 m n \text{Log}[c x^n] \text{Log}[e+f x]-6 b^3 e^2 m n^2 \text{Log}[c x^n] \text{Log}[e+f x]+24 a b^2 e^2 m n \text{Log}[x] \text{Log}[c x^n] \text{Log}[e+f x]-$$

$$12 b^3 e^2 m n^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}[e+f x]-12 b^3 e^2 m n^2 \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}[e+f x]-12 a b^2 e^2 m \text{Log}[c x^n]^2 \text{Log}[e+f x]+$$

$$6 b^3 e^2 m n \text{Log}[c x^n]^2 \text{Log}[e+f x]+12 b^3 e^2 m n \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}[e+f x]-4 b^3 e^2 m \text{Log}[c x^n]^3 \text{Log}[e+f x]+$$

$$4 a^3 f^2 x^2 \text{Log}\left[d (e+f x)^m\right]-6 a^2 b f^2 n x^2 \text{Log}\left[d (e+f x)^m\right]+6 a b^2 f^2 n^2 x^2 \text{Log}\left[d (e+f x)^m\right]-3 b^3 f^2 n^3 x^2 \text{Log}\left[d (e+f x)^m\right]+$$

$$12 a^2 b f^2 x^2 \text{Log}[c x^n] \text{Log}\left[d (e+f x)^m\right]-12 a b^2 f^2 n x^2 \text{Log}[c x^n] \text{Log}\left[d (e+f x)^m\right]+6 b^3 f^2 n^2 x^2 \text{Log}[c x^n] \text{Log}\left[d (e+f x)^m\right]+$$

$$12 a b^2 f^2 x^2 \text{Log}[c x^n]^2 \text{Log}\left[d (e+f x)^m\right]-6 b^3 f^2 n x^2 \text{Log}[c x^n]^2 \text{Log}\left[d (e+f x)^m\right]+4 b^3 f^2 x^2 \text{Log}[c x^n]^3 \text{Log}\left[d (e+f x)^m\right]-$$

$$12 a^2 b e^2 m n \text{Log}[x] \text{Log}\left[1+\frac{f x}{e}\right]+12 a b^2 e^2 m n^2 \text{Log}[x] \text{Log}\left[1+\frac{f x}{e}\right]-6 b^3 e^2 m n^3 \text{Log}[x] \text{Log}\left[1+\frac{f x}{e}\right]+$$

$$12 a b^2 e^2 m n^2 \text{Log}[x]^2 \text{Log}\left[1+\frac{f x}{e}\right]-6 b^3 e^2 m n^3 \text{Log}[x]^2 \text{Log}\left[1+\frac{f x}{e}\right]-4 b^3 e^2 m n^3 \text{Log}[x]^3 \text{Log}\left[1+\frac{f x}{e}\right]-$$

$$24 a b^2 e^2 m n \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1+\frac{f x}{e}\right]+12 b^3 e^2 m n^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1+\frac{f x}{e}\right]+12 b^3 e^2 m n^2 \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}\left[1+\frac{f x}{e}\right]-$$

$$12 b^3 e^2 m n \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}\left[1+\frac{f x}{e}\right]-6 b e^2 m n \left(2 a^2-2 a b n+b^2 n^2-2 b (-2 a+b n) \text{Log}[c x^n]+2 b^2 \text{Log}[c x^n]^2\right) \text{PolyLog}\left[2,-\frac{f x}{e}\right]+$$

$$12 b^2 e^2 m n^2 \left(2 a-b n+2 b \text{Log}[c x^n]\right) \text{PolyLog}\left[3,-\frac{f x}{e}\right]-24 b^3 e^2 m n^3 \text{PolyLog}\left[4,-\frac{f x}{e}\right]\Big)$$

Problem 86: Result more than twice size of optimal antiderivative.

$$\int \left(a+b \text{Log}[c x^n]\right)^3 \text{Log}\left[d (e+f x)^m\right] dx$$

Optimal (type 4, 473 leaves, 28 steps):

$$-12 a b^2 m n^2 x+18 b^3 m n^3 x-6 b^2 m n^2 (a-b n) x-18 b^3 m n^2 x \text{Log}[c x^n]+6 b m n x (a+b \text{Log}[c x^n])^2-$$

$$m x (a+b \text{Log}[c x^n])^3+\frac{6 b^2 e m n^2 (a-b n) \text{Log}[e+f x]}{f}+6 a b^2 n^2 x \text{Log}[d (e+f x)^m]-6 b^3 n^3 x \text{Log}[d (e+f x)^m]+$$

$$6 b^3 n^2 x \text{Log}[c x^n] \text{Log}[d (e+f x)^m]-3 b n x (a+b \text{Log}[c x^n])^2 \text{Log}[d (e+f x)^m]+x (a+b \text{Log}[c x^n])^3 \text{Log}[d (e+f x)^m]+$$

$$\frac{6 b^3 e m n^2 \text{Log}[c x^n] \text{Log}\left[1+\frac{f x}{e}\right]}{f}-\frac{3 b e m n (a+b \text{Log}[c x^n])^2 \text{Log}\left[1+\frac{f x}{e}\right]}{f}+\frac{e m (a+b \text{Log}[c x^n])^3 \text{Log}\left[1+\frac{f x}{e}\right]}{f}+$$

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

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

Result (type 4, 1122 leaves):

$$\frac{1}{f}\Big(-a^3 f m x+6 a^2 b f m n x-18 a b^2 f m n^2 x+24 b^3 f m n^3 x-3 a^2 b f m x \text{Log}[c x^n]+12 a b^2 f m n x \text{Log}[c x^n]-18 b^3 f m n^2 x \text{Log}[c x^n]-$$

$$3 a b^2 f m x \text{Log}[c x^n]^2+6 b^3 f m n x \text{Log}[c x^n]^2-b^3 f m x \text{Log}[c x^n]^3+a^3 e m \text{Log}[e+f x]-3 a^2 b e m n \text{Log}[e+f x]+6 a b^2 e m n^2 \text{Log}[e+f x]-$$

$$6 b^3 e m n^3 \text{Log}[e+f x]-3 a^2 b e m n \text{Log}[x] \text{Log}[e+f x]+6 a b^2 e m n^2 \text{Log}[x] \text{Log}[e+f x]-6 b^3 e m n^3 \text{Log}[x] \text{Log}[e+f x]+$$

$$3 a b^2 e m n^2 \text{Log}[x]^2 \text{Log}[e+f x]-3 b^3 e m n^3 \text{Log}[x]^2 \text{Log}[e+f x]-b^3 e m n^3 \text{Log}[x]^3 \text{Log}[e+f x]+3 a^2 b e m \text{Log}[c x^n] \text{Log}[e+f x]-$$

$$6 a b^2 e m n \text{Log}[c x^n] \text{Log}[e+f x]+6 b^3 e m n^2 \text{Log}[c x^n] \text{Log}[e+f x]-6 a b^2 e m n \text{Log}[x] \text{Log}[c x^n] \text{Log}[e+f x]+$$

$$6 b^3 e m n^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}[e+f x]+3 b^3 e m n^2 \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}[e+f x]+3 a b^2 e m \text{Log}[c x^n]^2 \text{Log}[e+f x]-$$

$$3 b^3 e m n \text{Log}[c x^n]^2 \text{Log}[e+f x]-3 b^3 e m n \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}[e+f x]+b^3 e m \text{Log}[c x^n]^3 \text{Log}[e+f x]+a^3 f x \text{Log}[d (e+f x)^m]-$$

$$3 a^2 b f n x \text{Log}[d (e+f x)^m]+6 a b^2 f n^2 x \text{Log}[d (e+f x)^m]-6 b^3 f n^3 x \text{Log}[d (e+f x)^m]+3 a^2 b f x \text{Log}[c x^n] \text{Log}[d (e+f x)^m]-$$

$$6 a b^2 f n x \text{Log}[c x^n] \text{Log}[d (e+f x)^m]+6 b^3 f n^2 x \text{Log}[c x^n] \text{Log}[d (e+f x)^m]+3 a b^2 f x \text{Log}[c x^n]^2 \text{Log}[d (e+f x)^m]-$$

$$3 b^3 f n x \text{Log}[c x^n]^2 \text{Log}[d (e+f x)^m]+b^3 f x \text{Log}[c x^n]^3 \text{Log}[d (e+f x)^m]+3 a^2 b e m n \text{Log}[x] \text{Log}\left[1+\frac{f x}{e}\right]-6 a b^2 e m n^2 \text{Log}[x] \text{Log}\left[1+\frac{f x}{e}\right]+$$

$$6 b^3 e m n^3 \text{Log}[x] \text{Log}\left[1+\frac{f x}{e}\right]-3 a b^2 e m n^2 \text{Log}[x]^2 \text{Log}\left[1+\frac{f x}{e}\right]+3 b^3 e m n^3 \text{Log}[x]^2 \text{Log}\left[1+\frac{f x}{e}\right]+b^3 e m n^3 \text{Log}[x]^3 \text{Log}\left[1+\frac{f x}{e}\right]+$$

$$6 a b^2 e m n \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1+\frac{f x}{e}\right]-6 b^3 e m n^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1+\frac{f x}{e}\right]-3 b^3 e m n^2 \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}\left[1+\frac{f x}{e}\right]+$$

$$3 b^3 e m n \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}\left[1+\frac{f x}{e}\right]+3 b e m n \left(a^2-2 a b n+2 b^2 n^2+2 b (a-b n) \text{Log}[c x^n]+b^2 \text{Log}[c x^n]^2\right) \text{PolyLog}\left[2,-\frac{f x}{e}\right]-$$

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

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

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

Optimal (type 4, 161 leaves, 6 steps):

$$\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^4\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{4\,b\,n}-\frac{m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^4\,\text{Log}\left[1+\frac{f\,x}{e}\right]}{4\,b\,n}-m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{PolyLog}\left[2,-\frac{f\,x}{e}\right]+3\,b\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{PolyLog}\left[3,-\frac{f\,x}{e}\right]-6\,b^2\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[4,-\frac{f\,x}{e}\right]+6\,b^3\,m\,n^3\,\text{PolyLog}\left[5,-\frac{f\,x}{e}\right]$$

Result (type 4, 602 leaves):

$$a^3\,\text{Log}[x]\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]-\frac{3}{2}\,a^2\,b\,n\,\text{Log}[x]^2\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]+a\,b^2\,n^2\,\text{Log}[x]^3\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]-\frac{1}{4}\,b^3\,n^3\,\text{Log}[x]^4\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]+3\,a^2\,b\,\text{Log}[x]\,\text{Log}\left[c\,x^n\right]\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]-3\,a\,b^2\,n\,\text{Log}[x]^2\,\text{Log}\left[c\,x^n\right]\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]+b^3\,n^2\,\text{Log}[x]^3\,\text{Log}\left[c\,x^n\right]\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]+3\,a\,b^2\,\text{Log}[x]\,\text{Log}\left[c\,x^n\right]^2\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]-\frac{3}{2}\,b^3\,n\,\text{Log}[x]^2\,\text{Log}\left[c\,x^n\right]^2\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]+b^3\,\text{Log}[x]\,\text{Log}\left[c\,x^n\right]^3\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]-a^3\,m\,\text{Log}[x]\,\text{Log}\left[1+\frac{f\,x}{e}\right]+\frac{3}{2}\,a^2\,b\,m\,n\,\text{Log}[x]^2\,\text{Log}\left[1+\frac{f\,x}{e}\right]-a\,b^2\,m\,n^2\,\text{Log}[x]^3\,\text{Log}\left[1+\frac{f\,x}{e}\right]+\frac{1}{4}\,b^3\,m\,n^3\,\text{Log}[x]^4\,\text{Log}\left[1+\frac{f\,x}{e}\right]-3\,a^2\,b\,m\,\text{Log}[x]\,\text{Log}\left[c\,x^n\right]\,\text{Log}\left[1+\frac{f\,x}{e}\right]+3\,a\,b^2\,m\,n\,\text{Log}[x]^2\,\text{Log}\left[c\,x^n\right]\,\text{Log}\left[1+\frac{f\,x}{e}\right]-b^3\,m\,n^2\,\text{Log}[x]^3\,\text{Log}\left[c\,x^n\right]\,\text{Log}\left[1+\frac{f\,x}{e}\right]-3\,a\,b^2\,m\,\text{Log}[x]\,\text{Log}\left[c\,x^n\right]^2\,\text{Log}\left[1+\frac{f\,x}{e}\right]+\frac{3}{2}\,b^3\,m\,n\,\text{Log}[x]^2\,\text{Log}\left[c\,x^n\right]^2\,\text{Log}\left[1+\frac{f\,x}{e}\right]-b^3\,m\,\text{Log}[x]\,\text{Log}\left[c\,x^n\right]^3\,\text{Log}\left[1+\frac{f\,x}{e}\right]-m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{PolyLog}\left[2,-\frac{f\,x}{e}\right]+3\,b\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{PolyLog}\left[3,-\frac{f\,x}{e}\right]-6\,a\,b^2\,m\,n^2\,\text{PolyLog}\left[4,-\frac{f\,x}{e}\right]-6\,b^3\,m\,n^2\,\text{Log}\left[c\,x^n\right]\,\text{PolyLog}\left[4,-\frac{f\,x}{e}\right]+6\,b^3\,m\,n^3\,\text{PolyLog}\left[5,-\frac{f\,x}{e}\right]$$

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

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

Optimal (type 4, 411 leaves, 14 steps):

$$\frac{6 b^3 f m n^3 \text{Log}[x]}{e}-\frac{6 b^2 f m n^2 \text{Log}\left[1+\frac{e}{f x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)}{e}-\frac{3 b f m n \text{Log}\left[1+\frac{e}{f x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)^2}{e}-$$

$$\frac{f m \text{Log}\left[1+\frac{e}{f x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)^3}{e}-\frac{6 b^3 f m n^3 \text{Log}[e+f x]}{e}-\frac{6 b^3 n^3 \text{Log}\left[d (e+f x)^m\right]}{x}-\frac{6 b^2 n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[d (e+f x)^m\right]}{x}-$$

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

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

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

Result (type 4, 1347 leaves):

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

Problem 89: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{x^3}\,dx$$

Optimal (type 4, 555 leaves, 22 steps):

$$-\frac{45\,b^3\,f\,m\,n^3}{8\,e\,x}-\frac{3\,b^3\,f^2\,m\,n^3\,\text{Log}[x]}{8\,e^2}-\frac{21\,b^2\,f\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{4\,e\,x}+\frac{3\,b^2\,f^2\,m\,n^2\,\text{Log}\left[1+\frac{e}{f\,x}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)}{4\,e^2}-$$
$$\frac{9\,b\,f\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{4\,e\,x}+\frac{3\,b\,f^2\,m\,n\,\text{Log}\left[1+\frac{e}{f\,x}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2}{4\,e^2}-\frac{f\,m\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3}{2\,e\,x}+\frac{f^2\,m\,\text{Log}\left[1+\frac{e}{f\,x}\right]\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3}{2\,e^2}+$$
$$\frac{3\,b^3\,f^2\,m\,n^3\,\text{Log}[e+f\,x]}{8\,e^2}-\frac{3\,b^3\,n^3\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{8\,x^2}-\frac{3\,b^2\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{4\,x^2}-$$
$$\frac{3\,b\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{4\,x^2}-\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\,\text{Log}\left[d\,\left(e+f\,x\right)^m\right]}{2\,x^2}-\frac{3\,b^3\,f^2\,m\,n^3\,\text{PolyLog}\left[2,-\frac{e}{f\,x}\right]}{4\,e^2}-$$
$$\frac{3\,b^2\,f^2\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[2,-\frac{e}{f\,x}\right]}{2\,e^2}-\frac{3\,b\,f^2\,m\,n\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\,\text{PolyLog}\left[2,-\frac{e}{f\,x}\right]}{2\,e^2}-$$
$$\frac{3\,b^3\,f^2\,m\,n^3\,\text{PolyLog}\left[3,-\frac{e}{f\,x}\right]}{2\,e^2}-\frac{3\,b^2\,f^2\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\,\text{PolyLog}\left[3,-\frac{e}{f\,x}\right]}{e^2}-\frac{3\,b^3\,f^2\,m\,n^3\,\text{PolyLog}\left[4,-\frac{e}{f\,x}\right]}{e^2}$$

Result (type 4, 1736 leaves):

$$-\frac{1}{8 e^2 x^2}\Big(4 a^3 e f m x+18 a^2 b e f m n x+42 a b^2 e f m n^2 x+45 b^3 e f m n^3 x+4 a^3 f^2 m x^2 \text{Log}[x]+6 a^2 b f^2 m n x^2 \text{Log}[x]+$$
$$6 a b^2 f^2 m n^2 x^2 \text{Log}[x]+3 b^3 f^2 m n^3 x^2 \text{Log}[x]-6 a^2 b f^2 m n x^2 \text{Log}[x]^2-6 a b^2 f^2 m n^2 x^2 \text{Log}[x]^2-3 b^3 f^2 m n^3 x^2 \text{Log}[x]^2+$$
$$4 a b^2 f^2 m n^2 x^2 \text{Log}[x]^3+2 b^3 f^2 m n^3 x^2 \text{Log}[x]^3-b^3 f^2 m n^3 x^2 \text{Log}[x]^4+12 a^2 b e f m x \text{Log}\left[c x^n\right]+36 a b^2 e f m n x \text{Log}\left[c x^n\right]+$$
$$42 b^3 e f m n^2 x \text{Log}\left[c x^n\right]+12 a^2 b f^2 m x^2 \text{Log}[x] \text{Log}\left[c x^n\right]+12 a b^2 f^2 m n x^2 \text{Log}[x] \text{Log}\left[c x^n\right]+6 b^3 f^2 m n^2 x^2 \text{Log}[x] \text{Log}\left[c x^n\right]-$$
$$12 a b^2 f^2 m n x^2 \text{Log}[x]^2 \text{Log}\left[c x^n\right]-6 b^3 f^2 m n^2 x^2 \text{Log}[x]^2 \text{Log}\left[c x^n\right]+4 b^3 f^2 m n^2 x^2 \text{Log}[x]^3 \text{Log}\left[c x^n\right]+12 a b^2 e f m x \text{Log}\left[c x^n\right]^2+$$
$$18 b^3 e f m n x \text{Log}\left[c x^n\right]^2+12 a b^2 f^2 m x^2 \text{Log}[x] \text{Log}\left[c x^n\right]^2+6 b^3 f^2 m n x^2 \text{Log}[x] \text{Log}\left[c x^n\right]^2-6 b^3 f^2 m n x^2 \text{Log}[x]^2 \text{Log}\left[c x^n\right]^2+$$
$$4 b^3 e f m x \text{Log}\left[c x^n\right]^3+4 b^3 f^2 m x^2 \text{Log}[x] \text{Log}\left[c x^n\right]^3-4 a^3 f^2 m x^2 \text{Log}[e+f x]-6 a^2 b f^2 m n x^2 \text{Log}[e+f x]-6 a b^2 f^2 m n^2 x^2 \text{Log}[e+f x]-$$
$$3 b^3 f^2 m n^3 x^2 \text{Log}[e+f x]+12 a^2 b f^2 m n x^2 \text{Log}[x] \text{Log}[e+f x]+12 a b^2 f^2 m n^2 x^2 \text{Log}[x] \text{Log}[e+f x]+6 b^3 f^2 m n^3 x^2 \text{Log}[x] \text{Log}[e+f x]-$$
$$12 a b^2 f^2 m n^2 x^2 \text{Log}[x]^2 \text{Log}[e+f x]-6 b^3 f^2 m n^3 x^2 \text{Log}[x]^2 \text{Log}[e+f x]+4 b^3 f^2 m n^3 x^2 \text{Log}[x]^3 \text{Log}[e+f x]-$$
$$12 a^2 b f^2 m x^2 \text{Log}\left[c x^n\right] \text{Log}[e+f x]-12 a b^2 f^2 m n x^2 \text{Log}\left[c x^n\right] \text{Log}[e+f x]-6 b^3 f^2 m n^2 x^2 \text{Log}\left[c x^n\right] \text{Log}[e+f x]+$$
$$24 a b^2 f^2 m n x^2 \text{Log}[x] \text{Log}\left[c x^n\right] \text{Log}[e+f x]+12 b^3 f^2 m n^2 x^2 \text{Log}[x] \text{Log}\left[c x^n\right] \text{Log}[e+f x]-12 b^3 f^2 m n^2 x^2 \text{Log}[x]^2 \text{Log}\left[c x^n\right] \text{Log}[e+f x]-$$
$$12 a b^2 f^2 m x^2 \text{Log}\left[c x^n\right]^2 \text{Log}[e+f x]-6 b^3 f^2 m n x^2 \text{Log}\left[c x^n\right]^2 \text{Log}[e+f x]+12 b^3 f^2 m n x^2 \text{Log}[x] \text{Log}\left[c x^n\right]^2 \text{Log}[e+f x]-$$
$$4 b^3 f^2 m x^2 \text{Log}\left[c x^n\right]^3 \text{Log}[e+f x]+4 a^3 e^2 \text{Log}\left[d (e+f x)^m\right]+6 a^2 b e^2 n \text{Log}\left[d (e+f x)^m\right]+6 a b^2 e^2 n^2 \text{Log}\left[d (e+f x)^m\right]+$$
$$3 b^3 e^2 n^3 \text{Log}\left[d (e+f x)^m\right]+12 a^2 b e^2 \text{Log}\left[c x^n\right] \text{Log}\left[d (e+f x)^m\right]+12 a b^2 e^2 n \text{Log}\left[c x^n\right] \text{Log}\left[d (e+f x)^m\right]+6 b^3 e^2 n^2 \text{Log}\left[c x^n\right] \text{Log}\left[d (e+f x)^m\right]+$$
$$12 a b^2 e^2 \text{Log}\left[c x^n\right]^2 \text{Log}\left[d (e+f x)^m\right]+6 b^3 e^2 n \text{Log}\left[c x^n\right]^2 \text{Log}\left[d (e+f x)^m\right]+4 b^3 e^2 \text{Log}\left[c x^n\right]^3 \text{Log}\left[d (e+f x)^m\right]-$$
$$12 a^2 b f^2 m n x^2 \text{Log}[x] \text{Log}\left[1+\frac{f x}{e}\right]-12 a b^2 f^2 m n^2 x^2 \text{Log}[x] \text{Log}\left[1+\frac{f x}{e}\right]-6 b^3 f^2 m n^3 x^2 \text{Log}[x] \text{Log}\left[1+\frac{f x}{e}\right]+$$
$$12 a b^2 f^2 m n^2 x^2 \text{Log}[x]^2 \text{Log}\left[1+\frac{f x}{e}\right]+6 b^3 f^2 m n^3 x^2 \text{Log}[x]^2 \text{Log}\left[1+\frac{f x}{e}\right]-4 b^3 f^2 m n^3 x^2 \text{Log}[x]^3 \text{Log}\left[1+\frac{f x}{e}\right]-$$
$$24 a b^2 f^2 m n x^2 \text{Log}[x] \text{Log}\left[c x^n\right] \text{Log}\left[1+\frac{f x}{e}\right]-12 b^3 f^2 m n^2 x^2 \text{Log}[x] \text{Log}\left[c x^n\right] \text{Log}\left[1+\frac{f x}{e}\right]+12 b^3 f^2 m n^2 x^2 \text{Log}[x]^2 \text{Log}\left[c x^n\right] \text{Log}\left[1+\frac{f x}{e}\right]-$$
$$12 b^3 f^2 m n x^2 \text{Log}[x] \text{Log}\left[c x^n\right]^2 \text{Log}\left[1+\frac{f x}{e}\right]-6 b f^2 m n x^2 \left(2 a^2+2 a b n+b^2 n^2+2 b (2 a+b n) \text{Log}\left[c x^n\right]+2 b^2 \text{Log}\left[c x^n\right]^2\right) \text{PolyLog}\left[2,-\frac{f x}{e}\right]+$$
$$12 b^2 f^2 m n^2 x^2 \left(2 a+b n+2 b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[3,-\frac{f x}{e}\right]-24 b^3 f^2 m n^3 x^2 \text{PolyLog}\left[4,-\frac{f x}{e}\right]\Big)$$

Problem 90: Result unnecessarily involves imaginary or complex numbers.

$$\int x^3 \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[d \left(e+f x^2\right)^m\right] \, dx$$

Optimal (type 4, 221 leaves, 9 steps):

$$-\frac{3 b e m n x^2}{16 f}+\frac{1}{16} b m n x^4+\frac{e m x^2 \left(a+b \text{Log}\left[c x^n\right]\right)}{4 f}-\frac{1}{8} m x^4 \left(a+b \text{Log}\left[c x^n\right]\right)+\frac{b e^2 m n \text{Log}\left[e+f x^2\right]}{16 f^2}+\frac{b e^2 m n \text{Log}\left[-\frac{f x^2}{e}\right] \text{Log}\left[e+f x^2\right]}{8 f^2}-$$
$$\frac{e^2 m \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[e+f x^2\right]}{4 f^2}-\frac{1}{16} b n x^4 \text{Log}\left[d \left(e+f x^2\right)^m\right]+\frac{1}{4} x^4 \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[d \left(e+f x^2\right)^m\right]+\frac{b e^2 m n \text{PolyLog}\left[2,1+\frac{f x^2}{e}\right]}{8 f^2}$$

Result (type 4, 324 leaves):

$$-\frac{1}{16 f^2}\left(-4 a e f m x^2+3 b e f m n x^2+2 a f^2 m x^4-b f^2 m n x^4-4 b e f m x^2 \text{Log}\left[c x^n\right]+2 b f^2 m x^4 \text{Log}\left[c x^n\right]+4 b e^2 m n \text{Log}[x] \text{Log}\left[1-\frac{i \sqrt{f} x}{\sqrt{e}}\right]+4 b e^2 m n \text{Log}[x] \text{Log}\left[1+\frac{i \sqrt{f} x}{\sqrt{e}}\right]+4 a e^2 m \text{Log}\left[e+f x^2\right]-b e^2 m n \text{Log}\left[e+f x^2\right]-4 b e^2 m n \text{Log}[x] \text{Log}\left[e+f x^2\right]+4 b e^2 m \text{Log}\left[c x^n\right] \text{Log}\left[e+f x^2\right]-4 a f^2 x^4 \text{Log}\left[d \left(e+f x^2\right)^m\right]+b f^2 n x^4 \text{Log}\left[d \left(e+f x^2\right)^m\right]-4 b f^2 x^4 \text{Log}\left[c x^n\right] \text{Log}\left[d \left(e+f x^2\right)^m\right]+4 b e^2 m n \text{PolyLog}\left[2,-\frac{i \sqrt{f} x}{\sqrt{e}}\right]+4 b e^2 m n \text{PolyLog}\left[2,\frac{i \sqrt{f} x}{\sqrt{e}}\right]\right)$$

Problem 91: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 148 leaves, 9 steps):

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

Result (type 4, 263 leaves):

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

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

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

Optimal (type 4, 113 leaves, 4 steps):

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

Result (type 4, 307 leaves):

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

Problem 93: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 195 leaves, 11 steps):

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

Result (type 4, 298 leaves):

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

Problem 94: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 248 leaves, 10 steps):

$$-\frac{3\,b\,f\,m\,n}{16\,e\,x^2}-\frac{b\,f^2\,m\,n\,\text{Log}[x]}{8\,e^2}+\frac{b\,f^2\,m\,n\,\text{Log}[x]^2}{4\,e^2}-\frac{f\,m\,(a+b\,\text{Log}[c\,x^n])}{4\,e\,x^2}-\frac{f^2\,m\,\text{Log}[x]\,(a+b\,\text{Log}[c\,x^n])}{2\,e^2}+\frac{b\,f^2\,m\,n\,\text{Log}[e+f\,x^2]}{16\,e^2}-\frac{b\,f^2\,m\,n\,\text{Log}\left[-\frac{f\,x^2}{e}\right]\,\text{Log}[e+f\,x^2]}{8\,e^2}+\frac{f^2\,m\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}[e+f\,x^2]}{4\,e^2}-\frac{b\,n\,\text{Log}[d\,(e+f\,x^2)^m]}{16\,x^4}-\frac{(a+b\,\text{Log}[c\,x^n])\,\text{Log}[d\,(e+f\,x^2)^m]}{4\,x^4}-\frac{b\,f^2\,m\,n\,\text{PolyLog}\left[2,1+\frac{f\,x^2}{e}\right]}{8\,e^2}$$

Result (type 4, 363 leaves) :

$$-\frac{1}{16\,e^2\,x^4}\Big(4\,a\,e\,f\,m\,x^2+3\,b\,e\,f\,m\,n\,x^2+8\,a\,f^2\,m\,x^4\,\text{Log}[x]+2\,b\,f^2\,m\,n\,x^4\,\text{Log}[x]-4\,b\,f^2\,m\,n\,x^4\,\text{Log}[x]^2+4\,b\,e\,f\,m\,x^2\,\text{Log}[c\,x^n]+8\,b\,f^2\,m\,x^4\,\text{Log}[x]\,\text{Log}[c\,x^n]-4\,b\,f^2\,m\,n\,x^4\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]-4\,b\,f^2\,m\,n\,x^4\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]-4\,a\,f^2\,m\,x^4\,\text{Log}[e+f\,x^2]-b\,f^2\,m\,n\,x^4\,\text{Log}[e+f\,x^2]+4\,b\,f^2\,m\,n\,x^4\,\text{Log}[x]\,\text{Log}[e+f\,x^2]-4\,b\,f^2\,m\,x^4\,\text{Log}[c\,x^n]\,\text{Log}[e+f\,x^2]+4\,a\,e^2\,\text{Log}[d\,(e+f\,x^2)^m]+b\,e^2\,n\,\text{Log}[d\,(e+f\,x^2)^m]+4\,b\,e^2\,\text{Log}[c\,x^n]\,\text{Log}[d\,(e+f\,x^2)^m]-4\,b\,f^2\,m\,n\,x^4\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]-4\,b\,f^2\,m\,n\,x^4\,\text{PolyLog}\left[2,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]\Big)$$

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

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

Optimal (type 4, 310 leaves, 17 steps) :

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

Result (type 4, 814 leaves) :

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

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

$$\int \frac{(a+b \operatorname{Log}[c x^n])^2 \operatorname{Log}[d (e+f x^2)^m]}{x} \, dx$$

Optimal (type 4, 147 leaves, 5 steps):

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

Result (type 4, 736 leaves):

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

Problem 102: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c x^n\right]\right)^2 \operatorname{Log}\left[d\left(e+f x^2\right)^m\right]}{x^3} \, dx$$

Optimal (type 4, 276 leaves, 11 steps):

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

Result (type 4, 946 leaves):

$$-\frac{1}{12\,e\,x^2}\Bigg(-12\,a^2 f m x^2 \text{Log}[x]-12\,a\,b\,f m n x^2 \text{Log}[x]-6\,b^2 f m n^2 x^2 \text{Log}[x]+12\,a\,b\,f m n x^2 \text{Log}[x]^2+6\,b^2 f m n^2 x^2 \text{Log}[x]^2-$$
$$4\,b^2 f m n^2 x^2 \text{Log}[x]^3-24\,a\,b\,f m x^2 \text{Log}[x]\,\text{Log}[c\,x^n]-12\,b^2 f m n x^2 \text{Log}[x]\,\text{Log}[c\,x^n]+12\,b^2 f m n x^2 \text{Log}[x]^2\,\text{Log}[c\,x^n]-$$
$$12\,b^2 f m x^2 \text{Log}[x]\,\text{Log}[c\,x^n]^2+12\,a\,b\,f m n x^2 \text{Log}[x]\,\text{Log}\Big[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\Big]+6\,b^2 f m n^2 x^2 \text{Log}[x]\,\text{Log}\Big[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\Big]-$$
$$6\,b^2 f m n^2 x^2 \text{Log}[x]^2\,\text{Log}\Big[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\Big]+12\,b^2 f m n x^2 \text{Log}[x]\,\text{Log}[c\,x^n]\,\text{Log}\Big[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\Big]+12\,a\,b\,f m n x^2 \text{Log}[x]\,\text{Log}\Big[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\Big]+$$
$$6\,b^2 f m n^2 x^2 \text{Log}[x]\,\text{Log}\Big[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\Big]-6\,b^2 f m n^2 x^2 \text{Log}[x]^2\,\text{Log}\Big[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\Big]+12\,b^2 f m n x^2 \text{Log}[x]\,\text{Log}[c\,x^n]\,\text{Log}\Big[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\Big]+$$
$$6\,a^2 f m x^2 \text{Log}[e+f x^2]+6\,a\,b\,f m n x^2 \text{Log}[e+f x^2]+3\,b^2 f m n^2 x^2 \text{Log}[e+f x^2]-12\,a\,b\,f m n x^2 \text{Log}[x]\,\text{Log}[e+f x^2]-$$
$$6\,b^2 f m n^2 x^2 \text{Log}[x]\,\text{Log}[e+f x^2]+6\,b^2 f m n^2 x^2 \text{Log}[x]^2\,\text{Log}[e+f x^2]+12\,a\,b\,f m x^2 \text{Log}[c\,x^n]\,\text{Log}[e+f x^2]+$$
$$6\,b^2 f m n x^2 \text{Log}[c\,x^n]\,\text{Log}[e+f x^2]-12\,b^2 f m n x^2 \text{Log}[x]\,\text{Log}[c\,x^n]\,\text{Log}[e+f x^2]+6\,b^2 f m x^2 \text{Log}[c\,x^n]^2\,\text{Log}[e+f x^2]+$$
$$6\,a^2 e\,\text{Log}[d\,(e+f x^2)^m]+6\,a\,b\,e\,n\,\text{Log}[d\,(e+f x^2)^m]+3\,b^2 e\,n^2\,\text{Log}[d\,(e+f x^2)^m]+12\,a\,b\,e\,\text{Log}[c\,x^n]\,\text{Log}[d\,(e+f x^2)^m]+$$
$$6\,b^2 e\,n\,\text{Log}[c\,x^n]\,\text{Log}[d\,(e+f x^2)^m]+6\,b^2 e\,\text{Log}[c\,x^n]^2\,\text{Log}[d\,(e+f x^2)^m]+6\,b\,f m n x^2\,(2\,a+b\,n+2\,b\,\text{Log}[c\,x^n])\,\text{PolyLog}\Big[2,-\frac{i\sqrt{f}\,x}{\sqrt{e}}\Big]+$$
$$6\,b\,f m n x^2\,(2\,a+b\,n+2\,b\,\text{Log}[c\,x^n])\,\text{PolyLog}\Big[2,\frac{i\sqrt{f}\,x}{\sqrt{e}}\Big]-12\,b^2 f m n^2 x^2\,\text{PolyLog}\Big[3,-\frac{i\sqrt{f}\,x}{\sqrt{e}}\Big]-12\,b^2 f m n^2 x^2\,\text{PolyLog}\Big[3,\frac{i\sqrt{f}\,x}{\sqrt{e}}\Big]\Bigg)$$

Problem 103: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{(a+b\,\text{Log}[c\,x^n])^2\,\text{Log}[d\,(e+f x^2)^m]}{x^5}\,dx$$

Optimal (type 4, 356 leaves, 15 steps):

$$-\frac{7\,b^2 f m n^2}{32\,e\,x^2}-\frac{b^2 f^2 m n^2\,\text{Log}[x]}{16\,e^2}-\frac{3\,b\,f m n\,(a+b\,\text{Log}[c\,x^n])}{8\,e\,x^2}+\frac{b\,f^2 m n\,\text{Log}\big[1+\frac{e}{f x^2}\big]\,(a+b\,\text{Log}[c\,x^n])}{8\,e^2}-\frac{f m\,(a+b\,\text{Log}[c\,x^n])^2}{4\,e\,x^2}+$$
$$\frac{f^2 m\,\text{Log}\big[1+\frac{e}{f x^2}\big]\,(a+b\,\text{Log}[c\,x^n])^2}{4\,e^2}+\frac{b^2 f^2 m n^2\,\text{Log}[e+f x^2]}{32\,e^2}-\frac{b^2 n^2\,\text{Log}[d\,(e+f x^2)^m]}{32\,x^4}-\frac{b\,n\,(a+b\,\text{Log}[c\,x^n])\,\text{Log}[d\,(e+f x^2)^m]}{8\,x^4}-$$
$$\frac{(a+b\,\text{Log}[c\,x^n])^2\,\text{Log}[d\,(e+f x^2)^m]}{4\,x^4}-\frac{b^2 f^2 m n^2\,\text{PolyLog}\big[2,-\frac{e}{f x^2}\big]}{16\,e^2}-\frac{b\,f^2 m n\,(a+b\,\text{Log}[c\,x^n])\,\text{PolyLog}\big[2,-\frac{e}{f x^2}\big]}{4\,e^2}-\frac{b^2 f^2 m n^2\,\text{PolyLog}\big[3,-\frac{e}{f x^2}\big]}{8\,e^2}$$

Result (type 4, 1111 leaves):

$$-\frac{1}{96 e^2 x^4}\Big(24 a^2 e f m x^2+36 a b e f m n x^2+21 b^2 e f m n^2 x^2+48 a^2 f^2 m x^4 \text{Log}[x]+24 a b f^2 m n x^4 \text{Log}[x]+6 b^2 f^2 m n^2 x^4 \text{Log}[x]-48 a b f^2 m n x^4 \text{Log}[x]^2-$$
$$12 b^2 f^2 m n^2 x^4 \text{Log}[x]^2+16 b^2 f^2 m n^2 x^4 \text{Log}[x]^3+48 a b e f m x^2 \text{Log}[c x^n]+36 b^2 e f m n x^2 \text{Log}[c x^n]+96 a b f^2 m x^4 \text{Log}[x] \text{Log}[c x^n]+$$
$$24 b^2 f^2 m n x^4 \text{Log}[x] \text{Log}[c x^n]-48 b^2 f^2 m n x^4 \text{Log}[x]^2 \text{Log}[c x^n]+24 b^2 e f m x^2 \text{Log}[c x^n]^2+48 b^2 f^2 m x^4 \text{Log}[x] \text{Log}[c x^n]^2-$$
$$48 a b f^2 m n x^4 \text{Log}[x] \text{Log}\Big[1-\frac{i \sqrt{f} x}{\sqrt{e}}\Big]-12 b^2 f^2 m n^2 x^4 \text{Log}[x] \text{Log}\Big[1-\frac{i \sqrt{f} x}{\sqrt{e}}\Big]+24 b^2 f^2 m n^2 x^4 \text{Log}[x]^2 \text{Log}\Big[1-\frac{i \sqrt{f} x}{\sqrt{e}}\Big]-$$
$$48 b^2 f^2 m n x^4 \text{Log}[x] \text{Log}[c x^n] \text{Log}\Big[1-\frac{i \sqrt{f} x}{\sqrt{e}}\Big]-48 a b f^2 m n x^4 \text{Log}[x] \text{Log}\Big[1+\frac{i \sqrt{f} x}{\sqrt{e}}\Big]-12 b^2 f^2 m n^2 x^4 \text{Log}[x] \text{Log}\Big[1+\frac{i \sqrt{f} x}{\sqrt{e}}\Big]+$$
$$24 b^2 f^2 m n^2 x^4 \text{Log}[x]^2 \text{Log}\Big[1+\frac{i \sqrt{f} x}{\sqrt{e}}\Big]-48 b^2 f^2 m n x^4 \text{Log}[x] \text{Log}[c x^n] \text{Log}\Big[1+\frac{i \sqrt{f} x}{\sqrt{e}}\Big]-24 a^2 f^2 m x^4 \text{Log}[e+f x^2]-$$
$$12 a b f^2 m n x^4 \text{Log}[e+f x^2]-3 b^2 f^2 m n^2 x^4 \text{Log}[e+f x^2]+48 a b f^2 m n x^4 \text{Log}[x] \text{Log}[e+f x^2]+12 b^2 f^2 m n^2 x^4 \text{Log}[x] \text{Log}[e+f x^2]-$$
$$24 b^2 f^2 m n^2 x^4 \text{Log}[x]^2 \text{Log}[e+f x^2]-48 a b f^2 m x^4 \text{Log}[c x^n] \text{Log}[e+f x^2]-12 b^2 f^2 m n x^4 \text{Log}[c x^n] \text{Log}[e+f x^2]+$$
$$48 b^2 f^2 m n x^4 \text{Log}[x] \text{Log}[c x^n] \text{Log}[e+f x^2]-24 b^2 f^2 m x^4 \text{Log}[c x^n]^2 \text{Log}[e+f x^2]+24 a^2 e^2 \text{Log}[d (e+f x^2)^m]+$$
$$12 a b e^2 n \text{Log}[d (e+f x^2)^m]+3 b^2 e^2 n^2 \text{Log}[d (e+f x^2)^m]+48 a b e^2 \text{Log}[c x^n] \text{Log}[d (e+f x^2)^m]+12 b^2 e^2 n \text{Log}[c x^n] \text{Log}[d (e+f x^2)^m]+$$
$$24 b^2 e^2 \text{Log}[c x^n]^2 \text{Log}[d (e+f x^2)^m]-12 b f^2 m n x^4 (4 a+b n+4 b \text{Log}[c x^n]) \text{PolyLog}\Big[2,-\frac{i \sqrt{f} x}{\sqrt{e}}\Big]-$$
$$12 b f^2 m n x^4 (4 a+b n+4 b \text{Log}[c x^n]) \text{PolyLog}\Big[2,\frac{i \sqrt{f} x}{\sqrt{e}}\Big]+48 b^2 f^2 m n^2 x^4 \text{PolyLog}\Big[3,-\frac{i \sqrt{f} x}{\sqrt{e}}\Big]+48 b^2 f^2 m n^2 x^4 \text{PolyLog}\Big[3,\frac{i \sqrt{f} x}{\sqrt{e}}\Big]\Big)$$

Problem 108: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 514 leaves, 26 steps) :

$$\frac{3}{2} b^3 m n^3 x^2 - \frac{9}{4} b^2 m n^2 x^2 (a + b \text{Log}[c x^n]) + \frac{3}{2} b m n x^2 (a + b \text{Log}[c x^n])^2 - \frac{1}{2} m x^2 (a + b \text{Log}[c x^n])^3 -$$
$$\frac{3 b^3 e m n^3 \text{Log}[e + f x^2]}{8 f} - \frac{3}{8} b^3 n^3 x^2 \text{Log}[d (e + f x^2)^m] + \frac{3}{4} b^2 n^2 x^2 (a + b \text{Log}[c x^n]) \text{Log}[d (e + f x^2)^m] -$$
$$\frac{3}{4} b n x^2 (a + b \text{Log}[c x^n])^2 \text{Log}[d (e + f x^2)^m] + \frac{1}{2} x^2 (a + b \text{Log}[c x^n])^3 \text{Log}[d (e + f x^2)^m] + \frac{3 b^2 e m n^2 (a + b \text{Log}[c x^n]) \text{Log}[1 + \frac{f x^2}{e}]}{4 f} -$$
$$\frac{3 b e m n (a + b \text{Log}[c x^n])^2 \text{Log}[1 + \frac{f x^2}{e}]}{4 f} + \frac{e m (a + b \text{Log}[c x^n])^3 \text{Log}[1 + \frac{f x^2}{e}]}{2 f} + \frac{3 b^3 e m n^3 \text{PolyLog}[2, -\frac{f x^2}{e}]}{8 f} -$$
$$\frac{3 b^2 e m n^2 (a + b \text{Log}[c x^n]) \text{PolyLog}[2, -\frac{f x^2}{e}]}{4 f} + \frac{3 b e m n (a + b \text{Log}[c x^n])^2 \text{PolyLog}[2, -\frac{f x^2}{e}]}{4 f} +$$
$$\frac{3 b^3 e m n^3 \text{PolyLog}[3, -\frac{f x^2}{e}]}{8 f} - \frac{3 b^2 e m n^2 (a + b \text{Log}[c x^n]) \text{PolyLog}[3, -\frac{f x^2}{e}]}{4 f} + \frac{3 b^3 e m n^3 \text{PolyLog}[4, -\frac{f x^2}{e}]}{8 f}$$

Result (type 4, 1911 leaves) :

$$\frac{1}{8 f} \Big(-4 a^3 f m x^2 + 12 a^2 b f m n x^2 - 18 a b^2 f m n^2 x^2 + 12 b^3 f m n^3 x^2 - 12 a^2 b f m x^2 \text{Log}[c x^n] +$$
$$24 a b^2 f m n x^2 \text{Log}[c x^n] - 18 b^3 f m n^2 x^2 \text{Log}[c x^n] - 12 a b^2 f m x^2 \text{Log}[c x^n]^2 + 12 b^3 f m n x^2 \text{Log}[c x^n]^2 - 4 b^3 f m x^2 \text{Log}[c x^n]^3 +$$
$$12 a^2 b e m n \text{Log}[x] \text{Log}[1 - \frac{i \sqrt{f} x}{\sqrt{e}}] - 12 a b^2 e m n^2 \text{Log}[x] \text{Log}[1 - \frac{i \sqrt{f} x}{\sqrt{e}}] + 6 b^3 e m n^3 \text{Log}[x] \text{Log}[1 - \frac{i \sqrt{f} x}{\sqrt{e}}] -$$
$$12 a b^2 e m n^2 \text{Log}[x]^2 \text{Log}[1 - \frac{i \sqrt{f} x}{\sqrt{e}}] + 6 b^3 e m n^3 \text{Log}[x]^2 \text{Log}[1 - \frac{i \sqrt{f} x}{\sqrt{e}}] + 4 b^3 e m n^3 \text{Log}[x]^3 \text{Log}[1 - \frac{i \sqrt{f} x}{\sqrt{e}}] +$$
$$24 a b^2 e m n \text{Log}[x] \text{Log}[c x^n] \text{Log}[1 - \frac{i \sqrt{f} x}{\sqrt{e}}] - 12 b^3 e m n^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}[1 - \frac{i \sqrt{f} x}{\sqrt{e}}] - 12 b^3 e m n^2 \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}[1 - \frac{i \sqrt{f} x}{\sqrt{e}}] +$$
$$12 b^3 e m n \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}[1 - \frac{i \sqrt{f} x}{\sqrt{e}}] + 12 a^2 b e m n \text{Log}[x] \text{Log}[1 + \frac{i \sqrt{f} x}{\sqrt{e}}] - 12 a b^2 e m n^2 \text{Log}[x] \text{Log}[1 + \frac{i \sqrt{f} x}{\sqrt{e}}] +$$
$$6 b^3 e m n^3 \text{Log}[x] \text{Log}[1 + \frac{i \sqrt{f} x}{\sqrt{e}}] - 12 a b^2 e m n^2 \text{Log}[x]^2 \text{Log}[1 + \frac{i \sqrt{f} x}{\sqrt{e}}] + 6 b^3 e m n^3 \text{Log}[x]^2 \text{Log}[1 + \frac{i \sqrt{f} x}{\sqrt{e}}] +$$
$$4 b^3 e m n^3 \text{Log}[x]^3 \text{Log}[1 + \frac{i \sqrt{f} x}{\sqrt{e}}] + 24 a b^2 e m n \text{Log}[x] \text{Log}[c x^n] \text{Log}[1 + \frac{i \sqrt{f} x}{\sqrt{e}}] - 12 b^3 e m n^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}[1 + \frac{i \sqrt{f} x}{\sqrt{e}}] -$$
$$12 b^3 e m n^2 \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}[1 + \frac{i \sqrt{f} x}{\sqrt{e}}] + 12 b^3 e m n \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}[1 + \frac{i \sqrt{f} x}{\sqrt{e}}] + 4 a^3 e m \text{Log}[e + f x^2] -$$
$$6 a^2 b e m n \text{Log}[e + f x^2] + 6 a b^2 e m n^2 \text{Log}[e + f x^2] - 3 b^3 e m n^3 \text{Log}[e + f x^2] - 12 a^2 b e m n \text{Log}[x] \text{Log}[e + f x^2] +$$
$$12 a b^2 e m n^2 \text{Log}[x] \text{Log}[e + f x^2] - 6 b^3 e m n^3 \text{Log}[x] \text{Log}[e + f x^2] + 12 a b^2 e m n^2 \text{Log}[x]^2 \text{Log}[e + f x^2] - 6 b^3 e m n^3 \text{Log}[x]^2 \text{Log}[e + f x^2] -$$

$4\,b^3\,e\,m\,n^3\,\text{Log}[x]^3\,\text{Log}[e+f\,x^2]+12\,a^2\,b\,e\,m\,\text{Log}[c\,x^n]\,\text{Log}[e+f\,x^2]-12\,a\,b^2\,e\,m\,n\,\text{Log}[c\,x^n]\,\text{Log}[e+f\,x^2]+6\,b^3\,e\,m\,n^2\,\text{Log}[c\,x^n]\,\text{Log}[e+f\,x^2]-$
$24\,a\,b^2\,e\,m\,n\,\text{Log}[x]\,\text{Log}[c\,x^n]\,\text{Log}[e+f\,x^2]+12\,b^3\,e\,m\,n^2\,\text{Log}[x]\,\text{Log}[c\,x^n]\,\text{Log}[e+f\,x^2]+12\,b^3\,e\,m\,n^2\,\text{Log}[x]^2\,\text{Log}[c\,x^n]\,\text{Log}[e+f\,x^2]+$
$12\,a\,b^2\,e\,m\,\text{Log}[c\,x^n]^2\,\text{Log}[e+f\,x^2]-6\,b^3\,e\,m\,n\,\text{Log}[c\,x^n]^2\,\text{Log}[e+f\,x^2]-12\,b^3\,e\,m\,n\,\text{Log}[x]\,\text{Log}[c\,x^n]^2\,\text{Log}[e+f\,x^2]+$
$4\,b^3\,e\,m\,\text{Log}[c\,x^n]^3\,\text{Log}[e+f\,x^2]+4\,a^3\,f\,x^2\,\text{Log}[d\,(e+f\,x^2)^m]-6\,a^2\,b\,f\,n\,x^2\,\text{Log}[d\,(e+f\,x^2)^m]+6\,a\,b^2\,f\,n^2\,x^2\,\text{Log}[d\,(e+f\,x^2)^m]-$
$3\,b^3\,f\,n^3\,x^2\,\text{Log}[d\,(e+f\,x^2)^m]+12\,a^2\,b\,f\,x^2\,\text{Log}[c\,x^n]\,\text{Log}[d\,(e+f\,x^2)^m]-12\,a\,b^2\,f\,n\,x^2\,\text{Log}[c\,x^n]\,\text{Log}[d\,(e+f\,x^2)^m]+$
$6\,b^3\,f\,n^2\,x^2\,\text{Log}[c\,x^n]\,\text{Log}[d\,(e+f\,x^2)^m]+12\,a\,b^2\,f\,x^2\,\text{Log}[c\,x^n]^2\,\text{Log}[d\,(e+f\,x^2)^m]-6\,b^3\,f\,n\,x^2\,\text{Log}[c\,x^n]^2\,\text{Log}[d\,(e+f\,x^2)^m]+$
$4\,b^3\,f\,x^2\,\text{Log}[c\,x^n]^3\,\text{Log}[d\,(e+f\,x^2)^m]+6\,b\,e\,m\,n\,\left(2\,a^2-2\,a\,b\,n+b^2\,n^2-2\,b\,(-2\,a+b\,n)\,\text{Log}[c\,x^n]+2\,b^2\,\text{Log}[c\,x^n]^2\right)\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]+$
$6\,b\,e\,m\,n\,\left(2\,a^2-2\,a\,b\,n+b^2\,n^2-2\,b\,(-2\,a+b\,n)\,\text{Log}[c\,x^n]+2\,b^2\,\text{Log}[c\,x^n]^2\right)\,\text{PolyLog}\left[2,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]-$
$24\,a\,b^2\,e\,m\,n^2\,\text{PolyLog}\left[3,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]+12\,b^3\,e\,m\,n^3\,\text{PolyLog}\left[3,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]-$
$24\,b^3\,e\,m\,n^2\,\text{Log}[c\,x^n]\,\text{PolyLog}\left[3,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]-24\,a\,b^2\,e\,m\,n^2\,\text{PolyLog}\left[3,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]+12\,b^3\,e\,m\,n^3\,\text{PolyLog}\left[3,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]-$
$24\,b^3\,e\,m\,n^2\,\text{Log}[c\,x^n]\,\text{PolyLog}\left[3,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]+24\,b^3\,e\,m\,n^3\,\text{PolyLog}\left[4,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]+24\,b^3\,e\,m\,n^3\,\text{PolyLog}\left[4,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]\Bigg)$

Problem 109: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 181 leaves, 6 steps):

$$\frac{(a+b\,\text{Log}[c\,x^n])^4\,\text{Log}[d\,(e+f\,x^2)^m]}{4\,b\,n}-\frac{m\,(a+b\,\text{Log}[c\,x^n])^4\,\text{Log}\left[1+\frac{f\,x^2}{e}\right]}{4\,b\,n}-\frac{1}{2}\,m\,(a+b\,\text{Log}[c\,x^n])^3\,\text{PolyLog}\left[2,-\frac{f\,x^2}{e}\right]+$$
$$\frac{3}{4}\,b\,m\,n\,(a+b\,\text{Log}[c\,x^n])^2\,\text{PolyLog}\left[3,-\frac{f\,x^2}{e}\right]-\frac{3}{4}\,b^2\,m\,n^2\,(a+b\,\text{Log}[c\,x^n])\,\text{PolyLog}\left[4,-\frac{f\,x^2}{e}\right]+\frac{3}{8}\,b^3\,m\,n^3\,\text{PolyLog}\left[5,-\frac{f\,x^2}{e}\right]$$

Result (type 4, 1348 leaves):

$$-a^3 m \text{Log}[x] \text{Log}\left[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+\frac{3}{2}a^2 b m n \text{Log}[x]^2 \text{Log}\left[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-a b^2 m n^2 \text{Log}[x]^3 \text{Log}\left[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+$$
$$\frac{1}{4}b^3 m n^3 \text{Log}[x]^4 \text{Log}\left[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-3a^2 b m \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+3 a b^2 m n \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}\left[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-$$
$$b^3 m n^2 \text{Log}[x]^3 \text{Log}[c x^n] \text{Log}\left[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-3 a b^2 m \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}\left[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+\frac{3}{2}b^3 m n \text{Log}[x]^2 \text{Log}[c x^n]^2 \text{Log}\left[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-$$
$$b^3 m \text{Log}[x] \text{Log}[c x^n]^3 \text{Log}\left[1-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-a^3 m \text{Log}[x] \text{Log}\left[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+\frac{3}{2}a^2 b m n \text{Log}[x]^2 \text{Log}\left[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-a b^2 m n^2 \text{Log}[x]^3 \text{Log}\left[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+$$
$$\frac{1}{4}b^3 m n^3 \text{Log}[x]^4 \text{Log}\left[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-3a^2 b m \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+3 a b^2 m n \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}\left[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-$$
$$b^3 m n^2 \text{Log}[x]^3 \text{Log}[c x^n] \text{Log}\left[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-3 a b^2 m \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}\left[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+\frac{3}{2}b^3 m n \text{Log}[x]^2 \text{Log}[c x^n]^2 \text{Log}\left[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-$$
$$b^3 m \text{Log}[x] \text{Log}[c x^n]^3 \text{Log}\left[1+\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+a^3 \text{Log}[x] \text{Log}\left[d\left(e+f x^2\right)^m\right]-\frac{3}{2}a^2 b n \text{Log}[x]^2 \text{Log}\left[d\left(e+f x^2\right)^m\right]+$$
$$a b^2 n^2 \text{Log}[x]^3 \text{Log}\left[d\left(e+f x^2\right)^m\right]-\frac{1}{4}b^3 n^3 \text{Log}[x]^4 \text{Log}\left[d\left(e+f x^2\right)^m\right]+3a^2 b \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[d\left(e+f x^2\right)^m\right]-$$
$$3 a b^2 n \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}\left[d\left(e+f x^2\right)^m\right]+b^3 n^2 \text{Log}[x]^3 \text{Log}[c x^n] \text{Log}\left[d\left(e+f x^2\right)^m\right]+3 a b^2 \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}\left[d\left(e+f x^2\right)^m\right]-$$
$$\frac{3}{2}b^3 n \text{Log}[x]^2 \text{Log}[c x^n]^2 \text{Log}\left[d\left(e+f x^2\right)^m\right]+b^3 \text{Log}[x] \text{Log}[c x^n]^3 \text{Log}\left[d\left(e+f x^2\right)^m\right]-m\left(a+b \text{Log}[c x^n]\right)^3 \text{PolyLog}\left[2,-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-$$
$$m\left(a+b \text{Log}[c x^n]\right)^3 \text{PolyLog}\left[2,\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+3a^2 b m n \text{PolyLog}\left[3,-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+6 a b^2 m n \text{Log}[c x^n] \text{PolyLog}\left[3,-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+$$
$$3 b^3 m n \text{Log}[c x^n]^2 \text{PolyLog}\left[3,-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+3a^2 b m n \text{PolyLog}\left[3,\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+6 a b^2 m n \text{Log}[c x^n] \text{PolyLog}\left[3,\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+$$
$$3 b^3 m n \text{Log}[c x^n]^2 \text{PolyLog}\left[3,\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-6 a b^2 m n^2 \text{PolyLog}\left[4,-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-6 b^3 m n^2 \text{Log}[c x^n] \text{PolyLog}\left[4,-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-$$
$$6 a b^2 m n^2 \text{PolyLog}\left[4,\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-6 b^3 m n^2 \text{Log}[c x^n] \text{PolyLog}\left[4,\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+6 b^3 m n^3 \text{PolyLog}\left[5,-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+6 b^3 m n^3 \text{PolyLog}\left[5,\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]$$

Problem 110: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 451 leaves, 15 steps):

$$\frac{3 b^3 f m n^3 \text{Log}[x]}{4 e}-\frac{3 b^2 f m n^2 \text{Log}\left[1+\frac{e}{f x^2}\right] (a+b \text{Log}[c x^n])}{4 e}-\frac{3 b f m n \text{Log}\left[1+\frac{e}{f x^2}\right] (a+b \text{Log}[c x^n])^2}{4 e}-\frac{f m \text{Log}\left[1+\frac{e}{f x^2}\right] (a+b \text{Log}[c x^n])^3}{2 e}-\frac{3 b^3 f m n^3 \text{Log}\left[e+f x^2\right]}{8 e}-\frac{3 b^3 n^3 \text{Log}\left[d \left(e+f x^2\right)^m\right]}{8 x^2}-\frac{3 b^2 n^2 (a+b \text{Log}[c x^n]) \text{Log}\left[d \left(e+f x^2\right)^m\right]}{4 x^2}-\frac{3 b n (a+b \text{Log}[c x^n])^2 \text{Log}\left[d \left(e+f x^2\right)^m\right]}{4 x^2}-\frac{(a+b \text{Log}[c x^n])^3 \text{Log}\left[d \left(e+f x^2\right)^m\right]}{2 x^2}+\frac{3 b^3 f m n^3 \text{PolyLog}\left[2,-\frac{e}{f x^2}\right]}{8 e}+\frac{3 b^2 f m n^2 (a+b \text{Log}[c x^n]) \text{PolyLog}\left[2,-\frac{e}{f x^2}\right]}{4 e}+\frac{3 b f m n (a+b \text{Log}[c x^n])^2 \text{PolyLog}\left[2,-\frac{e}{f x^2}\right]}{4 e}+\frac{3 b^3 f m n^3 \text{PolyLog}\left[3,-\frac{e}{f x^2}\right]}{8 e}+\frac{3 b^2 f m n^2 (a+b \text{Log}[c x^n]) \text{PolyLog}\left[3,-\frac{e}{f x^2}\right]}{4 e}+\frac{3 b^3 f m n^3 \text{PolyLog}\left[4,-\frac{e}{f x^2}\right]}{8 e}$$

Result (type 4, 2248 leaves):

$$-\frac{1}{8 e x^2}\Bigg(-8 a^3 f m x^2 \text{Log}[x]-12 a^2 b f m n x^2 \text{Log}[x]-12 a b^2 f m n^2 x^2 \text{Log}[x]-6 b^3 f m n^3 x^2 \text{Log}[x]+12 a^2 b f m n x^2 \text{Log}[x]^2+12 a b^2 f m n^2 x^2 \text{Log}[x]^2+6 b^3 f m n^3 x^2 \text{Log}[x]^2-8 a b^2 f m n^2 x^2 \text{Log}[x]^3-4 b^3 f m n^3 x^2 \text{Log}[x]^3+2 b^3 f m n^3 x^2 \text{Log}[x]^4-24 a^2 b f m x^2 \text{Log}[x] \text{Log}[c x^n]-24 a b^2 f m n x^2 \text{Log}[x] \text{Log}[c x^n]-12 b^3 f m n^2 x^2 \text{Log}[x] \text{Log}[c x^n]+24 a b^2 f m n x^2 \text{Log}[x]^2 \text{Log}[c x^n]+12 b^3 f m n^2 x^2 \text{Log}[x]^2 \text{Log}[c x^n]-8 b^3 f m n^2 x^2 \text{Log}[x]^3 \text{Log}[c x^n]-24 a b^2 f m x^2 \text{Log}[x] \text{Log}[c x^n]^2-12 b^3 f m n x^2 \text{Log}[x] \text{Log}[c x^n]^2+12 b^3 f m n x^2 \text{Log}[x]^2 \text{Log}[c x^n]^2-8 b^3 f m x^2 \text{Log}[x] \text{Log}[c x^n]^3+12 a^2 b f m n x^2 \text{Log}[x] \text{Log}\left[1-\frac{i \sqrt{f} x}{\sqrt{e}}\right]+12 a b^2 f m n^2 x^2 \text{Log}[x] \text{Log}\left[1-\frac{i \sqrt{f} x}{\sqrt{e}}\right]+6 b^3 f m n^3 x^2 \text{Log}[x] \text{Log}\left[1-\frac{i \sqrt{f} x}{\sqrt{e}}\right]-12 a b^2 f m n^2 x^2 \text{Log}[x]^2 \text{Log}\left[1-\frac{i \sqrt{f} x}{\sqrt{e}}\right]-6 b^3 f m n^3 x^2 \text{Log}[x]^2 \text{Log}\left[1-\frac{i \sqrt{f} x}{\sqrt{e}}\right]+4 b^3 f m n^3 x^2 \text{Log}[x]^3 \text{Log}\left[1-\frac{i \sqrt{f} x}{\sqrt{e}}\right]+24 a b^2 f m n x^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1-\frac{i \sqrt{f} x}{\sqrt{e}}\right]+12 b^3 f m n^2 x^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1-\frac{i \sqrt{f} x}{\sqrt{e}}\right]-12 b^3 f m n^2 x^2 \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}\left[1-\frac{i \sqrt{f} x}{\sqrt{e}}\right]+12 b^3 f m n x^2 \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}\left[1-\frac{i \sqrt{f} x}{\sqrt{e}}\right]+12 a^2 b f m n x^2 \text{Log}[x] \text{Log}\left[1+\frac{i \sqrt{f} x}{\sqrt{e}}\right]+12 a b^2 f m n^2 x^2 \text{Log}[x] \text{Log}\left[1+\frac{i \sqrt{f} x}{\sqrt{e}}\right]+6 b^3 f m n^3 x^2 \text{Log}[x] \text{Log}\left[1+\frac{i \sqrt{f} x}{\sqrt{e}}\right]-12 a b^2 f m n^2 x^2 \text{Log}[x]^2 \text{Log}\left[1+\frac{i \sqrt{f} x}{\sqrt{e}}\right]-6 b^3 f m n^3 x^2 \text{Log}[x]^2 \text{Log}\left[1+\frac{i \sqrt{f} x}{\sqrt{e}}\right]+4 b^3 f m n^3 x^2 \text{Log}[x]^3 \text{Log}\left[1+\frac{i \sqrt{f} x}{\sqrt{e}}\right]+24 a b^2 f m n x^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1+\frac{i \sqrt{f} x}{\sqrt{e}}\right]+12 b^3 f m n^2 x^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1+\frac{i \sqrt{f} x}{\sqrt{e}}\right]-12 b^3 f m n^2 x^2 \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}\left[1+\frac{i \sqrt{f} x}{\sqrt{e}}\right]+$$

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

Problem 111: Result more than twice size of optimal antiderivative.

$$\int x^2 \left(a + b \text{Log}[c x^n]\right)^3 \text{Log}\left[d \left(e + f x^2\right)^m\right] \, dx$$

Optimal (type 4, 1092 leaves, 49 steps):

$$\frac{52\,a\,b^2\,e\,m\,n^2\,x}{9\,f}-\frac{160\,b^3\,e\,m\,n^3\,x}{27\,f}+\frac{16}{81}\,b^3\,m\,n^3\,x^3+\frac{4\,b^3\,e^{3/2}\,m\,n^3\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]}{27\,f^{3/2}}+\frac{52\,b^3\,e\,m\,n^2\,x\,\text{Log}[c\,x^n]}{9\,f}-$$

$$\frac{4}{9}\,b^2\,m\,n^2\,x^3\,\left(a+b\,\text{Log}[c\,x^n]\right)-\frac{4\,b^2\,e^{3/2}\,m\,n^2\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\left(a+b\,\text{Log}[c\,x^n]\right)}{9\,f^{3/2}}-\frac{8\,b\,e\,m\,n\,x\,\left(a+b\,\text{Log}[c\,x^n]\right)^2}{3\,f}+$$

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

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

$$\frac{2}{27}\,b^3\,n^3\,x^3\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]+\frac{2}{9}\,b^2\,n^2\,x^3\,\left(a+b\,\text{Log}[c\,x^n]\right)\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]-\frac{1}{3}\,b\,n\,x^3\,\left(a+b\,\text{Log}[c\,x^n]\right)^2\,\text{Log}\left[d\,\left(e+f\,x^2\right)^m\right]+$$

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

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

$$\frac{b\,(-e)^{3/2}\,m\,n\,\left(a+b\,\text{Log}[c\,x^n]\right)^2\,\text{PolyLog}\left[2,\frac{\sqrt{f}\,x}{\sqrt{-e}}\right]}{f^{3/2}}+\frac{2\,i\,b^3\,e^{3/2}\,m\,n^3\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]}{9\,f^{3/2}}-\frac{2\,i\,b^3\,e^{3/2}\,m\,n^3\,\text{PolyLog}\left[2,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]}{9\,f^{3/2}}+$$

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

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

Result (type 4, 2544 leaves):

$$\frac{1}{81\,f^{3/2}}\left(54\,a^3\,e\,\sqrt{f}\,m\,x-216\,a^2\,b\,e\,\sqrt{f}\,m\,n\,x+468\,a\,b^2\,e\,\sqrt{f}\,m\,n^2\,x-480\,b^3\,e\,\sqrt{f}\,m\,n^3\,x-18\,a^3\,f^{3/2}\,m\,x^3+36\,a^2\,b\,f^{3/2}\,m\,n\,x^3-36\,a\,b^2\,f^{3/2}\,m\,n^2\,x^3+\right.$$

$$16\,b^3\,f^{3/2}\,m\,n^3\,x^3-54\,a^3\,e^{3/2}\,m\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]+54\,a^2\,b\,e^{3/2}\,m\,n\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]-36\,a\,b^2\,e^{3/2}\,m\,n^2\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]+12\,b^3\,e^{3/2}\,m\,n^3\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]+$$

$$162\,a^2\,b\,e^{3/2}\,m\,n\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\text{Log}[x]-108\,a\,b^2\,e^{3/2}\,m\,n^2\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\text{Log}[x]+36\,b^3\,e^{3/2}\,m\,n^3\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\text{Log}[x]-$$

$$162\,a\,b^2\,e^{3/2}\,m\,n^2\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\text{Log}[x]^2+54\,b^3\,e^{3/2}\,m\,n^3\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\text{Log}[x]^2+54\,b^3\,e^{3/2}\,m\,n^3\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\text{Log}[x]^3+$$

$162 a^2 b e \sqrt{f} m x \text{Log}[c x^n] - 432 a b^2 e \sqrt{f} m n x \text{Log}[c x^n] + 468 b^3 e \sqrt{f} m n^2 x \text{Log}[c x^n] - 54 a^2 b f^{3/2} m x^3 \text{Log}[c x^n] +$

$72 a b^2 f^{3/2} m n x^3 \text{Log}[c x^n] - 36 b^3 f^{3/2} m n^2 x^3 \text{Log}[c x^n] - 162 a^2 b e^{3/2} m \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[c x^n] + 108 a b^2 e^{3/2} m n \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[c x^n] -$

$36 b^3 e^{3/2} m n^2 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[c x^n] + 324 a b^2 e^{3/2} m n \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x] \text{Log}[c x^n] - 108 b^3 e^{3/2} m n^2 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x] \text{Log}[c x^n] -$

$162 b^3 e^{3/2} m n^2 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x]^2 \text{Log}[c x^n] + 162 a b^2 e \sqrt{f} m x \text{Log}[c x^n]^2 - 216 b^3 e \sqrt{f} m n x \text{Log}[c x^n]^2 - 54 a b^2 f^{3/2} m x^3 \text{Log}[c x^n]^2 +$

$36 b^3 f^{3/2} m n x^3 \text{Log}[c x^n]^2 - 162 a b^2 e^{3/2} m \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[c x^n]^2 + 54 b^3 e^{3/2} m n \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[c x^n]^2 +$

$162 b^3 e^{3/2} m n \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x] \text{Log}[c x^n]^2 + 54 b^3 e \sqrt{f} m x \text{Log}[c x^n]^3 - 18 b^3 f^{3/2} m x^3 \text{Log}[c x^n]^3 - 54 b^3 e^{3/2} m \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[c x^n]^3 -$

$81 i a^2 b e^{3/2} m n \text{Log}[x] \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] + 54 i a b^2 e^{3/2} m n^2 \text{Log}[x] \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] - 18 i b^3 e^{3/2} m n^3 \text{Log}[x] \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] +$

$81 i a b^2 e^{3/2} m n^2 \text{Log}[x]^2 \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] - 27 i b^3 e^{3/2} m n^3 \text{Log}[x]^2 \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] - 27 i b^3 e^{3/2} m n^3 \text{Log}[x]^3 \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] -$

$162 i a b^2 e^{3/2} m n \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] + 54 i b^3 e^{3/2} m n^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] +$

$81 i b^3 e^{3/2} m n^2 \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] - 81 i b^3 e^{3/2} m n \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] +$

$81 i a^2 b e^{3/2} m n \text{Log}[x] \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] - 54 i a b^2 e^{3/2} m n^2 \text{Log}[x] \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] + 18 i b^3 e^{3/2} m n^3 \text{Log}[x] \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] -$

$81 i a b^2 e^{3/2} m n^2 \text{Log}[x]^2 \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] + 27 i b^3 e^{3/2} m n^3 \text{Log}[x]^2 \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] + 27 i b^3 e^{3/2} m n^3 \text{Log}[x]^3 \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] +$

$162 i a b^2 e^{3/2} m n \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] - 54 i b^3 e^{3/2} m n^2 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] -$

$81 i b^3 e^{3/2} m n^2 \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] + 81 i b^3 e^{3/2} m n \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] +$

$27 a^3 f^{3/2} x^3 \text{Log}[d (e + f x^2)^m] - 27 a^2 b f^{3/2} n x^3 \text{Log}[d (e + f x^2)^m] + 18 a b^2 f^{3/2} n^2 x^3 \text{Log}[d (e + f x^2)^m] - 6 b^3 f^{3/2} n^3 x^3 \text{Log}[d (e + f x^2)^m] +$

$81 a^2 b f^{3/2} x^3 \text{Log}[c x^n] \text{Log}[d (e + f x^2)^m] - 54 a b^2 f^{3/2} n x^3 \text{Log}[c x^n] \text{Log}[d (e + f x^2)^m] + 18 b^3 f^{3/2} n^2 x^3 \text{Log}[c x^n] \text{Log}[d (e + f x^2)^m] +$

$81 a b^2 f^{3/2} x^3 \text{Log}[c x^n]^2 \text{Log}[d (e + f x^2)^m] - 27 b^3 f^{3/2} n x^3 \text{Log}[c x^n]^2 \text{Log}[d (e + f x^2)^m] + 27 b^3 f^{3/2} x^3 \text{Log}[c x^n]^3 \text{Log}[d (e + f x^2)^m] +$

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

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

$$162\,i\,a\,b^2\,e^{3/2}\,m\,n^2\,\text{PolyLog}\left[3,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]+54\,i\,b^3\,e^{3/2}\,m\,n^3\,\text{PolyLog}\left[3,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]-$$

$$162\,i\,b^3\,e^{3/2}\,m\,n^2\,\text{Log}[c\,x^n]\,\text{PolyLog}\left[3,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]+162\,i\,a\,b^2\,e^{3/2}\,m\,n^2\,\text{PolyLog}\left[3,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]-54\,i\,b^3\,e^{3/2}\,m\,n^3\,\text{PolyLog}\left[3,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]+$$

$$162\,i\,b^3\,e^{3/2}\,m\,n^2\,\text{Log}[c\,x^n]\,\text{PolyLog}\left[3,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]+162\,i\,b^3\,e^{3/2}\,m\,n^3\,\text{PolyLog}\left[4,-\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]-162\,i\,b^3\,e^{3/2}\,m\,n^3\,\text{PolyLog}\left[4,\frac{i\,\sqrt{f}\,x}{\sqrt{e}}\right]\Bigg)$$

Problem 112: Result more than twice size of optimal antiderivative.

$$\int(a+b\,\text{Log}[c\,x^n])^3\,\text{Log}\left[d\,(e+f\,x^2)^m\right]\,dx$$

Optimal (type 4, 977 leaves, 42 steps) :

$$-24\,a\,b^2\,m\,n^2\,x+36\,b^3\,m\,n^3\,x-12\,b^2\,m\,n^2\,(a-b\,n)\,x+\frac{12\,b^2\,\sqrt{e}\,m\,n^2\,(a-b\,n)\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]}{\sqrt{f}}-$$

$$36\,b^3\,m\,n^2\,x\,\text{Log}[c\,x^n]+\frac{12\,b^3\,\sqrt{e}\,m\,n^2\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\text{Log}[c\,x^n]}{\sqrt{f}}+12\,b\,m\,n\,x\,(a+b\,\text{Log}[c\,x^n])^2-2\,m\,x\,(a+b\,\text{Log}[c\,x^n])^3+$$

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

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

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

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

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

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

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

Result (type 4, 2302 leaves):

$$\frac{1}{\sqrt{f}}\Bigg(-2\,a^3\,\sqrt{f}\,m\,x+12\,a^2\,b\,\sqrt{f}\,m\,n\,x-36\,a\,b^2\,\sqrt{f}\,m\,n^2\,x+48\,b^3\,\sqrt{f}\,m\,n^3\,x+2\,a^3\,\sqrt{e}\,m\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]-$$

$$6\,a^2\,b\,\sqrt{e}\,m\,n\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]+12\,a\,b^2\,\sqrt{e}\,m\,n^2\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]-12\,b^3\,\sqrt{e}\,m\,n^3\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]-6\,a^2\,b\,\sqrt{e}\,m\,n\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\text{Log}[x]+$$

$$12\,a\,b^2\,\sqrt{e}\,m\,n^2\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\text{Log}[x]-12\,b^3\,\sqrt{e}\,m\,n^3\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\text{Log}[x]+6\,a\,b^2\,\sqrt{e}\,m\,n^2\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\text{Log}[x]^2-$$

$$6\,b^3\,\sqrt{e}\,m\,n^3\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\text{Log}[x]^2-2\,b^3\,\sqrt{e}\,m\,n^3\,\text{ArcTan}\left[\frac{\sqrt{f}\,x}{\sqrt{e}}\right]\,\text{Log}[x]^3-6\,a^2\,b\,\sqrt{f}\,m\,x\,\text{Log}[c\,x^n]+24\,a\,b^2\,\sqrt{f}\,m\,n\,x\,\text{Log}[c\,x^n]-$$

$36 b^3 \sqrt{f}\, m n^2 x \,\text{Log}[c x^n] + 6 a^2 b \sqrt{e}\, m \,\text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[c x^n] - 12 a b^2 \sqrt{e}\, m n \,\text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[c x^n] +$

$12 b^3 \sqrt{e}\, m n^2 \,\text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[c x^n] - 12 a b^2 \sqrt{e}\, m n \,\text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x] \,\text{Log}[c x^n] + 12 b^3 \sqrt{e}\, m n^2 \,\text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x] \,\text{Log}[c x^n] +$

$6 b^3 \sqrt{e}\, m n^2 \,\text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x]^2 \,\text{Log}[c x^n] - 6 a b^2 \sqrt{f}\, m x \,\text{Log}[c x^n]^2 + 12 b^3 \sqrt{f}\, m n x \,\text{Log}[c x^n]^2 + 6 a b^2 \sqrt{e}\, m \,\text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[c x^n]^2 -$

$6 b^3 \sqrt{e}\, m n \,\text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[c x^n]^2 - 6 b^3 \sqrt{e}\, m n \,\text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x] \,\text{Log}[c x^n]^2 - 2 b^3 \sqrt{f}\, m x \,\text{Log}[c x^n]^3 +$

$2 b^3 \sqrt{e}\, m \,\text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[c x^n]^3 + 3 i a^2 b \sqrt{e}\, m n \,\text{Log}[x] \,\text{Log}\left[1 - \frac{i \sqrt{f}\, x}{\sqrt{e}}\right] - 6 i a b^2 \sqrt{e}\, m n^2 \,\text{Log}[x] \,\text{Log}\left[1 - \frac{i \sqrt{f}\, x}{\sqrt{e}}\right] +$

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

$i b^3 \sqrt{e}\, m n^3 \,\text{Log}[x]^3 \,\text{Log}\left[1 - \frac{i \sqrt{f}\, x}{\sqrt{e}}\right] + 6 i a b^2 \sqrt{e}\, m n \,\text{Log}[x] \,\text{Log}[c x^n] \,\text{Log}\left[1 - \frac{i \sqrt{f}\, x}{\sqrt{e}}\right] - 6 i b^3 \sqrt{e}\, m n^2 \,\text{Log}[x] \,\text{Log}[c x^n] \,\text{Log}\left[1 - \frac{i \sqrt{f}\, x}{\sqrt{e}}\right] -$

$3 i b^3 \sqrt{e}\, m n^2 \,\text{Log}[x]^2 \,\text{Log}[c x^n] \,\text{Log}\left[1 - \frac{i \sqrt{f}\, x}{\sqrt{e}}\right] + 3 i b^3 \sqrt{e}\, m n \,\text{Log}[x] \,\text{Log}[c x^n]^2 \,\text{Log}\left[1 - \frac{i \sqrt{f}\, x}{\sqrt{e}}\right] -$

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

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

$6 i a b^2 \sqrt{e}\, m n \,\text{Log}[x] \,\text{Log}[c x^n] \,\text{Log}\left[1 + \frac{i \sqrt{f}\, x}{\sqrt{e}}\right] + 6 i b^3 \sqrt{e}\, m n^2 \,\text{Log}[x] \,\text{Log}[c x^n] \,\text{Log}\left[1 + \frac{i \sqrt{f}\, x}{\sqrt{e}}\right] +$

$3 i b^3 \sqrt{e}\, m n^2 \,\text{Log}[x]^2 \,\text{Log}[c x^n] \,\text{Log}\left[1 + \frac{i \sqrt{f}\, x}{\sqrt{e}}\right] - 3 i b^3 \sqrt{e}\, m n \,\text{Log}[x] \,\text{Log}[c x^n]^2 \,\text{Log}\left[1 + \frac{i \sqrt{f}\, x}{\sqrt{e}}\right] +$

$a^3 \sqrt{f}\, x \,\text{Log}[d (e + f x^2)^m] - 3 a^2 b \sqrt{f}\, n x \,\text{Log}[d (e + f x^2)^m] + 6 a b^2 \sqrt{f}\, n^2 x \,\text{Log}[d (e + f x^2)^m] - 6 b^3 \sqrt{f}\, n^3 x \,\text{Log}[d (e + f x^2)^m] +$

$3 a^2 b \sqrt{f}\, x \,\text{Log}[c x^n] \,\text{Log}[d (e + f x^2)^m] - 6 a b^2 \sqrt{f}\, n x \,\text{Log}[c x^n] \,\text{Log}[d (e + f x^2)^m] + 6 b^3 \sqrt{f}\, n^2 x \,\text{Log}[c x^n] \,\text{Log}[d (e + f x^2)^m] +$

$3 a b^2 \sqrt{f}\, x \,\text{Log}[c x^n]^2 \,\text{Log}[d (e + f x^2)^m] - 3 b^3 \sqrt{f}\, n x \,\text{Log}[c x^n]^2 \,\text{Log}[d (e + f x^2)^m] + b^3 \sqrt{f}\, x \,\text{Log}[c x^n]^3 \,\text{Log}[d (e + f x^2)^m] -$

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

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

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

Problem 113: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 879 leaves, 26 steps):

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

Result (type 4, 2166 leaves) :

$$\frac{1}{\sqrt{e}\,x}\left(2 a^3 \sqrt{f}\, m\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right]+6 a^2 b \sqrt{f}\, m\, n\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right]+12 a b^2 \sqrt{f}\, m\, n^2\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right]+12 b^3 \sqrt{f}\, m\, n^3\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right]-\right.$$

$$6 a^2 b \sqrt{f}\, m\, n\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x]-12 a b^2 \sqrt{f}\, m\, n^2\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x]-12 b^3 \sqrt{f}\, m\, n^3\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x]+$$

$$6 a b^2 \sqrt{f}\, m\, n^2\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x]^2+6 b^3 \sqrt{f}\, m\, n^3\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x]^2-2 b^3 \sqrt{f}\, m\, n^3\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x]^3+$$

$$6 a^2 b \sqrt{f}\, m\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}\left[c\, x^n\right]+12 a b^2 \sqrt{f}\, m\, n\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}\left[c\, x^n\right]+12 b^3 \sqrt{f}\, m\, n^2\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}\left[c\, x^n\right]-$$

$$12 a b^2 \sqrt{f}\, m\, n\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x]\, \text{Log}\left[c\, x^n\right]-12 b^3 \sqrt{f}\, m\, n^2\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x]\, \text{Log}\left[c\, x^n\right]+$$

$$6 b^3 \sqrt{f}\, m\, n^2\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x]^2\, \text{Log}\left[c\, x^n\right]+6 a b^2 \sqrt{f}\, m\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}\left[c\, x^n\right]^2+6 b^3 \sqrt{f}\, m\, n\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}\left[c\, x^n\right]^2-$$

$$6 b^3 \sqrt{f}\, m\, n\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}[x]\, \text{Log}\left[c\, x^n\right]^2+2 b^3 \sqrt{f}\, m\, x\, \text{ArcTan}\left[\frac{\sqrt{f}\, x}{\sqrt{e}}\right] \text{Log}\left[c\, x^n\right]^3+3 i a^2 b \sqrt{f}\, m\, n\, x\, \text{Log}[x]\, \text{Log}\left[1-\frac{i \sqrt{f}\, x}{\sqrt{e}}\right]+$$

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

$$3 i b^3 \sqrt{f}\, m\, n^3\, x\, \text{Log}[x]^2\, \text{Log}\left[1-\frac{i \sqrt{f}\, x}{\sqrt{e}}\right]+i b^3 \sqrt{f}\, m\, n^3\, x\, \text{Log}[x]^3\, \text{Log}\left[1-\frac{i \sqrt{f}\, x}{\sqrt{e}}\right]+6 i a b^2 \sqrt{f}\, m\, n\, x\, \text{Log}[x]\, \text{Log}\left[c\, x^n\right] \text{Log}\left[1-\frac{i \sqrt{f}\, x}{\sqrt{e}}\right]+$$

$$6 i b^3 \sqrt{f}\, m\, n^2\, x\, \text{Log}[x]\, \text{Log}\left[c\, x^n\right] \text{Log}\left[1-\frac{i \sqrt{f}\, x}{\sqrt{e}}\right]-3 i b^3 \sqrt{f}\, m\, n^2\, x\, \text{Log}[x]^2\, \text{Log}\left[c\, x^n\right] \text{Log}\left[1-\frac{i \sqrt{f}\, x}{\sqrt{e}}\right]+$$

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

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

$$3 i b^3 \sqrt{f}\, m\, n^3\, x\, \text{Log}[x]^2\, \text{Log}\left[1+\frac{i \sqrt{f}\, x}{\sqrt{e}}\right]-i b^3 \sqrt{f}\, m\, n^3\, x\, \text{Log}[x]^3\, \text{Log}\left[1+\frac{i \sqrt{f}\, x}{\sqrt{e}}\right]-6 i a b^2 \sqrt{f}\, m\, n\, x\, \text{Log}[x]\, \text{Log}\left[c\, x^n\right] \text{Log}\left[1+\frac{i \sqrt{f}\, x}{\sqrt{e}}\right]-$$

$$6 i b^3 \sqrt{f}\, m\, n^2\, x\, \text{Log}[x]\, \text{Log}\left[c\, x^n\right] \text{Log}\left[1+\frac{i \sqrt{f}\, x}{\sqrt{e}}\right]+3 i b^3 \sqrt{f}\, m\, n^2\, x\, \text{Log}[x]^2\, \text{Log}\left[c\, x^n\right] \text{Log}\left[1+\frac{i \sqrt{f}\, x}{\sqrt{e}}\right]-$$

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

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

Problem 114: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\mathrm{Log}\left[c\,x^n\right]\right)^3\mathrm{Log}\left[d\left(e+f\,x^2\right)^m\right]}{x^4}\,dx$$

Optimal (type 4, 1007 leaves, 36 steps) :

$$-\frac{160 b^3 f m n^3}{27 e x}-\frac{4 b^3 f^{3/2} m n^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right]}{27 e^{3/2}}-\frac{52 b^2 f m n^2 \left(a+b \text{Log}\left[c x^n\right]\right)}{9 e x}-\frac{4 b^2 f^{3/2} m n^2 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \left(a+b \text{Log}\left[c x^n\right]\right)}{9 e^{3/2}}-$$

$$\frac{8 b f m n \left(a+b \text{Log}\left[c x^n\right]\right)^2}{3 e x}-\frac{2 f m \left(a+b \text{Log}\left[c x^n\right]\right)^3}{3 e x}+\frac{b f^{3/2} m n \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[1-\frac{\sqrt{f} x}{\sqrt{-e}}\right]}{3 (-e)^{3/2}}+$$

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

$$\frac{2 b^3 n^3 \text{Log}\left[d \left(e+f x^2\right)^m\right]}{27 x^3}-\frac{2 b^2 n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{Log}\left[d \left(e+f x^2\right)^m\right]}{9 x^3}-\frac{b n \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{Log}\left[d \left(e+f x^2\right)^m\right]}{3 x^3}-$$

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

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

$$\frac{b f^{3/2} m n \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{PolyLog}\left[2,\frac{\sqrt{f} x}{\sqrt{-e}}\right]}{(-e)^{3/2}}+\frac{2 i b^3 f^{3/2} m n^3 \text{PolyLog}\left[2,-\frac{i \sqrt{f} x}{\sqrt{e}}\right]}{9 e^{3/2}}-\frac{2 i b^3 f^{3/2} m n^3 \text{PolyLog}\left[2,\frac{i \sqrt{f} x}{\sqrt{e}}\right]}{9 e^{3/2}}+$$

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

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

Result (type 4, 2488 leaves):

$$\frac{1}{27 e^{3/2} x^3}\Bigg(-18 a^3 \sqrt{e} f m x^2-72 a^2 b \sqrt{e} f m n x^2-156 a b^2 \sqrt{e} f m n^2 x^2-160 b^3 \sqrt{e} f m n^3 x^2-$$

$$18 a^3 f^{3/2} m x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right]-18 a^2 b f^{3/2} m n x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right]-12 a b^2 f^{3/2} m n^2 x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right]-4 b^3 f^{3/2} m n^3 x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right]+$$

$$54 a^2 b f^{3/2} m n x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x]+36 a b^2 f^{3/2} m n^2 x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x]+12 b^3 f^{3/2} m n^3 x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x]-$$

$$54 a b^2 f^{3/2} m n^2 x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x]^2-18 b^3 f^{3/2} m n^3 x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x]^2+18 b^3 f^{3/2} m n^3 x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x]^3-$$

$54 a^2 b \sqrt{e} f m x^2 \text{Log}[c x^n] - 144 a b^2 \sqrt{e} f m n x^2 \text{Log}[c x^n] - 156 b^3 \sqrt{e} f m n^2 x^2 \text{Log}[c x^n] - 54 a^2 b f^{3/2} m x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[c x^n] -$

$36 a b^2 f^{3/2} m n x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[c x^n] - 12 b^3 f^{3/2} m n^2 x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[c x^n] + 108 a b^2 f^{3/2} m n x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x] \text{Log}[c x^n] +$

$36 b^3 f^{3/2} m n^2 x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x] \text{Log}[c x^n] - 54 b^3 f^{3/2} m n^2 x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x]^2 \text{Log}[c x^n] - 54 a b^2 \sqrt{e} f m x^2 \text{Log}[c x^n]^2 -$

$72 b^3 \sqrt{e} f m n x^2 \text{Log}[c x^n]^2 - 54 a b^2 f^{3/2} m x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[c x^n]^2 - 18 b^3 f^{3/2} m n x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[c x^n]^2 +$

$54 b^3 f^{3/2} m n x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[x] \text{Log}[c x^n]^2 - 18 b^3 \sqrt{e} f m x^2 \text{Log}[c x^n]^3 - 18 b^3 f^{3/2} m x^3 \text{ArcTan}\left[\frac{\sqrt{f} x}{\sqrt{e}}\right] \text{Log}[c x^n]^3 -$

$27 i a^2 b f^{3/2} m n x^3 \text{Log}[x] \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] - 18 i a b^2 f^{3/2} m n^2 x^3 \text{Log}[x] \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] - 6 i b^3 f^{3/2} m n^3 x^3 \text{Log}[x] \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] +$

$27 i a b^2 f^{3/2} m n^2 x^3 \text{Log}[x]^2 \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] + 9 i b^3 f^{3/2} m n^3 x^3 \text{Log}[x]^2 \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] - 9 i b^3 f^{3/2} m n^3 x^3 \text{Log}[x]^3 \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] -$

$54 i a b^2 f^{3/2} m n x^3 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] - 18 i b^3 f^{3/2} m n^2 x^3 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] +$

$27 i b^3 f^{3/2} m n^2 x^3 \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] - 27 i b^3 f^{3/2} m n x^3 \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}\left[1 - \frac{i \sqrt{f} x}{\sqrt{e}}\right] +$

$27 i a^2 b f^{3/2} m n x^3 \text{Log}[x] \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] + 18 i a b^2 f^{3/2} m n^2 x^3 \text{Log}[x] \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] + 6 i b^3 f^{3/2} m n^3 x^3 \text{Log}[x] \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] -$

$27 i a b^2 f^{3/2} m n^2 x^3 \text{Log}[x]^2 \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] - 9 i b^3 f^{3/2} m n^3 x^3 \text{Log}[x]^2 \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] + 9 i b^3 f^{3/2} m n^3 x^3 \text{Log}[x]^3 \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] +$

$54 i a b^2 f^{3/2} m n x^3 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] + 18 i b^3 f^{3/2} m n^2 x^3 \text{Log}[x] \text{Log}[c x^n] \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] -$

$27 i b^3 f^{3/2} m n^2 x^3 \text{Log}[x]^2 \text{Log}[c x^n] \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] + 27 i b^3 f^{3/2} m n x^3 \text{Log}[x] \text{Log}[c x^n]^2 \text{Log}\left[1 + \frac{i \sqrt{f} x}{\sqrt{e}}\right] -$

$9 a^3 e^{3/2} \text{Log}\left[d \left(e + f x^2\right)^m\right] - 9 a^2 b e^{3/2} n \text{Log}\left[d \left(e + f x^2\right)^m\right] - 6 a b^2 e^{3/2} n^2 \text{Log}\left[d \left(e + f x^2\right)^m\right] - 2 b^3 e^{3/2} n^3 \text{Log}\left[d \left(e + f x^2\right)^m\right] -$

$27 a^2 b e^{3/2} \text{Log}[c x^n] \text{Log}\left[d \left(e + f x^2\right)^m\right] - 18 a b^2 e^{3/2} n \text{Log}[c x^n] \text{Log}\left[d \left(e + f x^2\right)^m\right] - 6 b^3 e^{3/2} n^2 \text{Log}[c x^n] \text{Log}\left[d \left(e + f x^2\right)^m\right] -$

$27 a b^2 e^{3/2} \text{Log}[c x^n]^2 \text{Log}\left[d \left(e + f x^2\right)^m\right] - 9 b^3 e^{3/2} n \text{Log}[c x^n]^2 \text{Log}\left[d \left(e + f x^2\right)^m\right] - 9 b^3 e^{3/2} \text{Log}[c x^n]^3 \text{Log}\left[d \left(e + f x^2\right)^m\right] +$

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

$$3\,i\,b\,f^{3/2}\,m\,n\,x^3\left(9\,a^2+6\,a\,b\,n+2\,b^2\,n^2+6\,b\,(3\,a+b\,n)\,\text{Log}[c\,x^n]+9\,b^2\,\text{Log}[c\,x^n]^2\right)\text{PolyLog}\left[2,\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-$$
$$54\,i\,a\,b^2\,f^{3/2}\,m\,n^2\,x^3\,\text{PolyLog}\left[3,-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-18\,i\,b^3\,f^{3/2}\,m\,n^3\,x^3\,\text{PolyLog}\left[3,-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-$$
$$54\,i\,b^3\,f^{3/2}\,m\,n^2\,x^3\,\text{Log}[c\,x^n]\,\text{PolyLog}\left[3,-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+54\,i\,a\,b^2\,f^{3/2}\,m\,n^2\,x^3\,\text{PolyLog}\left[3,\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+18\,i\,b^3\,f^{3/2}\,m\,n^3\,x^3\,\text{PolyLog}\left[3,\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+$$
$$54\,i\,b^3\,f^{3/2}\,m\,n^2\,x^3\,\text{Log}[c\,x^n]\,\text{PolyLog}\left[3,\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]+54\,i\,b^3\,f^{3/2}\,m\,n^3\,x^3\,\text{PolyLog}\left[4,-\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]-54\,i\,b^3\,f^{3/2}\,m\,n^3\,x^3\,\text{PolyLog}\left[4,\frac{i\sqrt{f}\,x}{\sqrt{e}}\right]\Bigg)$$

Problem 125: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 145 leaves, 5 steps):

$$\frac{\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\left(a+b\,\text{Log}[c\,x^n]\right)^3}{3\,b\,n}-\frac{\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\left(a+b\,\text{Log}[c\,x^n]\right)^3}{3\,b\,n}-$$
$$2\left(a+b\,\text{Log}[c\,x^n]\right)^2\text{PolyLog}\left[2,-\frac{f\sqrt{x}}{e}\right]+8\,b\,n\left(a+b\,\text{Log}[c\,x^n]\right)\text{PolyLog}\left[3,-\frac{f\sqrt{x}}{e}\right]-16\,b^2\,n^2\,\text{PolyLog}\left[4,-\frac{f\sqrt{x}}{e}\right]$$

Result (type 4, 368 leaves):

$$a^2\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]-a^2\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]-a\,b\,n\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]^2+$$
$$a\,b\,n\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]^2+\frac{1}{3}\,b^2\,n^2\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]^3-\frac{1}{3}\,b^2\,n^2\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]^3+$$
$$2\,a\,b\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]\,\text{Log}[c\,x^n]-2\,a\,b\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]\,\text{Log}[c\,x^n]-b^2\,n\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]^2\,\text{Log}[c\,x^n]+$$
$$b^2\,n\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]^2\,\text{Log}[c\,x^n]+b^2\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]\,\text{Log}[c\,x^n]^2-b^2\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]\,\text{Log}[c\,x^n]^2-$$
$$2\left(a+b\,\text{Log}[c\,x^n]\right)^2\text{PolyLog}\left[2,-\frac{f\sqrt{x}}{e}\right]+8\,b\,n\left(a+b\,\text{Log}[c\,x^n]\right)\text{PolyLog}\left[3,-\frac{f\sqrt{x}}{e}\right]-16\,b^2\,n^2\,\text{PolyLog}\left[4,-\frac{f\sqrt{x}}{e}\right]$$

Problem 128: Result more than twice size of optimal antiderivative.

$$\int x \operatorname{Log}\left[d\left(e+f\sqrt{x}\right)\right]\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^3\,dx$$

Optimal (type 4, 907 leaves, 36 steps):

$$-\frac{255\,b^3 e^3 n^3 \sqrt{x}}{8\,f^3}-\frac{9\,a\,b^2 e^2 n^2 x}{4\,f^2}+\frac{45\,b^3 e^2 n^3 x}{16\,f^2}-\frac{175\,b^3 e\,n^3 x^{3/2}}{216\,f}+\frac{3}{8}b^3 n^3 x^2+\frac{3\,b^3 e^4 n^3 \operatorname{Log}\left[e+f\sqrt{x}\right]}{8\,f^4}-\frac{3}{8}b^3 n^3 x^2 \operatorname{Log}\left[d\left(e+f\sqrt{x}\right)\right]+$$
$$\frac{3\,b^3 e^4 n^3 \operatorname{Log}\left[e+f\sqrt{x}\right]\operatorname{Log}\left[-\frac{f\sqrt{x}}{e}\right]}{2\,f^4}-\frac{9\,b^3 e^2 n^2 x \operatorname{Log}\left[c\,x^n\right]}{4\,f^2}+\frac{63\,b^2 e^3 n^2 \sqrt{x}\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)}{4\,f^3}-\frac{3\,b^2 e^2 n^2 x\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)}{8\,f^2}+$$
$$\frac{37\,b^2 e\,n^2 x^{3/2}\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)}{36\,f}-\frac{9}{16}b^2 n^2 x^2\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)-\frac{3\,b^2 e^4 n^2 \operatorname{Log}\left[e+f\sqrt{x}\right]\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)}{4\,f^4}+$$
$$\frac{3}{4}b^2 n^2 x^2 \operatorname{Log}\left[d\left(e+f\sqrt{x}\right)\right]\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)-\frac{15\,b\,e^3 n\sqrt{x}\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^2}{4\,f^3}+\frac{9\,b\,e^2 n\,x\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^2}{8\,f^2}-$$
$$\frac{7\,b\,e\,n\,x^{3/2}\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^2}{12\,f}+\frac{3}{8}b\,n\,x^2\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^2-\frac{3}{4}b\,n\,x^2 \operatorname{Log}\left[d\left(e+f\sqrt{x}\right)\right]\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^2+$$
$$\frac{3\,b\,e^4 n \operatorname{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^2}{4\,f^4}+\frac{e^3\sqrt{x}\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^3}{2\,f^3}-\frac{e^2 x\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^3}{4\,f^2}+\frac{e\,x^{3/2}\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^3}{6\,f}-$$
$$\frac{1}{8}x^2\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^3+\frac{1}{2}x^2 \operatorname{Log}\left[d\left(e+f\sqrt{x}\right)\right]\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^3-\frac{e^4 \operatorname{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^3}{2\,f^4}+$$
$$\frac{3\,b^3 e^4 n^3 \operatorname{PolyLog}\left[2,1+\frac{f\sqrt{x}}{e}\right]}{2\,f^4}+\frac{3\,b^2 e^4 n^2\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)\operatorname{PolyLog}\left[2,-\frac{f\sqrt{x}}{e}\right]}{f^4}-\frac{3\,b\,e^4 n\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)^2 \operatorname{PolyLog}\left[2,-\frac{f\sqrt{x}}{e}\right]}{f^4}-$$
$$\frac{6\,b^3 e^4 n^3 \operatorname{PolyLog}\left[3,-\frac{f\sqrt{x}}{e}\right]}{f^4}+\frac{12\,b^2 e^4 n^2\left(a+b\operatorname{Log}\left[c\,x^n\right]\right)\operatorname{PolyLog}\left[3,-\frac{f\sqrt{x}}{e}\right]}{f^4}-\frac{24\,b^3 e^4 n^3 \operatorname{PolyLog}\left[4,-\frac{f\sqrt{x}}{e}\right]}{f^4}$$

Result (type 4, 1968 leaves):

$$
\begin{aligned}
&\frac{1}{432 f^4}\Big(216 a^3 e^3 f \sqrt{x} - 1620 a^2 b e^3 f n \sqrt{x} + 6804 a b^2 e^3 f n^2 \sqrt{x} - 13\,770 b^3 e^3 f n^3 \sqrt{x} - 108 a^3 e^2 f^2 x + 486 a^2 b e^2 f^2 n x - \\
&1134 a b^2 e^2 f^2 n^2 x + 1215 b^3 e^2 f^2 n^3 x + 72 a^3 e f^3 x^{3/2} - 252 a^2 b e f^3 n x^{3/2} + 444 a b^2 e f^3 n^2 x^{3/2} - 350 b^3 e f^3 n^3 x^{3/2} - 54 a^3 f^4 x^2 + \\
&162 a^2 b f^4 n x^2 - 243 a b^2 f^4 n^2 x^2 + 162 b^3 f^4 n^3 x^2 - 216 a^3 e^4 \text{Log}[e + f \sqrt{x}] + 324 a^2 b e^4 n \text{Log}[e + f \sqrt{x}] - 324 a b^2 e^4 n^2 \text{Log}[e + f \sqrt{x}] + \\
&162 b^3 e^4 n^3 \text{Log}[e + f \sqrt{x}] + 216 a^3 f^4 x^2 \text{Log}[d (e + f \sqrt{x})] - 324 a^2 b f^4 n x^2 \text{Log}[d (e + f \sqrt{x})] + 324 a b^2 f^4 n^2 x^2 \text{Log}[d (e + f \sqrt{x})] - \\
&162 b^3 f^4 n^3 x^2 \text{Log}[d (e + f \sqrt{x})] + 648 a^2 b e^4 n \text{Log}[e + f \sqrt{x}] \text{Log}[x] - 648 a b^2 e^4 n^2 \text{Log}[e + f \sqrt{x}] \text{Log}[x] + 324 b^3 e^4 n^3 \text{Log}[e + f \sqrt{x}] \text{Log}[x] - \\
&648 a^2 b e^4 n \text{Log}\Big[1 + \frac{f \sqrt{x}}{e}\Big] \text{Log}[x] + 648 a b^2 e^4 n^2 \text{Log}\Big[1 + \frac{f \sqrt{x}}{e}\Big] \text{Log}[x] - 324 b^3 e^4 n^3 \text{Log}\Big[1 + \frac{f \sqrt{x}}{e}\Big] \text{Log}[x] - \\
&648 a b^2 e^4 n^2 \text{Log}[e + f \sqrt{x}] \text{Log}[x]^2 + 324 b^3 e^4 n^3 \text{Log}[e + f \sqrt{x}] \text{Log}[x]^2 + 648 a b^2 e^4 n^2 \text{Log}\Big[1 + \frac{f \sqrt{x}}{e}\Big] \text{Log}[x]^2 - \\
&324 b^3 e^4 n^3 \text{Log}\Big[1 + \frac{f \sqrt{x}}{e}\Big] \text{Log}[x]^2 + 216 b^3 e^4 n^3 \text{Log}[e + f \sqrt{x}] \text{Log}[x]^3 - 216 b^3 e^4 n^3 \text{Log}\Big[1 + \frac{f \sqrt{x}}{e}\Big] \text{Log}[x]^3 + 648 a^2 b e^3 f \sqrt{x} \text{Log}[c x^n] - \\
&3240 a b^2 e^3 f n \sqrt{x} \text{Log}[c x^n] + 6804 b^3 e^3 f n^2 \sqrt{x} \text{Log}[c x^n] - 324 a^2 b e^2 f^2 x \text{Log}[c x^n] + 972 a b^2 e^2 f^2 n x \text{Log}[c x^n] - \\
&1134 b^3 e^2 f^2 n^2 x \text{Log}[c x^n] + 216 a^2 b e f^3 x^{3/2} \text{Log}[c x^n] - 504 a b^2 e f^3 n x^{3/2} \text{Log}[c x^n] + 444 b^3 e f^3 n^2 x^{3/2} \text{Log}[c x^n] - 162 a^2 b f^4 x^2 \text{Log}[c x^n] + \\
&324 a b^2 f^4 n x^2 \text{Log}[c x^n] - 243 b^3 f^4 n^2 x^2 \text{Log}[c x^n] - 648 a^2 b e^4 \text{Log}[e + f \sqrt{x}] \text{Log}[c x^n] + 648 a b^2 e^4 n \text{Log}[e + f \sqrt{x}] \text{Log}[c x^n] - \\
&324 b^3 e^4 n^2 \text{Log}[e + f \sqrt{x}] \text{Log}[c x^n] + 648 a^2 b f^4 x^2 \text{Log}[d (e + f \sqrt{x})] \text{Log}[c x^n] - 648 a b^2 f^4 n x^2 \text{Log}[d (e + f \sqrt{x})] \text{Log}[c x^n] + \\
&324 b^3 f^4 n^2 x^2 \text{Log}[d (e + f \sqrt{x})] \text{Log}[c x^n] + 1296 a b^2 e^4 n \text{Log}[e + f \sqrt{x}] \text{Log}[x] \text{Log}[c x^n] - 648 b^3 e^4 n^2 \text{Log}[e + f \sqrt{x}] \text{Log}[x] \text{Log}[c x^n] - \\
&1296 a b^2 e^4 n \text{Log}\Big[1 + \frac{f \sqrt{x}}{e}\Big] \text{Log}[x] \text{Log}[c x^n] + 648 b^3 e^4 n^2 \text{Log}\Big[1 + \frac{f \sqrt{x}}{e}\Big] \text{Log}[x] \text{Log}[c x^n] - 648 b^3 e^4 n^2 \text{Log}[e + f \sqrt{x}] \text{Log}[x]^2 \text{Log}[c x^n] + \\
&648 b^3 e^4 n^2 \text{Log}\Big[1 + \frac{f \sqrt{x}}{e}\Big] \text{Log}[x]^2 \text{Log}[c x^n] + 648 a b^2 e^3 f \sqrt{x} \text{Log}[c x^n]^2 - 1620 b^3 e^3 f n \sqrt{x} \text{Log}[c x^n]^2 - 324 a b^2 e^2 f^2 x \text{Log}[c x^n]^2 + \\
&486 b^3 e^2 f^2 n x \text{Log}[c x^n]^2 + 216 a b^2 e f^3 x^{3/2} \text{Log}[c x^n]^2 - 252 b^3 e f^3 n x^{3/2} \text{Log}[c x^n]^2 - 162 a b^2 f^4 x^2 \text{Log}[c x^n]^2 + 162 b^3 f^4 n x^2 \text{Log}[c x^n]^2 - \\
&648 a b^2 e^4 \text{Log}[e + f \sqrt{x}] \text{Log}[c x^n]^2 + 324 b^3 e^4 n \text{Log}[e + f \sqrt{x}] \text{Log}[c x^n]^2 + 648 a b^2 f^4 x^2 \text{Log}[d (e + f \sqrt{x})] \text{Log}[c x^n]^2 - \\
&324 b^3 f^4 n x^2 \text{Log}[d (e + f \sqrt{x})] \text{Log}[c x^n]^2 + 648 b^3 e^4 n \text{Log}[e + f \sqrt{x}] \text{Log}[x] \text{Log}[c x^n]^2 - 648 b^3 e^4 n \text{Log}\Big[1 + \frac{f \sqrt{x}}{e}\Big] \text{Log}[x] \text{Log}[c x^n]^2 + \\
&216 b^3 e^3 f \sqrt{x} \text{Log}[c x^n]^3 - 108 b^3 e^2 f^2 x \text{Log}[c x^n]^3 + 72 b^3 e f^3 x^{3/2} \text{Log}[c x^n]^3 - 54 b^3 f^4 x^2 \text{Log}[c x^n]^3 - 216 b^3 e^4 \text{Log}[e + f \sqrt{x}] \text{Log}[c x^n]^3 + \\
&216 b^3 f^4 x^2 \text{Log}[d (e + f \sqrt{x})] \text{Log}[c x^n]^3 - 648 b e^4 n \left(2 a^2 - 2 a b n + b^2 n^2 - 2 b (-2 a + b n) \text{Log}[c x^n] + 2 b^2 \text{Log}[c x^n]^2\right) \text{PolyLog}\Big[2, -\frac{f \sqrt{x}}{e}\Big] + \\
&2592 b^2 e^4 n^2 (2 a - b n + 2 b \text{Log}[c x^n]) \text{PolyLog}\Big[3, -\frac{f \sqrt{x}}{e}\Big] - 10\,368 b^3 e^4 n^3 \text{PolyLog}\Big[4, -\frac{f \sqrt{x}}{e}\Big]\Big)
\end{aligned}
$$

Problem 129: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 639 leaves, 30 steps):

$$-\frac{90 b^3 e n^3 \sqrt{x}}{f}-6 a b^2 n^2 x+12 b^3 n^3 x+\frac{6 b^3 e^2 n^3 \text{Log}\left[e+f \sqrt{x}\right]}{f^2}-6 b^3 n^3 x \text{Log}\left[d \left(e+f \sqrt{x}\right)\right]+$$
$$\frac{12 b^3 e^2 n^3 \text{Log}\left[e+f \sqrt{x}\right] \text{Log}\left[-\frac{f \sqrt{x}}{e}\right]}{f^2}-6 b^3 n^2 x \text{Log}\left[c x^n\right]+\frac{42 b^2 e n^2 \sqrt{x} \left(a+b \text{Log}\left[c x^n\right]\right)}{f}-3 b^2 n^2 x \left(a+b \text{Log}\left[c x^n\right]\right)-$$
$$\frac{6 b^2 e^2 n^2 \text{Log}\left[e+f \sqrt{x}\right] \left(a+b \text{Log}\left[c x^n\right]\right)}{f^2}+6 b^2 n^2 x \text{Log}\left[d \left(e+f \sqrt{x}\right)\right] \left(a+b \text{Log}\left[c x^n\right]\right)-\frac{9 b e n \sqrt{x} \left(a+b \text{Log}\left[c x^n\right]\right)^2}{f}+$$
$$3 b n x \left(a+b \text{Log}\left[c x^n\right]\right)^2-3 b n x \text{Log}\left[d \left(e+f \sqrt{x}\right)\right] \left(a+b \text{Log}\left[c x^n\right]\right)^2+\frac{3 b e^2 n \text{Log}\left[1+\frac{f \sqrt{x}}{e}\right] \left(a+b \text{Log}\left[c x^n\right]\right)^2}{f^2}+$$
$$\frac{e \sqrt{x} \left(a+b \text{Log}\left[c x^n\right]\right)^3}{f}-\frac{1}{2} x \left(a+b \text{Log}\left[c x^n\right]\right)^3+x \text{Log}\left[d \left(e+f \sqrt{x}\right)\right] \left(a+b \text{Log}\left[c x^n\right]\right)^3-\frac{e^2 \text{Log}\left[1+\frac{f \sqrt{x}}{e}\right] \left(a+b \text{Log}\left[c x^n\right]\right)^3}{f^2}+$$
$$\frac{12 b^3 e^2 n^3 \text{PolyLog}\left[2,1+\frac{f \sqrt{x}}{e}\right]}{f^2}+\frac{12 b^2 e^2 n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[2,-\frac{f \sqrt{x}}{e}\right]}{f^2}-\frac{6 b e^2 n \left(a+b \text{Log}\left[c x^n\right]\right)^2 \text{PolyLog}\left[2,-\frac{f \sqrt{x}}{e}\right]}{f^2}-$$
$$\frac{24 b^3 e^2 n^3 \text{PolyLog}\left[3,-\frac{f \sqrt{x}}{e}\right]}{f^2}+\frac{24 b^2 e^2 n^2 \left(a+b \text{Log}\left[c x^n\right]\right) \text{PolyLog}\left[3,-\frac{f \sqrt{x}}{e}\right]}{f^2}-\frac{48 b^3 e^2 n^3 \text{PolyLog}\left[4,-\frac{f \sqrt{x}}{e}\right]}{f^2}$$

Result (type 4, 1513 leaves):

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

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

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

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

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

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

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

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

$$\left.\frac{6\,e\,\text{Log}[x]\left(-8\,e\,f\sqrt{x}+f^2\,x-8\,e^2\,\text{PolyLog}\left[3,-\frac{f\sqrt{x}}{e}\right]\right)}{f^3\,x^{3/2}}-\frac{6\,e\left(-16\,e\,f\sqrt{x}+f^2\,x-16\,e^2\,\text{PolyLog}\left[4,-\frac{f\sqrt{x}}{e}\right]\right)}{f^3\,x^{3/2}}\right)$$

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

$$\int\frac{\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\left(a+b\,\text{Log}[c\,x^n]\right)^3}{x}\,dx$$

Optimal (type 4, 178 leaves, 6 steps) :

$$\frac{\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^4}{4\,b\,n}-\frac{\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^4}{4\,b\,n}-2\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\text{PolyLog}\left[2,-\frac{f\sqrt{x}}{e}\right]+$$
$$12\,b\,n\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\text{PolyLog}\left[3,-\frac{f\sqrt{x}}{e}\right]-48\,b^2\,n^2\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\text{PolyLog}\left[4,-\frac{f\sqrt{x}}{e}\right]+96\,b^3\,n^3\,\text{PolyLog}\left[5,-\frac{f\sqrt{x}}{e}\right]$$

Result (type 4, 662 leaves):

$$\frac{1}{4}\left(4\,a^3\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]-4\,a^3\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]-6\,a^2\,b\,n\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]^2+6\,a^2\,b\,n\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]^2+\right.$$
$$4\,a\,b^2\,n^2\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]^3-4\,a\,b^2\,n^2\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]^3-b^3\,n^3\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]^4+$$
$$b^3\,n^3\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]^4+12\,a^2\,b\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]\,\text{Log}\left[c\,x^n\right]-12\,a^2\,b\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]\,\text{Log}\left[c\,x^n\right]-$$
$$12\,a\,b^2\,n\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]^2\,\text{Log}\left[c\,x^n\right]+12\,a\,b^2\,n\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]^2\,\text{Log}\left[c\,x^n\right]+4\,b^3\,n^2\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]^3\,\text{Log}\left[c\,x^n\right]-$$
$$4\,b^3\,n^2\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]^3\,\text{Log}\left[c\,x^n\right]+12\,a\,b^2\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]\,\text{Log}\left[c\,x^n\right]^2-12\,a\,b^2\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]\,\text{Log}\left[c\,x^n\right]^2-$$
$$6\,b^3\,n\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]^2\,\text{Log}\left[c\,x^n\right]^2+6\,b^3\,n\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]^2\,\text{Log}\left[c\,x^n\right]^2+4\,b^3\,\text{Log}\left[d\left(e+f\sqrt{x}\right)\right]\text{Log}[x]\,\text{Log}\left[c\,x^n\right]^3-$$
$$4\,b^3\,\text{Log}\left[1+\frac{f\sqrt{x}}{e}\right]\text{Log}[x]\,\text{Log}\left[c\,x^n\right]^3-8\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\text{PolyLog}\left[2,-\frac{f\sqrt{x}}{e}\right]+48\,b\,n\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\text{PolyLog}\left[3,-\frac{f\sqrt{x}}{e}\right]-$$
$$\left.192\,a\,b^2\,n^2\,\text{PolyLog}\left[4,-\frac{f\sqrt{x}}{e}\right]-192\,b^3\,n^2\,\text{Log}\left[c\,x^n\right]\text{PolyLog}\left[4,-\frac{f\sqrt{x}}{e}\right]+384\,b^3\,n^3\,\text{PolyLog}\left[5,-\frac{f\sqrt{x}}{e}\right]\right)$$

Problem 139: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\text{Log}\left[d\left(e+f\,x^m\right)^r\right]}{x}\,dx$$

Optimal (type 4, 185 leaves, 6 steps):

$$\frac{\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^4\text{Log}\left[d\left(e+f\,x^m\right)^r\right]}{4\,b\,n}-\frac{r\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^4\text{Log}\left[1+\frac{f\,x^m}{e}\right]}{4\,b\,n}-\frac{r\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^3\text{PolyLog}\left[2,-\frac{f\,x^m}{e}\right]}{m}+$$
$$\frac{3\,b\,n\,r\left(a+b\,\text{Log}\left[c\,x^n\right]\right)^2\text{PolyLog}\left[3,-\frac{f\,x^m}{e}\right]}{m^2}-\frac{6\,b^2\,n^2\,r\left(a+b\,\text{Log}\left[c\,x^n\right]\right)\text{PolyLog}\left[4,-\frac{f\,x^m}{e}\right]}{m^3}+\frac{6\,b^3\,n^3\,r\,\text{PolyLog}\left[5,-\frac{f\,x^m}{e}\right]}{m^4}$$

Result (type 4, 1395 leaves):

$$-\frac{1}{2} a^2 b m n r \text{Log}[x]^3+\frac{3}{4} a b^2 m n^2 r \text{Log}[x]^4-\frac{3}{10} b^3 m n^3 r \text{Log}[x]^5-a b^2 m n r \text{Log}[x]^3 \text{Log}\left[c x^n\right]+\frac{3}{4} b^3 m n^2 r \text{Log}[x]^4 \text{Log}\left[c x^n\right]-$$

$$\frac{1}{2} b^3 m n r \text{Log}[x]^3 \text{Log}\left[c x^n\right]^2-\frac{3}{2} a^2 b n r \text{Log}[x]^2 \text{Log}\left[1+\frac{e x^{-m}}{f}\right]+2 a b^2 n^2 r \text{Log}[x]^3 \text{Log}\left[1+\frac{e x^{-m}}{f}\right]-\frac{3}{4} b^3 n^3 r \text{Log}[x]^4 \text{Log}\left[1+\frac{e x^{-m}}{f}\right]-$$

$$3 a b^2 n r \text{Log}[x]^2 \text{Log}\left[c x^n\right] \text{Log}\left[1+\frac{e x^{-m}}{f}\right]+2 b^3 n^2 r \text{Log}[x]^3 \text{Log}\left[c x^n\right] \text{Log}\left[1+\frac{e x^{-m}}{f}\right]-\frac{3}{2} b^3 n r \text{Log}[x]^2 \text{Log}\left[c x^n\right]^2 \text{Log}\left[1+\frac{e x^{-m}}{f}\right]-$$

$$a^3 r \text{Log}[x] \text{Log}\left[e+f x^m\right]+3 a^2 b n r \text{Log}[x]^2 \text{Log}\left[e+f x^m\right]-3 a b^2 n^2 r \text{Log}[x]^3 \text{Log}\left[e+f x^m\right]+b^3 n^3 r \text{Log}[x]^4 \text{Log}\left[e+f x^m\right]+$$

$$\frac{a^3 r \text{Log}\left[-\frac{f x^m}{e}\right] \text{Log}\left[e+f x^m\right]}{m}-\frac{3 a^2 b n r \text{Log}[x] \text{Log}\left[-\frac{f x^m}{e}\right] \text{Log}\left[e+f x^m\right]}{m}+\frac{3 a b^2 n^2 r \text{Log}[x]^2 \text{Log}\left[-\frac{f x^m}{e}\right] \text{Log}\left[e+f x^m\right]}{m}-$$

$$\frac{b^3 n^3 r \text{Log}[x]^3 \text{Log}\left[-\frac{f x^m}{e}\right] \text{Log}\left[e+f x^m\right]}{m}-3 a^2 b r \text{Log}[x] \text{Log}\left[c x^n\right] \text{Log}\left[e+f x^m\right]+6 a b^2 n r \text{Log}[x]^2 \text{Log}\left[c x^n\right] \text{Log}\left[e+f x^m\right]-$$

$$3 b^3 n^2 r \text{Log}[x]^3 \text{Log}\left[c x^n\right] \text{Log}\left[e+f x^m\right]+\frac{3 a^2 b r \text{Log}\left[-\frac{f x^m}{e}\right] \text{Log}\left[c x^n\right] \text{Log}\left[e+f x^m\right]}{m}-\frac{6 a b^2 n r \text{Log}[x] \text{Log}\left[-\frac{f x^m}{e}\right] \text{Log}\left[c x^n\right] \text{Log}\left[e+f x^m\right]}{m}+$$

$$\frac{3 b^3 n^2 r \text{Log}[x]^2 \text{Log}\left[-\frac{f x^m}{e}\right] \text{Log}\left[c x^n\right] \text{Log}\left[e+f x^m\right]}{m}-3 a b^2 r \text{Log}[x] \text{Log}\left[c x^n\right]^2 \text{Log}\left[e+f x^m\right]+3 b^3 n r \text{Log}[x]^2 \text{Log}\left[c x^n\right]^2 \text{Log}\left[e+f x^m\right]+$$

$$\frac{3 a b^2 r \text{Log}\left[-\frac{f x^m}{e}\right] \text{Log}\left[c x^n\right]^2 \text{Log}\left[e+f x^m\right]}{m}-\frac{3 b^3 n r \text{Log}[x] \text{Log}\left[-\frac{f x^m}{e}\right] \text{Log}\left[c x^n\right]^2 \text{Log}\left[e+f x^m\right]}{m}-b^3 r \text{Log}[x] \text{Log}\left[c x^n\right]^3 \text{Log}\left[e+f x^m\right]+$$

$$\frac{b^3 r \text{Log}\left[-\frac{f x^m}{e}\right] \text{Log}\left[c x^n\right]^3 \text{Log}\left[e+f x^m\right]}{m}+a^3 \text{Log}[x] \text{Log}\left[d \left(e+f x^m\right)^r\right]-\frac{3}{2} a^2 b n \text{Log}[x]^2 \text{Log}\left[d \left(e+f x^m\right)^r\right]+a b^2 n^2 \text{Log}[x]^3 \text{Log}\left[d \left(e+f x^m\right)^r\right]-$$

$$\frac{1}{4} b^3 n^3 \text{Log}[x]^4 \text{Log}\left[d \left(e+f x^m\right)^r\right]+3 a^2 b \text{Log}[x] \text{Log}\left[c x^n\right] \text{Log}\left[d \left(e+f x^m\right)^r\right]-3 a b^2 n \text{Log}[x]^2 \text{Log}\left[c x^n\right] \text{Log}\left[d \left(e+f x^m\right)^r\right]+$$

$$b^3 n^2 \text{Log}[x]^3 \text{Log}\left[c x^n\right] \text{Log}\left[d \left(e+f x^m\right)^r\right]+3 a b^2 \text{Log}[x] \text{Log}\left[c x^n\right]^2 \text{Log}\left[d \left(e+f x^m\right)^r\right]-\frac{3}{2} b^3 n \text{Log}[x]^2 \text{Log}\left[c x^n\right]^2 \text{Log}\left[d \left(e+f x^m\right)^r\right]+$$

$$b^3 \text{Log}[x] \text{Log}\left[c x^n\right]^3 \text{Log}\left[d \left(e+f x^m\right)^r\right]+\frac{b n r \text{Log}[x] \left(b^2 n^2 \text{Log}[x]^2-3 b n \text{Log}[x] \left(a+b \text{Log}\left[c x^n\right]\right)+3 \left(a+b \text{Log}\left[c x^n\right]\right)^2\right) \text{PolyLog}\left[2,-\frac{e x^{-m}}{f}\right]}{m}+$$

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

$$\frac{3 b^3 n r \text{Log}\left[c x^n\right]^2 \text{PolyLog}\left[3,-\frac{e x^{-m}}{f}\right]}{m^2}+\frac{6 a b^2 n^2 r \text{PolyLog}\left[4,-\frac{e x^{-m}}{f}\right]}{m^3}+\frac{6 b^3 n^2 r \text{Log}\left[c x^n\right] \text{PolyLog}\left[4,-\frac{e x^{-m}}{f}\right]}{m^3}+\frac{6 b^3 n^3 r \text{PolyLog}\left[5,-\frac{e x^{-m}}{f}\right]}{m^4}$$

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

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

Optimal (type 4, 150 leaves, 5 steps):

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

Result (type 4, 741 leaves):

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

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

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

Optimal (type 4, 114 leaves, 4 steps):

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

Result (type 4, 304 leaves):

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

Problem 147: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 114 leaves, 4 steps):

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

Result (type 4, 304 leaves):

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

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

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

Optimal (type 3, 57 leaves, 4 steps):

$$-\frac{e r \left(a+b \text{Log}\left[c x^n\right]\right)^4}{12 b^2 n^2}+\frac{\left(a+b \text{Log}\left[c x^n\right]\right)^3 \left(d+e \text{Log}\left[f x^r\right]\right)}{3 b n}$$

Result (type 3, 129 leaves):

$$\frac{1}{12} \text{Log}[x] \left(-3 b^2 e n^2 r \text{Log}[x]^3 + 12 \left(a + b \text{Log}\left[c x^n\right]\right)^2 \left(d + e \text{Log}\left[f x^r\right]\right) + 4 b n \text{Log}[x]^2 \left(b d n + 2 a e r + 2 b e r \text{Log}\left[c x^n\right] + b e n \text{Log}\left[f x^r\right]\right) - 6 \text{Log}[x] \left(a + b \text{Log}\left[c x^n\right]\right) \left(2 b d n + a e r + b e r \text{Log}\left[c x^n\right] + 2 b e n \text{Log}\left[f x^r\right]\right)\right)$$

Problem 199: Unable to integrate problem.

$$\int \frac{\left(a + b \text{Log}[c x^n]\right)^3 \text{PolyLog}[k, e x^q]}{x} \, dx$$

Optimal (type 4, 104 leaves, 4 steps):

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

Result (type 8, 25 leaves):

$$\int \frac{\left(a + b \text{Log}[c x^n]\right)^3 \text{PolyLog}[k, e x^q]}{x} \, dx$$

Problem 200: Unable to integrate problem.

$$\int \frac{\left(a + b \text{Log}[c x^n]\right)^2 \text{PolyLog}[k, e x^q]}{x} \, dx$$

Optimal (type 4, 72 leaves, 3 steps):

$$\frac{\left(a + b \text{Log}[c x^n]\right)^2 \text{PolyLog}[1 + k, e x^q]}{q} - \frac{2 b n \left(a + b \text{Log}[c x^n]\right) \text{PolyLog}[2 + k, e x^q]}{q^2} + \frac{2 b^2 n^2 \text{PolyLog}[3 + k, e x^q]}{q^3}$$

Result (type 8, 25 leaves):

$$\int \frac{\left(a + b \text{Log}[c x^n]\right)^2 \text{PolyLog}[k, e x^q]}{x} \, dx$$

Problem 201: Unable to integrate problem.

$$\int \frac{\left(a + b \text{Log}[c x^n]\right) \text{PolyLog}[k, e x^q]}{x} \, dx$$

Optimal (type 4, 40 leaves, 2 steps):

$$\frac{(a + b \, Log[c \, x^n]) \, PolyLog[1 + k, e \, x^q]}{q} - \frac{b \, n \, PolyLog[2 + k, e \, x^q]}{q^2}$$

Result (type 8, 23 leaves):

$$\int \frac{(a + b \, Log[c \, x^n]) \, PolyLog[k, e \, x^q]}{x} \, dx$$

Problem 205: Unable to integrate problem.

$$\int \frac{Log[x] \, PolyLog[n, a \, x]}{x} \, dx$$

Optimal (type 4, 20 leaves, 2 steps):

$$Log[x] \, PolyLog[1 + n, a \, x] - PolyLog[2 + n, a \, x]$$

Result (type 8, 13 leaves):

$$\int \frac{Log[x] \, PolyLog[n, a \, x]}{x} \, dx$$

Problem 206: Unable to integrate problem.

$$\int \frac{Log[x]^2 \, PolyLog[n, a \, x]}{x} \, dx$$

Optimal (type 4, 33 leaves, 3 steps):

$$Log[x]^2 \, PolyLog[1 + n, a \, x] - 2 \, Log[x] \, PolyLog[2 + n, a \, x] + 2 \, PolyLog[3 + n, a \, x]$$

Result (type 8, 15 leaves):

$$\int \frac{Log[x]^2 \, PolyLog[n, a \, x]}{x} \, dx$$

Problem 207: Unable to integrate problem.

$$\int \left(\frac{q \, PolyLog[-1 + k, e \, x^q]}{b \, n \, x \, (a + b \, Log[c \, x^n])} - \frac{PolyLog[k, e \, x^q]}{x \, (a + b \, Log[c \, x^n])^2} \right) dx$$

Optimal (type 4, 26 leaves, 2 steps):

$$\frac{\text{PolyLog}[k, e\,x^q]}{b\,n\,(a + b\,\text{Log}[c\,x^n])}$$

Result (type 8, 59 leaves):

$$\int \left(\frac{q\,\text{PolyLog}[-1 + k, e\,x^q]}{b\,n\,x\,(a + b\,\text{Log}[c\,x^n])} - \frac{\text{PolyLog}[k, e\,x^q]}{x\,(a + b\,\text{Log}[c\,x^n])^2} \right) dx$$

Problem 214: Unable to integrate problem.

$$\int x^2\,(a + b\,\text{Log}[c\,x^n])\,\text{PolyLog}[3, e\,x]\,dx$$

Optimal (type 4, 253 leaves, 15 steps):

$$-\frac{2\,b\,n\,x}{27\,e^2} - \frac{b\,n\,x^2}{36\,e} - \frac{4}{243}\,b\,n\,x^3 + \frac{x\,(a + b\,\text{Log}[c\,x^n])}{27\,e^2} + \frac{x^2\,(a + b\,\text{Log}[c\,x^n])}{54\,e} + \frac{1}{81}\,x^3\,(a + b\,\text{Log}[c\,x^n]) - \frac{b\,n\,\text{Log}[1 - e\,x]}{27\,e^3} +$$
$$\frac{1}{27}\,b\,n\,x^3\,\text{Log}[1 - e\,x] + \frac{(a + b\,\text{Log}[c\,x^n])\,\text{Log}[1 - e\,x]}{27\,e^3} - \frac{1}{27}\,x^3\,(a + b\,\text{Log}[c\,x^n])\,\text{Log}[1 - e\,x] + \frac{b\,n\,\text{PolyLog}[2, e\,x]}{27\,e^3} +$$
$$\frac{2}{27}\,b\,n\,x^3\,\text{PolyLog}[2, e\,x] - \frac{1}{9}\,x^3\,(a + b\,\text{Log}[c\,x^n])\,\text{PolyLog}[2, e\,x] - \frac{1}{9}\,b\,n\,x^3\,\text{PolyLog}[3, e\,x] + \frac{1}{3}\,x^3\,(a + b\,\text{Log}[c\,x^n])\,\text{PolyLog}[3, e\,x]$$

Result (type 8, 21 leaves):

$$\int x^2\,(a + b\,\text{Log}[c\,x^n])\,\text{PolyLog}[3, e\,x]\,dx$$

Problem 215: Unable to integrate problem.

$$\int x\,(a + b\,\text{Log}[c\,x^n])\,\text{PolyLog}[3, e\,x]\,dx$$

Optimal (type 4, 221 leaves, 15 steps):

$$-\frac{5\,b\,n\,x}{16\,e} - \frac{1}{8}\,b\,n\,x^2 + \frac{x\,(a + b\,\text{Log}[c\,x^n])}{8\,e} + \frac{1}{16}\,x^2\,(a + b\,\text{Log}[c\,x^n]) - \frac{3\,b\,n\,\text{Log}[1 - e\,x]}{16\,e^2} + \frac{3}{16}\,b\,n\,x^2\,\text{Log}[1 - e\,x] +$$
$$\frac{(a + b\,\text{Log}[c\,x^n])\,\text{Log}[1 - e\,x]}{8\,e^2} - \frac{1}{8}\,x^2\,(a + b\,\text{Log}[c\,x^n])\,\text{Log}[1 - e\,x] + \frac{b\,n\,\text{PolyLog}[2, e\,x]}{8\,e^2} + \frac{1}{4}\,b\,n\,x^2\,\text{PolyLog}[2, e\,x] -$$
$$\frac{1}{4}\,x^2\,(a + b\,\text{Log}[c\,x^n])\,\text{PolyLog}[2, e\,x] - \frac{1}{4}\,b\,n\,x^2\,\text{PolyLog}[3, e\,x] + \frac{1}{2}\,x^2\,(a + b\,\text{Log}[c\,x^n])\,\text{PolyLog}[3, e\,x]$$

Result (type 8, 19 leaves):

$$\int x\,(a + b\,\text{Log}[c\,x^n])\,\text{PolyLog}[3, e\,x]\,dx$$

Problem 216: Unable to integrate problem.

$$\int (a + b \, \text{Log}[c\, x^n]) \, \text{PolyLog}[3, e\, x] \, dx$$

Optimal (type 4, 131 leaves, 14 steps):

$$-4\, b\, n\, x + x\, (a + b\, \text{Log}[c\, x^n]) - \frac{3\, b\, n\, (1 - e\, x)\, \text{Log}[1 - e\, x]}{e} + \frac{(1 - e\, x)\, (a + b\, \text{Log}[c\, x^n])\, \text{Log}[1 - e\, x]}{e} + \frac{b\, n\, \text{PolyLog}[2, e\, x]}{e} + 2\, b\, n\, x\, \text{PolyLog}[2, e\, x] - x\, (a + b\, \text{Log}[c\, x^n])\, \text{PolyLog}[2, e\, x] - b\, n\, x\, \text{PolyLog}[3, e\, x] + x\, (a + b\, \text{Log}[c\, x^n])\, \text{PolyLog}[3, e\, x]$$

Result (type 8, 18 leaves):

$$\int (a + b \, \text{Log}[c\, x^n]) \, \text{PolyLog}[3, e\, x] \, dx$$

Problem 217: Unable to integrate problem.

$$\int \frac{(a + b\, \text{Log}[c\, x^n])\, \text{PolyLog}[3, e\, x]}{x} \, dx$$

Optimal (type 4, 26 leaves, 2 steps):

$$(a + b\, \text{Log}[c\, x^n])\, \text{PolyLog}[4, e\, x] - b\, n\, \text{PolyLog}[5, e\, x]$$

Result (type 8, 21 leaves):

$$\int \frac{(a + b\, \text{Log}[c\, x^n])\, \text{PolyLog}[3, e\, x]}{x} \, dx$$

Problem 218: Unable to integrate problem.

$$\int \frac{(a + b\, \text{Log}[c\, x^n])\, \text{PolyLog}[3, e\, x]}{x^2} \, dx$$

Optimal (type 4, 174 leaves, 19 steps):

$$3\, b\, e\, n\, \text{Log}[x] - \frac{1}{2}\, b\, e\, n\, \text{Log}[x]^2 + e\, \text{Log}[x]\, (a + b\, \text{Log}[c\, x^n]) - 3\, b\, e\, n\, \text{Log}[1 - e\, x] + \frac{3\, b\, n\, \text{Log}[1 - e\, x]}{x} - e\, (a + b\, \text{Log}[c\, x^n])\, \text{Log}[1 - e\, x] + \frac{(a + b\, \text{Log}[c\, x^n])\, \text{Log}[1 - e\, x]}{x} - b\, e\, n\, \text{PolyLog}[2, e\, x] - \frac{2\, b\, n\, \text{PolyLog}[2, e\, x]}{x} - \frac{(a + b\, \text{Log}[c\, x^n])\, \text{PolyLog}[2, e\, x]}{x} - \frac{b\, n\, \text{PolyLog}[3, e\, x]}{x} - \frac{(a + b\, \text{Log}[c\, x^n])\, \text{PolyLog}[3, e\, x]}{x}$$

Result (type 8, 21 leaves):

$$\int \frac{(a + b \, \text{Log}[c \, x^n]) \, \text{PolyLog}[3, e \, x]}{x^2} \, dx$$

Problem 219: Unable to integrate problem.

$$\int \frac{(a + b \, \text{Log}[c \, x^n]) \, \text{PolyLog}[3, e \, x]}{x^3} \, dx$$

Optimal (type 4, 238 leaves, 16 steps):

$$-\frac{5 \, b \, e \, n}{16 \, x} + \frac{3}{16} \, b \, e^2 \, n \, \text{Log}[x] - \frac{1}{16} \, b \, e^2 \, n \, \text{Log}[x]^2 - \frac{e \, (a + b \, \text{Log}[c \, x^n])}{8 \, x} + \frac{1}{8} \, e^2 \, \text{Log}[x] \, (a + b \, \text{Log}[c \, x^n]) - \frac{3}{16} \, b \, e^2 \, n \, \text{Log}[1 - e \, x] + \frac{3 \, b \, n \, \text{Log}[1 - e \, x]}{16 \, x^2} - \frac{1}{8} \, e^2 \, (a + b \, \text{Log}[c \, x^n]) \, \text{Log}[1 - e \, x] + \frac{(a + b \, \text{Log}[c \, x^n]) \, \text{Log}[1 - e \, x]}{8 \, x^2} - \frac{1}{8} \, b \, e^2 \, n \, \text{PolyLog}[2, e \, x] - \frac{b \, n \, \text{PolyLog}[2, e \, x]}{4 \, x^2} - \frac{(a + b \, \text{Log}[c \, x^n]) \, \text{PolyLog}[2, e \, x]}{4 \, x^2} - \frac{b \, n \, \text{PolyLog}[3, e \, x]}{4 \, x^2} - \frac{(a + b \, \text{Log}[c \, x^n]) \, \text{PolyLog}[3, e \, x]}{2 \, x^2}$$

Result (type 8, 21 leaves):

$$\int \frac{(a + b \, \text{Log}[c \, x^n]) \, \text{PolyLog}[3, e \, x]}{x^3} \, dx$$

Test results for the 314 problems in "3.2.1 (f+g x)^m (A+B log(e ((a+b x) over (c+d x))^n))^p.m"

Problem 10: Result more than twice size of optimal antiderivative.

$$\int (a \, g + b \, g \, x)^4 \left(A + B \, \text{Log}\left[e \left(\frac{a + b \, x}{c + d \, x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 396 leaves, 8 steps):

$$-\frac{B\,(b\,c-a\,d)\,g^4\,n\,(a+b\,x)^4\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{10\,b\,d}+$$

$$\frac{g^4\,(a+b\,x)^5\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{5\,b}+\frac{B\,(b\,c-a\,d)^2\,g^4\,n\,(a+b\,x)^3\left(4\,A+B\,n+4\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{30\,b\,d^2}-$$

$$\frac{B\,(b\,c-a\,d)^3\,g^4\,n\,(a+b\,x)^2\left(12\,A+7\,B\,n+12\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{60\,b\,d^3}+\frac{B\,(b\,c-a\,d)^4\,g^4\,n\,(a+b\,x)\left(12\,A+13\,B\,n+12\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{30\,b\,d^4}+$$

$$\frac{B\,(b\,c-a\,d)^5\,g^4\,n\left(12\,A+25\,B\,n+12\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{30\,b\,d^5}+\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,n^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{5\,b\,d^5}$$

Result (type 4, 3194 leaves):

$$g^4\left(-\frac{8\,a^5\,B^2\,n^2}{5\,b}+\frac{2\,b^4\,B^2\,c^5\,n^2}{5\,d^5}-\frac{12\,a\,b^3\,B^2\,c^4\,n^2}{5\,d^4}+\frac{6\,a^2\,b^2\,B^2\,c^3\,n^2}{d^3}-\frac{8\,a^3\,b\,B^2\,c^2\,n^2}{d^2}+\frac{28\,a^4\,B^2\,c\,n^2}{5\,d}+a^4\,A^2\,x+\frac{8}{5}\,a^4\,A\,B\,n\,x+\frac{2\,A\,b^4\,B\,c^4\,n\,x}{5\,d^4}-\frac{2\,a\,A\,b^3\,B\,c^3\,n\,x}{d^3}+\right.$$

$$\frac{4\,a^2\,A\,b^2\,B\,c^2\,n\,x}{d^2}-\frac{4\,a^3\,A\,b\,B\,c\,n\,x}{d}+\frac{23}{30}\,a^4\,B^2\,n^2\,x+\frac{13\,b^4\,B^2\,c^4\,n^2\,x}{30\,d^4}-\frac{59\,a\,b^3\,B^2\,c^3\,n^2\,x}{30\,d^3}+\frac{17\,a^2\,b^2\,B^2\,c^2\,n^2\,x}{5\,d^2}-\frac{79\,a^3\,b\,B^2\,c\,n^2\,x}{30\,d}+2\,a^3\,A^2\,b\,x^2+$$

$$\frac{6}{5}\,a^3\,A\,b\,B\,n\,x^2-\frac{A\,b^4\,B\,c^3\,n\,x^2}{5\,d^3}+\frac{a\,A\,b^3\,B\,c^2\,n\,x^2}{d^2}-\frac{2\,a^2\,A\,b^2\,B\,c\,n\,x^2}{d}+\frac{13}{60}\,a^3\,b\,B^2\,n^2\,x^2-\frac{7\,b^4\,B^2\,c^3\,n^2\,x^2}{60\,d^3}+\frac{9\,a\,b^3\,B^2\,c^2\,n^2\,x^2}{20\,d^2}-\frac{11\,a^2\,b^2\,B^2\,c\,n^2\,x^2}{20\,d}+$$

$$2\,a^2\,A^2\,b^2\,x^3+\frac{8}{15}\,a^2\,A\,b^2\,B\,n\,x^3+\frac{2\,A\,b^4\,B\,c^2\,n\,x^3}{15\,d^2}-\frac{2\,a\,A\,b^3\,B\,c\,n\,x^3}{3\,d}+\frac{1}{30}\,a^2\,b^2\,B^2\,n^2\,x^3+\frac{b^4\,B^2\,c^2\,n^2\,x^3}{30\,d^2}-\frac{a\,b^3\,B^2\,c\,n^2\,x^3}{15\,d}+a\,A^2\,b^3\,x^4+\frac{1}{10}\,a\,A\,b^3\,B\,n\,x^4-$$

$$\frac{A\,b^4\,B\,c\,n\,x^4}{10\,d}+\frac{1}{5}\,A^2\,b^4\,x^5+\frac{8\,a^5\,B^2\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]}{5\,b}+\frac{2\,a\,b^3\,B^2\,c^4\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]}{5\,d^4}-\frac{2\,a^2\,b^2\,B^2\,c^3\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]}{d^3}+\frac{4\,a^3\,b\,B^2\,c^2\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]}{d^2}-$$

$$\frac{4\,a^4\,B^2\,c\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]}{d}+\frac{a^5\,B^2\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]^2}{5\,b}-\frac{2\,b^4\,B^2\,c^5\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]}{5\,d^5}+\frac{2\,a\,b^3\,B^2\,c^4\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]}{d^4}-\frac{4\,a^2\,b^2\,B^2\,c^3\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]}{d^3}+$$

$$\frac{4\,a^3\,b\,B^2\,c^2\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]}{d^2}-\frac{8\,a^4\,B^2\,c\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]}{5\,d}+\frac{b^4\,B^2\,c^5\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]^2}{5\,d^5}-\frac{a\,b^3\,B^2\,c^4\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]^2}{d^4}+\frac{2\,a^2\,b^2\,B^2\,c^3\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]^2}{d^3}-$$

$$\frac{2\,a^3\,b\,B^2\,c^2\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]^2}{d^2}+\frac{a^4\,B^2\,c\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]^2}{d}+\frac{2\,a^5\,A\,B\,n\,\text{Log}[a+b\,x]}{5\,b}-\frac{23\,a^5\,B^2\,n^2\,\text{Log}[a+b\,x]}{30\,b}+\frac{a^2\,b^2\,B^2\,c^3\,n^2\,\text{Log}[a+b\,x]}{5\,d^3}-$$

$$\frac{13\,a^3\,b\,B^2\,c^2\,n^2\,\text{Log}[a+b\,x]}{15\,d^2}+\frac{43\,a^4\,B^2\,c\,n^2\,\text{Log}[a+b\,x]}{30\,d}-\frac{2\,a^5\,B^2\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b\,x]}{5\,b}+\frac{2\,a^5\,B^2\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]}{5\,b}-$$

$$\frac{2\,a^5\,B^2\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]}{5\,b}+2\,a^4\,A\,B\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\frac{8}{5}\,a^4\,B^2\,n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+\frac{2\,b^4\,B^2\,c^4\,n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{5\,d^4}-$$

$$\frac{2\,a\,b^3\,B^2\,c^3\,n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d^3}+\frac{4\,a^2\,b^2\,B^2\,c^2\,n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d^2}-\frac{4\,a^3\,b\,B^2\,c\,n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d}+4\,a^3\,A\,b\,B\,x^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+$$

$$\frac{6}{5} a^3 b B^2 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - \frac{b^4 B^2 c^3 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{5 d^3} + \frac{a b^3 B^2 c^2 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^2} - \frac{2 a^2 b^2 B^2 c n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d} +$$

$$4 a^2 A b^2 B x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + \frac{8}{15} a^2 b^2 B^2 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + \frac{2 b^4 B^2 c^2 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{15 d^2} - \frac{2 a b^3 B^2 c n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{3 d} +$$

$$2 a A b^3 B x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + \frac{1}{10} a b^3 B^2 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - \frac{b^4 B^2 c n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{10 d} + \frac{2}{5} A b^4 B x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$$

$$\frac{2 a^5 B^2 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{5 b} + a^4 B^2 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 2 a^3 b B^2 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 2 a^2 b^2 B^2 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 +$$

$$a b^3 B^2 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + \frac{1}{5} b^4 B^2 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 - \frac{2 A b^4 B c^5 n \text{Log}[c+d x]}{5 d^5} + \frac{2 a A b^3 B c^4 n \text{Log}[c+d x]}{d^4} -$$

$$\frac{4 a^2 A b^2 B c^3 n \text{Log}[c+d x]}{d^3} + \frac{4 a^3 A b B c^2 n \text{Log}[c+d x]}{d^2} - \frac{2 a^4 A B c n \text{Log}[c+d x]}{d} - \frac{13 b^4 B^2 c^5 n^2 \text{Log}[c+d x]}{30 d^5} + \frac{53 a b^3 B^2 c^4 n^2 \text{Log}[c+d x]}{30 d^4} -$$

$$\frac{38 a^2 b^2 B^2 c^3 n^2 \text{Log}[c+d x]}{15 d^3} + \frac{6 a^3 b B^2 c^2 n^2 \text{Log}[c+d x]}{5 d^2} + \frac{2 b^4 B^2 c^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]}{5 d^5} - \frac{2 a b^3 B^2 c^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]}{d^4} +$$

$$\frac{4 a^2 b^2 B^2 c^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]}{d^3} - \frac{4 a^3 b B^2 c^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]}{d^2} + \frac{2 a^4 B^2 c n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]}{d} -$$

$$\frac{2 b^4 B^2 c^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]}{5 d^5} + \frac{2 a b^3 B^2 c^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]}{d^4} - \frac{4 a^2 b^2 B^2 c^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]}{d^3} +$$

$$\frac{4 a^3 b B^2 c^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]}{d^2} - \frac{2 a^4 B^2 c n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]}{d} - \frac{2 b^4 B^2 c^5 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]}{5 d^5} +$$

$$\frac{2 a b^3 B^2 c^4 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]}{d^4} - \frac{4 a^2 b^2 B^2 c^3 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]}{d^3} + \frac{4 a^3 b B^2 c^2 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]}{d^2} -$$

$$\frac{2 a^4 B^2 c n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]}{d} - \frac{2 b^4 B^2 c^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{5 d^5} + \frac{2 a b^3 B^2 c^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^4} -$$

$$\frac{4 a^2 b^2 B^2 c^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^3} + \frac{4 a^3 b B^2 c^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2} - \frac{2 a^4 B^2 c n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d} -$$

$$\left.\frac{2 B^2 c \left(b^4 c^4 - 5 a b^3 c^3 d + 10 a^2 b^2 c^2 d^2 - 10 a^3 b c d^3 + 5 a^4 d^4\right) n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]}{5 d^5} - \frac{2 a^5 B^2 n^2 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{5 b}\right)$$

Problem 11: Result more than twice size of optimal antiderivative.

$$\int (a\,g+b\,g\,x)^3 \left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 335 leaves, 7 steps):

$$-\frac{B\,(b\,c-a\,d)\,g^3\,n\,(a+b\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,b\,d}+\frac{g^3\,(a+b\,x)^4\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{4\,b}+$$
$$\frac{B\,(b\,c-a\,d)^2\,g^3\,n\,(a+b\,x)^2\left(3\,A+B\,n+3\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{12\,b\,d^2}-\frac{B\,(b\,c-a\,d)^3\,g^3\,n\,(a+b\,x)\left(6\,A+5\,B\,n+6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{12\,b\,d^3}-$$
$$\frac{B\,(b\,c-a\,d)^4\,g^3\,n\left(6\,A+11\,B\,n+6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{12\,b\,d^4}-\frac{B^2\,(b\,c-a\,d)^4\,g^3\,n^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{2\,b\,d^4}$$

Result (type 4, 2348 leaves):

$$\frac{1}{12\,b\,d^4}\,g^3\Big(-6\,b^4\,B^2\,c^4\,n^2+30\,a\,b^3\,B^2\,c^3\,d\,n^2-60\,a^2\,b^2\,B^2\,c^2\,d^2\,n^2+54\,a^3\,b\,B^2\,c\,d^3\,n^2-18\,a^4\,B^2\,d^4\,n^2+12\,a^3\,A^2\,b\,d^4\,x-6\,A\,b^4\,B\,c^3\,d\,n\,x+24\,a\,A\,b^3\,B\,c^2\,d^2\,n\,x-$$

$$36\,a^2\,A\,b^2\,B\,c\,d^3\,n\,x+18\,a^3\,A\,b\,B\,d^4\,n\,x-5\,b^4\,B^2\,c^3\,d\,n^2\,x+17\,a\,b^3\,B^2\,c^2\,d^2\,n^2\,x-19\,a^2\,b^2\,B^2\,c\,d^3\,n^2\,x+7\,a^3\,b\,B^2\,d^4\,n^2\,x+18\,a^2\,A^2\,b^2\,d^4\,x^2+$$

$$3\,A\,b^4\,B\,c^2\,d^2\,n\,x^2-12\,a\,A\,b^3\,B\,c\,d^3\,n\,x^2+9\,a^2\,A\,b^2\,B\,d^4\,n\,x^2+b^4\,B^2\,c^2\,d^2\,n^2\,x^2-2\,a\,b^3\,B^2\,c\,d^3\,n^2\,x^2+a^2\,b^2\,B^2\,d^4\,n^2\,x^2+12\,a\,A^2\,b^3\,d^4\,x^3-$$

$$2\,A\,b^4\,B\,c\,d^3\,n\,x^3+2\,a\,A\,b^3\,B\,d^4\,n\,x^3+3\,A^2\,b^4\,d^4\,x^4-6\,a\,b^3\,B^2\,c^3\,d\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]+24\,a^2\,b^2\,B^2\,c^2\,d^2\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]-36\,a^3\,b\,B^2\,c\,d^3\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]+$$

$$18\,a^4\,B^2\,d^4\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]+3\,a^4\,B^2\,d^4\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]^2+6\,b^4\,B^2\,c^4\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]-24\,a\,b^3\,B^2\,c^3\,d\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]+36\,a^2\,b^2\,B^2\,c^2\,d^2\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]-$$

$$18\,a^3\,b\,B^2\,c\,d^3\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]-3\,b^4\,B^2\,c^4\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]^2+12\,a\,b^3\,B^2\,c^3\,d\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]^2-18\,a^2\,b^2\,B^2\,c^2\,d^2\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]^2+$$

$$12\,a^3\,b\,B^2\,c\,d^3\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]^2+6\,a^4\,A\,B\,d^4\,n\,\text{Log}[a+b\,x]-3\,a^2\,b^2\,B^2\,c^2\,d^2\,n^2\,\text{Log}[a+b\,x]+10\,a^3\,b\,B^2\,c\,d^3\,n^2\,\text{Log}[a+b\,x]-$$

$$7\,a^4\,B^2\,d^4\,n^2\,\text{Log}[a+b\,x]-6\,a^4\,B^2\,d^4\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}[a+b\,x]+6\,a^4\,B^2\,d^4\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}[a+b\,x]-6\,a^4\,B^2\,d^4\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+$$

$$24\,a^3\,A\,b\,B\,d^4\,x\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]-6\,b^4\,B^2\,c^3\,d\,n\,x\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]+24\,a\,b^3\,B^2\,c^2\,d^2\,n\,x\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]-36\,a^2\,b^2\,B^2\,c\,d^3\,n\,x\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]+$$

$$18\,a^3\,b\,B^2\,d^4\,n\,x\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]+36\,a^2\,A\,b^2\,B\,d^4\,x^2\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]+3\,b^4\,B^2\,c^2\,d^2\,n\,x^2\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]-$$

$$12\,a\,b^3\,B^2\,c\,d^3\,n\,x^2\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]+9\,a^2\,b^2\,B^2\,d^4\,n\,x^2\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]+24\,a\,A\,b^3\,B\,d^4\,x^3\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]-2\,b^4\,B^2\,c\,d^3\,n\,x^3\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]+$$

$$2\,a\,b^3\,B^2\,d^4\,n\,x^3\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]+6\,A\,b^4\,B\,d^4\,x^4\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]+6\,a^4\,B^2\,d^4\,n\,\text{Log}[a+b\,x]\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]+$$

$$12\,a^3\,b\,B^2\,d^4\,x\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]^2+18\,a^2\,b^2\,B^2\,d^4\,x^2\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]^2+12\,a\,b^3\,B^2\,d^4\,x^3\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]^2+3\,b^4\,B^2\,d^4\,x^4\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]^2+$$

$$6\,A\,b^4\,B\,c^4\,n\,\text{Log}[c+d\,x]-24\,a\,A\,b^3\,B\,c^3\,d\,n\,\text{Log}[c+d\,x]+36\,a^2\,A\,b^2\,B\,c^2\,d^2\,n\,\text{Log}[c+d\,x]-24\,a^3\,A\,b\,B\,c\,d^3\,n\,\text{Log}[c+d\,x]+$$

$$5\,b^4\,B^2\,c^4\,n^2\,\text{Log}[c+d\,x]-14\,a\,b^3\,B^2\,c^3\,d\,n^2\,\text{Log}[c+d\,x]+9\,a^2\,b^2\,B^2\,c^2\,d^2\,n^2\,\text{Log}[c+d\,x]-6\,b^4\,B^2\,c^4\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}[c+d\,x]+$$

$$24\,a\,b^3\,B^2\,c^3\,d\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}[c+d\,x]-36\,a^2\,b^2\,B^2\,c^2\,d^2\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}[c+d\,x]+24\,a^3\,b\,B^2\,c\,d^3\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}[c+d\,x]+$$

$$6\,b^4\,B^2\,c^4\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}[c+d\,x]-24\,a\,b^3\,B^2\,c^3\,d\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}[c+d\,x]+36\,a^2\,b^2\,B^2\,c^2\,d^2\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}[c+d\,x]-$$

$$24\,a^3\,b\,B^2\,c\,d^3\,n^2\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}[c+d\,x]+6\,b^4\,B^2\,c^4\,n\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]\,\text{Log}[c+d\,x]-24\,a\,b^3\,B^2\,c^3\,d\,n\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]\,\text{Log}[c+d\,x]+$$

$$36\,a^2\,b^2\,B^2\,c^2\,d^2\,n\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]\,\text{Log}[c+d\,x]-24\,a^3\,b\,B^2\,c\,d^3\,n\,\text{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]\,\text{Log}[c+d\,x]+6\,b^4\,B^2\,c^4\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]-$$

$$24\,a\,b^3\,B^2\,c^3\,d\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]+36\,a^2\,b^2\,B^2\,c^2\,d^2\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]-24\,a^3\,b\,B^2\,c\,d^3\,n^2\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]+$$

$$6\,b\,B^2\,c\,\big(b^3\,c^3-4\,a\,b^2\,c^2\,d+6\,a^2\,b\,c\,d^2-4\,a^3\,d^3\big)\,n^2\,\text{PolyLog}\Big[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]-6\,a^4\,B^2\,d^4\,n^2\,\text{PolyLog}\Big[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)$$

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

$$\int (a g + b g x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right)^2 \, dx$$

Optimal (type 4, 274 leaves, 6 steps):

$$-\frac{B (b c - a d) g^2 n (a + b x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b d} + \frac{g^2 (a + b x)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b} + \frac{B (b c - a d)^2 g^2 n (a + b x) \left(2 A + B n + 2 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b d^2} + \frac{B (b c - a d)^3 g^2 n \left(2 A + 3 B n + 2 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c - a d}{b (c+d x)}\right]}{3 b d^3} + \frac{2 B^2 (b c - a d)^3 g^2 n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3}$$

Result (type 4, 1589 leaves):

$$g^2 \Bigg(a^2 x \left(A + B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2 + a b x^2 \left(A + B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2 +$$

$$\frac{1}{3} b^2 x^3 \left(A + B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2 + 2 a^2 B n \left(A + B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$

$$\left(x \text{Log}\left[\frac{a+b x}{c+d x}\right] + \frac{(b c - a d) (a d \text{Log}[a+b x] - b c \text{Log}[c+d x])}{b^2 c d - a b d^2}\right) + 2 b^2 B n \left(A + B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$

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

$$4 a b B n \left(A + B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right) \left(\frac{1}{2} x^2 \text{Log}\left[\frac{a+b x}{c+d x}\right] - \frac{1}{2} (b c - a d) \left(\frac{x}{b d} + \frac{a^2 \text{Log}[a+b x]}{b^2 (b c - a d)} - \frac{c^2 \text{Log}[c+d x]}{d^2 (b c - a d)}\right)\right) +$$

$$a^2 B^2 n^2 \Bigg(x \text{Log}\left[\frac{a+b x}{c+d x}\right]^2 - \frac{1}{b d} \Bigg(-a d \text{Log}\left[\frac{a}{b} + x\right]^2 - b c \text{Log}\left[\frac{c}{d} + x\right]^2 + 2 a d \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[a+b x] - 2 a d \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a+b x] +$$

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

$$2 b c \text{Log}\left[\frac{a+b x}{c+d x}\right] \text{Log}[c+d x] + 2 b c \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c+d x)}{b c - a d}\right] + 2 b c \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c + a d}\right] + 2 a d \text{PolyLog}\left[2, \frac{b (c+d x)}{b c - a d}\right]\Bigg)\Bigg) + 2 a b$$

$$B^2 n^2 \Bigg(\frac{1}{2} x^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2 - \frac{1}{2 b^2 d^2} \Bigg(-2 d (-b c + a d) (a + b x) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) + a^2 d^2 \text{Log}\left[\frac{a}{b} + x\right]^2 - 2 b (b c - a d) (c + d x) \left(-1 + \text{Log}\left[\frac{c}{d} + x\right]\right) +$$

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

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

$$b^2 B^2 n^2 \Bigg(\frac{1}{3} x^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2 - \frac{1}{6 b^3 d^3} \Bigg(4 d (-b c + a d) (b c + a d) (a + b x) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) - 2 a^3 d^3 \text{Log}\left[\frac{a}{b} + x\right]^2 +$$

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

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

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

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

Problem 13: Result more than twice size of optimal antiderivative.

$$\int (a g+b g x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 196 leaves, 5 steps):

$$-\frac{B (b c-a d) g n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b d}+\frac{g (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b}-\frac{B (b c-a d)^2 g n \left(A+B n+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b d^2}-\frac{B^2 (b c-a d)^2 g n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}$$

Result (type 4, 911 leaves):

$$g \left(-\frac{a^2 B^2 n^2}{b}-\frac{b B^2 c^2 n^2}{d^2}+\frac{2 a B^2 c n^2}{d}+a A^2 x+a A B n x-\frac{A b B c n x}{d}+\frac{1}{2} A^2 b x^2+\frac{a^2 B^2 n^2 \text{Log}\left[\frac{a}{b}+x\right]}{b}-\frac{a B^2 c n^2 \text{Log}\left[\frac{a}{b}+x\right]}{d}+\frac{a^2 B^2 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2}{2 b}+\frac{b B^2 c^2 n^2 \text{Log}\left[\frac{c}{d}+x\right]}{d^2}-\frac{a B^2 c n^2 \text{Log}\left[\frac{c}{d}+x\right]}{d}-\frac{b B^2 c^2 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2}{2 d^2}+\frac{a B^2 c n^2 \text{Log}\left[\frac{c}{d}+x\right]^2}{d}+\frac{a^2 A B n \text{Log}[a+b x]}{b}-\frac{a^2 B^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]}{b}+\frac{a^2 B^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]}{b}-\frac{a^2 B^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]}{b}+2 a A B x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+a B^2 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-\frac{b B^2 c n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d}+A b B x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+\frac{a^2 B^2 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{b}+a B^2 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+\frac{1}{2} b B^2 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+\frac{A b B c^2 n \text{Log}[c+d x]}{d^2}-\frac{2 a A B c n \text{Log}[c+d x]}{d}-\frac{b B^2 c^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]}{d^2}+\frac{2 a B^2 c n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]}{d}+\frac{b B^2 c^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]}{d^2}-\frac{2 a B^2 c n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]}{d}+\frac{b B^2 c^2 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]}{d^2}-\frac{2 a B^2 c n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]}{d}+\frac{b B^2 c^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2}-\frac{2 a B^2 c n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d}+\frac{B^2 c (b c-2 a d) n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]}{d^2}-\frac{a^2 B^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b}\right)$$

Problem 14: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 138 leaves, 4 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}+\frac{2\,B\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}+\frac{2\,B^2\,n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}$$

Result (type 4, 537 leaves):

$$\frac{1}{3\,b\,g}\Bigg(3\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2+3\,B\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)$$
$$\left(\text{Log}\left[\frac{a}{b}+x\right]^2-2\,\text{Log}[a+b\,x]\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)+$$
$$B^2\,n^2\Bigg(\text{Log}\left[\frac{a}{b}+x\right]^3+3\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+3\,\text{Log}[a+b\,x]\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2+$$
$$3\,\text{Log}\left[\frac{a}{b}+x\right]^2\left(-\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+6\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$
$$3\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\left(\text{Log}\left[\frac{a}{b}+x\right]^2-2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)-$$
$$6\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)\Bigg)$$

Problem 15: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^2}\,dx$$

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

$$-\frac{2\,B^2\,n^2\,(c+d\,x)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}-\frac{2\,B\,n\,(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)\,g^2\,(a+b\,x)}-\frac{(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)\,g^2\,(a+b\,x)}$$

Result (type 3, 389 leaves):

$$\frac{1}{b\,(b c-a d)\,g^2\,(a+b x)}\Big(-A^2 b c+a A^2 d-2 A b B c n+2 a A B d n-2 b B^2 c n^2+2 a B^2 d n^2+B^2\,(-b c+a d)\,\mathrm{Log}\Big[e\Big(\frac{a+b x}{c+d x}\Big)^n\Big]^2-a B^2 d n^2\,\mathrm{Log}\Big[\frac{a+b x}{c+d x}\Big]^2-b B^2 d n^2 x\,\mathrm{Log}\Big[\frac{a+b x}{c+d x}\Big]^2-$$
$$2 B d n\,(a+b x)\,\mathrm{Log}[a+b x]\,\Big(A+B n+B\,\mathrm{Log}\Big[e\Big(\frac{a+b x}{c+d x}\Big)^n\Big]-B n\,\mathrm{Log}\Big[\frac{a+b x}{c+d x}\Big]\Big)+2 a A B d n\,\mathrm{Log}[c+d x]+2 a B^2 d n^2\,\mathrm{Log}[c+d x]+$$
$$2 A b B d n x\,\mathrm{Log}[c+d x]+2 b B^2 d n^2 x\,\mathrm{Log}[c+d x]-2 a B^2 d n^2\,\mathrm{Log}\Big[\frac{a+b x}{c+d x}\Big]\,\mathrm{Log}[c+d x]-$$
$$2 b B^2 d n^2 x\,\mathrm{Log}\Big[\frac{a+b x}{c+d x}\Big]\,\mathrm{Log}[c+d x]+2 B\,\mathrm{Log}\Big[e\Big(\frac{a+b x}{c+d x}\Big)^n\Big]\,\big(-(b c-a d)\,(A+B n)+B d n\,(a+b x)\,\mathrm{Log}[c+d x]\big)\Big)$$

Problem 38: Result more than twice size of optimal antiderivative.

$$\int (c g+d g x)^4\,\Big(A+B\,\mathrm{Log}\Big[e\Big(\frac{a+b x}{c+d x}\Big)^n\Big]\Big)^2\,dx$$

Optimal (type 4, 544 leaves, 19 steps):

$$\frac{13 B^2\,(b c-a d)^4 g^4 n^2 x}{30 b^4}+\frac{7 B^2\,(b c-a d)^3 g^4 n^2\,(c+d x)^2}{60 b^3 d}+\frac{B^2\,(b c-a d)^2 g^4 n^2\,(c+d x)^3}{30 b^2 d}-\frac{2 B\,(b c-a d)^4 g^4 n\,(a+b x)\,\Big(A+B\,\mathrm{Log}\Big[e\Big(\frac{a+b x}{c+d x}\Big)^n\Big]\Big)}{5 b^5}-$$
$$\frac{B\,(b c-a d)^3 g^4 n\,(c+d x)^2\,\Big(A+B\,\mathrm{Log}\Big[e\Big(\frac{a+b x}{c+d x}\Big)^n\Big]\Big)}{5 b^3 d}-\frac{2 B\,(b c-a d)^2 g^4 n\,(c+d x)^3\,\Big(A+B\,\mathrm{Log}\Big[e\Big(\frac{a+b x}{c+d x}\Big)^n\Big]\Big)}{15 b^2 d}-$$
$$\frac{B\,(b c-a d)\,g^4 n\,(c+d x)^4\,\Big(A+B\,\mathrm{Log}\Big[e\Big(\frac{a+b x}{c+d x}\Big)^n\Big]\Big)}{10 b d}+\frac{g^4\,(c+d x)^5\,\Big(A+B\,\mathrm{Log}\Big[e\Big(\frac{a+b x}{c+d x}\Big)^n\Big]\Big)^2}{5 d}+\frac{13 B^2\,(b c-a d)^5 g^4 n^2\,\mathrm{Log}\Big[\frac{a+b x}{c+d x}\Big]}{30 b^5 d}+$$
$$\frac{5 B^2\,(b c-a d)^5 g^4 n^2\,\mathrm{Log}[c+d x]}{6 b^5 d}+\frac{2 B\,(b c-a d)^5 g^4 n\,\Big(A+B\,\mathrm{Log}\Big[e\Big(\frac{a+b x}{c+d x}\Big)^n\Big]\Big)\,\mathrm{Log}\Big[1-\frac{b (c+d x)}{d (a+b x)}\Big]}{5 b^5 d}-\frac{2 B^2\,(b c-a d)^5 g^4 n^2\,\mathrm{PolyLog}\Big[2,\frac{b (c+d x)}{d (a+b x)}\Big]}{5 b^5 d}$$

Result (type 4, 3163 leaves):

$$\frac{1}{60 b^5 d}g^4\Big(-96 b^5 B^2 c^5 n^2+336 a b^4 B^2 c^4 d n^2-480 a^2 b^3 B^2 c^3 d^2 n^2+360 a^3 b^2 B^2 c^2 d^3 n^2-144 a^4 b B^2 c d^4 n^2+24 a^5 B^2 d^5 n^2+60 A^2 b^5 c^4 d x-96 A b^5 B c^4 d n x+$$
$$240 a A b^4 B c^3 d^2 n x-240 a^2 A b^3 B c^2 d^3 n x+120 a^3 A b^2 B c d^4 n x-24 a^4 A b B d^5 n x+46 b^5 B^2 c^4 d n^2 x-158 a b^4 B^2 c^3 d^2 n^2 x+204 a^2 b^3 B^2 c^2 d^3 n^2 x-$$
$$118 a^3 b^2 B^2 c d^4 n^2 x+26 a^4 b B^2 d^5 n^2 x+120 A^2 b^5 c^3 d^2 x^2-72 A b^5 B c^3 d^2 n x^2+120 a A b^4 B c^2 d^3 n x^2-60 a^2 A b^3 B c d^4 n x^2+12 a^3 A b^2 B d^5 n x^2+$$
$$13 b^5 B^2 c^3 d^2 n^2 x^2-33 a b^4 B^2 c^2 d^3 n^2 x^2+27 a^2 b^3 B^2 c d^4 n^2 x^2-7 a^3 b^2 B^2 d^5 n^2 x^2+120 A^2 b^5 c^2 d^3 x^3-32 A b^5 B c^2 d^3 n x^3+40 a A b^4 B c d^4 n x^3-$$
$$8 a^2 A b^3 B d^5 n x^3+2 b^5 B^2 c^2 d^3 n^2 x^3-4 a b^4 B^2 c d^4 n^2 x^3+2 a^2 b^3 B^2 d^5 n^2 x^3+60 A^2 b^5 c d^4 x^4-6 A b^5 B c d^4 n x^4+6 a A b^4 B d^5 n x^4+$$
$$12 A^2 b^5 d^5 x^5-96 a b^4 B^2 c^4 d n^2\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]+240 a^2 b^3 B^2 c^3 d^2 n^2\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]-240 a^3 b^2 B^2 c^2 d^3 n^2\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]+120 a^4 b B^2 c d^4 n^2\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]-$$

$$24\,a^5 B^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] + 60\,a\,b^4 B^2 c^4 d\,n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 - 120\,a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 + 120\,a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 -$$

$$60\,a^4 b\,B^2 c\,d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 + 12\,a^5 B^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 + 96\,b^5 B^2 c^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] - 240\,a\,b^4 B^2 c^4 d\,n^2 \text{Log}\left[\frac{c}{d}+x\right] + 240\,a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] -$$

$$120\,a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] + 24\,a^4 b\,B^2 c\,d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] + 12\,b^5 B^2 c^5 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 + 120\,a\,A\,b^4 B\,c^4 d\,n\,\text{Log}[a+b\,x] -$$

$$240\,a^2 A\,b^3 B\,c^3 d^2 n\,\text{Log}[a+b\,x] + 240\,a^3 A\,b^2 B\,c^2 d^3 n\,\text{Log}[a+b\,x] - 120\,a^4 A\,b\,B\,c\,d^4 n\,\text{Log}[a+b\,x] + 24\,a^5 A\,B\,d^5 n\,\text{Log}[a+b\,x] +$$

$$72\,a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}[a+b\,x] - 152\,a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}[a+b\,x] + 106\,a^4 b\,B^2 c\,d^4 n^2 \text{Log}[a+b\,x] - 26\,a^5 B^2 d^5 n^2 \text{Log}[a+b\,x] -$$

$$120\,a\,b^4 B^2 c^4 d\,n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\,x] + 240\,a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\,x] - 240\,a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\,x] +$$

$$120\,a^4 b\,B^2 c\,d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\,x] - 24\,a^5 B^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\,x] + 120\,a\,b^4 B^2 c^4 d\,n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\,x] -$$

$$240\,a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\,x] + 240\,a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\,x] - 120\,a^4 b\,B^2 c\,d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\,x] +$$

$$24\,a^5 B^2 d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\,x] - 120\,a\,b^4 B^2 c^4 d\,n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] + 240\,a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] -$$

$$240\,a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] + 120\,a^4 b\,B^2 c\,d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] - 24\,a^5 B^2 d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] +$$

$$120\,A\,b^5 B\,c^4 d\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - 96\,b^5 B^2 c^4 d\,n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 240\,a\,b^4 B^2 c^3 d^2 n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] -$$

$$240\,a^2 b^3 B^2 c^2 d^3 n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 120\,a^3 b^2 B^2 c\,d^4 n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - 24\,a^4 b\,B^2 d^5 n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] +$$

$$240\,A\,b^5 B\,c^3 d^2 x^2 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - 72\,b^5 B^2 c^3 d^2 n\,x^2 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 120\,a\,b^4 B^2 c^2 d^3 n\,x^2 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] -$$

$$60\,a^2 b^3 B^2 c\,d^4 n\,x^2 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 12\,a^3 b^2 B^2 d^5 n\,x^2 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 240\,A\,b^5 B\,c^2 d^3 x^3 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] -$$

$$32\,b^5 B^2 c^2 d^3 n\,x^3 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 40\,a\,b^4 B^2 c\,d^4 n\,x^3 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - 8\,a^2 b^3 B^2 d^5 n\,x^3 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] +$$

$$120\,A\,b^5 B\,c\,d^4 x^4 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - 6\,b^5 B^2 c\,d^4 n\,x^4 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 6\,a\,b^4 B^2 d^5 n\,x^4 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] +$$

$$24\,A\,b^5 B\,d^5 x^5 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 120\,a\,b^4 B^2 c^4 d\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - 240\,a^2 b^3 B^2 c^3 d^2 n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] +$$

$$240\,a^3 b^2 B^2 c^2 d^3 n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - 120\,a^4 b\,B^2 c\,d^4 n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 24\,a^5 B^2 d^5 n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] +$$

$$60\,b^5 B^2 c^4 d\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2 + 120\,b^5 B^2 c^3 d^2 x^2 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2 + 120\,b^5 B^2 c^2 d^3 x^3 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2 +$$

$$60\,b^5 B^2 c\,d^4 x^4 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2 + 12\,b^5 B^2 d^5 x^5 \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2 - 24\,A\,b^5 B\,c^5 n\,\text{Log}[c+d\,x] - 46\,b^5 B^2 c^5 n^2 \text{Log}[c+d\,x] +$$

$$86\,a\,b^4 B^2 c^4 d\,n^2 \text{Log}[c+d\,x] - 52\,a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}[c+d\,x] + 12\,a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}[c+d\,x] + 24\,b^5 B^2 c^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d\,x] -$$

$$24\, b^5 B^2 c^5 n^2 \, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d\,x] - 24\, b^5 B^2 c^5 n \, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] \text{Log}[c+d\,x] - 24\, b^5 B^2 c^5 n^2 \, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] -$$
$$24\, b^5 B^2 c^5 n^2 \, \text{PolyLog}\left[2, \frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] - 24\, a\, B^2 d \left(5\, b^4 c^4 - 10\, a\, b^3 c^3 d + 10\, a^2 b^2 c^2 d^2 - 5\, a^3 b\, c\, d^3 + a^4 d^4\right) n^2 \, \text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)$$

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

$$\int (c\,g + d\,g\,x)^3 \left(A + B\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 454 leaves, 15 steps):

$$\frac{5\, B^2 (b\,c-a\,d)^3 g^3 n^2 x}{12\, b^3} + \frac{B^2 (b\,c-a\,d)^2 g^3 n^2 (c+d\,x)^2}{12\, b^2 d} - \frac{B\,(b\,c-a\,d)^3 g^3 n\,(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\, b^4} -$$
$$\frac{B\,(b\,c-a\,d)^2 g^3 n\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\, b^2 d} - \frac{B\,(b\,c-a\,d)\, g^3 n\,(c+d\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\, b\, d} +$$
$$\frac{g^3 (c+d\,x)^4\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{4\, d} + \frac{5\, B^2 (b\,c-a\,d)^4 g^3 n^2\, \text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{12\, b^4 d} + \frac{11\, B^2 (b\,c-a\,d)^4 g^3 n^2\, \text{Log}[c+d\,x]}{12\, b^4 d} +$$
$$\frac{B\,(b\,c-a\,d)^4 g^3 n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right) \text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{2\, b^4 d} - \frac{B^2 (b\,c-a\,d)^4 g^3 n^2\, \text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{2\, b^4 d}$$

Result (type 4, 2348 leaves):

$$\frac{1}{12\, b^4\, d}\, g^3 \Big(-18\, b^4 B^2 c^4 n^2 + 54\, a\, b^3 B^2 c^3 d\, n^2 - 60\, a^2 b^2 B^2 c^2 d^2 n^2 + 30\, a^3 b\, B^2 c\, d^3 n^2 - 6\, a^4 B^2 d^4 n^2 + 12\, A^2 b^4 c^3 d\, x - 18\, A\, b^4 B\, c^3 d\, n\, x + 36\, a\, A\, b^3 B\, c^2 d^2 n\, x -$$
$$24\, a^2 A\, b^2 B\, c\, d^3 n\, x + 6\, a^3 A\, b\, B\, d^4 n\, x + 7\, b^4 B^2 c^3 d\, n^2 x - 19\, a\, b^3 B^2 c^2 d^2 n^2 x + 17\, a^2 b^2 B^2 c\, d^3 n^2 x - 5\, a^3 b\, B^2 d^4 n^2 x + 18\, A^2 b^4 c^2 d^2 x^2 -$$
$$9\, A\, b^4 B\, c^2 d^2 n\, x^2 + 12\, a\, A\, b^3 B\, c\, d^3 n\, x^2 - 3\, a^2 A\, b^2 B\, d^4 n\, x^2 + b^4 B^2 c^2 d^2 n^2 x^2 - 2\, a\, b^3 B^2 c\, d^3 n^2 x^2 + a^2 b^2 B^2 d^4 n^2 x^2 + 12\, A^2 b^4 c\, d^3 x^3 -$$
$$2\, A\, b^4 B\, c\, d^3 n\, x^3 + 2\, a\, A\, b^3 B\, d^4 n\, x^3 + 3\, A^2 b^4 d^4 x^4 - 18\, a\, b^3 B^2 c^3 d\, n^2\, \text{Log}\left[\frac{a}{b}+x\right] + 36\, a^2 b^2 B^2 c^2 d^2 n^2\, \text{Log}\left[\frac{a}{b}+x\right] - 24\, a^3 b\, B^2 c\, d^3 n^2\, \text{Log}\left[\frac{a}{b}+x\right] +$$
$$6\, a^4 B^2 d^4 n^2\, \text{Log}\left[\frac{a}{b}+x\right] + 12\, a\, b^3 B^2 c^3 d\, n^2\, \text{Log}\left[\frac{a}{b}+x\right]^2 - 18\, a^2 b^2 B^2 c^2 d^2 n^2\, \text{Log}\left[\frac{a}{b}+x\right]^2 + 12\, a^3 b\, B^2 c\, d^3 n^2\, \text{Log}\left[\frac{a}{b}+x\right]^2 - 3\, a^4 B^2 d^4 n^2\, \text{Log}\left[\frac{a}{b}+x\right]^2 +$$
$$18\, b^4 B^2 c^4 n^2\, \text{Log}\left[\frac{c}{d}+x\right] - 36\, a\, b^3 B^2 c^3 d\, n^2\, \text{Log}\left[\frac{c}{d}+x\right] + 24\, a^2 b^2 B^2 c^2 d^2 n^2\, \text{Log}\left[\frac{c}{d}+x\right] - 6\, a^3 b\, B^2 c\, d^3 n^2\, \text{Log}\left[\frac{c}{d}+x\right] + 3\, b^4 B^2 c^4 n^2\, \text{Log}\left[\frac{c}{d}+x\right]^2 +$$
$$24\, a\, A\, b^3 B\, c^3 d\, n\, \text{Log}[a+b\,x] - 36\, a^2 A\, b^2 B\, c^2 d^2 n\, \text{Log}[a+b\,x] + 24\, a^3 A\, b\, B\, c\, d^3 n\, \text{Log}[a+b\,x] - 6\, a^4 A\, B\, d^4 n\, \text{Log}[a+b\,x] +$$
$$9\, a^2 b^2 B^2 c^2 d^2 n^2\, \text{Log}[a+b\,x] - 14\, a^3 b\, B^2 c\, d^3 n^2\, \text{Log}[a+b\,x] + 5\, a^4 B^2 d^4 n^2\, \text{Log}[a+b\,x] - 24\, a\, b^3 B^2 c^3 d\, n^2\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\,x] +$$
$$36\, a^2 b^2 B^2 c^2 d^2 n^2\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\,x] - 24\, a^3 b\, B^2 c\, d^3 n^2\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\,x] + 6\, a^4 B^2 d^4 n^2\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\,x] +$$
$$24\, a\, b^3 B^2 c^3 d\, n^2\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\,x] - 36\, a^2 b^2 B^2 c^2 d^2 n^2\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\,x] + 24\, a^3 b\, B^2 c\, d^3 n^2\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\,x] -$$
$$6\, a^4 B^2 d^4 n^2\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\,x] - 24\, a\, b^3 B^2 c^3 d\, n^2\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] + 36\, a^2 b^2 B^2 c^2 d^2 n^2\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] -$$
$$24\, a^3 b\, B^2 c\, d^3 n^2\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] + 6\, a^4 B^2 d^4 n^2\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] + 24\, A\, b^4 B\, c^3 d\, x\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] -$$
$$18\, b^4 B^2 c^3 d\, n\, x\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 36\, a\, b^3 B^2 c^2 d^2 n\, x\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - 24\, a^2 b^2 B^2 c\, d^3 n\, x\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] +$$
$$6\, a^3 b\, B^2 d^4 n\, x\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 36\, A\, b^4 B\, c^2 d^2 x^2\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - 9\, b^4 B^2 c^2 d^2 n\, x^2\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 12\, a\, b^3 B^2 c\, d^3 n\, x^2\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] -$$
$$3\, a^2 b^2 B^2 d^4 n\, x^2\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 24\, A\, b^4 B\, c\, d^3 x^3\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - 2\, b^4 B^2 c\, d^3 n\, x^3\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 2\, a\, b^3 B^2 d^4 n\, x^3\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] +$$
$$6\, A\, b^4 B\, d^4 x^4\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 24\, a\, b^3 B^2 c^3 d\, n\, \text{Log}[a+b\,x]\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - 36\, a^2 b^2 B^2 c^2 d^2 n\, \text{Log}[a+b\,x]\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] +$$
$$24\, a^3 b\, B^2 c\, d^3 n\, \text{Log}[a+b\,x]\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - 6\, a^4 B^2 d^4 n\, \text{Log}[a+b\,x]\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + 12\, b^4 B^2 c^3 d\, x\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2 +$$
$$18\, b^4 B^2 c^2 d^2 x^2\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2 + 12\, b^4 B^2 c\, d^3 x^3\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2 + 3\, b^4 B^2 d^4 x^4\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2 - 6\, A\, b^4 B\, c^4 n\, \text{Log}[c+d\,x] -$$
$$7\, b^4 B^2 c^4 n^2\, \text{Log}[c+d\,x] + 10\, a\, b^3 B^2 c^3 d\, n^2\, \text{Log}[c+d\,x] - 3\, a^2 b^2 B^2 c^2 d^2 n^2\, \text{Log}[c+d\,x] + 6\, b^4 B^2 c^4 n^2\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d\,x] -$$
$$6\, b^4 B^2 c^4 n^2\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d\,x] - 6\, b^4 B^2 c^4 n\, \text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] \text{Log}[c+d\,x] - 6\, b^4 B^2 c^4 n^2\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] -$$
$$6\, b^4 B^2 c^4 n^2\, \text{PolyLog}\left[2, \frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] + 6\, a\, B^2 d\left(-4\, b^3 c^3 + 6\, a\, b^2 c^2 d - 4\, a^2 b\, c\, d^2 + a^3 d^3\right) n^2\, \text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Big)$$

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

$$\int (c\,g + d\,g\,x)^2 \left(A + B\,\text{Log}\left[e\left(\frac{a + b\,x}{c + d\,x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 361 leaves, 11 steps):

$$\frac{B^2 (b\,c - a\,d)^2 g^2 n^2 x}{3\,b^2} - \frac{2\,B\,(b\,c - a\,d)^2 g^2 n\,(a + b\,x)\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b^3} - \frac{B\,(b\,c - a\,d)\,g^2 n\,(c + d\,x)^2\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,d} +$$
$$\frac{g^2 (c + d\,x)^3\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,d} + \frac{B^2 (b\,c - a\,d)^3 g^2 n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{3\,b^3\,d} + \frac{B^2 (b\,c - a\,d)^3 g^2 n^2\,\text{Log}[c + d\,x]}{b^3\,d} +$$
$$\frac{2\,B\,(b\,c - a\,d)^3 g^2 n\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[1 - \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{3\,b^3\,d} - \frac{2\,B^2 (b\,c - a\,d)^3 g^2 n^2\,\text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{3\,b^3\,d}$$

Result (type 4, 1589 leaves):

$$g^2 \left(c^2 x \left(A+B \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2+c d x^2 \left(A+B \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2+\right.$$

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

$$\left(x \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+\frac{(b c-a d) (a d \operatorname{Log}[a+b x]-b c \operatorname{Log}[c+d x])}{b^2 c d-a b d^2}\right)+2 B d^2 n \left(A+B \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$

$$\left(\frac{1}{3} x^3 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]-\frac{b d (b c-a d) x (-2 b c-2 a d+b d x)-2 a^3 d^3 \operatorname{Log}[a+b x]+2 b^3 c^3 \operatorname{Log}[c+d x]}{6 b^3 d^3}\right)+$$

$$4 B c d n \left(A+B \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right) \left(\frac{1}{2} x^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]-\frac{1}{2} (b c-a d) \left(\frac{x}{b d}+\frac{a^2 \operatorname{Log}[a+b x]}{b^2 (b c-a d)}-\frac{c^2 \operatorname{Log}[c+d x]}{d^2 (b c-a d)}\right)\right)+$$

$$B^2 c^2 n^2 \left(x \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2-\frac{1}{b d} \left(-a d \operatorname{Log}\left[\frac{a}{b}+x\right]^2-b c \operatorname{Log}\left[\frac{c}{d}+x\right]^2+2 a d \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[a+b x]-2 a d \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[a+b x]+\right.\right.$$

$$2 a d \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]-2 a d \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]-2 b c \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[c+d x]+2 b c \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[c+d x]+$$

$$\left.\left.2 b c \operatorname{Log}\left[\frac{a+b x}{c+d x}\right] \operatorname{Log}[c+d x]+2 b c \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 b c \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+2 a d \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)+2 B^2 c$$

$$d n^2 \left(\frac{1}{2} x^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2-\frac{1}{2 b^2 d^2} \left(-2 d (-b c+a d) (a+b x) \left(-1+\operatorname{Log}\left[\frac{a}{b}+x\right]\right)+a^2 d^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2-2 b (b c-a d) (c+d x) \left(-1+\operatorname{Log}\left[\frac{c}{d}+x\right]\right)+\right.\right.$$

$$b^2 c^2 \operatorname{Log}\left[\frac{c}{d}+x\right]^2-2 \left(\operatorname{Log}\left[\frac{a}{b}+x\right]-\operatorname{Log}\left[\frac{c}{d}+x\right]-\operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(a^2 d^2 \operatorname{Log}[a+b x]-b \left(d (-b c+a d) x+b c^2 \operatorname{Log}[c+d x]\right)\right)-$$

$$\left.\left.2 b^2 c^2 \left(\operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\operatorname{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)-2 a^2 d^2 \left(\operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\right)+$$

$$B^2 d^2 n^2 \left(\frac{1}{3} x^3 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2-\frac{1}{6 b^3 d^3} \left(4 d (-b c+a d) (b c+a d) (a+b x) \left(-1+\operatorname{Log}\left[\frac{a}{b}+x\right]\right)-2 a^3 d^3 \operatorname{Log}\left[\frac{a}{b}+x\right]^2+\right.\right.$$

$$4 b (b c-a d) (b c+a d) (c+d x) \left(-1+\operatorname{Log}\left[\frac{c}{d}+x\right]\right)-2 b^3 c^3 \operatorname{Log}\left[\frac{c}{d}+x\right]^2+d^2 (b c-a d)$$

$$\left(b x (2 a-b x)+2 b^2 x^2 \operatorname{Log}\left[\frac{a}{b}+x\right]-2 a^2 \operatorname{Log}[a+b x]\right)+b^2 (b c-a d) \left(d x (-2 c+d x)-2 d^2 x^2 \operatorname{Log}\left[\frac{c}{d}+x\right]+2 c^2 \operatorname{Log}[c+d x]\right)-$$

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

$$\left.\left.\left.4 b^3 c^3 \left(\operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\operatorname{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)+4 a^3 d^3 \left(\operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\right)\right)$$

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

$$\int (c\,g + d\,g\,x) \left(A + B \,\text{Log}\left[e \left(\frac{a + b\,x}{c + d\,x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 220 leaves, 7 steps):

$$-\frac{B\,(b\,c - a\,d)\,g\,n\,(a + b\,x)\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2} + \frac{g\,(c + d\,x)^2\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,d} + \frac{B^2\,(b\,c - a\,d)^2\,g\,n^2\,\text{Log}[c + d\,x]}{b^2\,d} + \frac{B\,(b\,c - a\,d)^2\,g\,n\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[1 - \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,d} - \frac{B^2\,(b\,c - a\,d)^2\,g\,n^2\,\text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,d}$$

Result (type 4, 941 leaves):

$$\frac{1}{2\,b^2\,d}\,g\left(-2\,b^2\,B^2\,c^2\,n^2 + 4\,a\,b\,B^2\,c\,d\,n^2 - 2\,a^2\,B^2\,d^2\,n^2 + 2\,A^2\,b^2\,c\,d\,x - 2\,A\,b^2\,B\,c\,d\,n\,x + 2\,a\,A\,b\,B\,d^2\,n\,x + A^2\,b^2\,d^2\,x^2 - 2\,a\,b\,B^2\,c\,d\,n^2\,\text{Log}\left[\frac{a}{b} + x\right] + 2\,a^2\,B^2\,d^2\,n^2\,\text{Log}\left[\frac{a}{b} + x\right] + 2\,a\,b\,B^2\,c\,d\,n^2\,\text{Log}\left[\frac{a}{b} + x\right]^2 - a^2\,B^2\,d^2\,n^2\,\text{Log}\left[\frac{a}{b} + x\right]^2 + 2\,b^2\,B^2\,c^2\,n^2\,\text{Log}\left[\frac{c}{d} + x\right] - 2\,a\,b\,B^2\,c\,d\,n^2\,\text{Log}\left[\frac{c}{d} + x\right] + b^2\,B^2\,c^2\,n^2\,\text{Log}\left[\frac{c}{d} + x\right]^2 + 4\,a\,A\,b\,B\,c\,d\,n\,\text{Log}[a + b\,x] - 2\,a^2\,A\,B\,d^2\,n\,\text{Log}[a + b\,x] - 4\,a\,b\,B^2\,c\,d\,n^2\,\text{Log}\left[\frac{a}{b} + x\right]\text{Log}[a + b\,x] + 2\,a^2\,B^2\,d^2\,n^2\,\text{Log}\left[\frac{a}{b} + x\right]\text{Log}[a + b\,x] + 4\,a\,b\,B^2\,c\,d\,n^2\,\text{Log}\left[\frac{c}{d} + x\right]\text{Log}[a + b\,x] - 2\,a^2\,B^2\,d^2\,n^2\,\text{Log}\left[\frac{c}{d} + x\right]\text{Log}[a + b\,x] - 4\,a\,b\,B^2\,c\,d\,n^2\,\text{Log}\left[\frac{c}{d} + x\right]\text{Log}\left[\frac{d\,(a + b\,x)}{-b\,c + a\,d}\right] + 2\,a^2\,B^2\,d^2\,n^2\,\text{Log}\left[\frac{c}{d} + x\right]\text{Log}\left[\frac{d\,(a + b\,x)}{-b\,c + a\,d}\right] + 4\,A\,b^2\,B\,c\,d\,x\,\text{Log}\left[e\left(\frac{a + b\,x}{c + d\,x}\right)^n\right] - 2\,b^2\,B^2\,c\,d\,n\,x\,\text{Log}\left[e\left(\frac{a + b\,x}{c + d\,x}\right)^n\right] + 2\,a\,b\,B^2\,d^2\,n\,x\,\text{Log}\left[e\left(\frac{a + b\,x}{c + d\,x}\right)^n\right] + 2\,A\,b^2\,B\,d^2\,x^2\,\text{Log}\left[e\left(\frac{a + b\,x}{c + d\,x}\right)^n\right] + 4\,a\,b\,B^2\,c\,d\,n\,\text{Log}[a + b\,x]\,\text{Log}\left[e\left(\frac{a + b\,x}{c + d\,x}\right)^n\right] - 2\,a^2\,B^2\,d^2\,n\,\text{Log}[a + b\,x]\,\text{Log}\left[e\left(\frac{a + b\,x}{c + d\,x}\right)^n\right] + 2\,b^2\,B^2\,c\,d\,x\,\text{Log}\left[e\left(\frac{a + b\,x}{c + d\,x}\right)^n\right]^2 + b^2\,B^2\,d^2\,x^2\,\text{Log}\left[e\left(\frac{a + b\,x}{c + d\,x}\right)^n\right]^2 - 2\,A\,b^2\,B\,c^2\,n\,\text{Log}[c + d\,x] + 2\,b^2\,B^2\,c^2\,n^2\,\text{Log}\left[\frac{a}{b} + x\right]\text{Log}[c + d\,x] - 2\,b^2\,B^2\,c^2\,n^2\,\text{Log}\left[\frac{c}{d} + x\right]\text{Log}[c + d\,x] - 2\,b^2\,B^2\,c^2\,n\,\text{Log}\left[e\left(\frac{a + b\,x}{c + d\,x}\right)^n\right]\text{Log}[c + d\,x] - 2\,b^2\,B^2\,c^2\,n^2\,\text{Log}\left[\frac{a}{b} + x\right]\text{Log}\left[\frac{b\,(c + d\,x)}{b\,c - a\,d}\right] - 2\,b^2\,B^2\,c^2\,n^2\,\text{PolyLog}\left[2, \frac{d\,(a + b\,x)}{-b\,c + a\,d}\right] + 2\,a\,B^2\,d\,(-2\,b\,c + a\,d)\,n^2\,\text{PolyLog}\left[2, \frac{b\,(c + d\,x)}{b\,c - a\,d}\right]\right)$$

Problem 42: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{c\,g + d\,g\,x}\,dx$$

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

$$-\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{d\,g}-\frac{2\,B\,n\,\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d\,g}+\frac{2\,B^2\,n^2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d\,g}$$

Result (type 4, 537 leaves):

$$\frac{1}{3\,d\,g}\left(3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2\text{Log}[c+d\,x]-3\,B\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right.$$
$$\left(\text{Log}\left[\frac{c}{d}+x\right]^2+2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\text{Log}[c+d\,x]-2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\right)+$$
$$B^2\,n^2\left(\text{Log}\left[\frac{c}{d}+x\right]^3+3\,\text{Log}\left[\frac{c}{d}+x\right]^2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+3\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2\text{Log}[c+d\,x]+\right.$$
$$3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$
$$3\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\left(\text{Log}\left[\frac{c}{d}+x\right]^2-2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\right)+$$
$$\left.\left.6\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)$$

Problem 43: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(c\,g+d\,g\,x)^2}\,dx$$

Optimal (type 3, 163 leaves, 4 steps):

$$-\frac{2\,A\,B\,n\,(a+b\,x)}{(b\,c-a\,d)\,g^2\,(c+d\,x)}+\frac{2\,B^2\,n^2\,(a+b\,x)}{(b\,c-a\,d)\,g^2\,(c+d\,x)}-\frac{2\,B^2\,n\,(a+b\,x)\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)\,g^2\,(c+d\,x)}+\frac{(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)\,g^2\,(c+d\,x)}$$

Result (type 3, 391 leaves):

$$\frac{1}{d\,(-b c+a d)\,g^2\,(c+d x)}\Bigg(A^2 b c-a A^2 d-2 A b B c n+2 a A B d n+2 b B^2 c n^2-2 a B^2 d n^2+B^2 (b c-a d) \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]^2-b B^2 c n^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2-b B^2 d n^2 x \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2+$$
$$2 b B n (c+d x) \operatorname{Log}[a+b x]\left(-A+B n-B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)+2 A b B c n \operatorname{Log}[c+d x]-2 b B^2 c n^2 \operatorname{Log}[c+d x]+$$
$$2 A b B d n x \operatorname{Log}[c+d x]-2 b B^2 d n^2 x \operatorname{Log}[c+d x]-2 b B^2 c n^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right] \operatorname{Log}[c+d x]-$$
$$2 b B^2 d n^2 x \operatorname{Log}\left[\frac{a+b x}{c+d x}\right] \operatorname{Log}[c+d x]+2 B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\left((b c-a d)(A-B n)+b B n (c+d x) \operatorname{Log}[c+d x]\right)\Bigg)$$

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

$$\int (f+g x)^3\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 923 leaves, 15 steps):

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

Result (type 4, 2541 leaves):

$$f^3 x \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+\frac{3}{2} f^2 g x^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+$$

$$f g^2 x^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+\frac{1}{4} g^3 x^4 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-$$

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

$$\frac{1}{12} B g^3 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)$$

$$\left(\frac{6 a^3 x}{b^3}-\frac{6 c^3 x}{d^3}-\frac{3 a^2 x^2}{b^2}+\frac{3 c^2 x^2}{d^2}+\frac{2 a x^3}{b}-\frac{2 c x^3}{d}-\frac{6 a^4 \operatorname{Log}[a+b x]}{b^4}+6 x^4 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+\frac{6 c^4 \operatorname{Log}[c+d x]}{d^4}\right)+$$

$$B f g^2 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(\frac{(b c-a d)\ x\ (2 b c+2 a d-b d x)}{b^2 d^2}+\frac{2 a^3 \operatorname{Log}[a+b x]}{b^3}+2 x^3 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]-\frac{2 c^3 \operatorname{Log}[c+d x]}{d^3}\right)-$$

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

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

$$2 a d \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+b d x \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2+2 b c \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[c+d x]-2 b c \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[c+d x]-$$

$$\left.2 b c \operatorname{Log}\left[\frac{a+b x}{c+d x}\right] \operatorname{Log}[c+d x]-2 b c \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-2 b c \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-2 a d \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)+$$

$$\frac{1}{12} B^2 g^3 n^2 \left(3 x^4 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2+\frac{1}{b^4 d^4}\left(-6 b^4 c^4+6 a b^3 c^3 d+6 a^3 b c d^3-6 a^4 d^4-5 b^4 c^3 d x+5 a b^3 c^2 d^2 x+5 a^2 b^2 c d^3 x-5 a^3 b d^4 x+b^4 c^2 d^2 x^2-\right.\right.$$

$$2 a b^3 c d^3 x^2+a^2 b^2 d^4 x^2-6 a b^3 c^3 d \operatorname{Log}\left[\frac{a}{b}+x\right]+6 a^4 d^4 \operatorname{Log}\left[\frac{a}{b}+x\right]-3 a^4 d^4 \operatorname{Log}\left[\frac{a}{b}+x\right]^2+6 b^4 c^4 \operatorname{Log}\left[\frac{c}{d}+x\right]-6 a^3 b c d^3 \operatorname{Log}\left[\frac{c}{d}+x\right]-$$

$$3 b^4 c^4 \operatorname{Log}\left[\frac{c}{d}+x\right]^2-3 a^2 b^2 c^2 d^2 \operatorname{Log}[a+b x]-2 a^3 b c d^3 \operatorname{Log}[a+b x]+5 a^4 d^4 \operatorname{Log}[a+b x]+6 a^4 d^4 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[a+b x]-$$

$$6 a^4 d^4 \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[a+b x]+6 a^4 d^4 \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]-6 b^4 c^3 d x \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+6 a^3 b d^4 x \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+$$

$$3 b^4 c^2 d^2 x^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]-3 a^2 b^2 d^4 x^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]-2 b^4 c d^3 x^3 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+2 a b^3 d^4 x^3 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]-6 a^4 d^4 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+$$

$$5 b^4 c^4 \operatorname{Log}[c+d x]-2 a b^3 c^3 d \operatorname{Log}[c+d x]-3 a^2 b^2 c^2 d^2 \operatorname{Log}[c+d x]-6 b^4 c^4 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[c+d x]+6 b^4 c^4 \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[c+d x]+$$

$$\left.\left.6 b^4 c^4 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right] \operatorname{Log}[c+d x]+6 b^4 c^4 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+6 b^4 c^4 \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+6 a^4 d^4 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)+$$

$$\frac{3}{2} B^2 f^2 g n^2 \left(x^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2-\frac{1}{b^2 d^2}\left(-2 d (-b c+a d) (a+b x) \left(-1+\operatorname{Log}\left[\frac{a}{b}+x\right]\right)+a^2 d^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2-2 b (b c-a d) (c+d x) \left(-1+\operatorname{Log}\left[\frac{c}{d}+x\right]\right)+\right.\right.$$

$$b^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]^2 - 2\left(\text{Log}\left[\frac{a}{b}+x\right] - \text{Log}\left[\frac{c}{d}+x\right] - \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\left(a^2 d^2 \text{Log}[a+b x] - b\left(d\left(-b c+a d\right) x + b c^2 \text{Log}[c+d x]\right)\right) -$$
$$2 b^2 c^2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\left(c+d x\right)}{b c-a d}\right] + \text{PolyLog}\left[2, \frac{d\left(a+b x\right)}{-b c+a d}\right]\right) - 2 a^2 d^2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\left(a+b x\right)}{-b c+a d}\right] + \text{PolyLog}\left[2, \frac{b\left(c+d x\right)}{b c-a d}\right]\right)\Bigg)\Bigg) +$$
$$3 B^2 f g^2 n^2\left(\frac{1}{3} x^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2 - \frac{1}{6 b^3 d^3}\left(4 d\left(-b c+a d\right)\left(b c+a d\right)\left(a+b x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right) - 2 a^3 d^3 \text{Log}\left[\frac{a}{b}+x\right]^2 +\right.\right.$$
$$4 b\left(b c-a d\right)\left(b c+a d\right)\left(c+d x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right) - 2 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right]^2 +$$
$$d^2\left(b c-a d\right)\left(b x\left(2 a-b x\right) + 2 b^2 x^2 \text{Log}\left[\frac{a}{b}+x\right] - 2 a^2 \text{Log}[a+b x]\right) + b^2\left(b c-a d\right)\left(d x\left(-2 c+d x\right) - 2 d^2 x^2 \text{Log}\left[\frac{c}{d}+x\right] + 2 c^2 \text{Log}[c+d x]\right) -$$
$$2\left(\text{Log}\left[\frac{a}{b}+x\right] - \text{Log}\left[\frac{c}{d}+x\right] - \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\left(b d\left(b c-a d\right) x\left(-2 b c-2 a d+b d x\right) - 2 a^3 d^3 \text{Log}[a+b x] + 2 b^3 c^3 \text{Log}[c+d x]\right) +$$
$$4 b^3 c^3\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\left(c+d x\right)}{b c-a d}\right] + \text{PolyLog}\left[2, \frac{d\left(a+b x\right)}{-b c+a d}\right]\right) + 4 a^3 d^3\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\left(a+b x\right)}{-b c+a d}\right] + \text{PolyLog}\left[2, \frac{b\left(c+d x\right)}{b c-a d}\right]\right)\Bigg)\Bigg)$$

Problem 68: Result more than twice size of optimal antiderivative.

$$\int (f+g x)^2\left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 565 leaves, 12 steps):

$$\frac{B^2\left(b c-a d\right)^2 g^2 n^2 x}{3 b^2 d^2} - \frac{2 B\left(b c-a d\right) g\left(3 b d f-2 b c g-a d g\right) n\left(a+b x\right)\left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^3 d^2} -$$
$$\frac{B\left(b c-a d\right) g^2 n\left(c+d x\right)^2\left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b d^3} - \frac{\left(b f-a g\right)^3\left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b^3 g} + \frac{\left(f+g x\right)^3\left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 g} +$$
$$\frac{1}{3 b^3 d^3} 2 B\left(b c-a d\right)\left(a^2 d^2 g^2 - a b d g\left(3 d f-c g\right) + b^2\left(3 d^2 f^2 - 3 c d f g + c^2 g^2\right)\right) n\left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b\left(c+d x\right)}\right] +$$
$$\frac{B^2\left(b c-a d\right)^3 g^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 b^3 d^3} + \frac{B^2\left(b c-a d\right)^3 g^2 n^2 \text{Log}[c+d x]}{3 b^3 d^3} + \frac{2 B^2\left(b c-a d\right)^2 g\left(3 b d f-2 b c g-a d g\right) n^2 \text{Log}[c+d x]}{3 b^3 d^3} +$$
$$\frac{2 B^2\left(b c-a d\right)\left(a^2 d^2 g^2 - a b d g\left(3 d f-c g\right) + b^2\left(3 d^2 f^2 - 3 c d f g + c^2 g^2\right)\right) n^2 \text{PolyLog}\left[2, \frac{d\left(a+b x\right)}{b\left(c+d x\right)}\right]}{3 b^3 d^3}$$

Result (type 4, 1534 leaves):

$$f^2 x \left(A + B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 +$$

$$f g x^2 \left(A + B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 + \frac{1}{3} g^2 x^3 \left(A + B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 -$$

$$\frac{2 B f^2 n \left(-A - B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + B n \,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(a d \,\text{Log}[a+b x] + b d x \,\text{Log}\left[\frac{a+b x}{c+d x}\right] - b c \,\text{Log}[c+d x]\right)}{b d} +$$

$$\frac{1}{3} B g^2 n \left(A + B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(\frac{(b c - a d)\, x\, (2 b c + 2 a d - b d x)}{b^2 d^2} + \frac{2 a^3 \,\text{Log}[a+b x]}{b^3} + 2 x^3 \,\text{Log}\left[\frac{a+b x}{c+d x}\right] - \frac{2 c^3 \,\text{Log}[c+d x]}{d^3}\right) -$$

$$\frac{1}{b^2 d^2} 2 B f g n \left(-A - B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + B n \,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(-a^2 d^2 \,\text{Log}[a+b x] + b \left(d (-b c + a d)\, x + b d^2 x^2 \,\text{Log}\left[\frac{a+b x}{c+d x}\right] + b c^2 \,\text{Log}[c+d x]\right)\right) +$$

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

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

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

$$B^2 f g n^2 \left(x^2 \,\text{Log}\left[\frac{a+b x}{c+d x}\right]^2 - \frac{1}{b^2 d^2} \left(-2 d (-b c + a d) (a+b x) \left(-1 + \text{Log}\left[\frac{a}{b}+x\right]\right) + a^2 d^2 \,\text{Log}\left[\frac{a}{b}+x\right]^2 - 2 b (b c - a d) (c + d x) \left(-1 + \text{Log}\left[\frac{c}{d}+x\right]\right) +\right.\right.$$

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

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

$$B^2 g^2 n^2 \left(\frac{1}{3} x^3 \,\text{Log}\left[\frac{a+b x}{c+d x}\right]^2 - \frac{1}{6 b^3 d^3} \left(4 d (-b c + a d) (b c + a d) (a + b x) \left(-1 + \text{Log}\left[\frac{a}{b}+x\right]\right) - 2 a^3 d^3 \,\text{Log}\left[\frac{a}{b}+x\right]^2 +\right.\right.$$

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

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

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

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

Problem 69: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 290 leaves, 9 steps):

$$-\frac{B\,(b\,c-a\,d)\,g\,n\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,d}-\frac{(b\,f-a\,g)^2\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,b^2\,g}+\frac{(f+g\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,g}+\frac{B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{b^2\,d^2}+\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\mathrm{Log}[c+d\,x]}{b^2\,d^2}+\frac{B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n^2\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b^2\,d^2}$$

Result (type 4, 902 leaves):

$$\frac{1}{2\,b^2\,d^2}\left(2\,b^2\,d^2\,f\,x\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2+b^2\,d^2\,g\,x^2\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2+\right.$$
$$4\,b\,B\,d\,f\,n\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\,\left(a\,d\,\mathrm{Log}[a+b\,x]+b\,d\,x\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]-b\,c\,\mathrm{Log}[c+d\,x]\right)-$$
$$2\,B\,g\,n\,\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\,\left(a^2\,d^2\,\mathrm{Log}[a+b\,x]-b\,\left(d\,(-b\,c+a\,d)\,x+b\,d^2\,x^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+b\,c^2\,\mathrm{Log}[c+d\,x]\right)\right)+$$
$$2\,b\,B^2\,d\,f\,n^2\,\left(a\,d\,\mathrm{Log}\left[\frac{a}{b}+x\right]^2+b\,c\,\mathrm{Log}\left[\frac{c}{d}+x\right]^2-2\,a\,d\,\mathrm{Log}\left[\frac{a}{b}+x\right]\,\mathrm{Log}[a+b\,x]+2\,a\,d\,\mathrm{Log}\left[\frac{c}{d}+x\right]\,\mathrm{Log}[a+b\,x]-2\,a\,d\,\mathrm{Log}\left[\frac{c}{d}+x\right]\,\mathrm{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\right.$$
$$2\,a\,d\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+b\,d\,x\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+2\,b\,c\,\mathrm{Log}\left[\frac{a}{b}+x\right]\,\mathrm{Log}[c+d\,x]-2\,b\,c\,\mathrm{Log}\left[\frac{c}{d}+x\right]\,\mathrm{Log}[c+d\,x]-$$
$$\left.2\,b\,c\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\,\mathrm{Log}[c+d\,x]-2\,b\,c\,\mathrm{Log}\left[\frac{a}{b}+x\right]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-2\,b\,c\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-2\,a\,d\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+$$
$$B^2\,g\,n^2\,\left(2\,d\,(-b\,c+a\,d)\,(a+b\,x)\,\left(-1+\mathrm{Log}\left[\frac{a}{b}+x\right]\right)-a^2\,d^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]^2+2\,b\,(b\,c-a\,d)\,(c+d\,x)\,\left(-1+\mathrm{Log}\left[\frac{c}{d}+x\right]\right)-b^2\,c^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]^2+\right.$$
$$b^2\,d^2\,x^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+2\,\left(\mathrm{Log}\left[\frac{a}{b}+x\right]-\mathrm{Log}\left[\frac{c}{d}+x\right]-\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\,\left(a^2\,d^2\,\mathrm{Log}[a+b\,x]-b\,\left(d\,(-b\,c+a\,d)\,x+b\,c^2\,\mathrm{Log}[c+d\,x]\right)\right)+$$
$$\left.\left.2\,b^2\,c^2\,\left(\mathrm{Log}\left[\frac{a}{b}+x\right]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+2\,a^2\,d^2\,\left(\mathrm{Log}\left[\frac{c}{d}+x\right]\,\mathrm{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\right)$$

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

$$\int\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,dx$$

Optimal (type 4, 135 leaves, 6 steps):

$$\frac{(a+b x)\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b}+\frac{2 B (b c-a d) n\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b d}+\frac{2 B^2 (b c-a d) n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b d}$$

Result (type 4, 421 leaves):

$$\frac{1}{b d}\left(A^2 b d x+a B^2 d n^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2+b B^2 c n^2 \operatorname{Log}\left[\frac{c}{d}+x\right]^2+2 a A B d n \operatorname{Log}[a+b x]-\right.$$
$$2 a B^2 d n^2 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[a+b x]+2 a B^2 d n^2 \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[a+b x]-2 a B^2 d n^2 \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+$$
$$2 A b B d x \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+2 a B^2 d n \operatorname{Log}[a+b x] \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+b B^2 d x \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]^2-2 A b B c n \operatorname{Log}[c+d x]+$$
$$2 b B^2 c n^2 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[c+d x]-2 b B^2 c n^2 \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[c+d x]-2 b B^2 c n \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] \operatorname{Log}[c+d x]-$$
$$\left.2 b B^2 c n^2 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-2 b B^2 c n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]-2 a B^2 d n^2 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right)$$

Problem 71: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{f+g x} \, dx$$

Optimal (type 4, 297 leaves, 9 steps):

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

Result (type 4, 1441 leaves):

$$\frac{1}{g}\left(-B^2 n^2 \text{Log}\left[\frac{-b c+a d}{d (a+b x)}\right] \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]^2+A^2 \text{Log}[f+g x]-2 A B n \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[f+g x]+\right.$$

$$B^2 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}[f+g x]+2 A B n \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[f+g x]-2 B^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[f+g x]+$$

$$B^2 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}[f+g x]+2 A B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[f+g x]-2 B^2 n \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[f+g x]+$$

$$2 B^2 n \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[f+g x]+B^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 \text{Log}[f+g x]+2 A B n \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-$$

$$B^2 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+2 B^2 n \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+2 B^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-$$

$$B^2 n^2 \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]^2 \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+2 B^2 n^2 \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right] \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-$$

$$B^2 n^2 \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]^2 \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-2 A B n \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]+2 B^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-$$

$$B^2 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-2 B^2 n \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-$$

$$2 B^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]+B^2 n^2 \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]^2 \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-$$

$$2 B^2 n^2 \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right] \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]+B^2 n^2 \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]^2 \text{Log}\left[\frac{(-b c+a d) (f+g x)}{(d f-c g) (a+b x)}\right]+$$

$$2 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+B n \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]\right) \text{PolyLog}\left[2,\frac{g (a+b x)}{-b f+a g}\right]-$$

$$2 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+B n \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]\right) \text{PolyLog}\left[2,\frac{g (c+d x)}{-d f+c g}\right]-$$

$$2 B^2 n^2 \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]+2 B^2 n^2 \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right] \text{PolyLog}\left[2,\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]+$$

$$\left.2 B^2 n^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]-2 B^2 n^2 \text{PolyLog}\left[3,\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]\right)$$

Problem 72: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 206 leaves, 4 steps):

$$\frac{(a+b x)\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b f-a g)(f+g x)}+\frac{2 B (b c-a d) n\left(A+B \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[1-\frac{(d f-c g)(a+b x)}{(b f-a g)(c+d x)}\right]}{(b f-a g)(d f-c g)}+\frac{2 B^2 (b c-a d) n^2 \operatorname{PolyLog}\left[2, \frac{(d f-c g)(a+b x)}{(b f-a g)(c+d x)}\right]}{(b f-a g)(d f-c g)}$$

Result (type 4, 3524 leaves) :

$$\frac{1}{g(-b f+a g)(-d f+c g)(f+g x)}$$

$$\Big(-A^2 b d f^2+A^2 b c f g+a A^2 d f g-a A^2 c g^2+2 A b B d f^2 n \operatorname{Log}\left[\frac{a}{b}+x\right]-2 A b B c f g n \operatorname{Log}\left[\frac{a}{b}+x\right]+2 A b B d f g n x \operatorname{Log}\left[\frac{a}{b}+x\right]-$$

$$2 A b B c g^2 n x \operatorname{Log}\left[\frac{a}{b}+x\right]-b B^2 d f^2 n^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2+b B^2 c f g n^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2-b B^2 d f g n^2 x \operatorname{Log}\left[\frac{a}{b}+x\right]^2+b B^2 c g^2 n^2 x \operatorname{Log}\left[\frac{a}{b}+x\right]^2-$$

$$2 A b B d f^2 n \operatorname{Log}\left[\frac{c}{d}+x\right]+2 a A B d f g n \operatorname{Log}\left[\frac{c}{d}+x\right]-2 A b B d f g n x \operatorname{Log}\left[\frac{c}{d}+x\right]+2 a A B d g^2 n x \operatorname{Log}\left[\frac{c}{d}+x\right]+$$

$$2 b B^2 d f^2 n^2 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{c}{d}+x\right]-2 a B^2 d f g n^2 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{c}{d}+x\right]+2 b B^2 d f g n^2 x \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{c}{d}+x\right]-$$

$$2 a B^2 d g^2 n^2 x \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{c}{d}+x\right]-b B^2 d f^2 n^2 \operatorname{Log}\left[\frac{c}{d}+x\right]^2+a B^2 d f g n^2 \operatorname{Log}\left[\frac{c}{d}+x\right]^2-b B^2 d f g n^2 x \operatorname{Log}\left[\frac{c}{d}+x\right]^2+a B^2 d g^2 n^2 x \operatorname{Log}\left[\frac{c}{d}+x\right]^2-$$

$$2 A b B d f^2 \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+2 A b B c f g \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+2 a A B d f g \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-2 a A B c g^2 \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+$$

$$2 b B^2 d f^2 n \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-2 b B^2 c f g n \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+2 b B^2 d f g n x \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-$$

$$2 b B^2 c g^2 n x \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-2 b B^2 d f^2 n \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+2 a B^2 d f g n \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-$$

$$2 b B^2 d f g n x \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+2 a B^2 d g^2 n x \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-b B^2 d f^2 \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]^2+$$

$$b B^2 c f g \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]^2+a B^2 d f g \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]^2-a B^2 c g^2 \operatorname{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]^2-2 b B^2 c f g n^2 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]+$$

$$2 a B^2 d f g n^2 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]-2 b B^2 c g^2 n^2 x \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]+2 a B^2 d g^2 n^2 x \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]+$$

$$b B^2 c f g n^2 \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]^2-a B^2 d f g n^2 \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]^2+b B^2 c g^2 n^2 x \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]^2-a B^2 d g^2 n^2 x \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]^2-$$

$$2 b B^2 c f g n^2 \operatorname{Log}\left[\frac{-b c+a d}{d (a+b x)}\right] \operatorname{Log}\left[\frac{(b f-a g)(c+d x)}{(d f-c g)(a+b x)}\right]+2 a B^2 d f g n^2 \operatorname{Log}\left[\frac{-b c+a d}{d (a+b x)}\right] \operatorname{Log}\left[\frac{(b f-a g)(c+d x)}{(d f-c g)(a+b x)}\right]-$$

$$2 b B^2 c g^2 n^2 x \operatorname{Log}\left[\frac{-b c+a d}{d (a+b x)}\right] \operatorname{Log}\left[\frac{(b f-a g)(c+d x)}{(d f-c g)(a+b x)}\right]+2 a B^2 d g^2 n^2 x \operatorname{Log}\left[\frac{-b c+a d}{d (a+b x)}\right] \operatorname{Log}\left[\frac{(b f-a g)(c+d x)}{(d f-c g)(a+b x)}\right]-$$

$$2 b B^2 c f g n^2 \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \operatorname{Log}\left[\frac{(b f-a g)(c+d x)}{(d f-c g)(a+b x)}\right]+2 a B^2 d f g n^2 \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \operatorname{Log}\left[\frac{(b f-a g)(c+d x)}{(d f-c g)(a+b x)}\right]-$$

$$2\,b\,B^2\,c\,g^2\,n^2\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]+2\,a\,B^2\,d\,g^2\,n^2\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]+$$

$$b\,B^2\,c\,f\,g\,n^2\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]^2-a\,B^2\,d\,f\,g\,n^2\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]^2+b\,B^2\,c\,g^2\,n^2\,x\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]^2-$$

$$a\,B^2\,d\,g^2\,n^2\,x\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]^2-2\,A\,b\,B\,d\,f^2\,n\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+2\,A\,b\,B\,c\,f\,g\,n\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-2\,A\,b\,B\,d\,f\,g\,n\,x\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+$$

$$2\,A\,b\,B\,c\,g^2\,n\,x\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+2\,b\,B^2\,d\,f^2\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-2\,a\,B^2\,d\,f\,g\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+$$

$$2\,b\,B^2\,d\,f\,g\,n^2\,x\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-2\,a\,B^2\,d\,g^2\,n^2\,x\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-2\,b\,B^2\,d\,f^2\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+$$

$$2\,b\,B^2\,c\,f\,g\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-2\,b\,B^2\,d\,f\,g\,n\,x\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+$$

$$2\,b\,B^2\,c\,g^2\,n\,x\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-2\,b\,B^2\,d\,f^2\,n^2\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+$$

$$2\,b\,B^2\,c\,f\,g\,n^2\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-2\,b\,B^2\,d\,f\,g\,n^2\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+$$

$$2\,b\,B^2\,c\,g^2\,n^2\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+2\,A\,b\,B\,d\,f^2\,n\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]-2\,a\,A\,B\,d\,f\,g\,n\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+2\,A\,b\,B\,d\,f\,g\,n\,x\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]-$$

$$2\,a\,A\,B\,d\,g^2\,n\,x\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]-2\,b\,B^2\,d\,f^2\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+2\,a\,B^2\,d\,f\,g\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]-$$

$$2\,b\,B^2\,d\,f\,g\,n^2\,x\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+2\,a\,B^2\,d\,g^2\,n^2\,x\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+2\,b\,B^2\,d\,f^2\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]-$$

$$2\,a\,B^2\,d\,f\,g\,n\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+2\,b\,B^2\,d\,f\,g\,n\,x\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]-$$

$$2\,a\,B^2\,d\,g^2\,n\,x\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+2\,b\,B^2\,d\,f^2\,n^2\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]-$$

$$2\,b\,B^2\,c\,f\,g\,n^2\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+2\,b\,B^2\,d\,f\,g\,n^2\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]-$$

$$2\,b\,B^2\,c\,g^2\,n^2\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+2\,B^2\,(b\,c-a\,d)\,g\,n^2\,(f+g\,x)\,\text{PolyLog}\left[2,\,\frac{g\,(a+b\,x)}{-b\,f+a\,g}\right]-$$

$$2\,B^2\,(b\,c-a\,d)\,g\,n^2\,(f+g\,x)\,\text{PolyLog}\left[2,\,\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]-2\,b\,B^2\,c\,f\,g\,n^2\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]+$$

$$2\,a\,B^2\,d\,f\,g\,n^2\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]-2\,b\,B^2\,c\,g^2\,n^2\,x\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]+2\,a\,B^2\,d\,g^2\,n^2\,x\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]\Bigg]\Bigg)$$

Problem 73: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(f+g\,x)^3}\,dx$$

Optimal (type 4, 389 leaves, 9 steps):

$$\frac{B\,(b\,c-a\,d)\,g\,n\,(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,f-a\,g)^2\,(d\,f-c\,g)\,(f+g\,x)}+\frac{b^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,g\,(b\,f-a\,g)^2}-\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,g\,(f+g\,x)^2}+$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g\,n^2\,\text{Log}\left[\frac{f+g\,x}{c+d\,x}\right]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}+\frac{B\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[1-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}+$$
$$\frac{B^2\,(b\,c-a\,d)\,(2\,b\,d\,f-b\,c\,g-a\,d\,g)\,n^2\,\text{PolyLog}\left[2,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{(b\,f-a\,g)^2\,(d\,f-c\,g)^2}$$

Result (type 4, 18 311 leaves):

$$-\frac{\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)^2}{2\,g\,(f+g\,x)^2}+$$
$$2\,B\,n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\left(\frac{\frac{g\left(\frac{a}{b}+x\right)}{\left(-f+\frac{a\,g}{b}\right)^3\left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right)}-\left(\frac{g^2\left(\frac{a}{b}+x\right)^2}{\left(-f+\frac{a\,g}{b}\right)^4\left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right)^2}+\frac{2\,g\left(\frac{a}{b}+x\right)}{\left(-f+\frac{a\,g}{b}\right)^3\left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right)}\right)\text{Log}\left[\frac{a}{b}+x\right]-\frac{\text{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right]}{\left(-f+\frac{a\,g}{b}\right)^2}}{2\,g}-\right.$$
$$\left.\frac{\frac{g\left(\frac{c}{d}+x\right)}{\left(-f+\frac{c\,g}{d}\right)^3\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right)}-\left(\frac{g^2\left(\frac{c}{d}+x\right)^2}{\left(-f+\frac{c\,g}{d}\right)^4\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right)^2}+\frac{2\,g\left(\frac{c}{d}+x\right)}{\left(-f+\frac{c\,g}{d}\right)^3\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right)}\right)\text{Log}\left[\frac{c}{d}+x\right]-\frac{\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right]}{\left(-f+\frac{c\,g}{d}\right)^2}}{2\,g}-\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]}{2\,g\,(f+g\,x)^2}\right)+$$

$$B^2 n^2 \left(2 \left(\frac{\frac{g\left(\frac{a}{b}+x\right)}{\left(-f+\frac{a g}{b}\right)^3 \left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right)} - \left(\frac{g^2\left(\frac{a}{b}+x\right)^2}{\left(-f+\frac{a g}{b}\right)^4 \left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right)^2} + \frac{2 g\left(\frac{a}{b}+x\right)}{\left(-f+\frac{a g}{b}\right)^3 \left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right)}\right) \mathrm{Log}\left[\frac{a}{b}+x\right] - \frac{\mathrm{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]}{\left(-f+\frac{a g}{b}\right)^2}}{2 g} - \right.\right.$$

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

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

$$\left.\frac{\mathrm{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]}{\left(-f+\frac{a g}{b}\right)^2} + \mathrm{Log}\left[\frac{a}{b}+x\right]\left(\frac{g\left(\frac{a}{b}+x\right)}{\left(-f+\frac{a g}{b}\right)^3\left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right)} - \frac{\mathrm{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]}{\left(-f+\frac{a g}{b}\right)^2}\right) - \frac{\mathrm{PolyLog}\left[2, \frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]}{\left(-f+\frac{a g}{b}\right)^2}\right) +$$

$$\frac{1}{g}\left(-\frac{1}{2}\left(\frac{g^2\left(\frac{c}{d}+x\right)^2}{\left(-f+\frac{c g}{d}\right)^4 \left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right)^2} + \frac{2 g\left(\frac{c}{d}+x\right)}{\left(-f+\frac{c g}{d}\right)^3 \left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right)}\right) \mathrm{Log}\left[\frac{c}{d}+x\right]^2 + \frac{\mathrm{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]}{\left(-f+\frac{c g}{d}\right)^2} + \right.$$

$$\left.\mathrm{Log}\left[\frac{c}{d}+x\right]\left(\frac{g\left(\frac{c}{d}+x\right)}{\left(-f+\frac{c g}{d}\right)^3\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right)} - \frac{\mathrm{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]}{\left(-f+\frac{c g}{d}\right)^2}\right) - \frac{\mathrm{PolyLog}\left[2, \frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]}{\left(-f+\frac{c g}{d}\right)^2}\right) -$$

$$\frac{1}{f^2}\Bigg(\frac{1}{g}2\Bigg(\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}\Big[\frac{b\,(f+g\,x)}{b\,f-a\,g}\Big]+\frac{1}{2}\text{Log}\Big[\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\Big]\,\Bigg(-2\,\text{Log}\Big[\frac{a}{b}+x\Big]+\text{Log}\Big[\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\Big]\Bigg)$$

$$\Bigg(\text{Log}\Big[\frac{b\,(f+g\,x)}{b\,f-a\,g}\Big]-\text{Log}\Big[-\frac{d\,(f+g\,x)}{-d\,f+c\,g}\Big]\Bigg)+\text{Log}\Big[\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\Big]\,\text{Log}\Big[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\Big]\,\Bigg(-\text{Log}\Big[\frac{b\,(f+g\,x)}{b\,f-a\,g}\Big]+\text{Log}\Big[-\frac{d\,(f+g\,x)}{-d\,f+c\,g}\Big]\Bigg)+$$

$$\frac{1}{2}\text{Log}\Big[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\Big]^2\,\Bigg(\text{Log}\Big[\frac{-b\,c+a\,d}{b\,d\,\left(\frac{a}{b}+x\right)}\Big]+\text{Log}\Big[\frac{b\,(f+g\,x)}{b\,f-a\,g}\Big]-\text{Log}\Big[-\frac{(-b\,c+a\,d)\,(f+g\,x)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\Big]\Bigg)+$$

$$\Bigg(\text{Log}\Big[\frac{c}{d}+x\Big]-\text{Log}\Big[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\Big]\Bigg)\,\text{PolyLog}\Big[2,\,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\Big]+\Bigg(\text{Log}\Big[\frac{a}{b}+x\Big]+\text{Log}\Big[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\Big]\Bigg)$$

$$\text{PolyLog}\Big[2,\,\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\Big]+\text{Log}\Big[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\Big]\,\Bigg(\text{PolyLog}\Big[2,\,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\Big]-\text{PolyLog}\Big[2,\,-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\Big]\Bigg)-$$

$$\text{PolyLog}\Big[3,\,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\Big]-\text{PolyLog}\Big[3,\,\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\Big]-\text{PolyLog}\Big[3,\,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\Big]+\text{PolyLog}\Big[3,\,-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\Big]\Bigg)+$$

$$g^2\Bigg(\frac{1}{g}\Bigg(\Bigg(\frac{(b\,f-a\,g)\,\left(\frac{2\,a\,b\,x}{(b\,f-a\,g)^2}+\frac{2\,a^2\,b\,(f+g\,x)}{(b\,f-a\,g)^3}\right)}{b\,(f+g\,x)}-\frac{(b\,f-a\,g)\,x\,\left(\frac{b\,x}{b\,f-a\,g}+\frac{a\,b\,(f+g\,x)}{(b\,f-a\,g)^2}\right)}{b\,(f+g\,x)^2}-\frac{a\,\left(\frac{b\,x}{b\,f-a\,g}+\frac{a\,b\,(f+g\,x)}{(b\,f-a\,g)^2}\right)}{b\,(f+g\,x)}\Bigg)\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}\Big[\frac{c}{d}+x\Big]-$$

$$\frac{1}{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}2\,b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)\,\Bigg(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\Bigg)$$

$$\Bigg(\frac{(b\,f-a\,g)\,\left(\frac{b\,x}{b\,f-a\,g}+\frac{a\,b\,(f+g\,x)}{(b\,f-a\,g)^2}\right)}{b\,(f+g\,x)}+\frac{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)\,\left(-\frac{(-b\,c+a\,d)\,x}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}+\frac{c\,(-b\,c+a\,d)\,(f+g\,x)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}\right)}{(-b\,c+a\,d)\,(f+g\,x)}\Bigg)\,\text{Log}\Big[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\Big]+$$

$$\Bigg(-\frac{(b\,f-a\,g)\,\left(\frac{2\,a\,b\,x}{(b\,f-a\,g)^2}+\frac{2\,a^2\,b\,(f+g\,x)}{(b\,f-a\,g)^3}\right)}{b\,(f+g\,x)}+\frac{(b\,f-a\,g)\,x\,\left(\frac{b\,x}{b\,f-a\,g}+\frac{a\,b\,(f+g\,x)}{(b\,f-a\,g)^2}\right)}{b\,(f+g\,x)^2}+\frac{a\,\left(\frac{b\,x}{b\,f-a\,g}+\frac{a\,b\,(f+g\,x)}{(b\,f-a\,g)^2}\right)}{b\,(f+g\,x)}-\frac{(-d\,f+c\,g)\,\left(\frac{2\,c\,d\,x}{(-d\,f+c\,g)^2}-\frac{2\,c^2\,d\,(f+g\,x)}{(-d\,f+c\,g)^3}\right)}{d\,(f+g\,x)}+$$

$$\frac{(-d f+c g)\, x \left(-\frac{d x}{-d f+c g}+\frac{c d (f+g x)}{(-d f+c g)^2}\right)}{d (f+g x)^2}-\frac{c \left(-\frac{d x}{-d f+c g}+\frac{c d (f+g x)}{(-d f+c g)^2}\right)}{d (f+g x)}\Bigg)\, \text{Log}\Big[\frac{d g \left(\frac{c}{d}+x\right)}{-d f+c g}\Big]\, \text{Log}\Big[-\frac{d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\Big]+$$

$$\frac{1}{2} \Bigg(\frac{(b f-a g) \left(\frac{2 a b x}{(b f-a g)^2}+\frac{2 a^2 b (f+g x)}{(b f-a g)^3}\right)}{b (f+g x)}-\frac{(b f-a g)\, x \left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)^2}-\frac{a \left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)}+$$

$$\frac{b (-d f+c g) \left(\frac{a}{b}+x\right) \left(\frac{2 c (-b c+a d)\, x}{b (-d f+c g)^2 \left(\frac{a}{b}+x\right)}-\frac{2 c^2 (-b c+a d) (f+g x)}{b (-d f+c g)^3 \left(\frac{a}{b}+x\right)}\right)}{(-b c+a d) (f+g x)}-\frac{b (-d f+c g)\, x \left(\frac{a}{b}+x\right) \left(-\frac{(-b c+a d)\, x}{b (-d f+c g) \left(\frac{a}{b}+x\right)}+\frac{c (-b c+a d) (f+g x)}{b (-d f+c g)^2 \left(\frac{a}{b}+x\right)}\right)}{(-b c+a d) (f+g x)^2}+$$

$$\frac{b c \left(\frac{a}{b}+x\right) \left(-\frac{(-b c+a d)\, x}{b (-d f+c g) \left(\frac{a}{b}+x\right)}+\frac{c (-b c+a d) (f+g x)}{b (-d f+c g)^2 \left(\frac{a}{b}+x\right)}\right)}{(-b c+a d) (f+g x)}\Bigg)\, \text{Log}\Big[-\frac{d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\Big]^2+2 \Bigg(-\frac{(b f-a g) \left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)}-$$

$$\frac{(-d f+c g) \left(-\frac{d x}{-d f+c g}+\frac{c d (f+g x)}{(-d f+c g)^2}\right)}{d (f+g x)}\Bigg) \Bigg(-\frac{b (-d f+c g) \left(\frac{a}{b}+x\right) \left(\frac{c d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g)^2 \left(\frac{a}{b}+x\right)}+\frac{a d \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\right) \text{Log}\Big[\frac{d g \left(\frac{c}{d}+x\right)}{-d f+c g}\Big]}{d (b f-a g) \left(\frac{c}{d}+x\right)}+$$

$$\frac{(-d f+c g) \left(-\frac{c d g \left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d \left(\frac{c}{d}+x\right)}{-d f+c g}\right) \text{Log}\Big[-\frac{d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\Big]}{d g \left(\frac{c}{d}+x\right)}\Bigg)+\frac{1}{d g \left(\frac{c}{d}+x\right)} (-d f+c g) \left(-\frac{c d g \left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d \left(\frac{c}{d}+x\right)}{-d f+c g}\right)$$

$$\Bigg(\Bigg(\frac{(b f-a g) \left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)}+\frac{(-d f+c g) \left(-\frac{d x}{-d f+c g}+\frac{c d (f+g x)}{(-d f+c g)^2}\right)}{d (f+g x)}\Bigg) \left(-2\, \text{Log}\Big[\frac{a}{b}+x\Big]+\text{Log}\Big[\frac{d g \left(\frac{c}{d}+x\right)}{-d f+c g}\Big]\right)+$$

$$\frac{(-d f+c g) \left(-\frac{c d g \left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d \left(\frac{c}{d}+x\right)}{-d f+c g}\right) \left(\text{Log}\Big[\frac{b (f+g x)}{b f-a g}\Big]-\text{Log}\Big[-\frac{d (f+g x)}{-d f+c g}\Big]\right)}{d g \left(\frac{c}{d}+x\right)}\Bigg)+\frac{1}{2}\, \text{Log}\Big[\frac{d g \left(\frac{c}{d}+x\right)}{-d f+c g}\Big]$$

$$\Bigg(\frac{1}{d\,g\,\left(\frac{c}{d}+x\right)}2\,(-d\,f+c\,g)\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\left(\frac{(b\,f-a\,g)\left(\frac{b\,x}{b\,f-a\,g}+\frac{a\,b\,(f+g\,x)}{(b\,f-a\,g)^2}\right)}{b\,(f+g\,x)}+\frac{(-d\,f+c\,g)\left(-\frac{d\,x}{-d\,f+c\,g}+\frac{c\,d\,(f+g\,x)}{(-d\,f+c\,g)^2}\right)}{d\,(f+g\,x)}\right)+$$

$$\Bigg(\frac{(b\,f-a\,g)\left(\frac{2\,a\,b\,x}{(b\,f-a\,g)^2}+\frac{2\,a^2\,b\,(f+g\,x)}{(b\,f-a\,g)^3}\right)}{b\,(f+g\,x)}-\frac{(b\,f-a\,g)\,x\left(\frac{b\,x}{b\,f-a\,g}+\frac{a\,b\,(f+g\,x)}{(b\,f-a\,g)^2}\right)}{b\,(f+g\,x)^2}-\frac{a\left(\frac{b\,x}{b\,f-a\,g}+\frac{a\,b\,(f+g\,x)}{(b\,f-a\,g)^2}\right)}{b\,(f+g\,x)}+$$

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

$$\mathrm{Log}\left[\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]\Bigg)+\Bigg(\frac{(-d\,f+c\,g)\left(\frac{2\,c^2\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^3}-\frac{2\,c\,d\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}\right)}{d\,g\,\left(\frac{c}{d}+x\right)}+\frac{c\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)}{d\,g\,\left(\frac{c}{d}+x\right)}-\frac{(-d\,f+c\,g)\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)}{d\,g^2\,\left(\frac{c}{d}+x\right)}\Bigg)$$

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

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

$$\Bigg(-\frac{2\,b\,(-d\,f+c\,g)^2\left(\frac{a}{b}+x\right)\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\left(\frac{c\,d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right)}{d^2\,g\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)^2}+$$

$$\Bigg(-\frac{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)\left(-\frac{2\,c^2\,d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^3\left(\frac{a}{b}+x\right)}-\frac{2\,a\,c\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}-\frac{b\,c\left(\frac{a}{b}+x\right)\left(\frac{c\,d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}-$$

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

$$\frac{c \left(-\frac{c\, d\, g \left(\frac{c}{d}+x\right)}{(-d\, f + c\, g)^{2}} + \frac{d \left(\frac{c}{d}+x\right)}{-d\, f + c\, g}\right)}{d\, g \left(\frac{c}{d} + x\right)} - \frac{(-d\, f + c\, g) \left(-\frac{c\, d\, g \left(\frac{c}{d}+x\right)}{(-d\, f + c\, g)^{2}} + \frac{d \left(\frac{c}{d}+x\right)}{-d\, f + c\, g}\right)}{d\, g^{2} \left(\frac{c}{d} + x\right)} \Bigg) \text{Log}\left[-\frac{d\, (b\, f - a\, g) \left(\frac{c}{d} + x\right)}{b\, (-d\, f + c\, g) \left(\frac{a}{b} + x\right)}\right] \Bigg)$$

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

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

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

$$\frac{2\, a\, b\, (-d\, f + c\, g) \left(\frac{a}{b} + x\right) \left(\frac{c\, d\, (b\, f - a\, g) \left(\frac{c}{d}+x\right)}{b\, (-d\, f + c\, g)^{2} \left(\frac{a}{b}+x\right)} + \frac{a\, d \left(\frac{c}{d}+x\right)}{b\, (-d\, f + c\, g) \left(\frac{a}{b}+x\right)}\right) \text{Log}\left[-\frac{d\, (b\, f - a\, g) \left(\frac{c}{d}+x\right)}{b\, (-d\, f + c\, g) \left(\frac{a}{b}+x\right)}\right]}{d\, (b\, f - a\, g)^{2} \left(\frac{c}{d} + x\right)} \Bigg)$$

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

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

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

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

$$\left.\frac{(b f-a g)\left(-\frac{a b g\left(\frac{a}{b}+x\right)}{(b f-a g)^2}-\frac{b\left(\frac{a}{b}+x\right)}{b f-a g}\right)\text{Log}\left[1+\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]}{b g^2\left(\frac{a}{b}+x\right)}\right)+\frac{(-d f+c g)^2\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)^2\text{Log}\left[1-\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d^2 g^2\left(\frac{c}{d}+x\right)^2}+$$

$$\left(2 b\,(-d f+c g)^2\left(\frac{a}{b}+x\right)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\left(\frac{c d\,(b f-a g)\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\left(\frac{a}{b}+x\right)}\right)\right.$$

$$\left.\text{Log}\left[1-\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\right)\Big/\left(d^2 g\,(b f-a g)\left(\frac{c}{d}+x\right)^2\right)+\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d\,(b f-a g)\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)$$

$$\left(-\frac{(-d f+c g)\left(\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}-\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)}{d g\left(\frac{c}{d}+x\right)\left(1-\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right)}-\frac{(-d f+c g)\left(\frac{2 c^2 d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^3}-\frac{2 c d\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}\right)\text{Log}\left[1-\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d g\left(\frac{c}{d}+x\right)}-\right.$$

$$\left.\frac{c\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\text{Log}\left[1-\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d g\left(\frac{c}{d}+x\right)}+\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\text{Log}\left[1-\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d g^2\left(\frac{c}{d}+x\right)}\right)+$$

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

$$\text{Log}\left[-\frac{d\,(b f-a g)\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(-\left(\left(b\,(-d f+c g)\left(\frac{a}{b}+x\right)\left(-\frac{c d\,(b f-a g)\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)^2\left(\frac{a}{b}+x\right)}-\frac{a d\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\left(\frac{a}{b}+x\right)}\right)\right.\right.\right.$$

$$\left(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^{2}\,\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)\Bigg)\Bigg/\left(d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)\,\left(1+\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)\right)\Bigg)-$$

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

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

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

$$\frac{(b\,f-a\,g)\,\left(-\frac{2\,a^{2}\,b\,g\,\left(\frac{a}{b}+x\right)}{(b\,f-a\,g)^{3}}-\frac{2\,a\,b\,\left(\frac{a}{b}+x\right)}{(b\,f-a\,g)^{2}}\right)\,\mathrm{PolyLog}\left[2,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right]}{b\,g\,\left(\frac{a}{b}+x\right)}-\frac{a\,\left(-\frac{a\,b\,g\,\left(\frac{a}{b}+x\right)}{(b\,f-a\,g)^{2}}-\frac{b\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right)\,\mathrm{PolyLog}\left[2,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right]}{b\,g\,\left(\frac{a}{b}+x\right)}-$$

$$\frac{(b\,f-a\,g)\,\left(-\frac{a\,b\,g\,\left(\frac{a}{b}+x\right)}{(b\,f-a\,g)^{2}}-\frac{b\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right)\,\mathrm{PolyLog}\left[2,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right]}{b\,g^{2}\,\left(\frac{a}{b}+x\right)}+\left(\frac{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)\,\left(-\frac{2\,c^{2}\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^{3}\,\left(\frac{a}{b}+x\right)}-\frac{2\,a\,c\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^{2}\,\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}+\right.$$

$$\left.\frac{b\,c\,\left(\frac{a}{b}+x\right)\,\left(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^{2}\,\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}+\frac{a\,b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)\,\left(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^{2}\,\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)^{2}\,\left(\frac{c}{d}+x\right)}\right)$$

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

$$\frac{c\,\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^{2}}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\,\mathrm{PolyLog}\left[2,\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]}{d\,g\,\left(\frac{c}{d}+x\right)}+\frac{(-d\,f+c\,g)\,\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^{2}}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\,\mathrm{PolyLog}\left[2,\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]}{d\,g^{2}\,\left(\frac{c}{d}+x\right)}+$$

$$\left(-\frac{b\left(-d f+c g\right)\left(\frac{a}{b}+x\right)\left(-\frac{2 c^2 d\left(b f-a g\right)\left(\frac{c}{d}+x\right)}{b\left(-d f+c g\right)^3\left(\frac{a}{b}+x\right)}-\frac{2 a c d\left(\frac{c}{d}+x\right)}{b\left(-d f+c g\right)^2\left(\frac{a}{b}+x\right)}\right)}{d\left(b f-a g\right)\left(\frac{c}{d}+x\right)}-\frac{b c\left(\frac{a}{b}+x\right)\left(\frac{c d\left(b f-a g\right)\left(\frac{c}{d}+x\right)}{b\left(-d f+c g\right)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b\left(-d f+c g\right)\left(\frac{a}{b}+x\right)}\right)}{d\left(b f-a g\right)\left(\frac{c}{d}+x\right)}-\right.$$

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

$$\left(-\frac{b\left(-d f+c g\right)\left(\frac{a}{b}+x\right)\left(-\frac{2 c^2 d\left(b f-a g\right)\left(\frac{c}{d}+x\right)}{b\left(-d f+c g\right)^3\left(\frac{a}{b}+x\right)}-\frac{2 a c d\left(\frac{c}{d}+x\right)}{b\left(-d f+c g\right)^2\left(\frac{a}{b}+x\right)}\right)}{d\left(b f-a g\right)\left(\frac{c}{d}+x\right)}-\frac{b c\left(\frac{a}{b}+x\right)\left(\frac{c d\left(b f-a g\right)\left(\frac{c}{d}+x\right)}{b\left(-d f+c g\right)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b\left(-d f+c g\right)\left(\frac{a}{b}+x\right)}\right)}{d\left(b f-a g\right)\left(\frac{c}{d}+x\right)}-\right.$$

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

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

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

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

$$\frac{1}{g^2}2\left(\frac{\left(b f-a g\right)\left(\frac{b x}{b f-a g}+\frac{a b\left(f+g x\right)}{\left(b f-a g\right)^2}\right)\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]}{b\left(f+g x\right)}+\frac{1}{2}\left(\frac{\left(b f-a g\right)\left(\frac{b x}{b f-a g}+\frac{a b\left(f+g x\right)}{\left(b f-a g\right)^2}\right)}{b\left(f+g x\right)}+\right.\right.$$

$$\frac{(-d f+c g)\left(-\frac{d x}{-d f+c g}+\frac{c d (f+g x)}{(-d f+c g)^2}\right)}{d (f+g x)}\Bigg) \text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\left(-2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\right)+$$

$$\Bigg(-\frac{(b f-a g)\left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)}-\frac{(-d f+c g)\left(-\frac{d x}{-d f+c g}+\frac{c d (f+g x)}{(-d f+c g)^2}\right)}{d (f+g x)}\Bigg) \text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right] \text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]+$$

$$\frac{1}{2}\left(\frac{(b f-a g)\left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)}+\frac{b (-d f+c g)\left(\frac{a}{b}+x\right)\left(-\frac{(-b c+a d) x}{b (-d f+c g)\left(\frac{a}{b}+x\right)}+\frac{c (-b c+a d)(f+g x)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}\right)}{(-b c+a d)(f+g x)}\right) \text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]^2+$$

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right) \text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\left(\text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{d (f+g x)}{-d f+c g}\right]\right)}{2 d g\left(\frac{c}{d}+x\right)}+\frac{1}{2 d g\left(\frac{c}{d}+x\right)}(-d f+c g)$$

$$\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\left(-2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\right)\left(\text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{d (f+g x)}{-d f+c g}\right]\right)-\frac{1}{d (b f-a g)\left(\frac{c}{d}+x\right)}$$

$$b (-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right) \text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\left(-\text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+\text{Log}\left[-\frac{d (f+g x)}{-d f+c g}\right]\right)+$$

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right) \text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(-\text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+\text{Log}\left[-\frac{d (f+g x)}{-d f+c g}\right]\right)}{d g\left(\frac{c}{d}+x\right)}-\frac{1}{d (b f-a g)\left(\frac{c}{d}+x\right)} b (-d f+c g)$$

$$\left(\frac{a}{b}+x\right)\left(\frac{c d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right) \text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\Bigg(\text{Log}\left[\frac{-b c+a d}{b d\left(\frac{a}{b}+x\right)}\right]+\text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-$$

$$\text{Log}\left[-\frac{(-b c+a d)(f+g x)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\Bigg)+\frac{(b f-a g)\left(-\frac{a b g\left(\frac{a}{b}+x\right)}{(b f-a g)^2}-\frac{b\left(\frac{a}{b}+x\right)}{b f-a g}\right)\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right) \text{Log}\left[1+\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]}{b g\left(\frac{a}{b}+x\right)}-$$

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right) \text{Log}\left[1-\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d g\left(\frac{c}{d}+x\right)}-\frac{1}{d (b f-a g)\left(\frac{c}{d}+x\right)}$$

$$b\left(-d f+c g\right)\left(\frac{a}{b}+x\right)\left(\frac{c d\left(b f-a g\right)\left(\frac{c}{d}+x\right)}{b\left(-d f+c g\right)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b\left(-d f+c g\right)\left(\frac{a}{b}+x\right)}\right)\text{Log}\left[-\frac{d\left(b f-a g\right)\left(\frac{c}{d}+x\right)}{b\left(-d f+c g\right)\left(\frac{a}{b}+x\right)}\right]\text{Log}\left[\right.$$

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

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

$$\frac{\left(-d f+c g\right)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{\left(-d f+c g\right)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\text{PolyLog}\left[2,\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d g\left(\frac{c}{d}+x\right)}-$$

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

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

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

$$\frac{1}{g^3}2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{b\left(f+g x\right)}{b f-a g}\right]+\frac{1}{2}\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\left(-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\right)\right.$$

$$\left(\text{Log}\left[\frac{b\left(f+g x\right)}{b f-a g}\right]-\text{Log}\left[-\frac{d\left(f+g x\right)}{-d f+c g}\right]\right)+\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\text{Log}\left[-\frac{d\left(b f-a g\right)\left(\frac{c}{d}+x\right)}{b\left(-d f+c g\right)\left(\frac{a}{b}+x\right)}\right]\left(-\text{Log}\left[\frac{b\left(f+g x\right)}{b f-a g}\right]+\text{Log}\left[-\frac{d\left(f+g x\right)}{-d f+c g}\right]\right)+$$

$$\frac{1}{2}\text{Log}\left[-\frac{d\left(b f-a g\right)\left(\frac{c}{d}+x\right)}{b\left(-d f+c g\right)\left(\frac{a}{b}+x\right)}\right]^2\left(\text{Log}\left[\frac{-b c+a d}{b d\left(\frac{a}{b}+x\right)}\right]+\text{Log}\left[\frac{b\left(f+g x\right)}{b f-a g}\right]-\text{Log}\left[-\frac{\left(-b c+a d\right)\left(f+g x\right)}{b\left(-d f+c g\right)\left(\frac{a}{b}+x\right)}\right]\right)+$$

$$\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\right)\text{PolyLog}\left[2,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right]+\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\right)\text{PolyLog}\Big[$$

$$2,\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\Big]+\text{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\left(\text{PolyLog}\left[2,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]-\text{PolyLog}\left[2,-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\right)-$$

$$\left.\left.\text{PolyLog}\left[3,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right]-\text{PolyLog}\left[3,\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]-\text{PolyLog}\left[3,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]+\text{PolyLog}\left[3,-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\right)\right)+$$

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

$$\text{Log}\left[\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]\left(-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]\right)+$$

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

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

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

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

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

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(-\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]+\text{Log}\left[-\frac{d(f+g x)}{-d f+c g}\right]\right)}{d g\left(\frac{c}{d}+x\right)}-$$

$$\frac{1}{d(b f-a g)\left(\frac{c}{d}+x\right)}b(-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)$$

$$\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(\text{Log}\left[\frac{-b c+a d}{b d\left(\frac{a}{b}+x\right)}\right]+\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{(-b c+a d)(f+g x)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)+$$

$$\frac{(b f-a g)\left(-\frac{a b g\left(\frac{a}{b}+x\right)}{(b f-a g)^2}-\frac{b\left(\frac{a}{b}+x\right)}{b f-a g}\right)\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)\text{Log}\left[1+\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]}{b g\left(\frac{a}{b}+x\right)}-$$

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)\text{Log}\left[1-\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d g\left(\frac{c}{d}+x\right)}-\frac{1}{d(b f-a g)\left(\frac{c}{d}+x\right)}$$

$$b(-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]$$

$$\text{Log}\left[1+\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]+\frac{(b f-a g)\left(-\frac{a b g\left(\frac{a}{b}+x\right)}{(b f-a g)^2}-\frac{b\left(\frac{a}{b}+x\right)}{b f-a g}\right)\text{PolyLog}\left[2,-\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]}{b g\left(\frac{a}{b}+x\right)}+$$

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

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\text{PolyLog}\left[2,\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d g\left(\frac{c}{d}+x\right)}-$$

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

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

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

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

$$\left(\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-\text{Log}\left[-\frac{d\,(f+g\,x)}{-d\,f+c\,g}\right]\right)+\text{Log}\left[\frac{d\,g\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]\text{Log}\left[-\frac{d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right]\left(-\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+\text{Log}\left[-\frac{d\,(f+g\,x)}{-d\,f+c\,g}\right]\right)+$$

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

$$\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right]\right)\text{PolyLog}\left[2,-\frac{b\,g\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right]+\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right]\right)$$

$$\text{PolyLog}\left[2,\frac{d\,g\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]+\text{Log}\left[-\frac{d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right]\left(\text{PolyLog}\left[2,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]-\text{PolyLog}\left[2,-\frac{d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right]\right)-$$

$$\left.\left.\left.\text{PolyLog}\left[3,-\frac{b\,g\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right]-\text{PolyLog}\left[3,\frac{d\,g\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]-\text{PolyLog}\left[3,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]+\text{PolyLog}\left[3,-\frac{d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right]\right)\right)\right)$$

Problem 74: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(f+g\,x)^4}\,dx$$

Optimal (type 4, 747 leaves, 12 steps) :

$$\frac{B^2 (b c - a d)^2 g^2 n^2 (c + d x)}{3 (b f - a g)^2 (d f - c g)^3 (f + g x)} - \frac{B (b c - a d) g^2 n (c + d x)^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 (b f - a g) (d f - c g)^3 (f + g x)^2} +$$

$$\frac{2 B (b c - a d) g (3 b d f - b c g - 2 a d g) n (a + b x) \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 (b f - a g)^3 (d f - c g)^2 (f + g x)} + \frac{b^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 g (b f - a g)^3} - \frac{\left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 g (f + g x)^3} +$$

$$\frac{B^2 (b c - a d)^3 g^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 (b f - a g)^3 (d f - c g)^3} - \frac{B^2 (b c - a d)^3 g^2 n^2 \text{Log}\left[\frac{f+g x}{c+d x}\right]}{3 (b f - a g)^3 (d f - c g)^3} + \frac{2 B^2 (b c - a d)^2 g (3 b d f - b c g - 2 a d g) n^2 \text{Log}\left[\frac{f+g x}{c+d x}\right]}{3 (b f - a g)^3 (d f - c g)^3} + \frac{1}{3 (b f - a g)^3 (d f - c g)^3}$$

$$2 B (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 \left(3 d^2 f^2 - 3 c d f g + c^2 g^2\right)\right) n \left(A + B \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]\right) \text{Log}\left[1 - \frac{(d f - c g) (a + b x)}{(b f - a g) (c + d x)}\right] +$$

$$\frac{2 B^2 (b c - a d) \left(a^2 d^2 g^2 - a b d g (3 d f - c g) + b^2 \left(3 d^2 f^2 - 3 c d f g + c^2 g^2\right)\right) n^2 \text{PolyLog}\left[2, \frac{(d f - c g) (a + b x)}{(b f - a g) (c + d x)}\right]}{3 (b f - a g)^3 (d f - c g)^3}$$

Result (type 4, 55 186 leaves) : Display of huge result suppressed!

Problem 75: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(f + g x)^5} \, dx$$

Optimal (type 4, 1208 leaves, 15 steps) :

$$-\frac{B^2 (b c-a d)^2 g^3 n^2 (c+d x)^2}{12 (b f-a g)^2 (d f-c g)^4 (f+g x)^2}-\frac{B^2 (b c-a d)^3 g^3 n^2 (c+d x)}{6 (b f-a g)^3 (d f-c g)^4 (f+g x)}+\frac{B^2 (b c-a d)^2 g^2 (4 b d f-b c g-3 a d g) n^2 (c+d x)}{4 (b f-a g)^3 (d f-c g)^4 (f+g x)}+$$

$$\frac{B (b c-a d) g^3 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 (b f-a g) (d f-c g)^4 (f+g x)^3}-\frac{B (b c-a d) g^2 (4 b d f-b c g-3 a d g) n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{4 (b f-a g)^2 (d f-c g)^4 (f+g x)^2}+$$

$$\left(B (b c-a d) g \left(3 a^2 d^2 g^2-2 a b d g (4 d f-c g)+b^2 \left(6 d^2 f^2-4 c d f g+c^2 g^2\right)\right) n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)\right)\Big/$$

$$\left(2 (b f-a g)^4 (d f-c g)^3 (f+g x)\right)+\frac{b^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 g (b f-a g)^4}-\frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 g (f+g x)^4}-\frac{B^2 (b c-a d)^4 g^3 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{6 (b f-a g)^4 (d f-c g)^4}+$$

$$\frac{B^2 (b c-a d)^3 g^2 (4 b d f-b c g-3 a d g) n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{4 (b f-a g)^4 (d f-c g)^4}+\frac{B^2 (b c-a d)^4 g^3 n^2 \text{Log}\left[\frac{f+g x}{c+d x}\right]}{6 (b f-a g)^4 (d f-c g)^4}-\frac{B^2 (b c-a d)^3 g^2 (4 b d f-b c g-3 a d g) n^2 \text{Log}\left[\frac{f+g x}{c+d x}\right]}{4 (b f-a g)^4 (d f-c g)^4}+$$

$$\frac{B^2 (b c-a d)^2 g \left(3 a^2 d^2 g^2-2 a b d g (4 d f-c g)+b^2 \left(6 d^2 f^2-4 c d f g+c^2 g^2\right)\right) n^2 \text{Log}\left[\frac{f+g x}{c+d x}\right]}{2 (b f-a g)^4 (d f-c g)^4}-\frac{1}{2 (b f-a g)^4 (d f-c g)^4}$$

$$B (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right) n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[1-\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]-$$

$$\frac{1}{2 (b f-a g)^4 (d f-c g)^4} B^2 (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right) n^2 \text{PolyLog}\left[2,\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]$$

Result (type 4, 142 969 leaves) : Display of huge result suppressed!

Problem 97: Result more than twice size of optimal antiderivative.

$$\int (a g+b g x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 365 leaves, 8 steps) :

$$-\frac{B (b c-a d) g^4 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b d}+\frac{g^4 (a+b x)^5 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 b}+\frac{B (b c-a d)^2 g^4 (a+b x)^3 \left(4 A+B+4 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b d^2}-$$

$$\frac{B (b c-a d)^3 g^4 (a+b x)^2 \left(12 A+7 B+12 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{60 b d^3}+\frac{B (b c-a d)^4 g^4 (a+b x) \left(12 A+13 B+12 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b d^4}+$$

$$\frac{B (b c-a d)^5 g^4 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(12 A+25 B+12 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b d^5}+\frac{2 B^2 (b c-a d)^5 g^4 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{5 b d^5}$$

Result (type 4, 2878 leaves) :

$$g^4 \Bigg(-\frac{8 a^5 B^2}{5 b}+\frac{2 b^4 B^2 c^5}{5 d^5}-\frac{12 a b^3 B^2 c^4}{5 d^4}+\frac{6 a^2 b^2 B^2 c^3}{d^3}-\frac{8 a^3 b B^2 c^2}{d^2}+\frac{28 a^4 B^2 c}{5 d}+a^4 A^2 x+\frac{8}{5} a^4 A B x+\frac{23}{30} a^4 B^2 x+\frac{2 A b^4 B c^4 x}{5 d^4}+\frac{13 b^4 B^2 c^4 x}{30 d^4}-$$

$$\frac{2 a A b^3 B c^3 x}{d^3}-\frac{59 a b^3 B^2 c^3 x}{30 d^3}+\frac{4 a^2 A b^2 B c^2 x}{d^2}+\frac{17 a^2 b^2 B^2 c^2 x}{5 d^2}-\frac{4 a^3 A b B c x}{d}-\frac{79 a^3 b B^2 c x}{30 d}+2 a^3 A^2 b x^2+\frac{6}{5} a^3 A b B x^2+$$

$$\frac{13}{60} a^3 b B^2 x^2-\frac{A b^4 B c^3 x^2}{5 d^3}-\frac{7 b^4 B^2 c^3 x^2}{60 d^3}+\frac{a A b^3 B c^2 x^2}{d^2}+\frac{9 a b^3 B^2 c^2 x^2}{20 d^2}-\frac{2 a^2 A b^2 B c x^2}{d}-\frac{11 a^2 b^2 B^2 c x^2}{20 d}+2 a^2 A^2 b^2 x^3+$$

$$\frac{8}{15} a^2 A b^2 B x^3+\frac{1}{30} a^2 b^2 B^2 x^3+\frac{2 A b^4 B c^2 x^3}{15 d^2}+\frac{b^4 B^2 c^2 x^3}{30 d^2}-\frac{2 a A b^3 B c x^3}{3 d}-\frac{a b^3 B^2 c x^3}{15 d}+a A^2 b^3 x^4+\frac{1}{10} a A b^3 B x^4-\frac{A b^4 B c x^4}{10 d}+$$

$$\frac{1}{5} A^2 b^4 x^5+\frac{8 a^5 B^2 \text{Log}\left[\frac{a}{b}+x\right]}{5 b}+\frac{2 a b^3 B^2 c^4 \text{Log}\left[\frac{a}{b}+x\right]}{5 d^4}-\frac{2 a^2 b^2 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right]}{d^3}+\frac{4 a^3 b B^2 c^2 \text{Log}\left[\frac{a}{b}+x\right]}{d^2}-\frac{4 a^4 B^2 c \text{Log}\left[\frac{a}{b}+x\right]}{d}+$$

$$\frac{a^5 B^2 \text{Log}\left[\frac{a}{b}+x\right]^2}{5 b}-\frac{2 b^4 B^2 c^5 \text{Log}\left[\frac{c}{d}+x\right]}{5 d^5}+\frac{2 a b^3 B^2 c^4 \text{Log}\left[\frac{c}{d}+x\right]}{d^4}-\frac{4 a^2 b^2 B^2 c^3 \text{Log}\left[\frac{c}{d}+x\right]}{d^3}+\frac{4 a^3 b B^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]}{d^2}-\frac{8 a^4 B^2 c \text{Log}\left[\frac{c}{d}+x\right]}{5 d}+$$

$$\frac{b^4 B^2 c^5 \text{Log}\left[\frac{c}{d}+x\right]^2}{5 d^5}-\frac{a b^3 B^2 c^4 \text{Log}\left[\frac{c}{d}+x\right]^2}{d^4}+\frac{2 a^2 b^2 B^2 c^3 \text{Log}\left[\frac{c}{d}+x\right]^2}{d^3}-\frac{2 a^3 b B^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]^2}{d^2}+\frac{a^4 B^2 c \text{Log}\left[\frac{c}{d}+x\right]^2}{d}+$$

$$\frac{2 a^5 A B \text{Log}[a+b x]}{5 b}-\frac{23 a^5 B^2 \text{Log}[a+b x]}{30 b}+\frac{a^2 b^2 B^2 c^3 \text{Log}[a+b x]}{5 d^3}-\frac{13 a^3 b B^2 c^2 \text{Log}[a+b x]}{15 d^2}+\frac{43 a^4 B^2 c \text{Log}[a+b x]}{30 d}-$$

$$\frac{2 a^5 B^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]}{5 b}+\frac{2 a^5 B^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]}{5 b}-\frac{2 a^5 B^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]}{5 b}+2 a^4 A B x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+$$

$$\frac{8}{5} a^4 B^2 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+\frac{2 b^4 B^2 c^4 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{5 d^4}-\frac{2 a b^3 B^2 c^3 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^3}+\frac{4 a^2 b^2 B^2 c^2 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^2}-\frac{4 a^3 b B^2 c x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d}+$$

$$4 a^3 A b B x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+\frac{6}{5} a^3 b B^2 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-\frac{b^4 B^2 c^3 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{5 d^3}+\frac{a b^3 B^2 c^2 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^2}-\frac{2 a^2 b^2 B^2 c x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d}+$$

$$4 a^2 A b^2 B x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+\frac{8}{15} a^2 b^2 B^2 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+\frac{2 b^4 B^2 c^2 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{15 d^2}-\frac{2 a b^3 B^2 c x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{3 d}+$$

$$2 a A b^3 B x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+\frac{1}{10} a b^3 B^2 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-\frac{b^4 B^2 c x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{10 d}+\frac{2}{5} A b^4 B x^5 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+$$

$$\frac{2 a^5 B^2 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{5 b}+a^4 B^2 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+2 a^3 b B^2 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+2 a^2 b^2 B^2 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+$$

$$a b^3 B^2 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+\frac{1}{5} b^4 B^2 x^5 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2-\frac{2 A b^4 B c^5 \text{Log}[c+d x]}{5 d^5}-\frac{13 b^4 B^2 c^5 \text{Log}[c+d x]}{30 d^5}+\frac{2 a A b^3 B c^4 \text{Log}[c+d x]}{d^4}+$$

$$\frac{53 a b^3 B^2 c^4 \text{Log}[c+d x]}{30 d^4}-\frac{4 a^2 A b^2 B c^3 \text{Log}[c+d x]}{d^3}-\frac{38 a^2 b^2 B^2 c^3 \text{Log}[c+d x]}{15 d^3}+\frac{4 a^3 A b B c^2 \text{Log}[c+d x]}{d^2}+\frac{6 a^3 b B^2 c^2 \text{Log}[c+d x]}{5 d^2}-$$

$$\frac{2 a^4 A B c \, Log[c+d x]}{d}+\frac{2 b^4 B^2 c^5 \, Log[\frac{a}{b}+x] \, Log[c+d x]}{5 d^5}-\frac{2 a b^3 B^2 c^4 \, Log[\frac{a}{b}+x] \, Log[c+d x]}{d^4}+\frac{4 a^2 b^2 B^2 c^3 \, Log[\frac{a}{b}+x] \, Log[c+d x]}{d^3}-$$

$$\frac{4 a^3 b B^2 c^2 \, Log[\frac{a}{b}+x] \, Log[c+d x]}{d^2}+\frac{2 a^4 B^2 c \, Log[\frac{a}{b}+x] \, Log[c+d x]}{d}-\frac{2 b^4 B^2 c^5 \, Log[\frac{c}{d}+x] \, Log[c+d x]}{5 d^5}+\frac{2 a b^3 B^2 c^4 \, Log[\frac{c}{d}+x] \, Log[c+d x]}{d^4}-$$

$$\frac{4 a^2 b^2 B^2 c^3 \, Log[\frac{c}{d}+x] \, Log[c+d x]}{d^3}+\frac{4 a^3 b B^2 c^2 \, Log[\frac{c}{d}+x] \, Log[c+d x]}{d^2}-\frac{2 a^4 B^2 c \, Log[\frac{c}{d}+x] \, Log[c+d x]}{d}-\frac{2 b^4 B^2 c^5 \, Log[\frac{e (a+b x)}{c+d x}] \, Log[c+d x]}{5 d^5}+$$

$$\frac{2 a b^3 B^2 c^4 \, Log[\frac{e (a+b x)}{c+d x}] \, Log[c+d x]}{d^4}-\frac{4 a^2 b^2 B^2 c^3 \, Log[\frac{e (a+b x)}{c+d x}] \, Log[c+d x]}{d^3}+\frac{4 a^3 b B^2 c^2 \, Log[\frac{e (a+b x)}{c+d x}] \, Log[c+d x]}{d^2}-$$

$$\frac{2 a^4 B^2 c \, Log[\frac{e (a+b x)}{c+d x}] \, Log[c+d x]}{d}-\frac{2 b^4 B^2 c^5 \, Log[\frac{a}{b}+x] \, Log[\frac{b (c+d x)}{b c-a d}]}{5 d^5}+\frac{2 a b^3 B^2 c^4 \, Log[\frac{a}{b}+x] \, Log[\frac{b (c+d x)}{b c-a d}]}{d^4}-$$

$$\frac{4 a^2 b^2 B^2 c^3 \, Log[\frac{a}{b}+x] \, Log[\frac{b (c+d x)}{b c-a d}]}{d^3}+\frac{4 a^3 b B^2 c^2 \, Log[\frac{a}{b}+x] \, Log[\frac{b (c+d x)}{b c-a d}]}{d^2}-\frac{2 a^4 B^2 c \, Log[\frac{a}{b}+x] \, Log[\frac{b (c+d x)}{b c-a d}]}{d}-$$

$$\left.\frac{2 B^2 c \left(b^4 c^4-5 a b^3 c^3 d+10 a^2 b^2 c^2 d^2-10 a^3 b c d^3+5 a^4 d^4\right) PolyLog[2, \frac{d (a+b x)}{-b c+a d}]}{5 d^5}-\frac{2 a^5 B^2 \, PolyLog[2, \frac{b (c+d x)}{b c-a d}]}{5 b}\right)$$

Problem 98: Result more than twice size of optimal antiderivative.

$$\int (a g+b g x)^3 \left(A+B \, Log[\frac{e (a+b x)}{c+d x}]\right)^2 dx$$

Optimal (type 4, 309 leaves, 7 steps):

$$-\frac{B (b c-a d) g^3 (a+b x)^3 \left(A+B \, Log[\frac{e (a+b x)}{c+d x}]\right)}{6 b d}+\frac{g^3 (a+b x)^4 \left(A+B \, Log[\frac{e (a+b x)}{c+d x}]\right)^2}{4 b}+$$

$$\frac{B (b c-a d)^2 g^3 (a+b x)^2 \left(3 A+B+3 B \, Log[\frac{e (a+b x)}{c+d x}]\right)}{12 b d^2}-\frac{B (b c-a d)^3 g^3 (a+b x) \left(6 A+5 B+6 B \, Log[\frac{e (a+b x)}{c+d x}]\right)}{12 b d^3}-$$

$$\frac{B (b c-a d)^4 g^3 \, Log[\frac{b c-a d}{b (c+d x)}] \left(6 A+11 B+6 B \, Log[\frac{e (a+b x)}{c+d x}]\right)}{12 b d^4}-\frac{B^2 (b c-a d)^4 g^3 \, PolyLog[2, \frac{d (a+b x)}{b (c+d x)}]}{2 b d^4}$$

Result (type 4, 2110 leaves):

$$\frac{1}{12 b d^4}$$

$$g^3 \left(-6 b^4 B^2 c^4+30 a b^3 B^2 c^3 d-60 a^2 b^2 B^2 c^2 d^2+54 a^3 b B^2 c d^3-18 a^4 B^2 d^4-6 A b^4 B c^3 d x-5 b^4 B^2 c^3 d x+24 a A b^3 B c^2 d^2 x+17 a b^3 B^2 c^2 d^2 x-36 a^2 A\right.$$

$$b^2 B c d^3 x-19 a^2 b^2 B^2 c d^3 x+12 a^3 A^2 b d^4 x+18 a^3 A b B d^4 x+7 a^3 b B^2 d^4 x+3 A b^4 B c^2 d^2 x^2+b^4 B^2 c^2 d^2 x^2-12 a A b^3 B c d^3 x^2-2 a b^3 B^2 c d^3 x^2+$$

$$18\,a^2 A^2 b^2 d^4 x^2+9\,a^2 A\,b^2 B\,d^4 x^2+a^2 b^2 B^2 d^4 x^2-2\,A\,b^4 B\,c\,d^3 x^3+12\,a\,A^2 b^3 d^4 x^3+2\,a\,A\,b^3 B\,d^4 x^3+3\,A^2 b^4 d^4 x^4-6\,a\,b^3 B^2 c^3 d\,\text{Log}\left[\frac{a}{b}+x\right]+$$

$$24\,a^2 b^2 B^2 c^2 d^2\,\text{Log}\left[\frac{a}{b}+x\right]-36\,a^3 b\,B^2 c\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]+18\,a^4 B^2 d^4\,\text{Log}\left[\frac{a}{b}+x\right]+3\,a^4 B^2 d^4\,\text{Log}\left[\frac{a}{b}+x\right]^2+6\,b^4 B^2 c^4\,\text{Log}\left[\frac{c}{d}+x\right]-$$

$$24\,a\,b^3 B^2 c^3 d\,\text{Log}\left[\frac{c}{d}+x\right]+36\,a^2 b^2 B^2 c^2 d^2\,\text{Log}\left[\frac{c}{d}+x\right]-18\,a^3 b\,B^2 c\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]-3\,b^4 B^2 c^4\,\text{Log}\left[\frac{c}{d}+x\right]^2+12\,a\,b^3 B^2 c^3 d\,\text{Log}\left[\frac{c}{d}+x\right]^2-$$

$$18\,a^2 b^2 B^2 c^2 d^2\,\text{Log}\left[\frac{c}{d}+x\right]^2+12\,a^3 b\,B^2 c\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]^2-3\,a^2 b^2 B^2 c^2 d^2\,\text{Log}[a+b\,x]+10\,a^3 b\,B^2 c\,d^3\,\text{Log}[a+b\,x]+6\,a^4 A\,B\,d^4\,\text{Log}[a+b\,x]-$$

$$7\,a^4 B^2 d^4\,\text{Log}[a+b\,x]-6\,a^4 B^2 d^4\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b\,x]+6\,a^4 B^2 d^4\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]-6\,a^4 B^2 d^4\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-$$

$$6\,b^4 B^2 c^3 d\,x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+24\,a\,b^3 B^2 c^2 d^2 x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-36\,a^2 b^2 B^2 c\,d^3 x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+24\,a^3 A\,b\,B\,d^4 x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+$$

$$18\,a^3 b\,B^2 d^4 x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+3\,b^4 B^2 c^2 d^2 x^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-12\,a\,b^3 B^2 c\,d^3 x^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+36\,a^2 A\,b^2 B\,d^4 x^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+$$

$$9\,a^2 b^2 B^2 d^4 x^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-2\,b^4 B^2 c\,d^3 x^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+24\,a\,A\,b^3 B\,d^4 x^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+2\,a\,b^3 B^2 d^4 x^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+$$

$$6\,A\,b^4 B\,d^4 x^4\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+6\,a^4 B^2 d^4\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+12\,a^3 b\,B^2 d^4 x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+$$

$$18\,a^2 b^2 B^2 d^4 x^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+12\,a\,b^3 B^2 d^4 x^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+3\,b^4 B^2 d^4 x^4\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+$$

$$6\,A\,b^4 B\,c^4\,\text{Log}[c+d\,x]+5\,b^4 B^2 c^4\,\text{Log}[c+d\,x]-24\,a\,A\,b^3 B\,c^3 d\,\text{Log}[c+d\,x]-14\,a\,b^3 B^2 c^3 d\,\text{Log}[c+d\,x]+$$

$$36\,a^2 A\,b^2 B\,c^2 d^2\,\text{Log}[c+d\,x]+9\,a^2 b^2 B^2 c^2 d^2\,\text{Log}[c+d\,x]-24\,a^3 A\,b\,B\,c\,d^3\,\text{Log}[c+d\,x]-6\,b^4 B^2 c^4\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+$$

$$24\,a\,b^3 B^2 c^3 d\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-36\,a^2 b^2 B^2 c^2 d^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+24\,a^3 b\,B^2 c\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+$$

$$6\,b^4 B^2 c^4\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-24\,a\,b^3 B^2 c^3 d\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]+36\,a^2 b^2 B^2 c^2 d^2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-$$

$$24\,a^3 b\,B^2 c\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]+6\,b^4 B^2 c^4\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\text{Log}[c+d\,x]-24\,a\,b^3 B^2 c^3 d\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\text{Log}[c+d\,x]+$$

$$36\,a^2 b^2 B^2 c^2 d^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\text{Log}[c+d\,x]-24\,a^3 b\,B^2 c\,d^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\text{Log}[c+d\,x]+6\,b^4 B^2 c^4\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$24\,a\,b^3 B^2 c^3 d\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+36\,a^2 b^2 B^2 c^2 d^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-24\,a^3 b\,B^2 c\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$6\,b\,B^2 c\,\left(b^3 c^3-4\,a\,b^2 c^2 d+6\,a^2 b\,c\,d^2-4\,a^3 d^3\right)\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,a^4 B^2 d^4\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)\Bigg)$$

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

$$\int (a g + b g x)^2 \left(A + B \operatorname{Log}\left[\frac{e (a + b x)}{c + d x}\right]\right)^2 dx$$

Optimal (type 4, 253 leaves, 6 steps):

$$-\frac{B (b c - a d) g^2 (a + b x)^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b d} + \frac{g^2 (a + b x)^3 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 b} + \frac{B (b c - a d)^2 g^2 (a + b x) \left(2 A + B + 2 B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b d^2} + \frac{B (b c - a d)^3 g^2 \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(2 A + 3 B + 2 B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b d^3} + \frac{2 B^2 (b c - a d)^3 g^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3}$$

Result (type 4, 1292 leaves):

$$
\begin{aligned}
&g^2 \Bigg(a^2 A^2 x + a A^2 b x^2 + \frac{1}{3} A^2 b^2 x^3 + \frac{2 a^2 A B \left(a d \text{Log}[a+b x] + b d x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - b c \text{Log}[c+d x]\right)}{b d} + \\
&\frac{1}{3} A b^2 B \left(\frac{(b c-a d) x (2 b c+2 a d-b d x)}{b^2 d^2} + \frac{2 a^3 \text{Log}[a+b x]}{b^3} + 2 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - \frac{2 c^3 \text{Log}[c+d x]}{d^3}\right) + \\
&2 a A B \left(a x - \frac{b c x}{d} - \frac{a^2 \text{Log}[a+b x]}{b} + b x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + \frac{b c^2 \text{Log}[c+d x]}{d^2}\right) + \\
&\frac{1}{b d} a^2 B^2 \Bigg(a d \text{Log}\left[\frac{a}{b}+x\right]^2 + b c \text{Log}\left[\frac{c}{d}+x\right]^2 - 2 a d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 2 a d \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 2 a d \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + \\
&\quad 2 a d \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + b d x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 2 b c \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] - 2 b c \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] - \\
&\quad 2 b c \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c+d x] - 2 b c \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] - 2 b c \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right] - 2 a d \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right] \Bigg) + \\
&\frac{1}{b d^2} a B^2 \Bigg(2 d (-b c+a d) (a+b x) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right) - a^2 d^2 \text{Log}\left[\frac{a}{b}+x\right]^2 + 2 b (b c-a d) (c+d x) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right) - b^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]^2 + \\
&\quad b^2 d^2 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 2 \left(\text{Log}\left[\frac{a}{b}+x\right] - \text{Log}\left[\frac{c}{d}+x\right] - \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \left(a^2 d^2 \text{Log}[a+b x] - b \left(d (-b c+a d) x + b c^2 \text{Log}[c+d x]\right)\right) + \\
&\quad 2 b^2 c^2 \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] + \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]\right) + 2 a^2 d^2 \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right) \Bigg) + \\
&b^2 B^2 \Bigg(\frac{1}{3} x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 - \frac{1}{6 b^3 d^3} \Bigg(4 d (-b c+a d) (b c+a d) (a+b x) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right) - 2 a^3 d^3 \text{Log}\left[\frac{a}{b}+x\right]^2 + \\
&\quad 4 b (b c-a d) (b c+a d) (c+d x) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right) - 2 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right]^2 + d^2 (b c-a d) \\
&\quad \left(b x (2 a-b x) + 2 b^2 x^2 \text{Log}\left[\frac{a}{b}+x\right] - 2 a^2 \text{Log}[a+b x]\right) + b^2 (b c-a d) \left(d x (-2 c+d x) - 2 d^2 x^2 \text{Log}\left[\frac{c}{d}+x\right] + 2 c^2 \text{Log}[c+d x]\right) - \\
&\quad 2 \left(\text{Log}\left[\frac{a}{b}+x\right] - \text{Log}\left[\frac{c}{d}+x\right] - \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \left(b d (b c-a d) x (-2 b c-2 a d+b d x) - 2 a^3 d^3 \text{Log}[a+b x] + 2 b^3 c^3 \text{Log}[c+d x]\right) + \\
&\quad 4 b^3 c^3 \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] + \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]\right) + 4 a^3 d^3 \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right) \Bigg) \Bigg) \Bigg)
\end{aligned}
$$

Problem 100: Result more than twice size of optimal antiderivative.

$$\int (a g + b g x) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 180 leaves, 5 steps) :

$$-\frac{B\,(b\,c-a\,d)\,g\,(a+b\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b\,d}+\frac{g\,(a+b\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,b}-$$
$$\frac{B\,(b\,c-a\,d)^2\,g\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b\,d^2}-\frac{B^2\,(b\,c-a\,d)^2\,g\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,d^2}$$

Result (type 4, 733 leaves):

$$g\,\Bigg(a\,A^2\,x+\frac{1}{2}\,A^2\,b\,x^2+\frac{2\,a\,A\,B\,\left(a\,d\,\text{Log}[a+b\,x]+b\,d\,x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-b\,c\,\text{Log}[c+d\,x]\right)}{b\,d}+$$
$$A\,B\,\left(a\,x-\frac{b\,c\,x}{d}-\frac{a^2\,\text{Log}[a+b\,x]}{b}+b\,x^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+\frac{b\,c^2\,\text{Log}[c+d\,x]}{d^2}\right)+$$
$$\frac{1}{b\,d}\,a\,B^2\,\Bigg(a\,d\,\text{Log}\left[\frac{a}{b}+x\right]^2+b\,c\,\text{Log}\left[\frac{c}{d}+x\right]^2-2\,a\,d\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[a+b\,x]+2\,a\,d\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[a+b\,x]-2\,a\,d\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$
$$2\,a\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+b\,d\,x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+2\,b\,c\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[c+d\,x]-2\,b\,c\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[c+d\,x]-$$
$$2\,b\,c\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[c+d\,x]-2\,b\,c\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-2\,b\,c\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-2\,a\,d\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)+$$
$$\frac{1}{2}\,b\,B^2\,\Bigg(x^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2-\frac{1}{b^2\,d^2}\Bigg(-2\,d\,(-b\,c+a\,d)\,(a+b\,x)\,\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)+a^2\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]^2-2\,b\,(b\,c-a\,d)\,(c+d\,x)\,\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)+$$
$$b^2\,c^2\,\text{Log}\left[\frac{c}{d}+x\right]^2-2\,\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\left(a^2\,d^2\,\text{Log}[a+b\,x]-b\,\left(d\,(-b\,c+a\,d)\,x+b\,c^2\,\text{Log}[c+d\,x]\right)\right)-$$
$$2\,b^2\,c^2\,\left(\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-2\,a^2\,d^2\,\left(\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\Bigg)\Bigg)\Bigg)$$

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

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

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

$$-\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}+\frac{2\,B\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}+\frac{2\,B^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}$$

Result (type 4, 458 leaves):

$$\frac{1}{3 b g}\Bigg(3 A^2 \text{Log}[a+b x]+ 3 A B\left(\text{Log}\left[\frac{a}{b}+x\right]^2-2 \text{Log}[a+b x]\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{e(a+b x)}{c+d x}\right]\right)-2\left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d(a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b(c+d x)}{b c-a d}\right]\right)\right)+ B^2\Bigg(\text{Log}\left[\frac{a}{b}+x\right]^3+3 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d(a+b x)}{-b c+a d}\right]+3 \text{Log}[a+b x]\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e(a+b x)}{c+d x}\right]\right)^2+ 3 \text{Log}\left[\frac{a}{b}+x\right]^2\left(-\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]\right)+6 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]+6 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b(c+d x)}{b c-a d}\right]- 3\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{e(a+b x)}{c+d x}\right]\right)\left(\text{Log}\left[\frac{a}{b}+x\right]^2-2\left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d(a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b(c+d x)}{b c-a d}\right]\right)\right)- 6 \text{PolyLog}\left[3,\frac{d(a+b x)}{-b c+a d}\right]-6 \text{PolyLog}\left[3,\frac{b(c+d x)}{b c-a d}\right]\Bigg)\Bigg)$$

Problem 106: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 28 leaves, 1 step):

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

Result (type 4, 130 leaves):

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

Problem 128: Result more than twice size of optimal antiderivative.

$$\int (a g+b g x)^4\left(A+B \text{Log}\left[\frac{e(a+b x)^2}{(c+d x)^2}\right]\right)^2 dx$$

Optimal (type 4, 377 leaves, 8 steps):

$$-\frac{B\,(b c-a d)\,g^4\,(a+b x)^4\left(A+B\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{5\,b\,d}+\frac{g^4\,(a+b x)^5\left(A+B\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{5\,b}+\frac{2\,B\,(b c-a d)^2\,g^4\,(a+b x)^3\left(2 A+B+2 B\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{15\,b\,d^2}-$$
$$\frac{B\,(b c-a d)^3\,g^4\,(a+b x)^2\left(6 A+7 B+6 B\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{15\,b\,d^3}+\frac{2\,B\,(b c-a d)^4\,g^4\,(a+b x)\left(6 A+13 B+6 B\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{15\,b\,d^4}+$$
$$\frac{2\,B\,(b c-a d)^5\,g^4\left(6 A+25 B+6 B\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)\text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{15\,b\,d^5}+\frac{8\,B^2\,(b c-a d)^5\,g^4\,\text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{5\,b\,d^5}$$

Result (type 4, 2907 leaves):

$$\frac{1}{15\,b\,d^5}$$
$$g^4\Big(24 b^5 B^2 c^5-144 a b^4 B^2 c^4 d+360 a^2 b^3 B^2 c^3 d^2-480 a^3 b^2 B^2 c^2 d^3+336 a^4 b B^2 c d^4-96 a^5 B^2 d^5+12 A b^5 B c^4 d x+26 b^5 B^2 c^4 d x-60 a A b^4 B c^3 d^2 x-$$
$$118 a b^4 B^2 c^3 d^2 x+120 a^2 A b^3 B c^2 d^3 x+204 a^2 b^3 B^2 c^2 d^3 x-120 a^3 A b^2 B c d^4 x-158 a^3 b^2 B^2 c d^4 x+15 a^4 A^2 b d^5 x+48 a^4 A b B d^5 x+$$
$$46 a^4 b B^2 d^5 x-6 A b^5 B c^3 d^2 x^2-7 b^5 B^2 c^3 d^2 x^2+30 a A b^4 B c^2 d^3 x^2+27 a b^4 B^2 c^2 d^3 x^2-60 a^2 A b^3 B c d^4 x^2-33 a^2 b^3 B^2 c d^4 x^2+$$
$$30 a^3 A^2 b^2 d^5 x^2+36 a^3 A b^2 B d^5 x^2+13 a^3 b^2 B^2 d^5 x^2+4 A b^5 B c^2 d^3 x^3+2 b^5 B^2 c^2 d^3 x^3-20 a A b^4 B c d^4 x^3-4 a b^4 B^2 c d^4 x^3+30 a^2 A^2 b^3 d^5 x^3+$$
$$16 a^2 A b^3 B d^5 x^3+2 a^2 b^3 B^2 d^5 x^3-3 A b^5 B c d^4 x^4+15 a A^2 b^4 d^5 x^4+3 a A b^4 B d^5 x^4+3 A^2 b^5 d^5 x^5+24 a b^4 B^2 c^4 d\,\text{Log}\left[\frac{a}{b}+x\right]-$$
$$120 a^2 b^3 B^2 c^3 d^2\,\text{Log}\left[\frac{a}{b}+x\right]+240 a^3 b^2 B^2 c^2 d^3\,\text{Log}\left[\frac{a}{b}+x\right]-240 a^4 b B^2 c d^4\,\text{Log}\left[\frac{a}{b}+x\right]+96 a^5 B^2 d^5\,\text{Log}\left[\frac{a}{b}+x\right]+12 a^5 B^2 d^5\,\text{Log}\left[\frac{a}{b}+x\right]^2-$$
$$24 b^5 B^2 c^5\,\text{Log}\left[\frac{c}{d}+x\right]+120 a b^4 B^2 c^4 d\,\text{Log}\left[\frac{c}{d}+x\right]-240 a^2 b^3 B^2 c^3 d^2\,\text{Log}\left[\frac{c}{d}+x\right]+240 a^3 b^2 B^2 c^2 d^3\,\text{Log}\left[\frac{c}{d}+x\right]-96 a^4 b B^2 c d^4\,\text{Log}\left[\frac{c}{d}+x\right]+$$
$$12 b^5 B^2 c^5\,\text{Log}\left[\frac{c}{d}+x\right]^2-60 a b^4 B^2 c^4 d\,\text{Log}\left[\frac{c}{d}+x\right]^2+120 a^2 b^3 B^2 c^3 d^2\,\text{Log}\left[\frac{c}{d}+x\right]^2-120 a^3 b^2 B^2 c^2 d^3\,\text{Log}\left[\frac{c}{d}+x\right]^2+$$
$$60 a^4 b B^2 c d^4\,\text{Log}\left[\frac{c}{d}+x\right]^2+12 a^2 b^3 B^2 c^3 d^2\,\text{Log}[a+b x]-52 a^3 b^2 B^2 c^2 d^3\,\text{Log}[a+b x]+86 a^4 b B^2 c d^4\,\text{Log}[a+b x]+12 a^5 A B d^5\,\text{Log}[a+b x]-$$
$$46 a^5 B^2 d^5\,\text{Log}[a+b x]-24 a^5 B^2 d^5\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b x]+24 a^5 B^2 d^5\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b x]-24 a^5 B^2 d^5\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+$$
$$12 b^5 B^2 c^4 d x\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-60 a b^4 B^2 c^3 d^2 x\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+120 a^2 b^3 B^2 c^2 d^3 x\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-120 a^3 b^2 B^2 c d^4 x\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+$$
$$30 a^4 A b B d^5 x\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+48 a^4 b B^2 d^5 x\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-6 b^5 B^2 c^3 d^2 x^2\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+30 a b^4 B^2 c^2 d^3 x^2\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-$$
$$60 a^2 b^3 B^2 c d^4 x^2\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+60 a^3 A b^2 B d^5 x^2\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+36 a^3 b^2 B^2 d^5 x^2\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+4 b^5 B^2 c^2 d^3 x^3\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-$$
$$20 a b^4 B^2 c d^4 x^3\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+60 a^2 A b^3 B d^5 x^3\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+16 a^2 b^3 B^2 d^5 x^3\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-3 b^5 B^2 c d^4 x^4\,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+$$

$$30\,a\,A\,b^4\,B\,d^5\,x^4\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]+3\,a\,b^4\,B^2\,d^5\,x^4\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]+6\,A\,b^5\,B\,d^5\,x^5\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]+12\,a^5\,B^2\,d^5\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]+$$

$$15\,a^4\,b\,B^2\,d^5\,x\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]^2+30\,a^3\,b^2\,B^2\,d^5\,x^2\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]^2+30\,a^2\,b^3\,B^2\,d^5\,x^3\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]^2+15\,a\,b^4\,B^2\,d^5\,x^4\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]^2+$$

$$3\,b^5\,B^2\,d^5\,x^5\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]^2-12\,A\,b^5\,B\,c^5\,\text{Log}[c+d\,x]-26\,b^5\,B^2\,c^5\,\text{Log}[c+d\,x]+60\,a\,A\,b^4\,B\,c^4\,d\,\text{Log}[c+d\,x]+$$

$$106\,a\,b^4\,B^2\,c^4\,d\,\text{Log}[c+d\,x]-120\,a^2\,A\,b^3\,B\,c^3\,d^2\,\text{Log}[c+d\,x]-152\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}[c+d\,x]+120\,a^3\,A\,b^2\,B\,c^2\,d^3\,\text{Log}[c+d\,x]+$$

$$72\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}[c+d\,x]-60\,a^4\,A\,b\,B\,c\,d^4\,\text{Log}[c+d\,x]+24\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-120\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+$$

$$240\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+120\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-$$

$$24\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]+120\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-240\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]+$$

$$240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-120\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-12\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\text{Log}[c+d\,x]+$$

$$60\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\text{Log}[c+d\,x]-120\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\text{Log}[c+d\,x]+120\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\text{Log}[c+d\,x]-$$

$$60\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\text{Log}[c+d\,x]-24\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+120\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$240\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-120\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$24\,b\,B^2\,c\,\left(b^4\,c^4-5\,a\,b^3\,c^3\,d+10\,a^2\,b^2\,c^2\,d^2-10\,a^3\,b\,c\,d^3+5\,a^4\,d^4\right)\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-24\,a^5\,B^2\,d^5\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)$$

Problem 129: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 319 leaves, 7 steps):

$$-\frac{B\,(b c-a d)\,g^3\,(a+b x)^3\,\left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b d}+\frac{g^3\,(a+b x)^4\,\left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{4 b}+$$

$$\frac{B\,(b c-a d)^2\,g^3\,(a+b x)^2\,\left(3 A+2 B+3 B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{6 b d^2}-\frac{B\,(b c-a d)^3\,g^3\,(a+b x)\,\left(3 A+5 B+3 B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b d^3}-$$

$$\frac{B\,(b c-a d)^4\,g^3\,\left(3 A+11 B+3 B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)\,\text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{3 b d^4}-\frac{2 B^2\,(b c-a d)^4\,g^3\,\text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b d^4}$$

Result (type 4, 2125 leaves) :

$$g^3\left(-\frac{6 a^4 B^2}{b}-\frac{2 b^3 B^2 c^4}{d^4}+\frac{10 a b^2 B^2 c^3}{d^3}-\frac{20 a^2 b B^2 c^2}{d^2}+\frac{18 a^3 B^2 c}{d}+a^3 A^2 x+3 a^3 A B x+\frac{7}{3} a^3 B^2 x-\frac{A b^3 B c^3 x}{d^3}-\frac{5 b^3 B^2 c^3 x}{3 d^3}+\frac{4 a A b^2 B c^2 x}{d^2}+\right.$$

$$\frac{17 a b^2 B^2 c^2 x}{3 d^2}-\frac{6 a^2 A b B c x}{d}-\frac{19 a^2 b B^2 c x}{3 d}+\frac{3}{2} a^2 A^2 b x^2+\frac{3}{2} a^2 A b B x^2+\frac{1}{3} a^2 b B^2 x^2+\frac{A b^3 B c^2 x^2}{2 d^2}+\frac{b^3 B^2 c^2 x^2}{3 d^2}-\frac{2 a A b^2 B c x^2}{d}-$$

$$\frac{2 a b^2 B^2 c x^2}{3 d}+a A^2 b^2 x^3+\frac{1}{3} a A b^2 B x^3-\frac{A b^3 B c x^3}{3 d}+\frac{1}{4} A^2 b^3 x^4+\frac{6 a^4 B^2 \text{Log}\left[\frac{a}{b}+x\right]}{b}-\frac{2 a b^2 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right]}{d^3}+\frac{8 a^2 b B^2 c^2 \text{Log}\left[\frac{a}{b}+x\right]}{d^2}-$$

$$\frac{12 a^3 B^2 c \text{Log}\left[\frac{a}{b}+x\right]}{d}+\frac{a^4 B^2 \text{Log}\left[\frac{a}{b}+x\right]^2}{b}+\frac{2 b^3 B^2 c^4 \text{Log}\left[\frac{c}{d}+x\right]}{d^4}-\frac{8 a b^2 B^2 c^3 \text{Log}\left[\frac{c}{d}+x\right]}{d^3}+\frac{12 a^2 b B^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]}{d^2}-\frac{6 a^3 B^2 c \text{Log}\left[\frac{c}{d}+x\right]}{d}-$$

$$\frac{b^3 B^2 c^4 \text{Log}\left[\frac{c}{d}+x\right]^2}{d^4}+\frac{4 a b^2 B^2 c^3 \text{Log}\left[\frac{c}{d}+x\right]^2}{d^3}-\frac{6 a^2 b B^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]^2}{d^2}+\frac{4 a^3 B^2 c \text{Log}\left[\frac{c}{d}+x\right]^2}{d}+\frac{a^4 A B \text{Log}[a+b x]}{b}-$$

$$\frac{7 a^4 B^2 \text{Log}[a+b x]}{3 b}-\frac{a^2 b B^2 c^2 \text{Log}[a+b x]}{d^2}+\frac{10 a^3 B^2 c \text{Log}[a+b x]}{3 d}-\frac{2 a^4 B^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]}{b}+\frac{2 a^4 B^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]}{b}-$$

$$\frac{2 a^4 B^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]}{b}+2 a^3 A B x \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+3 a^3 B^2 x \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-\frac{b^3 B^2 c^3 x \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{d^3}+$$

$$\frac{4 a b^2 B^2 c^2 x \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{d^2}-\frac{6 a^2 b B^2 c x \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{d}+3 a^2 A b B x^2 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+\frac{3}{2} a^2 b B^2 x^2 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+$$

$$\frac{b^3 B^2 c^2 x^2 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{2 d^2}-\frac{2 a b^2 B^2 c x^2 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{d}+2 a A b^2 B x^3 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+\frac{1}{3} a b^2 B^2 x^3 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-\frac{b^3 B^2 c x^3 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{3 d}+$$

$$\frac{1}{2} A b^3 B x^4 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+\frac{a^4 B^2 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{b}+a^3 B^2 x \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2+\frac{3}{2} a^2 b B^2 x^2 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2+$$

$$a b^2 B^2 x^3 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2+\frac{1}{4} b^3 B^2 x^4 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2+\frac{A b^3 B c^4 \text{Log}[c+d x]}{d^4}+\frac{5 b^3 B^2 c^4 \text{Log}[c+d x]}{3 d^4}-\frac{4 a A b^2 B c^3 \text{Log}[c+d x]}{d^3}-$$

$$\frac{14 a b^2 B^2 c^3 \text{Log}[c+d x]}{3 d^3}+\frac{6 a^2 A b B c^2 \text{Log}[c+d x]}{d^2}+\frac{3 a^2 b B^2 c^2 \text{Log}[c+d x]}{d^2}-\frac{4 a^3 A B c \text{Log}[c+d x]}{d}-\frac{2 b^3 B^2 c^4 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]}{d^4}+$$

$$\frac{8 a b^2 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]}{d^3}-\frac{12 a^2 b B^2 c^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]}{d^2}+\frac{8 a^3 B^2 c \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]}{d}+\frac{2 b^3 B^2 c^4 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]}{d^4}-$$

$$\frac{8 a b^2 B^2 c^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]}{d^3}+\frac{12 a^2 b B^2 c^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]}{d^2}-\frac{8 a^3 B^2 c \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]}{d}+\frac{b^3 B^2 c^4 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] \text{Log}[c+d x]}{d^4}-$$

$$\frac{4 a b^2 B^2 c^3 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] \text{Log}[c+d x]}{d^3}+\frac{6 a^2 b B^2 c^2 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] \text{Log}[c+d x]}{d^2}-\frac{4 a^3 B^2 c \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] \text{Log}[c+d x]}{d}+$$

$$\frac{2 b^3 B^2 c^4 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^4}-\frac{8 a b^2 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^3}+\frac{12 a^2 b B^2 c^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2}-$$

$$\left.\frac{8 a^3 B^2 c \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d}+\frac{2 B^2 c \left(b^3 c^3-4 a b^2 c^2 d+6 a^2 b c d^2-4 a^3 d^3\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]}{d^4}-\frac{2 a^4 B^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b}\right)$$

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

$$\int (a g+b g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2 dx$$

Optimal (type 4, 255 leaves, 6 steps):

$$-\frac{2 B (b c-a d) g^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b d}+\frac{g^2 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{3 b}+\frac{4 B (b c-a d)^2 g^2 (a+b x) \left(A+B+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b d^2}+$$

$$\frac{4 B (b c-a d)^3 g^2 \left(A+3 B+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{3 b d^3}+\frac{8 B^2 (b c-a d)^3 g^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3}$$

Result (type 4, 1316 leaves):

$$g^2 \left(a^2 A^2 x + a A^2 b x^2 + \frac{1}{3} A^2 b^2 x^3 + \frac{2 a^2 A B \left(2 a d \operatorname{Log}[a+b x] + b d x \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] - 2 b c \operatorname{Log}[c+d x]\right)}{b d} + \right.$$

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

$$2 a A B \left(2 a x - \frac{2 b c x}{d} - \frac{2 a^2 \operatorname{Log}[a+b x]}{b} + b x^2 \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] + \frac{2 b c^2 \operatorname{Log}[c+d x]}{d^2}\right) +$$

$$\frac{1}{b d} a^2 B^2 \left(4 a d \operatorname{Log}\left[\frac{a}{b}+x\right]^2 + 4 b c \operatorname{Log}\left[\frac{c}{d}+x\right]^2 - 8 a d \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[a+b x] + 8 a d \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[a+b x] - 8 a d \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c + a d}\right] + \right.$$

$$4 a d \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] + b d x \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2 + 8 b c \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[c+d x] - 8 b c \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[c+d x] -$$

$$\left. 4 b c \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] \operatorname{Log}[c+d x] - 8 b c \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c - a d}\right] - 8 b c \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{-b c + a d}\right] - 8 a d \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c - a d}\right]\right) + \frac{1}{b}$$

$$a B^2 \left(b^2 x^2 \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2 - \frac{1}{d^2} 4 \left(-2 d (-b c + a d) (a+b x) \left(-1 + \operatorname{Log}\left[\frac{a}{b}+x\right]\right) + a^2 d^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2 - 2 b (b c - a d) (c+d x) \left(-1 + \operatorname{Log}\left[\frac{c}{d}+x\right]\right) + \right.\right.$$

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

$$\left.\left. 2 b^2 c^2 \left(\operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c - a d}\right] + \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{-b c + a d}\right]\right) - 2 a^2 d^2 \left(\operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c + a d}\right] + \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c - a d}\right]\right)\right)\right) +$$

$$\frac{1}{3} b^2 B^2 \left(x^3 \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2 - \frac{1}{b^3 d^3} 2 \left(4 d (-b c + a d) (b c + a d) (a+b x) \left(-1 + \operatorname{Log}\left[\frac{a}{b}+x\right]\right) - 2 a^3 d^3 \operatorname{Log}\left[\frac{a}{b}+x\right]^2 + \right.\right.$$

$$4 b (b c - a d) (b c + a d) (c+d x) \left(-1 + \operatorname{Log}\left[\frac{c}{d}+x\right]\right) - 2 b^3 c^3 \operatorname{Log}\left[\frac{c}{d}+x\right]^2 + d^2 (b c - a d)$$

$$\left(b x (2 a - b x) + 2 b^2 x^2 \operatorname{Log}\left[\frac{a}{b}+x\right] - 2 a^2 \operatorname{Log}[a+b x]\right) + b^2 (b c - a d) \left(d x (-2 c + d x) - 2 d^2 x^2 \operatorname{Log}\left[\frac{c}{d}+x\right] + 2 c^2 \operatorname{Log}[c+d x]\right) -$$

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

$$\left.\left.\left. 4 b^3 c^3 \left(\operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c - a d}\right] + \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{-b c + a d}\right]\right) + 4 a^3 d^3 \left(\operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c + a d}\right] + \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c - a d}\right]\right)\right)\right)\right)$$

Problem 131: Result more than twice size of optimal antiderivative.

$$\int (a g + b g x) \left(A + B \text{Log}\left[\frac{e (a + b x)^2}{(c + d x)^2}\right]\right)^2 dx$$

Optimal (type 4, 188 leaves, 5 steps):

$$-\frac{2 B (b c - a d) g (a + b x) \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{b d} + \frac{g (a + b x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{2 b} - \frac{2 B (b c - a d)^2 g \left(A + 2 B + B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b d^2} - \frac{4 B^2 (b c - a d)^2 g \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}$$

Result (type 4, 849 leaves):

$$g \left(a A^2 x + \frac{1}{2} A^2 b x^2 + 2 a A B \left(\frac{2 (b c - a d) (a d \text{Log}[a + b x] - b c \text{Log}[c + d x])}{b^2 c d - a b d^2} + x \text{Log}\left[\frac{a^2 e + 2 a b e x + b^2 e x^2}{(c + d x)^2}\right]\right) + \right.$$
$$2 A b B \left(-(b c - a d) \left(\frac{x}{b d} + \frac{a^2 \text{Log}[a + b x]}{b^2 (b c - a d)} - \frac{c^2 \text{Log}[c + d x]}{d^2 (b c - a d)}\right) + \frac{1}{2} x^2 \text{Log}\left[\frac{a^2 e + 2 a b e x + b^2 e x^2}{(c + d x)^2}\right]\right) +$$
$$a B^2 \left(x \text{Log}\left[\frac{a^2 e + 2 a b e x + b^2 e x^2}{(c + d x)^2}\right]^2 - \frac{1}{b d} 4 \left(-a d \text{Log}\left[\frac{a}{b} + x\right]^2 - b c \text{Log}\left[\frac{c}{d} + x\right]^2 + 2 a d \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[a + b x] - 2 a d \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] + \right.\right.$$
$$2 a d \text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] - a d \text{Log}[a + b x] \text{Log}\left[\frac{e (a + b x)^2}{(c + d x)^2}\right] - 2 b c \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[c + d x] + 2 b c \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[c + d x] +$$
$$\left.\left. b c \text{Log}\left[\frac{e (a + b x)^2}{(c + d x)^2}\right] \text{Log}[c + d x] + 2 b c \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + 2 b c \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right] + 2 a d \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\right)\right) +$$
$$b B^2 \left(\frac{1}{2} x^2 \text{Log}\left[\frac{a^2 e + 2 a b e x + b^2 e x^2}{(c + d x)^2}\right]^2 - \frac{1}{b^2 d^2} 2 \left(-2 d (-b c + a d) (a + b x) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) + a^2 d^2 \text{Log}\left[\frac{a}{b} + x\right]^2 - \right.\right.$$
$$2 b (b c - a d) (c + d x) \left(-1 + \text{Log}\left[\frac{c}{d} + x\right]\right) + b^2 c^2 \text{Log}\left[\frac{c}{d} + x\right]^2 -$$
$$\left(2 \text{Log}\left[\frac{a}{b} + x\right] - 2 \text{Log}\left[\frac{c}{d} + x\right] - \text{Log}\left[\frac{e (a + b x)^2}{(c + d x)^2}\right]\right) \left(a^2 d^2 \text{Log}[a + b x] - b \left(d (-b c + a d) x + b c^2 \text{Log}[c + d x]\right)\right) -$$
$$\left.\left.\left. 2 b^2 c^2 \left(\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\right) - 2 a^2 d^2 \left(\text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\right)\right)\right)\right)$$

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

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

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

$$-\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2 \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b g}+\frac{4 B \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b g}+\frac{8 B^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b g}$$

Result (type 4, 622 leaves):

$$\frac{A^2 \text{Log}[a+b x]}{b g}+\frac{1}{g}2 A B \left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{b}+\frac{\text{Log}[a+b x] \left(-2 \text{Log}\left[\frac{a}{b}+x\right]+2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a^2 e}{(c+d x)^2}+\frac{2 a b e x}{(c+d x)^2}+\frac{b^2 e x^2}{(c+d x)^2}\right]\right)}{b}-\frac{2 \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]+\text{PolyLog}\left[2,\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]\right)}{b}\right)+$$

$$\frac{1}{g}B^2 \left(\frac{4 \text{Log}\left[\frac{a}{b}+x\right]^3}{3 b}+\frac{\text{Log}[a+b x] \left(-2 \text{Log}\left[\frac{a}{b}+x\right]+2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a^2 e}{(c+d x)^2}+\frac{2 a b e x}{(c+d x)^2}+\frac{b^2 e x^2}{(c+d x)^2}\right]\right)^2}{b}+2 \left(-2 \text{Log}\left[\frac{a}{b}+x\right]+2 \text{Log}\left[\frac{c}{d}+x\right]+\right.\right.$$

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

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

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

Problem 140: Unable to integrate problem.

$$\int \frac{1}{(a g+b g x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)} \, dx$$

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

$$\frac{e^{\frac{A}{2B}} \sqrt{\frac{e (a+b x)^2}{(c+d x)^2}} (c+d x) \operatorname{ExpIntegralEi}\left[-\frac{A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{2 B}\right]}{2 B (b c-a d) g^2 (a+b x)}$$

Result (type 8, 36 leaves):

$$\int \frac{1}{(a g+b g x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)} \, dx$$

Problem 141: Unable to integrate problem.

$$\int \frac{1}{(a g+b g x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)} \, dx$$

Optimal (type 4, 149 leaves, 7 steps):

$$\frac{b e e^{A/B} \operatorname{ExpIntegralEi}\left[-\frac{A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{B}\right]}{2 B (b c-a d)^2 g^3}-\frac{d e^{\frac{A}{2B}} \sqrt{\frac{e (a+b x)^2}{(c+d x)^2}} (c+d x) \operatorname{ExpIntegralEi}\left[-\frac{A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]}{2 B}\right]}{2 B (b c-a d)^2 g^3 (a+b x)}$$

Result (type 8, 36 leaves):

$$\int \frac{1}{(a g+b g x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)} \, dx$$

Problem 145: Unable to integrate problem.

$$\int \frac{1}{(a g+b g x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2} \, dx$$

Optimal (type 4, 147 leaves, 4 steps):

$$-\frac{e^{\frac{A}{2B}}\sqrt{\frac{e(a+bx)^2}{(c+dx)^2}}\,(c+dx)\,\text{ExpIntegralEi}\left[-\frac{A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]}{2B}\right]}{4B^2(bc-ad)g^2(a+bx)}-\frac{c+dx}{2B(bc-ad)g^2(a+bx)\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)}$$

Result (type 8, 36 leaves) :

$$\int\frac{1}{(a g+b g x)^2\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)^2}\,dx$$

Problem 146: Unable to integrate problem.

$$\int\frac{1}{(a g+b g x)^3\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)^2}\,dx$$

Optimal (type 4, 263 leaves, 9 steps) :

$$-\frac{b\,e\,e^{A/B}\,\text{ExpIntegralEi}\left[-\frac{A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]}{B}\right]}{2B^2(bc-ad)^2g^3}+\frac{d\,e^{\frac{A}{2B}}\sqrt{\frac{e(a+bx)^2}{(c+dx)^2}}\,(c+dx)\,\text{ExpIntegralEi}\left[-\frac{A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]}{2B}\right]}{4B^2(bc-ad)^2g^3(a+bx)}+$$

$$\frac{d(c+dx)}{2B(bc-ad)^2g^3(a+bx)\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)}-\frac{b(c+dx)^2}{2B(bc-ad)^2g^3(a+bx)^2\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)}$$

Result (type 8, 36 leaves) :

$$\int\frac{1}{(a g+b g x)^3\left(A+B\,\text{Log}\left[\frac{e(a+bx)^2}{(c+dx)^2}\right]\right)^2}\,dx$$

Problem 156: Result more than twice size of optimal antiderivative.

$$\int(a+bx)^3\left(A+B\,\text{Log}\left[e\,(a+bx)^n\,(c+dx)^{-n}\right]\right)^2\,dx$$

Optimal (type 4, 322 leaves, 8 steps) :

$$-\frac{B (b c-a d) n (a+b x)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{6 b d}+\frac{(a+b x)^4 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{4 b}+\frac{B (b c-a d)^2 n (a+b x)^2 \left(3 A+B n+3 B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{12 b d^2}-\frac{B (b c-a d)^3 n (a+b x) \left(6 A+5 B n+6 B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{12 b d^3}-\frac{B (b c-a d)^4 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(6 A+11 B n+6 B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{12 b d^4}-\frac{B^2 (b c-a d)^4 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{2 b d^4}$$

Result (type 4, 1709 leaves) :

$$\frac{1}{12 b d^4}\Big(-24 a^4 A B d^4 n+6 a b^3 B^2 c^3 d n^2-24 a^2 b^2 B^2 c^2 d^2 n^2+36 a^3 b B^2 c d^3 n^2-24 a^4 B^2 d^4 n^2+12 a^3 A^2 b d^4 x-6 A b^4 B c^3 d n x+24 a A b^3 B c^2 d^2 n x-36 a^2 A b^2 B c d^3 n x+18 a^3 A b B d^4 n x-5 b^4 B^2 c^3 d n^2 x+17 a b^3 B^2 c^2 d^2 n^2 x-19 a^2 b^2 B^2 c d^3 n^2 x+7 a^3 b B^2 d^4 n^2 x+18 a^2 A^2 b^2 d^4 x^2+3 A b^4 B c^2 d^2 n x^2-12 a A b^3 B c d^3 n x^2+9 a^2 A b^2 B d^4 n x^2+b^4 B^2 c^2 d^2 n^2 x^2-2 a b^3 B^2 c d^3 n^2 x^2+a^2 b^2 B^2 d^4 n^2 x^2+12 a A^2 b^3 d^4 x^3-2 A b^4 B c d^3 n x^3+2 a A b^3 B d^4 n x^3+3 A^2 b^4 d^4 x^4-3 a^4 B^2 d^4 n^2 \text{Log}[a+b x]^2+6 A b^4 B c^4 n \text{Log}[c+d x]-24 a A b^3 B c^3 d n \text{Log}[c+d x]+36 a^2 A b^2 B c^2 d^2 n \text{Log}[c+d x]-24 a^3 A b B c d^3 n \text{Log}[c+d x]+11 b^4 B^2 c^4 n^2 \text{Log}[c+d x]-38 a b^3 B^2 c^3 d n^2 \text{Log}[c+d x]+45 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}[c+d x]-18 a^3 b B^2 c d^3 n^2 \text{Log}[c+d x]-24 a^4 B^2 d^4 n^2 \text{Log}[c+d x]+3 b^4 B^2 c^4 n^2 \text{Log}[c+d x]^2-12 a b^3 B^2 c^3 d n^2 \text{Log}[c+d x]^2+18 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}[c+d x]^2-12 a^3 b B^2 c d^3 n^2 \text{Log}[c+d x]^2-24 a^4 B^2 d^4 n \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+24 a^3 A b B d^4 x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-6 b^4 B^2 c^3 d n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+24 a b^3 B^2 c^2 d^2 n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-36 a^2 b^2 B^2 c d^3 n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+18 a^3 b B^2 d^4 n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+36 a^2 A b^2 B d^4 x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+3 b^4 B^2 c^2 d^2 n x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-12 a b^3 B^2 c d^3 n x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+9 a^2 b^2 B^2 d^4 n x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+24 a A b^3 B d^4 x^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-2 b^4 B^2 c d^3 n x^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+2 a b^3 B^2 d^4 n x^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+6 A b^4 B d^4 x^4 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+6 b^4 B^2 c^4 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-24 a b^3 B^2 c^3 d n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+36 a^2 b^2 B^2 c^2 d^2 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-24 a^3 b B^2 c d^3 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+12 a^3 b B^2 d^4 x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+18 a^2 b^2 B^2 d^4 x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+12 a b^3 B^2 d^4 x^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+3 b^4 B^2 d^4 x^4 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+B n \text{Log}[a+b x] \Big(-6 b B c \left(b^3 c^3-4 a b^2 c^2 d+6 a^2 b c d^2-4 a^3 d^3\right) n \text{Log}[c+d x]+6 B (b c-a d)^4 n \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+a d \Big(-6 b^3 B c^3 n+21 a b^2 B c^2 d n-26 a^2 b B c d^2 n+a^3 d^3 (6 A+35 B n)+6 a^3 B d^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\Big)\Big)+6 B^2 (b c-a d)^4 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Big)$$

Problem 157: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 dx$$

Optimal (type 4, 263 leaves, 7 steps) :

$$-\frac{B (b c-a d) n (a+b x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{3 b d}+\frac{(a+b x)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{3 b}+\frac{B (b c-a d)^2 n (a+b x) \left(2 A+B n+2 B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{3 b d^2}+\frac{B (b c-a d)^3 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(2 A+3 B n+2 B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{3 b d^3}+\frac{2 B^2 (b c-a d)^3 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3}$$

Result (type 4, 1149 leaves) :

$$\frac{1}{3 b d^3}\Big(-6 a^3 A B d^3 n-2 a b^2 B^2 c^2 d n^2+6 a^2 b B^2 c d^2 n^2-6 a^3 B^2 d^3 n^2+3 a^2 A^2 b d^3 x+2 A b^3 B c^2 d n x-6 a A b^2 B c d^2 n x+4 a^2 A b B d^3 n x+ b^3 B^2 c^2 d n^2 x-2 a b^2 B^2 c d^2 n^2 x+a^2 b B^2 d^3 n^2 x+3 a A^2 b^2 d^3 x^2-A b^3 B c d^2 n x^2+a A b^2 B d^3 n x^2+A^2 b^3 d^3 x^3-a^3 B^2 d^3 n^2 \text{Log}[a+b x]^2- 2 A b^3 B c^3 n \text{Log}[c+d x]+6 a A b^2 B c^2 d n \text{Log}[c+d x]-6 a^2 A b B c d^2 n \text{Log}[c+d x]-3 b^3 B^2 c^3 n^2 \text{Log}[c+d x]+7 a b^2 B^2 c^2 d n^2 \text{Log}[c+d x]- 4 a^2 b B^2 c d^2 n^2 \text{Log}[c+d x]-6 a^3 B^2 d^3 n^2 \text{Log}[c+d x]-b^3 B^2 c^3 n^2 \text{Log}[c+d x]^2+3 a b^2 B^2 c^2 d n^2 \text{Log}[c+d x]^2-3 a^2 b B^2 c d^2 n^2 \text{Log}[c+d x]^2- 6 a^3 B^2 d^3 n \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+6 a^2 A b B d^3 x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+2 b^3 B^2 c^2 d n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]- 6 a b^2 B^2 c d^2 n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+4 a^2 b B^2 d^3 n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+6 a A b^2 B d^3 x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]- b^3 B^2 c d^2 n x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+a b^2 B^2 d^3 n x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+2 A b^3 B d^3 x^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]- 2 b^3 B^2 c^3 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+6 a b^2 B^2 c^2 d n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]- 6 a^2 b B^2 c d^2 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+3 a^2 b B^2 d^3 x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+3 a b^2 B^2 d^3 x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+ b^3 B^2 d^3 x^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+B n \text{Log}[a+b x] \Big(2 b B c \left(b^2 c^2-3 a b c d+3 a^2 d^2\right) n \text{Log}[c+d x]-2 B (b c-a d)^3 n \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+ a d \left(2 b^2 B c^2 n-5 a b B c d n+a^2 d^2 (2 A+9 B n)+2 a^2 B d^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)\Big)-2 B^2 (b c-a d)^3 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Big)$$

Problem 158: Result more than twice size of optimal antiderivative.

$$\int (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 dx$$

Optimal (type 4, 195 leaves, 6 steps) :

$$-\frac{B (b c-a d) n (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b d}+\frac{(a+b x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 b}-\frac{B (b c-a d)^2 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B n+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b d^2}-\frac{B^2 (b c-a d)^2 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}$$

Result (type 4, 656 leaves) :

$$-\frac{2 a^2 A B n}{b}-\frac{2 a^2 B^2 n^2}{b}+\frac{a B^2 c n^2}{d}+a A^2 x+a A B n x-\frac{A b B c n x}{d}+\frac{1}{2} A^2 b x^2-\frac{a^2 B^2 n^2 \text{Log}[a+b x]^2}{2 b}+\frac{A b B c^2 n \text{Log}[c+d x]}{d^2}-\frac{2 a A B c n \text{Log}[c+d x]}{d}-\frac{2 a^2 B^2 n^2 \text{Log}[c+d x]}{b}+\frac{b B^2 c^2 n^2 \text{Log}[c+d x]}{d^2}-\frac{a B^2 c n^2 \text{Log}[c+d x]}{d}+\frac{b B^2 c^2 n^2 \text{Log}[c+d x]^2}{2 d^2}-\frac{a B^2 c n^2 \text{Log}[c+d x]^2}{d}-\frac{2 a^2 B^2 n \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b}+2 a A B x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+a B^2 n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-\frac{b B^2 c n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d}+A b B x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+\frac{b B^2 c^2 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^2}-\frac{2 a B^2 c n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d}+a B^2 x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+\frac{1}{2} b B^2 x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+\frac{1}{b d^2}B n \text{Log}[a+b x]\left(b B c (-b c+2 a d) n \text{Log}[c+d x]+B (b c-a d)^2 n \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+a d \left(-b B c n+a d (A+3 B n)+a B d \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)\right)+\frac{B^2 (b c-a d)^2 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]}{b d^2}$$

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

$$\int \frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{a+b x} \, dx$$

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

$$-\frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b}+\frac{2 B n \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b}+\frac{2 B^2 n^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b}$$

Result (type 4, 443 leaves):

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

Problem 164: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3 \, dx$$

Optimal (type 4, 809 leaves, 27 steps):

$$-\frac{B^3 (b c-a d)^3 n^3 x}{4 d^3}-\frac{B^3 (b c-a d)^4 n^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{4 b d^4}+\frac{3 B^3 (b c-a d)^4 n^3 \text{Log}[c+d x]}{2 b d^4}-\frac{7 B^2 (b c-a d)^3 n^2 (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{4 b d^3}+$$
$$\frac{b B^2 (b c-a d)^2 n^2 (c+d x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{4 d^4}-\frac{9 B^2 (b c-a d)^4 n^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{2 b d^4}-$$
$$\frac{9 B (b c-a d)^3 n (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{4 b d^3}+\frac{9 b B (b c-a d)^2 n (c+d x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{8 d^4}-$$
$$\frac{b^2 B (b c-a d) n (c+d x)^3 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{4 d^4}-\frac{3 B (b c-a d)^4 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{4 b d^4}+$$
$$\frac{(a+b x)^4 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{4 b}+\frac{7 B^2 (b c-a d)^4 n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{4 b d^4}-$$
$$\frac{9 B^3 (b c-a d)^4 n^3 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{2 b d^4}-\frac{3 B^2 (b c-a d)^4 n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{2 b d^4}-$$
$$\frac{7 B^3 (b c-a d)^4 n^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{4 b d^4}+\frac{3 B^3 (b c-a d)^4 n^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{2 b d^4}$$

Result (type 4, 6899 leaves):

$$\frac{1}{8 b d^4}\Big(12 a A b^3 B^2 c^3 d n^2-48 a^2 A b^2 B^2 c^2 d^2 n^2+60 a^3 A b B^2 c d^3 n^2-48 a^4 A B^2 d^4 n^2-12 b^4 B^3 c^4 n^3+58 a b^3 B^3 c^3 d n^3-100 a^2 b^2 B^3 c^2 d^2 n^3+$$
$$54 a^3 b B^3 c d^3 n^3+12 a^4 B^3 d^4 n^3+8 a^3 A^3 b d^4 x-6 A^2 b^4 B c^3 d n x+24 a A^2 b^3 B c^2 d^2 n x-36 a^2 A^2 b^2 B c d^3 n x+18 a^3 A^2 b B d^4 n x-$$
$$10 A b^4 B^2 c^3 d n^2 x+34 a A b^3 B^2 c^2 d^2 n^2 x-38 a^2 A b^2 B^2 c d^3 n^2 x+14 a^3 A b B^2 d^4 n^2 x-2 b^4 B^3 c^3 d n^3 x+6 a b^3 B^3 c^2 d^2 n^3 x-$$
$$6 a^2 b^2 B^3 c d^3 n^3 x+2 a^3 b B^3 d^4 n^3 x+12 a^2 A^3 b^2 d^4 x^2+3 A^2 b^4 B c^2 d^2 n x^2-12 a A^2 b^3 B c d^3 n x^2+9 a^2 A^2 b^2 B d^4 n x^2+2 A b^4 B^2 c^2 d^2 n^2 x^2-$$
$$4 a A b^3 B^2 c d^3 n^2 x^2+2 a^2 A b^2 B^2 d^4 n^2 x^2+8 a A^3 b^3 d^4 x^3-2 A^2 b^4 B c d^3 n x^3+2 a A^2 b^3 B d^4 n x^3+2 A^3 b^4 d^4 x^4+6 a^4 A^2 B d^4 n \text{Log}[a+b x]-$$
$$12 a A b^3 B^2 c^3 d n^2 \text{Log}[a+b x]+42 a^2 A b^2 B^2 c^2 d^2 n^2 \text{Log}[a+b x]-52 a^3 A b B^2 c d^3 n^2 \text{Log}[a+b x]+22 a^4 A B^2 d^4 n^2 \text{Log}[a+b x]-$$
$$22 a b^3 B^3 c^3 d n^3 \text{Log}[a+b x]+80 a^2 b^2 B^3 c^2 d^2 n^3 \text{Log}[a+b x]-94 a^3 b B^3 c d^3 n^3 \text{Log}[a+b x]+60 a^4 B^3 d^4 n^3 \text{Log}[a+b x]-$$
$$6 a^4 A B^2 d^4 n^2 \text{Log}[a+b x]^2+6 a b^3 B^3 c^3 d n^3 \text{Log}[a+b x]^2-21 a^2 b^2 B^3 c^2 d^2 n^3 \text{Log}[a+b x]^2+26 a^3 b B^3 c d^3 n^3 \text{Log}[a+b x]^2-$$
$$11 a^4 B^3 d^4 n^3 \text{Log}[a+b x]^2+2 a^4 B^3 d^4 n^3 \text{Log}[a+b x]^3+6 A^2 b^4 B c^4 n \text{Log}[c+d x]-24 a A^2 b^3 B c^3 d n \text{Log}[c+d x]+$$
$$36 a^2 A^2 b^2 B c^2 d^2 n \text{Log}[c+d x]-24 a^3 A^2 b B c d^3 n \text{Log}[c+d x]+22 A b^4 B^2 c^4 n^2 \text{Log}[c+d x]-76 a A b^3 B^2 c^3 d n^2 \text{Log}[c+d x]+$$
$$90 a^2 A b^2 B^2 c^2 d^2 n^2 \text{Log}[c+d x]-36 a^3 A b B^2 c d^3 n^2 \text{Log}[c+d x]+12 b^4 B^3 c^4 n^3 \text{Log}[c+d x]-26 a b^3 B^3 c^3 d n^3 \text{Log}[c+d x]-$$
$$8 a^2 b^2 B^3 c^2 d^2 n^3 \text{Log}[c+d x]+46 a^3 b B^3 c d^3 n^3 \text{Log}[c+d x]-48 a^4 B^3 d^4 n^3 \text{Log}[c+d x]-12 A b^4 B^2 c^4 n^2 \text{Log}[a+b x] \text{Log}[c+d x]+$$
$$48 a A b^3 B^2 c^3 d n^2 \text{Log}[a+b x] \text{Log}[c+d x]-72 a^2 A b^2 B^2 c^2 d^2 n^2 \text{Log}[a+b x] \text{Log}[c+d x]+48 a^3 A b B^2 c d^3 n^2 \text{Log}[a+b x] \text{Log}[c+d x]+$$
$$12 a^4 A B^2 d^4 n^2 \text{Log}[a+b x] \text{Log}[c+d x]-22 b^4 B^3 c^4 n^3 \text{Log}[a+b x] \text{Log}[c+d x]+76 a b^3 B^3 c^3 d n^3 \text{Log}[a+b x] \text{Log}[c+d x]-$$

$$90\,a^2 b^2 B^3 c^2 d^2 n^3 \text{Log}[a+b x]\,\text{Log}[c+d x]+36\,a^3 b B^3 c d^3 n^3 \text{Log}[a+b x]\,\text{Log}[c+d x]+6\,b^4 B^3 c^4 n^3 \text{Log}[a+b x]^2\,\text{Log}[c+d x]-$$
$$24\,a b^3 B^3 c^3 d n^3 \text{Log}[a+b x]^2\,\text{Log}[c+d x]+36\,a^2 b^2 B^3 c^2 d^2 n^3 \text{Log}[a+b x]^2\,\text{Log}[c+d x]-24\,a^3 b B^3 c d^3 n^3 \text{Log}[a+b x]^2\,\text{Log}[c+d x]-$$
$$12\,a^4 B^3 d^4 n^3 \text{Log}[a+b x]^2\,\text{Log}[c+d x]-12\,a^4 A B^2 d^4 n^2 \text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]\text{Log}[c+d x]+12\,a^4 B^3 d^4 n^3 \text{Log}[a+b x]\,\text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]\text{Log}[c+d x]+$$
$$6\,A b^4 B^2 c^4 n^2 \text{Log}[c+d x]^2-24\,a A b^3 B^2 c^3 d n^2 \text{Log}[c+d x]^2+36\,a^2 A b^2 B^2 c^2 d^2 n^2 \text{Log}[c+d x]^2-24\,a^3 A b B^2 c d^3 n^2 \text{Log}[c+d x]^2+$$
$$11\,b^4 B^3 c^4 n^3 \text{Log}[c+d x]^2-38\,a b^3 B^3 c^3 d n^3 \text{Log}[c+d x]^2+45\,a^2 b^2 B^3 c^2 d^2 n^3 \text{Log}[c+d x]^2-18\,a^3 b B^3 c d^3 n^3 \text{Log}[c+d x]^2-$$
$$12\,b^4 B^3 c^4 n^3 \text{Log}[a+b x]\,\text{Log}[c+d x]^2+48\,a b^3 B^3 c^3 d n^3 \text{Log}[a+b x]\,\text{Log}[c+d x]^2-72\,a^2 b^2 B^3 c^2 d^2 n^3 \text{Log}[a+b x]\,\text{Log}[c+d x]^2+$$
$$48\,a^3 b B^3 c d^3 n^3 \text{Log}[a+b x]\,\text{Log}[c+d x]^2+6\,a^4 B^3 d^4 n^3 \text{Log}[a+b x]\,\text{Log}[c+d x]^2+6\,b^4 B^3 c^4 n^3 \text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]\text{Log}[c+d x]^2-$$
$$24\,a b^3 B^3 c^3 d n^3 \text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]\text{Log}[c+d x]^2+36\,a^2 b^2 B^3 c^2 d^2 n^3 \text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]\text{Log}[c+d x]^2-24\,a^3 b B^3 c d^3 n^3 \text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]\text{Log}[c+d x]^2-$$
$$6\,a^4 B^3 d^4 n^3 \text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]\text{Log}[c+d x]^2+2\,b^4 B^3 c^4 n^3 \text{Log}[c+d x]^3-8\,a b^3 B^3 c^3 d n^3 \text{Log}[c+d x]^3+12\,a^2 b^2 B^3 c^2 d^2 n^3 \text{Log}[c+d x]^3-$$
$$8\,a^3 b B^3 c d^3 n^3 \text{Log}[c+d x]^3+12\,A b^4 B^2 c^4 n^2 \text{Log}[a+b x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]-48\,a A b^3 B^2 c^3 d n^2 \text{Log}[a+b x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+$$
$$72\,a^2 A b^2 B^2 c^2 d^2 n^2 \text{Log}[a+b x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]-48\,a^3 A b B^2 c d^3 n^2 \text{Log}[a+b x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+22\,b^4 B^3 c^4 n^3 \text{Log}[a+b x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]-$$
$$88\,a b^3 B^3 c^3 d n^3 \text{Log}[a+b x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+132\,a^2 b^2 B^3 c^2 d^2 n^3 \text{Log}[a+b x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]-88\,a^3 b B^3 c d^3 n^3 \text{Log}[a+b x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+$$
$$22\,a^4 B^3 d^4 n^3 \text{Log}[a+b x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]-6\,b^4 B^3 c^4 n^3 \text{Log}[a+b x]^2\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+24\,a b^3 B^3 c^3 d n^3 \text{Log}[a+b x]^2\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]-$$
$$36\,a^2 b^2 B^3 c^2 d^2 n^3 \text{Log}[a+b x]^2\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+24\,a^3 b B^3 c d^3 n^3 \text{Log}[a+b x]^2\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+6\,a^4 B^3 d^4 n^3 \text{Log}[a+b x]^2\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+$$
$$12\,b^4 B^3 c^4 n^3 \text{Log}[a+b x]\,\text{Log}[c+d x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]-48\,a b^3 B^3 c^3 d n^3 \text{Log}[a+b x]\,\text{Log}[c+d x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+$$
$$72\,a^2 b^2 B^3 c^2 d^2 n^3 \text{Log}[a+b x]\,\text{Log}[c+d x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]-48\,a^3 b B^3 c d^3 n^3 \text{Log}[a+b x]\,\text{Log}[c+d x]\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+$$
$$12\,a b^3 B^3 c^3 d n^2 \text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]-48\,a^2 b^2 B^3 c^2 d^2 n^2 \text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+60\,a^3 b B^3 c d^3 n^2 \text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]-$$
$$48\,a^4 B^3 d^4 n^2 \text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+24\,a^3 A^2 b B d^4 x\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]-12\,A b^4 B^2 c^3 d n x\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+$$
$$48\,a A b^3 B^2 c^2 d^2 n x\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]-72\,a^2 A b^2 B^2 c d^3 n x\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+$$
$$36\,a^3 A b B^2 d^4 n x\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]-10\,b^4 B^3 c^3 d n^2 x\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+34\,a b^3 B^3 c^2 d^2 n^2 x\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]-$$
$$38\,a^2 b^2 B^3 c d^3 n^2 x\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+14\,a^3 b B^3 d^4 n^2 x\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+36\,a^2 A^2 b^2 B d^4 x^2\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+$$
$$6\,A b^4 B^2 c^2 d^2 n x^2\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]-24\,a A b^3 B^2 c d^3 n x^2\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+18\,a^2 A b^2 B^2 d^4 n x^2\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+$$
$$2\,b^4 B^3 c^2 d^2 n^2 x^2\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]-4\,a b^3 B^3 c d^3 n^2 x^2\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+2\,a^2 b^2 B^3 d^4 n^2 x^2\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+$$
$$24\,a A^2 b^3 B d^4 x^3\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]-4\,A b^4 B^2 c d^3 n x^3\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+4\,a A b^3 B^2 d^4 n x^3\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+$$
$$6\,A^2 b^4 B d^4 x^4\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+12\,a^4 A B^2 d^4 n\,\text{Log}[a+b x]\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]-$$
$$12\,a b^3 B^3 c^3 d n^2 \text{Log}[a+b x]\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+42\,a^2 b^2 B^3 c^2 d^2 n^2 \text{Log}[a+b x]\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]-$$
$$52\,a^3 b B^3 c d^3 n^2 \text{Log}[a+b x]\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+22\,a^4 B^3 d^4 n^2 \text{Log}[a+b x]\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]-$$

$$6 a^4 B^3 d^4 n^2 \text{Log}[a+b x]^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+12 A b^4 B^2 c^4 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-$$
$$48 a A b^3 B^2 c^3 d n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+72 a^2 A b^2 B^2 c^2 d^2 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-$$
$$48 a^3 A b B^2 c d^3 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+22 b^4 B^3 c^4 n^2 \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-$$
$$76 a b^3 B^3 c^3 d n^2 \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+90 a^2 b^2 B^3 c^2 d^2 n^2 \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-$$
$$36 a^3 b B^3 c d^3 n^2 \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-12 b^4 B^3 c^4 n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+$$
$$48 a b^3 B^3 c^3 d n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-72 a^2 b^2 B^3 c^2 d^2 n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+$$
$$48 a^3 b B^3 c d^3 n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+12 a^4 B^3 d^4 n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-$$
$$12 a^4 B^3 d^4 n^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+6 b^4 B^3 c^4 n^2 \text{Log}[c+d x]^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-$$
$$24 a b^3 B^3 c^3 d n^2 \text{Log}[c+d x]^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+36 a^2 b^2 B^3 c^2 d^2 n^2 \text{Log}[c+d x]^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-$$
$$24 a^3 b B^3 c d^3 n^2 \text{Log}[c+d x]^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+12 b^4 B^3 c^4 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-$$
$$48 a b^3 B^3 c^3 d n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+$$
$$72 a^2 b^2 B^3 c^2 d^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-$$
$$48 a^3 b B^3 c d^3 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+24 a^3 A b B^2 d^4 x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2-$$
$$6 b^4 B^3 c^3 d n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+24 a b^3 B^3 c^2 d^2 n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2-36 a^2 b^2 B^3 c d^3 n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+$$
$$18 a^3 b B^3 d^4 n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+36 a^2 A b^2 B^2 d^4 x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+3 b^4 B^3 c^2 d^2 n x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2-$$
$$12 a b^3 B^3 c d^3 n x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+9 a^2 b^2 B^3 d^4 n x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+24 a A b^3 B^2 d^4 x^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2-$$
$$2 b^4 B^3 c d^3 n x^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+2 a b^3 B^3 d^4 n x^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+6 A b^4 B^2 d^4 x^4 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+$$
$$6 a^4 B^3 d^4 n \text{Log}[a+b x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+6 b^4 B^3 c^4 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2-$$
$$24 a b^3 B^3 c^3 d n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+36 a^2 b^2 B^3 c^2 d^2 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2-$$
$$24 a^3 b B^3 c d^3 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+8 a^3 b B^3 d^4 x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3+$$
$$12 a^2 b^2 B^3 d^4 x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3+8 a b^3 B^3 d^4 x^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3+2 b^4 B^3 d^4 x^4 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3+$$
$$2 B^2 n^2 \Big(6 A b^4 c^4-24 a A b^3 c^3 d+36 a^2 A b^2 c^2 d^2-24 a^3 A b c d^3+11 b^4 B c^4 n-44 a b^3 B c^3 d n+66 a^2 b^2 B c^2 d^2 n-44 a^3 b B c d^3 n+11 a^4 B d^4 n+$$
$$6 a^4 B d^4 n \text{Log}[a+b x]+6 b B c \left(b^3 c^3-4 a b^2 c^2 d+6 a^2 b c d^2-4 a^3 d^3\right) n \text{Log}[c+d x]+6 b^4 B c^4 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-24 a b^3 B c^3 d \text{Log}\Big[$$
$$e (a+b x)^n (c+d x)^{-n}\Big]+36 a^2 b^2 B c^2 d^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]-24 a^3 b B c d^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\Big) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+$$
$$12 B^2 n^2 \left(a^4 B d^4 n \text{Log}[a+b x]+b B c \left(b^3 c^3-4 a b^2 c^2 d+6 a^2 b c d^2-4 a^3 d^3\right) n \text{Log}[c+d x]-a^4 d^4 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)\right)$$
$$\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-12 b^4 B^3 c^4 n^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]+48 a b^3 B^3 c^3 d n^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]-$$
$$72 a^2 b^2 B^3 c^2 d^2 n^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]+48 a^3 b B^3 c d^3 n^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]-12 a^4 B^3 d^4 n^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]-$$
$$12 b^4 B^3 c^4 n^3 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]+48 a b^3 B^3 c^3 d n^3 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]-$$

$$72 a^2 b^2 B^3 c^2 d^2 n^3 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]+48 a^3 b B^3 c d^3 n^3 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]-12 a^4 B^3 d^4 n^3 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]\Bigg)$$

Problem 165: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3 dx$$

Optimal (type 4, 614 leaves, 17 steps):

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

Result (type 4, 4819 leaves):

$$-\frac{6 a^3 A B^2 n^2}{b}-\frac{2 a A b B^2 c^2 n^2}{d^2}+\frac{4 a^2 A B^2 c n^2}{d}+\frac{2 a^3 B^3 n^3}{b}+\frac{2 b^2 B^3 c^3 n^3}{d^3}-\frac{7 a b B^3 c^2 n^3}{d^2}+\frac{5 a^2 B^3 c n^3}{d}+a^2 A^3 x+2 a^2 A^2 B n x+\frac{A^2 b^2 B c^2 n x}{d^2}-\frac{3 a A^2 b B c n x}{d}+a^2 A B^2 n^2 x+\frac{A b^2 B^2 c^2 n^2 x}{d^2}-\frac{2 a A b B^2 c n^2 x}{d}+a A^3 b x^2+\frac{1}{2} a A^2 b B n x^2-\frac{A^2 b^2 B c n x^2}{2 d}+\frac{1}{3} A^3 b^2 x^3+\frac{a^3 A^2 B n \text{Log}[a+b x]}{b}+\frac{3 a^3 A B^2 n^2 \text{Log}[a+b x]}{b}+\frac{2 a A b B^2 c^2 n^2 \text{Log}[a+b x]}{d^2}-\frac{5 a^2 A B^2 c n^2 \text{Log}[a+b x]}{d}+\frac{7 a^3 B^3 n^3 \text{Log}[a+b x]}{b}+\frac{3 a b B^3 c^2 n^3 \text{Log}[a+b x]}{d^2}-\frac{6 a^2 B^3 c n^3 \text{Log}[a+b x]}{d}-\frac{a^3 A B^2 n^2 \text{Log}[a+b x]^2}{b}-\frac{3 a^3 B^3 n^3 \text{Log}[a+b x]^2}{2 b}-\frac{a b B^3 c^2 n^3 \text{Log}[a+b x]^2}{d^2}+\frac{5 a^2 B^3 c n^3 \text{Log}[a+b x]^2}{2 d}+\frac{a^3 B^3 n^3 \text{Log}[a+b x]^3}{3 b}-\frac{A^2 b^2 B c^3 n \text{Log}[c+d x]}{d^3}+\frac{3 a A^2 b B c^2 n \text{Log}[c+d x]}{d^2}-\frac{3 a^2 A^2 B c n \text{Log}[c+d x]}{d}-\frac{3 A b^2 B^2 c^3 n^2 \text{Log}[c+d x]}{d^3}+\frac{7 a A b B^2 c^2 n^2 \text{Log}[c+d x]}{d^2}-\frac{4 a^2 A B^2 c n^2 \text{Log}[c+d x]}{d}-\frac{6 a^3 B^3 n^3 \text{Log}[c+d x]}{b}-\frac{b^2 B^3 c^3 n^3 \text{Log}[c+d x]}{d^3}+\frac{3 a^2 B^3 c n^3 \text{Log}[c+d x]}{d}+$$

$$\frac{2\,a^3\,A\,B^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]}{b}+\frac{2\,A\,b^2\,B^2\,c^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]}{d^3}-\frac{6\,a\,A\,b\,B^2\,c^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]}{d^2}+$$

$$\frac{6\,a^2\,A\,B^2\,c\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]}{d}+\frac{3\,b^2\,B^3\,c^3\,n^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]}{d^3}-\frac{7\,a\,b\,B^3\,c^2\,n^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]}{d^2}+$$

$$\frac{4\,a^2\,B^3\,c\,n^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]}{d}-\frac{2\,a^3\,B^3\,n^3\,\text{Log}[a+b\,x]^2\,\text{Log}[c+d\,x]}{b}-\frac{b^2\,B^3\,c^3\,n^3\,\text{Log}[a+b\,x]^2\,\text{Log}[c+d\,x]}{d^3}+$$

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

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

$$\frac{3\,b^2\,B^3\,c^3\,n^3\,\text{Log}[c+d\,x]^2}{2\,d^3}+\frac{7\,a\,b\,B^3\,c^2\,n^3\,\text{Log}[c+d\,x]^2}{2\,d^2}-\frac{2\,a^2\,B^3\,c\,n^3\,\text{Log}[c+d\,x]^2}{d}+\frac{a^3\,B^3\,n^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{b}+$$

$$\frac{2\,b^2\,B^3\,c^3\,n^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{d^3}-\frac{6\,a\,b\,B^3\,c^2\,n^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{d^2}+\frac{6\,a^2\,B^3\,c\,n^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2}{d}-$$

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

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

$$\frac{2\,A\,b^2\,B^2\,c^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3}+\frac{6\,a\,A\,b\,B^2\,c^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^2}-\frac{6\,a^2\,A\,B^2\,c\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d}+$$

$$\frac{3\,a^3\,B^3\,n^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b}-\frac{3\,b^2\,B^3\,c^3\,n^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3}+\frac{9\,a\,b\,B^3\,c^2\,n^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^2}-$$

$$\frac{9\,a^2\,B^3\,c\,n^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d}+\frac{a^3\,B^3\,n^3\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b}+\frac{b^2\,B^3\,c^3\,n^3\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3}-$$

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

$$\frac{6\,a\,b\,B^3\,c^2\,n^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^2}-\frac{6\,a^2\,B^3\,c\,n^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d}-\frac{6\,a^3\,B^3\,n^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{b}-$$

$$\frac{2\,a\,b\,B^3\,c^2\,n^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d^2}+\frac{4\,a^2\,B^3\,c\,n^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d}+3\,a^2\,A^2\,B\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$4\,a^2\,A\,B^2\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+\frac{2\,A\,b^2\,B^2\,c^2\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d^2}-\frac{6\,a\,A\,b\,B^2\,c\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d}+$$

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

$$3\,a\,A^2\,b\,B\,x^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+a\,A\,b\,B^2\,n\,x^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-\frac{A\,b^2\,B^2\,c\,n\,x^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d}+$$

$$A^2\,b^2\,B\,x^3\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+\frac{2\,a^3\,A\,B^2\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{b}+\frac{3\,a^3\,B^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{b}+$$

$$\frac{2\,a\,b\,B^3\,c^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d^2}-\frac{5\,a^2\,B^3\,c\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d}-$$

$$\frac{a^3\,B^3\,n^2\,\text{Log}[a+b\,x]^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{b}-\frac{2\,A\,b^2\,B^2\,c^3\,n\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d^3}+$$

$$\frac{6\,a\,A\,b\,B^2\,c^2\,n\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d^2}-\frac{6\,a^2\,A\,B^2\,c\,n\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d}-$$

$$\frac{3\,b^2\,B^3\,c^3\,n^2\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d^3}+\frac{7\,a\,b\,B^3\,c^2\,n^2\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d^2}-$$

$$\frac{4\,a^2\,B^3\,c\,n^2\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d}+\frac{2\,a^3\,B^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{b}+$$

$$\frac{2\,b^2\,B^3\,c^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d^3}-\frac{6\,a\,b\,B^3\,c^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d^2}+$$

$$\frac{6\,a^2\,B^3\,c\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d}-\frac{2\,a^3\,B^3\,n^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{b}-$$

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

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

$$\frac{6\,a\,b\,B^3\,c^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d^2}-\frac{6\,a^2\,B^3\,c\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{d}+$$

$$3\,a^2\,A\,B^2\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+2\,a^2\,B^3\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+\frac{b^2\,B^3\,c^2\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{d^2}-$$

$$\frac{3\,a\,b\,B^3\,c\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{d}+3\,a\,A\,b\,B^2\,x^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+\frac{1}{2}\,a\,b\,B^3\,n\,x^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2-$$

$$\frac{b^2\,B^3\,c\,n\,x^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{2\,d}+A\,b^2\,B^2\,x^3\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+\frac{a^3\,B^3\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2}{b}-$$

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

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

$$\frac{1}{3} b^2 B^3 x^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3 - \frac{1}{b d^3} B^2 n^2 \Big(2 A b^3 c^3 - 6 a A b^2 c^2 d + 6 a^2 A b c d^2 + 3 b^3 B c^3 n - 9 a b^2 B c^2 d n + 9 a^2 b B c d^2 n - 3 a^3 B d^3 n - 2 a^3 B d^3 n \text{Log}[a+b x] + 2 b B c \left(b^2 c^2 - 3 a b c d + 3 a^2 d^2\right) n \text{Log}[c+d x] + 2 b^3 B c^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] - 6 a b^2 B c^2 d \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] + 6 a^2 b B c d^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\Big) \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right] - \frac{1}{b d^3} 2 B^2 n^2 \left(-a^3 B d^3 n \text{Log}[a+b x] + b B c \left(b^2 c^2 - 3 a b c d + 3 a^2 d^2\right) n \text{Log}[c+d x] + a^3 d^3 \left(A + B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)\right) \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right] - \frac{2 a^3 B^3 n^3 \text{PolyLog}\left[3, \frac{d (a+b x)}{-b c+a d}\right]}{b} + \frac{2 b^2 B^3 c^3 n^3 \text{PolyLog}\left[3, \frac{d (a+b x)}{-b c+a d}\right]}{d^3} - \frac{6 a b B^3 c^2 n^3 \text{PolyLog}\left[3, \frac{d (a+b x)}{-b c+a d}\right]}{d^2} + \frac{6 a^2 B^3 c n^3 \text{PolyLog}\left[3, \frac{d (a+b x)}{-b c+a d}\right]}{d} - \frac{2 a^3 B^3 n^3 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{b} + \frac{2 b^2 B^3 c^3 n^3 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{d^3} - \frac{6 a b B^3 c^2 n^3 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{d^2} + \frac{6 a^2 B^3 c n^3 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]}{d}$$

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

$$\int (a+b x) \left(A + B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3 dx$$

Optimal (type 4, 376 leaves, 11 steps):

$$-\frac{3 B^2 (b c-a d)^2 n^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A + B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b d^2} - \frac{3 B (b c-a d) n (a+b x) \left(A + B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 b d} - \frac{3 B (b c-a d)^2 n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A + B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 b d^2} + \frac{(a+b x)^2 \left(A + B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{2 b} - \frac{3 B^3 (b c-a d)^2 n^3 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b d^2} - \frac{3 B^2 (b c-a d)^2 n^2 \left(A + B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b d^2} + \frac{3 B^3 (b c-a d)^2 n^3 \text{PolyLog}\left[3, \frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}$$

Result (type 4, 2998 leaves):

$$\frac{1}{2 b d^2} \Big(-12 a^2 A B^2 d^2 n^2 - 6 b^2 B^3 c^2 n^3 + 6 a b B^3 c d n^3 + 6 a^2 B^3 d^2 n^3 + 2 a A^3 b d^2 x - 3 A^2 b^2 B c d n x + 3 a A^2 b B d^2 n x + A^3 b^2 d^2 x^2 + 3 a^2 A^2 B d^2 n \text{Log}[a+b x] - 6 a A b B^2 c d n^2 \text{Log}[a+b x] + 6 a^2 A B^2 d^2 n^2 \text{Log}[a+b x] + 12 a^2 B^3 d^2 n^3 \text{Log}[a+b x] - 3 a^2 A B^2 d^2 n^2 \text{Log}[a+b x]^2 + 3 a b B^3 c d n^3 \text{Log}[a+b x]^2 - 3 a^2 B^3 d^2 n^3 \text{Log}[a+b x]^2 + a^2 B^3 d^2 n^3 \text{Log}[a+b x]^3 + 3 A^2 b^2 B c^2 n \text{Log}[c+d x] - 6 a A^2 b B c d n \text{Log}[c+d x] + 6 A b^2 B^2 c^2 n^2 \text{Log}[c+d x] - 6 a A b B^2 c d n^2 \text{Log}[c+d x] - 12 a^2 B^3 d^2 n^3 \text{Log}[c+d x] - 6 A b^2 B^2 c^2 n^2 \text{Log}[a+b x] \text{Log}[c+d x] + 12 a A b B^2 c d n^2 \text{Log}[a+b x] \text{Log}[c+d x] + 6 a^2 A B^2 d^2 n^2 \text{Log}[a+b x] \text{Log}[c+d x] - 6 b^2 B^3 c^2 n^3 \text{Log}[a+b x] \text{Log}[c+d x] + 6 a b B^3 c d n^3 \text{Log}[a+b x] \text{Log}[c+d x] + 3 b^2 B^3 c^2 n^3 \text{Log}[a+b x]^2 \text{Log}[c+d x] - 6 a b B^3 c d n^3 \text{Log}[a+b x]^2 \text{Log}[c+d x] - 6 a^2 B^3 d^2 n^3 \text{Log}[a+b x]^2 \text{Log}[c+d x] -$$

$$6\,a^2 A B^2 d^2 n^2 \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] \text{Log}[c+d\,x]+6\,a^2 B^3 d^2 n^3 \text{Log}[a+b\,x]\, \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] \text{Log}[c+d\,x]+3\,A\,b^2 B^2 c^2 n^2 \text{Log}[c+d\,x]^2-$$

$$6\,a\,A\,b\,B^2 c\,d\,n^2 \text{Log}[c+d\,x]^2+3\,b^2 B^3 c^2 n^3 \text{Log}[c+d\,x]^2-3\,a\,b\,B^3 c\,d\,n^3 \text{Log}[c+d\,x]^2-6\,b^2 B^3 c^2 n^3 \text{Log}[a+b\,x]\, \text{Log}[c+d\,x]^2+$$

$$12\,a\,b\,B^3 c\,d\,n^3 \text{Log}[a+b\,x]\, \text{Log}[c+d\,x]^2+3\,a^2 B^3 d^2 n^3 \text{Log}[a+b\,x]\, \text{Log}[c+d\,x]^2+3\,b^2 B^3 c^2 n^3 \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] \text{Log}[c+d\,x]^2-$$

$$6\,a\,b\,B^3 c\,d\,n^3 \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] \text{Log}[c+d\,x]^2-3\,a^2 B^3 d^2 n^3 \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] \text{Log}[c+d\,x]^2+b^2 B^3 c^2 n^3 \text{Log}[c+d\,x]^3-$$

$$2\,a\,b\,B^3 c\,d\,n^3 \text{Log}[c+d\,x]^3+6\,A\,b^2 B^2 c^2 n^2 \text{Log}[a+b\,x]\, \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-12\,a\,A\,b\,B^2 c\,d\,n^2 \text{Log}[a+b\,x]\, \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$6\,b^2 B^3 c^2 n^3 \text{Log}[a+b\,x]\, \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-12\,a\,b\,B^3 c\,d\,n^3 \text{Log}[a+b\,x]\, \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+6\,a^2 B^3 d^2 n^3 \text{Log}[a+b\,x]\, \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$3\,b^2 B^3 c^2 n^3 \text{Log}[a+b\,x]^2 \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+6\,a\,b\,B^3 c\,d\,n^3 \text{Log}[a+b\,x]^2 \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+3\,a^2 B^3 d^2 n^3 \text{Log}[a+b\,x]^2 \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$6\,b^2 B^3 c^2 n^3 \text{Log}[a+b\,x]\, \text{Log}[c+d\,x]\, \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-12\,a\,b\,B^3 c\,d\,n^3 \text{Log}[a+b\,x]\, \text{Log}[c+d\,x]\, \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$12\,a^2 B^3 d^2 n^2 \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+6\,a\,A^2 b\,B\,d^2 x\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-6\,A\,b^2 B^2 c\,d\,n\,x\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$6\,a\,A\,b\,B^2 d^2 n\,x\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+3\,A^2 b^2 B\,d^2 x^2 \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+6\,a^2 A\,B^2 d^2 n\, \text{Log}[a+b\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-$$

$$6\,a\,b\,B^3 c\,d\,n^2 \text{Log}[a+b\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+6\,a^2 B^3 d^2 n^2 \text{Log}[a+b\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-$$

$$3\,a^2 B^3 d^2 n^2 \text{Log}[a+b\,x]^2 \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+6\,A\,b^2 B^2 c^2 n\, \text{Log}[c+d\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-$$

$$12\,a\,A\,b\,B^2 c\,d\,n\, \text{Log}[c+d\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+6\,b^2 B^3 c^2 n^2 \text{Log}[c+d\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-$$

$$6\,a\,b\,B^3 c\,d\,n^2 \text{Log}[c+d\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-6\,b^2 B^3 c^2 n^2 \text{Log}[a+b\,x]\, \text{Log}[c+d\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$12\,a\,b\,B^3 c\,d\,n^2 \text{Log}[a+b\,x]\, \text{Log}[c+d\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+6\,a^2 B^3 d^2 n^2 \text{Log}[a+b\,x]\, \text{Log}[c+d\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-$$

$$6\,a^2 B^3 d^2 n^2 \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] \text{Log}[c+d\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+3\,b^2 B^3 c^2 n^2 \text{Log}[c+d\,x]^2 \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-$$

$$6\,a\,b\,B^3 c\,d\,n^2 \text{Log}[c+d\,x]^2 \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+6\,b^2 B^3 c^2 n^2 \text{Log}[a+b\,x]\, \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-$$

$$12\,a\,b\,B^3 c\,d\,n^2 \text{Log}[a+b\,x]\, \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+6\,a\,A\,b\,B^2 d^2 x\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2-$$

$$3\,b^2 B^3 c\,d\,n\,x\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+3\,a\,b\,B^3 d^2 n\,x\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+3\,A\,b^2 B^2 d^2 x^2 \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+$$

$$3\,a^2 B^3 d^2 n\, \text{Log}[a+b\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+3\,b^2 B^3 c^2 n\, \text{Log}[c+d\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2-$$

$$6\,a\,b\,B^3 c\,d\,n\, \text{Log}[c+d\,x]\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+2\,a\,b\,B^3 d^2 x\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^3+b^2 B^3 d^2 x^2 \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^3+$$

$$6\,B^2 n^2 \left(A\,b^2 c^2-2\,a\,A\,b\,c\,d+b^2 B\,c^2 n-2\,a\,b\,B\,c\,d\,n+a^2 B\,d^2 n+a^2 B\,d^2 n\, \text{Log}[a+b\,x]+b\,B\,c\,(b\,c-2\,a\,d)\,n\, \text{Log}[c+d\,x]+\right.$$

$$\left.b^2 B\,c^2 \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-2\,a\,b\,B\,c\,d\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$

$$6\,B^2 n^2 \left(a^2 B\,d^2 n\, \text{Log}[a+b\,x]+b\,B\,c\,(b\,c-2\,a\,d)\,n\, \text{Log}[c+d\,x]-a^2 d^2 \left(A+B\, \text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\right) \text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$6 b^2 B^3 c^2 n^3 \text{PolyLog}\left[3, \frac{d (a+b x)}{-b c+a d}\right]+12 a b B^3 c d n^3 \text{PolyLog}\left[3, \frac{d (a+b x)}{-b c+a d}\right]-6 a^2 B^3 d^2 n^3 \text{PolyLog}\left[3, \frac{d (a+b x)}{-b c+a d}\right]-$$
$$6 b^2 B^3 c^2 n^3 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]+12 a b B^3 c d n^3 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]-6 a^2 B^3 d^2 n^3 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]\Bigg)$$

Problem 167: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{a+b x} \, dx$$

Optimal (type 4, 186 leaves, 6 steps):

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

Result (type 4, 2513 leaves):

$$\frac{1}{4 b}\Bigg(4 A^3 \text{Log}[a+b x]-6 A^2 B n \text{Log}[a+b x]^2+4 A B^2 n^2 \text{Log}[a+b x]^3-B^3 n^3 \text{Log}[a+b x]^4+$$
$$B^3 n^3 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]^4-4 B^3 n^3 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]^3 \text{Log}\left[-\frac{d (a+b x)}{b (c+d x)}\right]+6 B^3 n^3 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]^2 \text{Log}\left[-\frac{d (a+b x)}{b (c+d x)}\right]^2-$$
$$4 B^3 n^3 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}\left[-\frac{d (a+b x)}{b (c+d x)}\right]^3+B^3 n^3 \text{Log}\left[-\frac{d (a+b x)}{b (c+d x)}\right]^4-12 A B^2 n^2 \text{Log}[a+b x] \text{Log}[c+d x]^2+$$
$$12 B^3 n^3 \text{Log}[a+b x]^2 \text{Log}[c+d x]^2+12 A B^2 n^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x]^2-12 B^3 n^3 \text{Log}[a+b x] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x]^2-$$
$$8 B^3 n^3 \text{Log}[a+b x] \text{Log}[c+d x]^3+8 B^3 n^3 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x]^3+12 A^2 B n \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-$$
$$12 A B^2 n^2 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+4 B^3 n^3 \text{Log}[a+b x]^3 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+8 B^3 n^3 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]^3 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-$$
$$12 B^3 n^3 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]^2 \text{Log}\left[-\frac{d (a+b x)}{b (c+d x)}\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+24 A B^2 n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-$$
$$24 B^3 n^3 \text{Log}[a+b x]^2 \text{Log}[c+d x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+12 B^3 n^3 \text{Log}[a+b x] \text{Log}[c+d x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+$$
$$6 B^3 n^3 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]^2+12 B^3 n^3 \text{Log}[a+b x] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]^2-$$

$$18\,B^3\,n^3\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]^2+12\,A^2\,B\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-$$

$$12\,A\,B^2\,n\,\text{Log}[a+b\,x]^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+4\,B^3\,n^2\,\text{Log}[a+b\,x]^3\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-$$

$$12\,B^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+12\,B^3\,n^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\,\text{Log}[c+d\,x]^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$24\,A\,B^2\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-12\,B^3\,n^2\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$24\,B^3\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+12\,A\,B^2\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2-$$

$$6\,B^3\,n\,\text{Log}[a+b\,x]^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+12\,B^3\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+$$

$$4\,B^3\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^3-4\,B^3\,n^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]^3\,\text{Log}\left[\frac{b\,c-a\,d}{b\,c+b\,d\,x}\right]+$$

$$12\,B\,n\,\Bigg(A^2+B^2\,n^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]^2+B^2\,n^2\,\text{Log}[c+d\,x]^2+2\,B^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$2\,B^2\,n^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\,\left(\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]+\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+2\,A\,B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$B^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+2\,B\,n\,\text{Log}[c+d\,x]\,\left(A-B\,n\,\text{Log}[a+b\,x]+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\Bigg)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-$$

$$12\,B^3\,n^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]+12\,B^3\,n^3\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$24\,B^3\,n^3\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+12\,B^3\,n^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$24\,A\,B^2\,n^2\,\text{Log}[c+d\,x]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-24\,B^3\,n^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$12\,B^3\,n^3\,\text{Log}[c+d\,x]^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+24\,B^3\,n^3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$24\,B^3\,n^3\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+24\,B^3\,n^2\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$24\,A\,B^2\,n^2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+24\,B^3\,n^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-$$

$$24\,B^3\,n^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+24\,B^3\,n^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]-$$

$$24\,A\,B^2\,n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+24\,B^3\,n^3\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$24 B^3 n^2 \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right] \mathrm{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right] - 24 B^3 n^3 \mathrm{PolyLog}\left[4, \frac{d (a+b x)}{b (c+d x)}\right]\Bigg)$$

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

$$\int \frac{\left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(a+b x)^2} \, dx$$

Optimal (type 3, 184 leaves, 5 steps):

$$-\frac{6 B^3 n^3 (c+d x)}{(b c-a d) (a+b x)} - \frac{6 B^2 n^2 (c+d x) \left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{(b c-a d) (a+b x)} - \frac{3 B n (c+d x) \left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(b c-a d) (a+b x)} - \frac{(c+d x) \left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(b c-a d) (a+b x)}$$

Result (type 3, 524 leaves):

$$\frac{1}{b (b c-a d) (a+b x)} \Bigg(-B^3 d n^3 (a+b x) \mathrm{Log}[a+b x]^3 + B^3 d n^3 (a+b x) \mathrm{Log}[c+d x]^3 + 3 B^2 d n^2 (a+b x) \mathrm{Log}[c+d x]^2 \left(A+B n+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) + 3 B^2 d n^2 (a+b x) \mathrm{Log}[a+b x]^2 \left(A+B n+B n \mathrm{Log}[c+d x]+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) + 3 B d n (a+b x) \mathrm{Log}[c+d x] \left(A^2+2 A B n+2 B^2 n^2+2 B (A+B n) \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+B^2 \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2\right) - (b c-a d) \left(A^3+3 A^2 B n+6 A B^2 n^2+6 B^3 n^3+3 B \left(A^2+2 A B n+2 B^2 n^2\right) \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+3 B^2 (A+B n) \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2 + B^3 \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^3\right) - 3 B d n (a+b x) \mathrm{Log}[a+b x] \Big(A^2+2 A B n+2 B^2 n^2+B^2 n^2 \mathrm{Log}[c+d x]^2 + 2 B (A+B n) \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+B^2 \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+2 B n \mathrm{Log}[c+d x] \left(A+B n+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)\Big)\Bigg)$$

Problem 172: Unable to integrate problem.

$$\int \frac{1}{(a g+b g x)^2 \left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)} \, dx$$

Optimal (type 4, 96 leaves, 4 steps):

$$\frac{e^{\frac{A}{B n}} (c+d x) \left(e (a+b x)^n (c+d x)^{-n}\right)^{\frac{1}{n}} \mathrm{ExpIntegralEi}\left[-\frac{A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{B n}\right]}{B (b c-a d) g^2 n (a+b x)}$$

Result (type 8, 38 leaves):

$$\int \frac{1}{(a\,g+b\,g\,x)^2 \left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}\,dx$$

Problem 182: Result more than twice size of optimal antiderivative.

$$\int (a\,g+b\,g\,x)^4 \left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2 dx$$

Optimal (type 4, 503 leaves, 19 steps):

$$\frac{13\,B^2\,(b\,c-a\,d)^4\,g^4\,x}{30\,d^4}-\frac{7\,B^2\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2}{60\,b\,d^3}+\frac{B^2\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3}{30\,b\,d^2}-\frac{5\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{Log}[a+b\,x]}{6\,b\,d^5}-\frac{13\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{Log}\left[\frac{c+d\,x}{a+b\,x}\right]}{30\,b\,d^5}+\frac{B\,(b\,c-a\,d)^3\,g^4\,(a+b\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{5\,b\,d^3}-\frac{2\,B\,(b\,c-a\,d)^2\,g^4\,(a+b\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{15\,b\,d^2}+\frac{B\,(b\,c-a\,d)\,g^4\,(a+b\,x)^4\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{10\,b\,d}-\frac{2\,B\,(b\,c-a\,d)^4\,g^4\,(c+d\,x)\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)}{5\,d^5}+\frac{g^4\,(a+b\,x)^5\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)^2}{5\,b}-\frac{2\,B\,(b\,c-a\,d)^5\,g^4\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)\text{Log}\left[1-\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{5\,b\,d^5}+\frac{2\,B^2\,(b\,c-a\,d)^5\,g^4\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{5\,b\,d^5}$$

Result (type 4, 2847 leaves):

$$\frac{1}{60\,b\,d^5}\,g^4\Big(24\,b^5\,B^2\,c^5-144\,a\,b^4\,B^2\,c^4\,d+360\,a^2\,b^3\,B^2\,c^3\,d^2-480\,a^3\,b^2\,B^2\,c^2\,d^3+336\,a^4\,b\,B^2\,c\,d^4-96\,a^5\,B^2\,d^5-24\,A\,b^5\,B\,c^4\,d\,x+26\,b^5\,B^2\,c^4\,d\,x+120\,a\,A\,b^4\,B\,c^3\,d^2\,x-$$
$$118\,a\,b^4\,B^2\,c^3\,d^2\,x-240\,a^2\,A\,b^3\,B\,c^2\,d^3\,x+204\,a^2\,b^3\,B^2\,c^2\,d^3\,x+240\,a^3\,A\,b^2\,B\,c\,d^4\,x-158\,a^3\,b^2\,B^2\,c\,d^4\,x+60\,a^4\,A^2\,b\,d^5\,x-96\,a^4\,A\,b\,B\,d^5\,x+$$
$$46\,a^4\,b\,B^2\,d^5\,x+12\,A\,b^5\,B\,c^3\,d^2\,x^2-7\,b^5\,B^2\,c^3\,d^2\,x^2-60\,a\,A\,b^4\,B\,c^2\,d^3\,x^2+27\,a\,b^4\,B^2\,c^2\,d^3\,x^2+120\,a^2\,A\,b^3\,B\,c\,d^4\,x^2-33\,a^2\,b^3\,B^2\,c\,d^4\,x^2+$$
$$120\,a^3\,A^2\,b^2\,d^5\,x^2-72\,a^3\,A\,b^2\,B\,d^5\,x^2+13\,a^3\,b^2\,B^2\,d^5\,x^2-8\,A\,b^5\,B\,c^2\,d^3\,x^3+2\,b^5\,B^2\,c^2\,d^3\,x^3+40\,a\,A\,b^4\,B\,c\,d^4\,x^3-4\,a\,b^4\,B^2\,c\,d^4\,x^3+120\,a^2\,A^2\,b^3\,d^5\,x^3-$$
$$32\,a^2\,A\,b^3\,B\,d^5\,x^3+2\,a^2\,b^3\,B^2\,d^5\,x^3+6\,A\,b^5\,B\,c\,d^4\,x^4+60\,a\,A^2\,b^4\,d^5\,x^4-6\,a\,A\,b^4\,B\,d^5\,x^4+12\,A^2\,b^5\,d^5\,x^5+24\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{a}{b}+x\right]-$$
$$120\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]+240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]-240\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]+96\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{a}{b}+x\right]+12\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{a}{b}+x\right]^2-$$
$$24\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{c}{d}+x\right]+120\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{c}{d}+x\right]-240\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{c}{d}+x\right]+240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]-96\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{c}{d}+x\right]+$$
$$12\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{c}{d}+x\right]^2-60\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{c}{d}+x\right]^2+120\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{c}{d}+x\right]^2-120\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]^2+60\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{c}{d}+x\right]^2+$$
$$12\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}[a+b\,x]-52\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}[a+b\,x]+86\,a^4\,b\,B^2\,c\,d^4\,\text{Log}[a+b\,x]-24\,a^5\,A\,B\,d^5\,\text{Log}[a+b\,x]-46\,a^5\,B^2\,d^5\,\text{Log}[a+b\,x]-$$
$$24\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b\,x]+24\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]-24\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+24\,A\,b^5\,B\,c^5\,\text{Log}[c+d\,x]-$$
$$26\,b^5\,B^2\,c^5\,\text{Log}[c+d\,x]-120\,a\,A\,b^4\,B\,c^4\,d\,\text{Log}[c+d\,x]+106\,a\,b^4\,B^2\,c^4\,d\,\text{Log}[c+d\,x]+240\,a^2\,A\,b^3\,B\,c^3\,d^2\,\text{Log}[c+d\,x]-$$

$$152\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}[c+d\,x]-240\,a^3\,A\,b^2\,B\,c^2\,d^3\,\text{Log}[c+d\,x]+72\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}[c+d\,x]+120\,a^4\,A\,b\,B\,c\,d^4\,\text{Log}[c+d\,x]+$$

$$24\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-120\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+240\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-$$

$$240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+120\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-24\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]+$$

$$120\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-240\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]+240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-$$

$$120\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-24\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+120\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$240\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-120\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$24\,b^5\,B^2\,c^4\,d\,x\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+120\,a\,b^4\,B^2\,c^3\,d^2\,x\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]-240\,a^2\,b^3\,B^2\,c^2\,d^3\,x\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+240\,a^3\,b^2\,B^2\,c\,d^4\,x\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+$$

$$120\,a^4\,A\,b\,B\,d^5\,x\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]-96\,a^4\,b\,B^2\,d^5\,x\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+12\,b^5\,B^2\,c^3\,d^2\,x^2\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]-60\,a\,b^4\,B^2\,c^2\,d^3\,x^2\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+$$

$$120\,a^2\,b^3\,B^2\,c\,d^4\,x^2\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+240\,a^3\,A\,b^2\,B\,d^5\,x^2\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]-72\,a^3\,b^2\,B^2\,d^5\,x^2\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]-8\,b^5\,B^2\,c^2\,d^3\,x^3\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+$$

$$40\,a\,b^4\,B^2\,c\,d^4\,x^3\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+240\,a^2\,A\,b^3\,B\,d^5\,x^3\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]-32\,a^2\,b^3\,B^2\,d^5\,x^3\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+6\,b^5\,B^2\,c\,d^4\,x^4\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+$$

$$120\,a\,A\,b^4\,B\,d^5\,x^4\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]-6\,a\,b^4\,B^2\,d^5\,x^4\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+24\,A\,b^5\,B\,d^5\,x^5\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]-24\,a^5\,B^2\,d^5\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+$$

$$24\,b^5\,B^2\,c^5\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]-120\,a\,b^4\,B^2\,c^4\,d\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+240\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]-$$

$$240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+120\,a^4\,b\,B^2\,c\,d^4\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+60\,a^4\,b\,B^2\,d^5\,x\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]^2+$$

$$120\,a^3\,b^2\,B^2\,d^5\,x^2\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]^2+120\,a^2\,b^3\,B^2\,d^5\,x^3\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]^2+60\,a\,b^4\,B^2\,d^5\,x^4\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]^2+12\,b^5\,B^2\,d^5\,x^5\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]^2-$$

$$24\,b\,B^2\,c\,\left(b^4\,c^4-5\,a\,b^3\,c^3\,d+10\,a^2\,b^2\,c^2\,d^2-10\,a^3\,b\,c\,d^3+5\,a^4\,d^4\right)\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-24\,a^5\,B^2\,d^5\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)$$

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

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

Optimal (type 4, 420 leaves, 15 steps) :

$$-\frac{5 B^2 (b c-a d)^3 g^3 x}{12 d^3}+\frac{B^2 (b c-a d)^2 g^3 (a+b x)^2}{12 b d^2}+\frac{11 B^2 (b c-a d)^4 g^3 \operatorname{Log}[a+b x]}{12 b d^4}+\frac{5 B^2 (b c-a d)^4 g^3 \operatorname{Log}\left[\frac{c+d x}{a+b x}\right]}{12 b d^4}-$$
$$\frac{B (b c-a d)^2 g^3 (a+b x)^2 \left(A+B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{4 b d^2}+\frac{B (b c-a d) g^3 (a+b x)^3 \left(A+B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{6 b d}+\frac{B (b c-a d)^3 g^3 (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{2 d^4}+$$
$$\frac{g^3 (a+b x)^4 \left(A+B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}{4 b}+\frac{B (b c-a d)^4 g^3 \left(A+B \operatorname{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right) \operatorname{Log}\left[1-\frac{d (a+b x)}{b (c+d x)}\right]}{2 b d^4}-\frac{B^2 (b c-a d)^4 g^3 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{2 b d^4}$$

Result (type 4, 2110 leaves) :

$$
\begin{aligned}
&\frac{1}{12\, b\, d^4} \\
&g^3 \Big(-6 b^4 B^2 c^4+30 a b^3 B^2 c^3 d-60 a^2 b^2 B^2 c^2 d^2+54 a^3 b B^2 c d^3-18 a^4 B^2 d^4+6 A b^4 B c^3 d x-5 b^4 B^2 c^3 d x-24 a A b^3 B c^2 d^2 x+17 a b^3 B^2 c^2 d^2 x+36 a^2 A \\
&\quad b^2 B c d^3 x-19 a^2 b^2 B^2 c d^3 x+12 a^3 A^2 b d^4 x-18 a^3 A b B d^4 x+7 a^3 b B^2 d^4 x-3 A b^4 B c^2 d^2 x^2+b^4 B^2 c^2 d^2 x^2+12 a A b^3 B c d^3 x^2-2 a b^3 B^2 c d^3 x^2+ \\
&\quad 18 a^2 A^2 b^2 d^4 x^2-9 a^2 A b^2 B d^4 x^2+a^2 b^2 B^2 d^4 x^2+2 A b^4 B c d^3 x^3+12 a A^2 b^3 d^4 x^3-2 a A b^3 B d^4 x^3+3 A^2 b^4 d^4 x^4-6 a b^3 B^2 c^3 d \,\text{Log}\left[\frac{a}{b}+x\right]+ \\
&\quad 24 a^2 b^2 B^2 c^2 d^2 \,\text{Log}\left[\frac{a}{b}+x\right]-36 a^3 b B^2 c d^3 \,\text{Log}\left[\frac{a}{b}+x\right]+18 a^4 B^2 d^4 \,\text{Log}\left[\frac{a}{b}+x\right]+3 a^4 B^2 d^4 \,\text{Log}\left[\frac{a}{b}+x\right]^2+6 b^4 B^2 c^4 \,\text{Log}\left[\frac{c}{d}+x\right]- \\
&\quad 24 a b^3 B^2 c^3 d \,\text{Log}\left[\frac{c}{d}+x\right]+36 a^2 b^2 B^2 c^2 d^2 \,\text{Log}\left[\frac{c}{d}+x\right]-18 a^3 b B^2 c d^3 \,\text{Log}\left[\frac{c}{d}+x\right]-3 b^4 B^2 c^4 \,\text{Log}\left[\frac{c}{d}+x\right]^2+12 a b^3 B^2 c^3 d \,\text{Log}\left[\frac{c}{d}+x\right]^2- \\
&\quad 18 a^2 b^2 B^2 c^2 d^2 \,\text{Log}\left[\frac{c}{d}+x\right]^2+12 a^3 b B^2 c d^3 \,\text{Log}\left[\frac{c}{d}+x\right]^2-3 a^2 b^2 B^2 c^2 d^2 \,\text{Log}[a+b x]+10 a^3 b B^2 c d^3 \,\text{Log}[a+b x]-6 a^4 A B d^4 \,\text{Log}[a+b x]- \\
&\quad 7 a^4 B^2 d^4 \,\text{Log}[a+b x]-6 a^4 B^2 d^4 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+6 a^4 B^2 d^4 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-6 a^4 B^2 d^4 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]- \\
&\quad 6 A b^4 B c^4 \,\text{Log}[c+d x]+5 b^4 B^2 c^4 \,\text{Log}[c+d x]+24 a A b^3 B c^3 d \,\text{Log}[c+d x]-14 a b^3 B^2 c^3 d \,\text{Log}[c+d x]-36 a^2 A b^2 B c^2 d^2 \,\text{Log}[c+d x]+ \\
&\quad 9 a^2 b^2 B^2 c^2 d^2 \,\text{Log}[c+d x]+24 a^3 A b B c d^3 \,\text{Log}[c+d x]-6 b^4 B^2 c^4 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+24 a b^3 B^2 c^3 d \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]- \\
&\quad 36 a^2 b^2 B^2 c^2 d^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+24 a^3 b B^2 c d^3 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+6 b^4 B^2 c^4 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]- \\
&\quad 24 a b^3 B^2 c^3 d \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+36 a^2 b^2 B^2 c^2 d^2 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]-24 a^3 b B^2 c d^3 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+ \\
&\quad 6 b^4 B^2 c^4 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-24 a b^3 B^2 c^3 d \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+36 a^2 b^2 B^2 c^2 d^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]- \\
&\quad 24 a^3 b B^2 c d^3 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+6 b^4 B^2 c^3 d x \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]-24 a b^3 B^2 c^2 d^2 x \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]+36 a^2 b^2 B^2 c d^3 x \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]+ \\
&\quad 24 a^3 A b B d^4 x \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]-18 a^3 b B^2 d^4 x \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]-3 b^4 B^2 c^2 d^2 x^2 \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]+12 a b^3 B^2 c d^3 x^2 \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]+ \\
&\quad 36 a^2 A b^2 B d^4 x^2 \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]-9 a^2 b^2 B^2 d^4 x^2 \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]+2 b^4 B^2 c d^3 x^3 \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]+24 a A b^3 B d^4 x^3 \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]- \\
&\quad 2 a b^3 B^2 d^4 x^3 \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]+6 A b^4 B d^4 x^4 \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]-6 a^4 B^2 d^4 \,\text{Log}[a+b x] \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]-6 b^4 B^2 c^4 \,\text{Log}[c+d x] \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]+ \\
&\quad 24 a b^3 B^2 c^3 d \,\text{Log}[c+d x] \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]-36 a^2 b^2 B^2 c^2 d^2 \,\text{Log}[c+d x] \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]+24 a^3 b B^2 c d^3 \,\text{Log}[c+d x] \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]+ \\
&\quad 12 a^3 b B^2 d^4 x \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]^2+18 a^2 b^2 B^2 d^4 x^2 \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]^2+12 a b^3 B^2 d^4 x^3 \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]^2+3 b^4 B^2 d^4 x^4 \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]^2+ \\
&\quad 6 b B^2 c \left(b^3 c^3-4 a b^2 c^2 d+6 a^2 b c d^2-4 a^3 d^3\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-6 a^4 B^2 d^4 \,\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\Big)
\end{aligned}
$$

Problem 184: Result more than twice size of optimal antiderivative.

$$\int (a g + b g x)^2 \left(A + B \text{Log}\left[\frac{e (c + d x)}{a + b x}\right]\right)^2 dx$$

Optimal (type 4, 335 leaves, 11 steps):

$$\frac{B^2 (b c - a d)^2 g^2 x}{3 d^2} - \frac{B^2 (b c - a d)^3 g^2 \text{Log}[a + b x]}{b d^3} - \frac{B^2 (b c - a d)^3 g^2 \text{Log}\left[\frac{c+d x}{a+b x}\right]}{3 b d^3} + \frac{B (b c - a d) g^2 (a + b x)^2 \left(A + B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{3 b d} - \frac{2 B (b c - a d)^2 g^2 (c + d x) \left(A + B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{3 d^3} + \frac{g^2 (a + b x)^3 \left(A + B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}{3 b} - \frac{2 B (b c - a d)^3 g^2 \left(A + B \text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right) \text{Log}\left[1 - \frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3} + \frac{2 B^2 (b c - a d)^3 g^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3}$$

Result (type 4, 1398 leaves):

$$g^2 \Big(a^2 A^2 x + a A^2 b x^2 + \frac{1}{3} A^2 b^2 x^3 + 2 a^2 A B \Big(\frac{(-b c + a d) (a d \text{Log}[a + b x] - b c \text{Log}[c + d x])}{b^2 c d - a b d^2} + x \text{Log}\Big[\frac{c e + d e x}{a + b x}\Big]\Big) +$$

$$4 a A b B \Big(-\frac{1}{2} (-b c + a d) \Big(\frac{x}{b d} + \frac{a^2 \text{Log}[a + b x]}{b^2 (b c - a d)} - \frac{c^2 \text{Log}[c + d x]}{d^2 (b c - a d)}\Big) + \frac{1}{2} x^2 \text{Log}\Big[\frac{c e + d e x}{a + b x}\Big]\Big) +$$

$$2 A b^2 B \Big(-\frac{(-b c + a d) (b d (b c - a d) x (-2 b c - 2 a d + b d x) - 2 a^3 d^3 \text{Log}[a + b x] + 2 b^3 c^3 \text{Log}[c + d x])}{6 b^3 d^3 (b c - a d)} + \frac{1}{3} x^3 \text{Log}\Big[\frac{c e + d e x}{a + b x}\Big]\Big) + a^2 B^2$$

$$\Big(x \text{Log}\Big[\frac{c e + d e x}{a + b x}\Big]^2 - \frac{1}{b d (b c - a d)} (-b c + a d) \Big(a d \text{Log}\Big[\frac{a}{b} + x\Big]^2 + b c \text{Log}\Big[\frac{c}{d} + x\Big]^2 - 2 a d \text{Log}\Big[\frac{a}{b} + x\Big] \text{Log}[a + b x] + 2 a d \text{Log}\Big[\frac{c}{d} + x\Big] \text{Log}[a + b x] -$$

$$2 a d \text{Log}\Big[\frac{c}{d} + x\Big] \text{Log}\Big[\frac{d (a + b x)}{-b c + a d}\Big] + 2 b c \text{Log}\Big[\frac{a}{b} + x\Big] \text{Log}[c + d x] - 2 b c \text{Log}\Big[\frac{c}{d} + x\Big] \text{Log}[c + d x] - 2 b c \text{Log}\Big[\frac{a}{b} + x\Big] \text{Log}\Big[\frac{b (c + d x)}{b c - a d}\Big] - 2 a d$$

$$\text{Log}[a + b x] \text{Log}\Big[\frac{e (c + d x)}{a + b x}\Big] + 2 b c \text{Log}[c + d x] \text{Log}\Big[\frac{e (c + d x)}{a + b x}\Big] - 2 b c \text{PolyLog}\Big[2, \frac{d (a + b x)}{-b c + a d}\Big] - 2 a d \text{PolyLog}\Big[2, \frac{b (c + d x)}{b c - a d}\Big]\Big)\Big) + 2 a$$

$$b B^2 \Big(\frac{1}{2} x^2 \text{Log}\Big[\frac{c e + d e x}{a + b x}\Big]^2 + \frac{1}{2 b^2 d^2} \Big(2 d (-b c + a d) (a + b x) \Big(-1 + \text{Log}\Big[\frac{a}{b} + x\Big]\Big) - a^2 d^2 \text{Log}\Big[\frac{a}{b} + x\Big]^2 + 2 b (b c - a d) (c + d x) \Big(-1 + \text{Log}\Big[\frac{c}{d} + x\Big]\Big) -$$

$$b^2 c^2 \text{Log}\Big[\frac{c}{d} + x\Big]^2 + 2 (a^2 d^2 \text{Log}[a + b x] - b (d (-b c + a d) x + b c^2 \text{Log}[c + d x])) \Big(\text{Log}\Big[\frac{a}{b} + x\Big] - \text{Log}\Big[\frac{c}{d} + x\Big] + \text{Log}\Big[\frac{e (c + d x)}{a + b x}\Big]\Big) +$$

$$2 b^2 c^2 \Big(\text{Log}\Big[\frac{a}{b} + x\Big] \text{Log}\Big[\frac{b (c + d x)}{b c - a d}\Big] + \text{PolyLog}\Big[2, \frac{d (a + b x)}{-b c + a d}\Big]\Big) + 2 a^2 d^2 \Big(\text{Log}\Big[\frac{c}{d} + x\Big] \text{Log}\Big[\frac{d (a + b x)}{-b c + a d}\Big] + \text{PolyLog}\Big[2, \frac{b (c + d x)}{b c - a d}\Big]\Big)\Big)\Big) +$$

$$b^2 B^2 \Big(\frac{1}{3} x^3 \text{Log}\Big[\frac{c e + d e x}{a + b x}\Big]^2 + \frac{1}{6 b^3 d^3} \Big(-4 d (-b c + a d) (b c + a d) (a + b x) \Big(-1 + \text{Log}\Big[\frac{a}{b} + x\Big]\Big) + 2 a^3 d^3 \text{Log}\Big[\frac{a}{b} + x\Big]^2 -$$

$$4 b (b c - a d) (b c + a d) (c + d x) \Big(-1 + \text{Log}\Big[\frac{c}{d} + x\Big]\Big) + 2 b^3 c^3 \text{Log}\Big[\frac{c}{d} + x\Big]^2 + d^2 (-b c + a d)$$

$$\Big(b x (2 a - b x) + 2 b^2 x^2 \text{Log}\Big[\frac{a}{b} + x\Big] - 2 a^2 \text{Log}[a + b x]\Big) + b^2 (b c - a d) \Big(d x (2 c - d x) + 2 d^2 x^2 \text{Log}\Big[\frac{c}{d} + x\Big] - 2 c^2 \text{Log}[c + d x]\Big) +$$

$$2 (b d (b c - a d) x (-2 b c - 2 a d + b d x) - 2 a^3 d^3 \text{Log}[a + b x] + 2 b^3 c^3 \text{Log}[c + d x]) \Big(\text{Log}\Big[\frac{a}{b} + x\Big] - \text{Log}\Big[\frac{c}{d} + x\Big] + \text{Log}\Big[\frac{e (c + d x)}{a + b x}\Big]\Big) -$$

$$4 b^3 c^3 \Big(\text{Log}\Big[\frac{a}{b} + x\Big] \text{Log}\Big[\frac{b (c + d x)}{b c - a d}\Big] + \text{PolyLog}\Big[2, \frac{d (a + b x)}{-b c + a d}\Big]\Big) - 4 a^3 d^3 \Big(\text{Log}\Big[\frac{c}{d} + x\Big] \text{Log}\Big[\frac{d (a + b x)}{-b c + a d}\Big] + \text{PolyLog}\Big[2, \frac{b (c + d x)}{b c - a d}\Big]\Big)\Big)\Big)\Big)$$

Problem 185: Result more than twice size of optimal antiderivative.

$$\int (a g + b g x) \Big(A + B \text{Log}\Big[\frac{e (c + d x)}{a + b x}\Big]\Big)^2 \, dx$$

Optimal (type 4, 202 leaves, 7 steps):

$$\frac{B^2 \left(b c-a d\right)^2 g \,\text{Log}[a+b x]}{b d^2}+\frac{B \left(b c-a d\right) g \left(c+d x\right) \left(A+B \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)}{d^2}+\frac{g \left(a+b x\right)^2 \left(A+B \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}{2 b}+$$
$$\frac{B \left(b c-a d\right)^2 g \left(A+B \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right) \text{Log}\left[1-\frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}-\frac{B^2 \left(b c-a d\right)^2 g \,\text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}$$

Result (type 4, 734 leaves) :

$$\frac{1}{2 b d^2} g \left(2 a A^2 b d^2 x+A^2 b^2 d^2 x^2-4 a A B d \left(a d \,\text{Log}[a+b x]-b \left(c \,\text{Log}[c+d x]+d x \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)\right)+\right.$$
$$2 A B \left(a^2 d^2 \,\text{Log}[a+b x]+b \left(-b c^2 \,\text{Log}[c+d x]+d x \left(b c-a d+b d x \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)\right)\right)+$$
$$2 a B^2 d \left(a d \,\text{Log}\left[\frac{a}{b}+x\right]^2+b c \,\text{Log}\left[\frac{c}{d}+x\right]^2-2 a d \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+2 a d \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-2 a d \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\right.$$
$$2 b c \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]-2 b c \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]-2 b c \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-2 a d \,\text{Log}[a+b x] \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]+$$
$$\left.2 b c \,\text{Log}[c+d x] \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]+b d x \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]^2-2 b c \,\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-2 a d \,\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)+$$
$$B^2 \left(2 d \left(-b c+a d\right) \left(a+b x\right) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)-a^2 d^2 \,\text{Log}\left[\frac{a}{b}+x\right]^2+2 b \left(b c-a d\right) \left(c+d x\right) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)-b^2 c^2 \,\text{Log}\left[\frac{c}{d}+x\right]^2+\right.$$
$$b^2 d^2 x^2 \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]^2+2 \left(a^2 d^2 \,\text{Log}[a+b x]-b \left(d \left(-b c+a d\right) x+b c^2 \,\text{Log}[c+d x]\right)\right) \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)+$$
$$\left.\left.2 b^2 c^2 \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)+2 a^2 d^2 \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\right)$$

Problem 186: Result more than twice size of optimal antiderivative.

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

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

$$-\frac{\text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \left(A+B \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right)^2}{b g}-\frac{2 B \left(A+B \,\text{Log}\left[\frac{e (c+d x)}{a+b x}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b g}+\frac{2 B^2 \,\text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b g}$$

Result (type 4, 454 leaves) :

$$\frac{1}{3 b g}\left(3 A^2 \operatorname{Log}[a+b x]-\right.$$
$$3 A B\left(\operatorname{Log}\left[\frac{a}{b}+x\right]^2-2 \operatorname{Log}[a+b x]\left(\operatorname{Log}\left[\frac{a}{b}+x\right]-\operatorname{Log}\left[\frac{c}{d}+x\right]+\operatorname{Log}\left[\frac{e(c+d x)}{a+b x}\right]\right)-2\left(\operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d(a+b x)}{-b c+a d}\right]+\operatorname{PolyLog}\left[2, \frac{b(c+d x)}{b c-a d}\right]\right)\right)+$$
$$B^2\left(\operatorname{Log}\left[\frac{a}{b}+x\right]^3+3 \operatorname{Log}\left[\frac{c}{d}+x\right]^2 \operatorname{Log}\left[\frac{d(a+b x)}{-b c+a d}\right]+3 \operatorname{Log}\left[\frac{a}{b}+x\right]^2\left(-\operatorname{Log}\left[\frac{c}{d}+x\right]+\operatorname{Log}\left[\frac{b(c+d x)}{b c-a d}\right]\right)+\right.$$
$$3 \operatorname{Log}[a+b x]\left(\operatorname{Log}\left[\frac{a}{b}+x\right]-\operatorname{Log}\left[\frac{c}{d}+x\right]+\operatorname{Log}\left[\frac{e(c+d x)}{a+b x}\right]\right)^2+6 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{PolyLog}\left[2, \frac{d(a+b x)}{-b c+a d}\right]+6 \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{PolyLog}\left[2, \frac{b(c+d x)}{b c-a d}\right]-$$
$$3\left(\operatorname{Log}\left[\frac{a}{b}+x\right]-\operatorname{Log}\left[\frac{c}{d}+x\right]+\operatorname{Log}\left[\frac{e(c+d x)}{a+b x}\right]\right)\left(\operatorname{Log}\left[\frac{a}{b}+x\right]^2-2\left(\operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d(a+b x)}{-b c+a d}\right]+\operatorname{PolyLog}\left[2, \frac{b(c+d x)}{b c-a d}\right]\right)\right)-$$
$$\left.\left.6 \operatorname{PolyLog}\left[3, \frac{d(a+b x)}{-b c+a d}\right]-6 \operatorname{PolyLog}\left[3, \frac{b(c+d x)}{b c-a d}\right]\right)\right)$$

Problem 210: Result more than twice size of optimal antiderivative.

$$\int(a g+b g x)^4\left(A+B \operatorname{Log}\left[\frac{e(c+d x)^2}{(a+b x)^2}\right]\right)^2 dx$$

Optimal (type 4, 515 leaves, 19 steps):

$$\frac{26 B^2(b c-a d)^4 g^4 x}{15 d^4}-\frac{7 B^2(b c-a d)^3 g^4(a+b x)^2}{15 b d^3}+\frac{2 B^2(b c-a d)^2 g^4(a+b x)^3}{15 b d^2}-\frac{10 B^2(b c-a d)^5 g^4 \operatorname{Log}[a+b x]}{3 b d^5}-$$
$$\frac{26 B^2(b c-a d)^5 g^4 \operatorname{Log}\left[\frac{c+d x}{a+b x}\right]}{15 b d^5}+\frac{2 B(b c-a d)^3 g^4(a+b x)^2\left(A+B \operatorname{Log}\left[\frac{e(c+d x)^2}{(a+b x)^2}\right]\right)}{5 b d^3}-\frac{4 B(b c-a d)^2 g^4(a+b x)^3\left(A+B \operatorname{Log}\left[\frac{e(c+d x)^2}{(a+b x)^2}\right]\right)}{15 b d^2}+$$
$$\frac{B(b c-a d) g^4(a+b x)^4\left(A+B \operatorname{Log}\left[\frac{e(c+d x)^2}{(a+b x)^2}\right]\right)}{5 b d}-\frac{4 B(b c-a d)^4 g^4(c+d x)\left(A+B \operatorname{Log}\left[\frac{e(c+d x)^2}{(a+b x)^2}\right]\right)}{5 d^5}+$$
$$\frac{g^4(a+b x)^5\left(A+B \operatorname{Log}\left[\frac{e(c+d x)^2}{(a+b x)^2}\right]\right)^2}{5 b}-\frac{4 B(b c-a d)^5 g^4\left(A+B \operatorname{Log}\left[\frac{e(c+d x)^2}{(a+b x)^2}\right]\right) \operatorname{Log}\left[1-\frac{d(a+b x)}{b(c+d x)}\right]}{5 b d^5}+\frac{8 B^2(b c-a d)^5 g^4 \operatorname{PolyLog}\left[2, \frac{d(a+b x)}{b(c+d x)}\right]}{5 b d^5}$$

Result (type 4, 2907 leaves):

$$\frac{1}{15 b d^5}$$
$$g^4\left(24 b^5 B^2 c^5-144 a b^4 B^2 c^4 d+360 a^2 b^3 B^2 c^3 d^2-480 a^3 b^2 B^2 c^2 d^3+336 a^4 b B^2 c d^4-96 a^5 B^2 d^5-12 A b^5 B c^4 d x+26 b^5 B^2 c^4 d x+60 a A b^4 B c^3 d^2 x-\right.$$
$$118 a b^4 B^2 c^3 d^2 x-120 a^2 A b^3 B c^2 d^3 x+204 a^2 b^3 B^2 c^2 d^3 x+120 a^3 A b^2 B c d^4 x-158 a^3 b^2 B^2 c d^4 x+15 a^4 A^2 b d^5 x-48 a^4 A b B d^5 x+$$

$$46\,a^4\,b\,B^2\,d^5\,x+6\,A\,b^5\,B\,c^3\,d^2\,x^2-7\,b^5\,B^2\,c^3\,d^2\,x^2-30\,a\,A\,b^4\,B\,c^2\,d^3\,x^2+27\,a\,b^4\,B^2\,c^2\,d^3\,x^2+60\,a^2\,A\,b^3\,B\,c\,d^4\,x^2-33\,a^2\,b^3\,B^2\,c\,d^4\,x^2+$$

$$30\,a^3\,A^2\,b^2\,d^5\,x^2-36\,a^3\,A\,b^2\,B\,d^5\,x^2+13\,a^3\,b^2\,B^2\,d^5\,x^2-4\,A\,b^5\,B\,c^2\,d^3\,x^3+2\,b^5\,B^2\,c^2\,d^3\,x^3+20\,a\,A\,b^4\,B\,c\,d^4\,x^3-4\,a\,b^4\,B^2\,c\,d^4\,x^3+30\,a^2\,A^2\,b^3\,d^5\,x^3-$$

$$16\,a^2\,A\,b^3\,B\,d^5\,x^3+2\,a^2\,b^3\,B^2\,d^5\,x^3+3\,A\,b^5\,B\,c\,d^4\,x^4+15\,a\,A^2\,b^4\,d^5\,x^4-3\,a\,A\,b^4\,B\,d^5\,x^4+3\,A^2\,b^5\,d^5\,x^5+24\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{a}{b}+x\right]-$$

$$120\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]+240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]-240\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]+96\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{a}{b}+x\right]+12\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{a}{b}+x\right]^2-$$

$$24\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{c}{d}+x\right]+120\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{c}{d}+x\right]-240\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{c}{d}+x\right]+240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]-96\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{c}{d}+x\right]+$$

$$12\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{c}{d}+x\right]^2-60\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{c}{d}+x\right]^2+120\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{c}{d}+x\right]^2-120\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]^2+60\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{c}{d}+x\right]^2+$$

$$12\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}[a+b\,x]-52\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}[a+b\,x]+86\,a^4\,b\,B^2\,c\,d^4\,\text{Log}[a+b\,x]-12\,a^5\,A\,B\,d^5\,\text{Log}[a+b\,x]-46\,a^5\,B^2\,d^5\,\text{Log}[a+b\,x]-$$

$$24\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b\,x]+24\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]-24\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+12\,A\,b^5\,B\,c^5\,\text{Log}[c+d\,x]-$$

$$26\,b^5\,B^2\,c^5\,\text{Log}[c+d\,x]-60\,a\,A\,b^4\,B\,c^4\,d\,\text{Log}[c+d\,x]+106\,a\,b^4\,B^2\,c^4\,d\,\text{Log}[c+d\,x]+120\,a^2\,A\,b^3\,B\,c^3\,d^2\,\text{Log}[c+d\,x]-152\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}[c+d\,x]-$$

$$120\,a^3\,A\,b^2\,B\,c^2\,d^3\,\text{Log}[c+d\,x]+72\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}[c+d\,x]+60\,a^4\,A\,b\,B\,c\,d^4\,\text{Log}[c+d\,x]+24\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-$$

$$120\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+240\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+$$

$$120\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-24\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]+120\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-$$

$$240\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]+240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-120\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-$$

$$24\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+120\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-240\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$240\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-120\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-12\,b^5\,B^2\,c^4\,d\,x\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]+$$

$$60\,a\,b^4\,B^2\,c^3\,d^2\,x\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]-120\,a^2\,b^3\,B^2\,c^2\,d^3\,x\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]+120\,a^3\,b^2\,B^2\,c\,d^4\,x\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]+$$

$$30\,a^4\,A\,b\,B\,d^5\,x\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]-48\,a^4\,b\,B^2\,d^5\,x\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]+6\,b^5\,B^2\,c^3\,d^2\,x^2\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]-30\,a\,b^4\,B^2\,c^2\,d^3\,x^2\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]+$$

$$60\,a^2\,b^3\,B^2\,c\,d^4\,x^2\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]+60\,a^3\,A\,b^2\,B\,d^5\,x^2\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]-36\,a^3\,b^2\,B^2\,d^5\,x^2\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]-4\,b^5\,B^2\,c^2\,d^3\,x^3\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]+$$

$$20\,a\,b^4\,B^2\,c\,d^4\,x^3\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]+60\,a^2\,A\,b^3\,B\,d^5\,x^3\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]-16\,a^2\,b^3\,B^2\,d^5\,x^3\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]+3\,b^5\,B^2\,c\,d^4\,x^4\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]+$$

$$30\,a\,A\,b^4\,B\,d^5\,x^4\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]-3\,a\,b^4\,B^2\,d^5\,x^4\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]+6\,A\,b^5\,B\,d^5\,x^5\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]-12\,a^5\,B^2\,d^5\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]+$$

$$12\, b^5 B^2 c^5 \text{Log}[c+d x] \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right] - 60\, a\, b^4 B^2 c^4 d\, \text{Log}[c+d x] \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right] + 120\, a^2 b^3 B^2 c^3 d^2 \text{Log}[c+d x] \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right] -$$

$$120\, a^3 b^2 B^2 c^2 d^3 \text{Log}[c+d x] \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right] + 60\, a^4 b\, B^2 c\, d^4 \text{Log}[c+d x] \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right] + 15\, a^4 b\, B^2 d^5 x\, \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]^2 +$$

$$30\, a^3 b^2 B^2 d^5 x^2 \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]^2 + 30\, a^2 b^3 B^2 d^5 x^3 \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]^2 + 15\, a\, b^4 B^2 d^5 x^4 \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]^2 + 3\, b^5 B^2 d^5 x^5 \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]^2 -$$

$$24\, b\, B^2 c \left(b^4 c^4 - 5\, a\, b^3 c^3 d + 10\, a^2 b^2 c^2 d^2 - 10\, a^3 b\, c\, d^3 + 5\, a^4 d^4\right) \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right] - 24\, a^5 B^2 d^5 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\Bigg)$$

Problem 211: Result more than twice size of optimal antiderivative.

$$\int (a g+b g x)^3 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2 dx$$

Optimal (type 4, 422 leaves, 15 steps):

$$-\frac{5 B^2 (b c-a d)^3 g^3 x}{3 d^3} + \frac{B^2 (b c-a d)^2 g^3 (a+b x)^2}{3 b d^2} + \frac{11 B^2 (b c-a d)^4 g^3 \text{Log}[a+b x]}{3 b d^4} + \frac{5 B^2 (b c-a d)^4 g^3 \text{Log}\left[\frac{c+d x}{a+b x}\right]}{3 b d^4} -$$

$$\frac{B (b c-a d)^2 g^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{2 b d^2} + \frac{B (b c-a d) g^3 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 b d} + \frac{B (b c-a d)^3 g^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{d^4} +$$

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

Result (type 4, 2127 leaves):

$$g^3 \Bigg(-\frac{6 a^4 B^2}{b} - \frac{2 b^3 B^2 c^4}{d^4} + \frac{10 a b^2 B^2 c^3}{d^3} - \frac{20 a^2 b B^2 c^2}{d^2} + \frac{18 a^3 B^2 c}{d} + a^3 A^2 x - 3 a^3 A B x + \frac{7}{3} a^3 B^2 x + \frac{A b^3 B c^3 x}{d^3} - \frac{5 b^3 B^2 c^3 x}{3 d^3} - \frac{4 a A b^2 B c^2 x}{d^2} +$$

$$\frac{17 a b^2 B^2 c^2 x}{3 d^2} + \frac{6 a^2 A b B c x}{d} - \frac{19 a^2 b B^2 c x}{3 d} + \frac{3}{2} a^2 A^2 b x^2 - \frac{3}{2} a^2 A b B x^2 + \frac{1}{3} a^2 b B^2 x^2 - \frac{A b^3 B c^2 x^2}{2 d^2} + \frac{b^3 B^2 c^2 x^2}{3 d^2} + \frac{2 a A b^2 B c x^2}{d} - \frac{2 a b^2 B^2 c x^2}{3 d} +$$

$$a A^2 b^2 x^3 - \frac{1}{3} a A b^2 B x^3 + \frac{A b^3 B c x^3}{3 d} + \frac{1}{4} A^2 b^3 x^4 + \frac{6 a^4 B^2 \text{Log}\left[\frac{a}{b}+x\right]}{b} - \frac{2 a b^2 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right]}{d^3} + \frac{8 a^2 b B^2 c^2 \text{Log}\left[\frac{a}{b}+x\right]}{d^2} - \frac{12 a^3 B^2 c \text{Log}\left[\frac{a}{b}+x\right]}{d} +$$

$$\frac{a^4 B^2 \text{Log}\left[\frac{a}{b}+x\right]^2}{b} + \frac{2 b^3 B^2 c^4 \text{Log}\left[\frac{c}{d}+x\right]}{d^4} - \frac{8 a b^2 B^2 c^3 \text{Log}\left[\frac{c}{d}+x\right]}{d^3} + \frac{12 a^2 b B^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]}{d^2} - \frac{6 a^3 B^2 c \text{Log}\left[\frac{c}{d}+x\right]}{d} - \frac{b^3 B^2 c^4 \text{Log}\left[\frac{c}{d}+x\right]^2}{d^4} +$$

$$\frac{4\,a\,b^2\,B^2\,c^3\,\text{Log}\left[\frac{c}{d}+x\right]^2}{d^3}-\frac{6\,a^2\,b\,B^2\,c^2\,\text{Log}\left[\frac{c}{d}+x\right]^2}{d^2}+\frac{4\,a^3\,B^2\,c\,\text{Log}\left[\frac{c}{d}+x\right]^2}{d}-\frac{a^4\,A\,B\,\text{Log}[a+b\,x]}{b}-\frac{7\,a^4\,B^2\,\text{Log}[a+b\,x]}{3\,b}-\frac{a^2\,b\,B^2\,c^2\,\text{Log}[a+b\,x]}{d^2}+$$

$$\frac{10\,a^3\,B^2\,c\,\text{Log}[a+b\,x]}{3\,d}-\frac{2\,a^4\,B^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[a+b\,x]}{b}+\frac{2\,a^4\,B^2\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[a+b\,x]}{b}-\frac{2\,a^4\,B^2\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]}{b}-$$

$$\frac{A\,b^3\,B\,c^4\,\text{Log}[c+d\,x]}{d^4}+\frac{5\,b^3\,B^2\,c^4\,\text{Log}[c+d\,x]}{3\,d^4}+\frac{4\,a\,A\,b^2\,B\,c^3\,\text{Log}[c+d\,x]}{d^3}-\frac{14\,a\,b^2\,B^2\,c^3\,\text{Log}[c+d\,x]}{3\,d^3}-\frac{6\,a^2\,A\,b\,B\,c^2\,\text{Log}[c+d\,x]}{d^2}+$$

$$\frac{3\,a^2\,b\,B^2\,c^2\,\text{Log}[c+d\,x]}{d^2}+\frac{4\,a^3\,A\,B\,c\,\text{Log}[c+d\,x]}{d}-\frac{2\,b^3\,B^2\,c^4\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[c+d\,x]}{d^4}+\frac{8\,a\,b^2\,B^2\,c^3\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[c+d\,x]}{d^3}-$$

$$\frac{12\,a^2\,b\,B^2\,c^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[c+d\,x]}{d^2}+\frac{8\,a^3\,B^2\,c\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[c+d\,x]}{d}+\frac{2\,b^3\,B^2\,c^4\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[c+d\,x]}{d^4}-\frac{8\,a\,b^2\,B^2\,c^3\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[c+d\,x]}{d^3}+$$

$$\frac{12\,a^2\,b\,B^2\,c^2\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[c+d\,x]}{d^2}-\frac{8\,a^3\,B^2\,c\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[c+d\,x]}{d}+\frac{2\,b^3\,B^2\,c^4\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^4}-\frac{8\,a\,b^2\,B^2\,c^3\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^3}+$$

$$\frac{12\,a^2\,b\,B^2\,c^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d^2}-\frac{8\,a^3\,B^2\,c\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{d}+2\,a^3\,A\,B\,x\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]-3\,a^3\,B^2\,x\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]+$$

$$\frac{b^3\,B^2\,c^3\,x\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{d^3}-\frac{4\,a\,b^2\,B^2\,c^2\,x\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{d^2}+\frac{6\,a^2\,b\,B^2\,c\,x\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{d}+3\,a^2\,A\,b\,B\,x^2\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]-$$

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

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

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

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

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

Problem 212: Result more than twice size of optimal antiderivative.

$$\int (a g + b g x)^2 \left(A + B \operatorname{Log}\left[\frac{e (c + d x)^2}{(a + b x)^2}\right]\right)^2 dx$$

Optimal (type 4, 343 leaves, 11 steps):

$$\frac{4 B^2 (b c - a d)^2 g^2 x}{3 d^2} - \frac{4 B^2 (b c - a d)^3 g^2 \operatorname{Log}[a + b x]}{b d^3} - \frac{4 B^2 (b c - a d)^3 g^2 \operatorname{Log}\left[\frac{c+d x}{a+b x}\right]}{3 b d^3} +$$
$$\frac{2 B (b c - a d) g^2 (a + b x)^2 \left(A + B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 b d} - \frac{4 B (b c - a d)^2 g^2 (c + d x) \left(A + B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{3 d^3} +$$
$$\frac{g^2 (a + b x)^3 \left(A + B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{3 b} - \frac{4 B (b c - a d)^3 g^2 \left(A + B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right) \operatorname{Log}\left[1 - \frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3} + \frac{8 B^2 (b c - a d)^3 g^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{3 b d^3}$$

Result (type 4, 1458 leaves):

$$g^2\,\Bigg(a^2 A^2 x+a A^2 b x^2+\frac{1}{3}A^2 b^2 x^3+2 a^2 A B\left(\frac{2\,(-b c+a d)\,(a d\,\mathrm{Log}[a+b x]-b c\,\mathrm{Log}[c+d x])}{b^2 c d-a b d^2}+x\,\mathrm{Log}\Big[\frac{c^2 e+2 c d e x+d^2 e x^2}{(a+b x)^2}\Big]\right)+$$

$$4 a A b B\left(-(-b c+a d)\left(\frac{x}{b d}+\frac{a^2\,\mathrm{Log}[a+b x]}{b^2\,(b c-a d)}-\frac{c^2\,\mathrm{Log}[c+d x]}{d^2\,(b c-a d)}\right)+\frac{1}{2}x^2\,\mathrm{Log}\Big[\frac{c^2 e+2 c d e x+d^2 e x^2}{(a+b x)^2}\Big]\right)+$$

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

$$a^2 B^2\,\Bigg(x\,\mathrm{Log}\Big[\frac{c^2 e+2 c d e x+d^2 e x^2}{(a+b x)^2}\Big]^2+\frac{1}{b d}\,4\,\Big(a d\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]^2+b c\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]^2-2 a d\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]\,\mathrm{Log}[a+b x]+2 a d\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]\,\mathrm{Log}[a+b x]-$$

$$2 a d\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]\,\mathrm{Log}\Big[\frac{d\,(a+b x)}{-b c+a d}\Big]+2 b c\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]\,\mathrm{Log}[c+d x]-2 b c\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]\,\mathrm{Log}[c+d x]-2 b c\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]\,\mathrm{Log}\Big[\frac{b\,(c+d x)}{b c-a d}\Big]-$$

$$a d\,\mathrm{Log}[a+b x]\,\mathrm{Log}\Big[\frac{e\,(c+d x)^2}{(a+b x)^2}\Big]+b c\,\mathrm{Log}[c+d x]\,\mathrm{Log}\Big[\frac{e\,(c+d x)^2}{(a+b x)^2}\Big]-2 b c\,\mathrm{PolyLog}\Big[2,\frac{d\,(a+b x)}{-b c+a d}\Big]-2 a d\,\mathrm{PolyLog}\Big[2,\frac{b\,(c+d x)}{b c-a d}\Big]\Big)\Bigg)+$$

$$2 a b B^2\,\Bigg(\frac{1}{2}x^2\,\mathrm{Log}\Big[\frac{c^2 e+2 c d e x+d^2 e x^2}{(a+b x)^2}\Big]^2+\frac{1}{b^2 d^2}\,2\,\Big(2 d\,(-b c+a d)\,(a+b x)\,\Big(-1+\mathrm{Log}\Big[\frac{a}{b}+x\Big]\Big)-a^2 d^2\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]^2+$$

$$2 b\,(b c-a d)\,(c+d x)\,\Big(-1+\mathrm{Log}\Big[\frac{c}{d}+x\Big]\Big)-b^2 c^2\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]^2+$$

$$(a^2 d^2\,\mathrm{Log}[a+b x]-b\,(d\,(-b c+a d)\,x+b c^2\,\mathrm{Log}[c+d x]))\,\Big(2\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]-2\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]+\mathrm{Log}\Big[\frac{e\,(c+d x)^2}{(a+b x)^2}\Big]\Big)+$$

$$2 b^2 c^2\,\Big(\mathrm{Log}\Big[\frac{a}{b}+x\Big]\,\mathrm{Log}\Big[\frac{b\,(c+d x)}{b c-a d}\Big]+\mathrm{PolyLog}\Big[2,\frac{d\,(a+b x)}{-b c+a d}\Big]\Big)+2 a^2 d^2\,\Big(\mathrm{Log}\Big[\frac{c}{d}+x\Big]\,\mathrm{Log}\Big[\frac{d\,(a+b x)}{-b c+a d}\Big]+\mathrm{PolyLog}\Big[2,\frac{b\,(c+d x)}{b c-a d}\Big]\Big)\Big)\Bigg)+$$

$$b^2 B^2\,\Bigg(\frac{1}{3}x^3\,\mathrm{Log}\Big[\frac{c^2 e+2 c d e x+d^2 e x^2}{(a+b x)^2}\Big]^2+\frac{1}{3 b^3 d^3}\,2\,\Big(-4 d\,(-b c+a d)\,(b c+a d)\,(a+b x)\,\Big(-1+\mathrm{Log}\Big[\frac{a}{b}+x\Big]\Big)+2 a^3 d^3\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]^2-$$

$$4 b\,(b c-a d)\,(b c+a d)\,(c+d x)\,\Big(-1+\mathrm{Log}\Big[\frac{c}{d}+x\Big]\Big)+2 b^3 c^3\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]^2+d^2\,(-b c+a d)$$

$$\Big(b x\,(2 a-b x)+2 b^2 x^2\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]-2 a^2\,\mathrm{Log}[a+b x]\Big)+b^2\,(b c-a d)\,\Big(d x\,(2 c-d x)+2 d^2 x^2\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]-2 c^2\,\mathrm{Log}[c+d x]\Big)+$$

$$(b d\,(b c-a d)\,x\,(-2 b c-2 a d+b d x)-2 a^3 d^3\,\mathrm{Log}[a+b x]+2 b^3 c^3\,\mathrm{Log}[c+d x])\,\Big(2\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]-2\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]+\mathrm{Log}\Big[\frac{e\,(c+d x)^2}{(a+b x)^2}\Big]\Big)-$$

$$4 b^3 c^3\,\Big(\mathrm{Log}\Big[\frac{a}{b}+x\Big]\,\mathrm{Log}\Big[\frac{b\,(c+d x)}{b c-a d}\Big]+\mathrm{PolyLog}\Big[2,\frac{d\,(a+b x)}{-b c+a d}\Big]\Big)-4 a^3 d^3\,\Big(\mathrm{Log}\Big[\frac{c}{d}+x\Big]\,\mathrm{Log}\Big[\frac{d\,(a+b x)}{-b c+a d}\Big]+\mathrm{PolyLog}\Big[2,\frac{b\,(c+d x)}{b c-a d}\Big]\Big)\Big)\Bigg)\Bigg)$$

Problem 213: Result more than twice size of optimal antiderivative.

$$\int (a g+b g x) \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2 dx$$

Optimal (type 4, 211 leaves, 7 steps):

$$\frac{4 B^2 (b c-a d)^2 g \text{Log}[a+b x]}{b d^2}+\frac{2 B (b c-a d) g (c+d x) \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{d^2}+\frac{g (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2}{2 b}+$$
$$\frac{2 B (b c-a d)^2 g \left(A+B \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right) \text{Log}\left[1-\frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}-\frac{4 B^2 (b c-a d)^2 g \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b d^2}$$

Result (type 4, 754 leaves):

$$g \left(a A^2 x+\frac{1}{2} A^2 b x^2+\frac{2 a A B \left(-2 a d \text{Log}[a+b x]+2 b c \text{Log}[c+d x]+b d x \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{b d}+\right.$$
$$A B \left(\frac{2 a^2 \text{Log}[a+b x]}{b}+\frac{-2 b c^2 \text{Log}[c+d x]+d x \left(2 b c-2 a d+b d x \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)}{d^2}\right)+$$
$$\frac{1}{b d} a B^2 \left(4 a d \text{Log}\left[\frac{a}{b}+x\right]^2+4 b c \text{Log}\left[\frac{c}{d}+x\right]^2-8 a d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+8 a d \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-8 a d \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\right.$$
$$8 b c \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]-8 b c \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]-8 b c \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-4 a d \text{Log}[a+b x] \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]+$$
$$\left.4 b c \text{Log}[c+d x] \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]+b d x \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]^2-8 b c \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-8 a d \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)+$$
$$b B^2 \left(\frac{1}{2} x^2 \text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]^2+\frac{1}{b^2 d^2} 2 \left(2 d (-b c+a d) (a+b x) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)-a^2 d^2 \text{Log}\left[\frac{a}{b}+x\right]^2+2 b (b c-a d) (c+d x) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)-\right.\right.$$
$$b^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]^2+\left(a^2 d^2 \text{Log}[a+b x]-b \left(d (-b c+a d) x+b c^2 \text{Log}[c+d x]\right)\right) \left(2 \text{Log}\left[\frac{a}{b}+x\right]-2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)+$$
$$\left.\left.\left.2 b^2 c^2 \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)+2 a^2 d^2 \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\right)\right)$$

Problem 214: Result more than twice size of optimal antiderivative.

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

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

$$-\frac{\text{Log}\left[-\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}{b\,g}-\frac{4\,B\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}+\frac{8\,B^2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b\,g}$$

Result (type 4, 624 leaves):

$$\frac{A^2\,\text{Log}[a+b\,x]}{b\,g}+\frac{1}{g}2\,A\,B\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{b}+\frac{\text{Log}[a+b\,x]\left(2\,\text{Log}\left[\frac{a}{b}+x\right]-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c^2\,e}{(a+b\,x)^2}+\frac{2\,c\,d\,e\,x}{(a+b\,x)^2}+\frac{d^2\,e\,x^2}{(a+b\,x)^2}\right]\right)}{b}+\frac{2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]+\text{PolyLog}\left[2,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]\right)}{b}\right)+$$

$$\frac{1}{g}B^2\left(\frac{4\,\text{Log}\left[\frac{a}{b}+x\right]^3}{3\,b}+\frac{\text{Log}[a+b\,x]\left(2\,\text{Log}\left[\frac{a}{b}+x\right]-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c^2\,e}{(a+b\,x)^2}+\frac{2\,c\,d\,e\,x}{(a+b\,x)^2}+\frac{d^2\,e\,x^2}{(a+b\,x)^2}\right]\right)^2}{b}+2\left(2\,\text{Log}\left[\frac{a}{b}+x\right]-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c^2\,e}{(a+b\,x)^2}+\frac{2\,c\,d\,e\,x}{(a+b\,x)^2}+\frac{d^2\,e\,x^2}{(a+b\,x)^2}\right]\right)\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{b}+\frac{2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]+\text{PolyLog}\left[2,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]\right)}{b}\right)+\frac{8\left(\frac{1}{2}\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]+\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]-\text{PolyLog}\left[3,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]\right)}{b}-\frac{1}{b}8\left(\frac{1}{2}\text{Log}\left[\frac{a}{b}+x\right]^2\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{b\,d\left(\frac{c}{d}+x\right)}{b\,c-a\,d}\right]\right)-\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\right)\right)$$

Problem 222: Unable to integrate problem.

$$\int \frac{1}{(a g + b g x)^2 \left(A + B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)} \, dx$$

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

$$-\frac{e^{-\frac{A}{2B}} (c + d x) \operatorname{ExpIntegralEi}\left[\frac{A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}{2 B}\right]}{2 B (b c - a d) g^2 (a + b x) \sqrt{\frac{e (c+d x)^2}{(a+b x)^2}}}$$

Result (type 8, 36 leaves):

$$\int \frac{1}{(a g + b g x)^2 \left(A + B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)} \, dx$$

Problem 223: Unable to integrate problem.

$$\int \frac{1}{(a g + b g x)^3 \left(A + B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)} \, dx$$

Optimal (type 4, 151 leaves, 7 steps):

$$\frac{d e^{-\frac{A}{2B}} (c + d x) \operatorname{ExpIntegralEi}\left[\frac{A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}{2 B}\right]}{2 B (b c - a d)^2 g^3 (a + b x) \sqrt{\frac{e (c+d x)^2}{(a+b x)^2}}} - \frac{b e^{-\frac{A}{B}} \operatorname{ExpIntegralEi}\left[\frac{A+B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]}{B}\right]}{2 B (b c - a d)^2 e g^3}$$

Result (type 8, 36 leaves):

$$\int \frac{1}{(a g + b g x)^3 \left(A + B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)} \, dx$$

Problem 227: Unable to integrate problem.

$$\int \frac{1}{(a g + b g x)^2 \left(A + B \operatorname{Log}\left[\frac{e (c+d x)^2}{(a+b x)^2}\right]\right)^2} \, dx$$

Optimal (type 4, 147 leaves, 4 steps):

$$-\frac{e^{-\frac{A}{2B}}\,(c+d\,x)\,\text{ExpIntegralEi}\left[\frac{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{2\,B}\right]}{4\,B^2\,(b\,c-a\,d)\,g^2\,(a+b\,x)\,\sqrt{\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}}}+\frac{c+d\,x}{2\,B\,(b\,c-a\,d)\,g^2\,(a+b\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}$$

Result (type 8, 36 leaves):

$$\int \frac{1}{(a\,g+b\,g\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}\,dx$$

Problem 228: Unable to integrate problem.

$$\int \frac{1}{(a\,g+b\,g\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}\,dx$$

Optimal (type 4, 206 leaves, 10 steps):

$$\frac{d\,e^{-\frac{A}{2B}}\,(c+d\,x)\,\text{ExpIntegralEi}\left[\frac{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{2\,B}\right]}{4\,B^2\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)\,\sqrt{\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}}}-\frac{b\,e^{-\frac{A}{B}}\,\text{ExpIntegralEi}\left[\frac{A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]}{B}\right]}{2\,B^2\,(b\,c-a\,d)^2\,e\,g^3}+\frac{c+d\,x}{2\,B\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)}$$

Result (type 8, 36 leaves):

$$\int \frac{1}{(a\,g+b\,g\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(c+d\,x)^2}{(a+b\,x)^2}\right]\right)^2}\,dx$$

Problem 229: Unable to integrate problem.

$$\int \frac{1}{(a\,g+b\,g\,x)^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)}\,dx$$

Optimal (type 4, 96 leaves, 4 steps):

$$\frac{e^{\frac{A}{B\,n}}\,(c+d\,x)\,\left(e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right)^{\frac{1}{n}}\,\text{ExpIntegralEi}\left[-\frac{A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{B\,n}\right]}{B\,(b\,c-a\,d)\,g^2\,n\,(a+b\,x)}$$

Result (type 8, 38 leaves):

$$\int \frac{1}{(a g+b g x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)} \, dx$$

Problem 240: Result more than twice size of optimal antiderivative.

$$\int (f+g x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \, dx$$

Optimal (type 4, 874 leaves, 15 steps):

$$\frac{B^2 (b c-a d)^3 g^3 x}{6 b^3 d^3}+\frac{B^2 (b c-a d)^2 g^2 (4 b d f-3 b c g-a d g) x}{4 b^3 d^3}+\frac{B^2 (b c-a d)^2 g^3 (c+d x)^2}{12 b^2 d^4}+$$
$$\frac{B^2 (b c-a d)^4 g^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{6 b^4 d^4}+\frac{B^2 (b c-a d)^3 g^2 (4 b d f-3 b c g-a d g) \text{Log}\left[\frac{a+b x}{c+d x}\right]}{4 b^4 d^4}-\frac{1}{2 b^4 d^3}$$
$$B (b c-a d) g \left(a^2 d^2 g^2-2 a b d g (2 d f-c g)+b^2 \left(6 d^2 f^2-8 c d f g+3 c^2 g^2\right)\right) (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)-$$
$$\frac{B (b c-a d) g^2 (4 b d f-3 b c g-a d g) (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 b^2 d^4}-\frac{B (b c-a d) g^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b d^4}-\frac{1}{2 b^4 d^4}$$
$$B (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)-$$
$$\frac{(b f-a g)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 b^4 g}+\frac{(f+g x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 g}+\frac{B^2 (b c-a d)^4 g^3 \text{Log}[c+d x]}{6 b^4 d^4}+$$
$$\frac{B^2 (b c-a d)^3 g^2 (4 b d f-3 b c g-a d g) \text{Log}[c+d x]}{4 b^4 d^4}+\frac{B^2 (b c-a d)^2 g \left(a^2 d^2 g^2-2 a b d g (2 d f-c g)+b^2 \left(6 d^2 f^2-8 c d f g+3 c^2 g^2\right)\right) \text{Log}[c+d x]}{2 b^4 d^4}-$$
$$\frac{1}{2 b^4 d^4} B^2 (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right) \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]$$

Result (type 4, 2229 leaves):

$$A^2 f^3 x+\frac{3}{2} A^2 f^2 g x^2+A^2 f g^2 x^3+\frac{1}{4} A^2 g^3 x^4+\frac{2 A B f^3 \left(a d \text{Log}[a+b x]+b d x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-b c \text{Log}[c+d x]\right)}{b d}+$$
$$\frac{1}{12} A B g^3 \left(\frac{6 a^3 x}{b^3}-\frac{6 c^3 x}{d^3}-\frac{3 a^2 x^2}{b^2}+\frac{3 c^2 x^2}{d^2}+\frac{2 a x^3}{b}-\frac{2 c x^3}{d}-\frac{6 a^4 \text{Log}[a+b x]}{b^4}+6 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+\frac{6 c^4 \text{Log}[c+d x]}{d^4}\right)+$$
$$A B f g^2 \left(\frac{(b c-a d) x (2 b c+2 a d-b d x)}{b^2 d^2}+\frac{2 a^3 \text{Log}[a+b x]}{b^3}+2 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-\frac{2 c^3 \text{Log}[c+d x]}{d^3}\right)+$$

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

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

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

$$\left.2 b c \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] \operatorname{Log}[c+d x]-2 b c \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-2 b c \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-2 a d \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)+$$

$$\frac{1}{12} B^2 g^3 \left(3 x^4 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+\frac{1}{b^4 d^4}\left(-6 b^4 c^4+6 a b^3 c^3 d+6 a^3 b c d^3-6 a^4 d^4-5 b^4 c^3 d x+5 a b^3 c^2 d^2 x+5 a^2 b^2 c d^3 x-5 a^3 b d^4 x+\right.\right.$$

$$b^4 c^2 d^2 x^2-2 a b^3 c d^3 x^2+a^2 b^2 d^4 x^2-6 a b^3 c^3 d \operatorname{Log}\left[\frac{a}{b}+x\right]+6 a^4 d^4 \operatorname{Log}\left[\frac{a}{b}+x\right]-3 a^4 d^4 \operatorname{Log}\left[\frac{a}{b}+x\right]^2+6 b^4 c^4 \operatorname{Log}\left[\frac{c}{d}+x\right]-$$

$$6 a^3 b c d^3 \operatorname{Log}\left[\frac{c}{d}+x\right]-3 b^4 c^4 \operatorname{Log}\left[\frac{c}{d}+x\right]^2-3 a^2 b^2 c^2 d^2 \operatorname{Log}[a+b x]-2 a^3 b c d^3 \operatorname{Log}[a+b x]+5 a^4 d^4 \operatorname{Log}[a+b x]+$$

$$6 a^4 d^4 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[a+b x]-6 a^4 d^4 \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[a+b x]+6 a^4 d^4 \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]-6 b^4 c^3 d x \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]+$$

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

$$2 a b^3 d^4 x^3 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]-6 a^4 d^4 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]+5 b^4 c^4 \operatorname{Log}[c+d x]-2 a b^3 c^3 d \operatorname{Log}[c+d x]-$$

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

$$\left.\left.6 b^4 c^4 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+6 b^4 c^4 \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+6 a^4 d^4 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)+$$

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

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

$$\left.\left.2 b^2 c^2 \left(\operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\operatorname{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)-2 a^2 d^2 \left(\operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\right)+$$

$$3 B^2 f g^2 \left(\frac{1}{3} x^3 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2-\frac{1}{6 b^3 d^3}\left(4 d (-b c+a d) (b c+a d) (a+b x) \left(-1+\operatorname{Log}\left[\frac{a}{b}+x\right]\right)-2 a^3 d^3 \operatorname{Log}\left[\frac{a}{b}+x\right]^2+\right.\right.$$

$$4 b (b c-a d) (b c+a d) (c+d x) \left(-1+\operatorname{Log}\left[\frac{c}{d}+x\right]\right)-2 b^3 c^3 \operatorname{Log}\left[\frac{c}{d}+x\right]^2+$$

$$d^2 (b c-a d) \left(b x (2 a-b x)+2 b^2 x^2 \operatorname{Log}\left[\frac{a}{b}+x\right]-2 a^2 \operatorname{Log}[a+b x]\right)+b^2 (b c-a d) \left(d x (-2 c+d x)-2 d^2 x^2 \operatorname{Log}\left[\frac{c}{d}+x\right]+2 c^2 \operatorname{Log}[c+d x]\right)-$$

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

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

Problem 241: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 532 leaves, 12 steps):

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

$$\frac{2\,B\,(b\,c-a\,d)\,g\,(3\,b\,d\,f-2\,b\,c\,g-a\,d\,g)\,(a+b\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b^3\,d^2}-\frac{B\,(b\,c-a\,d)\,g^2\,(c+d\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b\,d^3}+$$

$$\frac{1}{3\,b^3\,d^3}2\,B\,(b\,c-a\,d)\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(3\,d\,f-c\,g)+b^2\,(3\,d^2\,f^2-3\,c\,d\,f\,g+c^2\,g^2)\right)\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)-$$

$$\frac{(b\,f-a\,g)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,b^3\,g}+\frac{(f+g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,g}+$$

$$\frac{B^2\,(b\,c-a\,d)^3\,g^2\,\text{Log}[c+d\,x]}{3\,b^3\,d^3}+\frac{2\,B^2\,(b\,c-a\,d)^2\,g\,(3\,b\,d\,f-2\,b\,c\,g-a\,d\,g)\,\text{Log}[c+d\,x]}{3\,b^3\,d^3}+$$

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

Result (type 4, 1294 leaves):

$$A^2 f^2 x + A^2 f g x^2 + \frac{1}{3} A^2 g^2 x^3 + \frac{2 A B f^2 \left(a d \,\text{Log}[a + b x] + b d x \,\text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - b c \,\text{Log}[c + d x]\right)}{b d} +$$

$$\frac{1}{3} A B g^2 \left(\frac{(b c - a d) x (2 b c + 2 a d - b d x)}{b^2 d^2} + \frac{2 a^3 \,\text{Log}[a + b x]}{b^3} + 2 x^3 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - \frac{2 c^3 \,\text{Log}[c + d x]}{d^3}\right) +$$

$$\frac{2 A B f g \left(-a^2 d^2 \,\text{Log}[a + b x] + b \left(d (-b c + a d) x + b d^2 x^2 \,\text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + b c^2 \,\text{Log}[c + d x]\right)\right)}{b^2 d^2} +$$

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

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

$$2 b c \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] \text{Log}[c + d x] - 2 b c \,\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] - 2 b c \,\text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right] - 2 a d \,\text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\Bigg) +$$

$$B^2 f g \Bigg(x^2 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right]^2 - \frac{1}{b^2 d^2} \Bigg(-2 d (-b c + a d) (a + b x) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) + a^2 d^2 \,\text{Log}\left[\frac{a}{b} + x\right]^2 - 2 b (b c - a d) (c + d x) \left(-1 + \text{Log}\left[\frac{c}{d} + x\right]\right) +$$

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

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

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

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

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

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

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

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

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

Optimal (type 4, 270 leaves, 9 steps):

$$-\frac{B\,(b c-a d)\,g\,(a+b x)\,\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^2 d}+$$

$$\frac{B\,(b c-a d)\,(2 b d f-b c g-a d g)\,\operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]\,\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^2 d^2}-\frac{(b f-a g)^2\,\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^2 g}+$$

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

Result (type 4, 745 leaves):

$$\frac{1}{2 b^2 d^2}\left(2 A^2 b^2 d^2 f x+A^2 b^2 d^2 g x^2+4 A b B d f\left(a d \operatorname{Log}[a+b x]+b d x \operatorname{Log}\left[\frac{e\,(a+b x)}{c+d x}\right]-b c \operatorname{Log}[c+d x]\right)-\right.$$

$$2 A B g\left(a^2 d^2 \operatorname{Log}[a+b x]-b\left(d\,(-b c+a d)\,x+b d^2 x^2 \operatorname{Log}\left[\frac{e\,(a+b x)}{c+d x}\right]+b c^2 \operatorname{Log}[c+d x]\right)\right)+$$

$$2 b B^2 d f\left(a d \operatorname{Log}\left[\frac{a}{b}+x\right]^2+b c \operatorname{Log}\left[\frac{c}{d}+x\right]^2-2 a d \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[a+b x]+2 a d \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[a+b x]-2 a d \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]+\right.$$

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

$$\left.2 b c \operatorname{Log}\left[\frac{e\,(a+b x)}{c+d x}\right] \operatorname{Log}[c+d x]-2 b c \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]-2 b c \operatorname{PolyLog}\left[2,\frac{d\,(a+b x)}{-b c+a d}\right]-2 a d \operatorname{PolyLog}\left[2,\frac{b\,(c+d x)}{b c-a d}\right]\right)+$$

$$B^2 g\left(2 d\,(-b c+a d)\,(a+b x)\left(-1+\operatorname{Log}\left[\frac{a}{b}+x\right]\right)-a^2 d^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2+2 b\,(b c-a d)\,(c+d x)\left(-1+\operatorname{Log}\left[\frac{c}{d}+x\right]\right)-b^2 c^2 \operatorname{Log}\left[\frac{c}{d}+x\right]^2+\right.$$

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

$$\left.\left.2 b^2 c^2\left(\operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+\operatorname{PolyLog}\left[2,\frac{d\,(a+b x)}{-b c+a d}\right]\right)+2 a^2 d^2\left(\operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]+\operatorname{PolyLog}\left[2,\frac{b\,(c+d x)}{b c-a d}\right]\right)\right)\right)$$

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

$$\int\left(A+B \operatorname{Log}\left[\frac{e\,(a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 125 leaves, 6 steps):

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

Result (type 4, 338 leaves):

$$\frac{1}{b\,d}\left(A^2\,b\,d\,x+2\,A\,B\left(a\,d\,\text{Log}[a+b\,x]+b\,d\,x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-b\,c\,\text{Log}[c+d\,x]\right)+\right.$$
$$B^2\left(a\,d\,\text{Log}\left[\frac{a}{b}+x\right]^2+b\,c\,\text{Log}\left[\frac{c}{d}+x\right]^2-2\,a\,d\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b\,x]+2\,a\,d\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]-2\,a\,d\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\right.$$
$$2\,a\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+b\,d\,x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+2\,b\,c\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-2\,b\,c\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-$$
$$\left.\left.2\,b\,c\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\text{Log}[c+d\,x]-2\,b\,c\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-2\,b\,c\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-2\,a\,d\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)$$

Problem 244: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 277 leaves, 9 steps):

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

Result (type 4, 1348 leaves):

$$\frac{1}{g}\left(-B^2 \operatorname{Log}\left[\frac{-b c+a d}{d (a+b x)}\right] \operatorname{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]^2+A^2 \operatorname{Log}[f+g x]-2 A B \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[f+g x]+\right.$$

$$B^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2 \operatorname{Log}[f+g x]+2 A B \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[f+g x]-2 B^2 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[f+g x]+B^2 \operatorname{Log}\left[\frac{c}{d}+x\right]^2 \operatorname{Log}[f+g x]+$$

$$2 A B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] \operatorname{Log}[f+g x]-2 B^2 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] \operatorname{Log}[f+g x]+2 B^2 \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] \operatorname{Log}[f+g x]+$$

$$B^2 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 \operatorname{Log}[f+g x]+2 A B \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-B^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2 \operatorname{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+$$

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

$$2 B^2 \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \operatorname{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right] \operatorname{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-B^2 \operatorname{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]^2 \operatorname{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-$$

$$2 A B \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]+2 B^2 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-B^2 \operatorname{Log}\left[\frac{c}{d}+x\right]^2 \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-$$

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

$$B^2 \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]^2 \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-2 B^2 \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \operatorname{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right] \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]+$$

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

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

$$\left.2 B^2 \operatorname{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right] \operatorname{PolyLog}\left[2, \frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]+2 B^2 \operatorname{PolyLog}\left[3, \frac{b (c+d x)}{d (a+b x)}\right]-2 B^2 \operatorname{PolyLog}\left[3, \frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]\right)$$

Problem 245: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(f+g x)^2} \, dx$$

Optimal (type 4, 196 leaves, 4 steps):

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

Result (type 4, 3258 leaves):

$$
\begin{aligned}
&\frac{1}{g\,(-b\,f+a\,g)\,(-d\,f+c\,g)\,(f+g\,x)}\\
&\Bigl(-A^2\,b\,d\,f^2+A^2\,b\,c\,f\,g+a\,A^2\,d\,f\,g-a\,A^2\,c\,g^2+2\,A\,b\,B\,d\,f^2\,\text{Log}\left[\frac{a}{b}+x\right]-2\,A\,b\,B\,c\,f\,g\,\text{Log}\left[\frac{a}{b}+x\right]+2\,A\,b\,B\,d\,f\,g\,x\,\text{Log}\left[\frac{a}{b}+x\right]-2\,A\,b\,B\,c\,g^2\,x\,\text{Log}\left[\frac{a}{b}+x\right]-\\
&\quad b\,B^2\,d\,f^2\,\text{Log}\left[\frac{a}{b}+x\right]^2+b\,B^2\,c\,f\,g\,\text{Log}\left[\frac{a}{b}+x\right]^2-b\,B^2\,d\,f\,g\,x\,\text{Log}\left[\frac{a}{b}+x\right]^2+b\,B^2\,c\,g^2\,x\,\text{Log}\left[\frac{a}{b}+x\right]^2-2\,A\,b\,B\,d\,f^2\,\text{Log}\left[\frac{c}{d}+x\right]+2\,a\,A\,B\,d\,f\,g\,\text{Log}\left[\frac{c}{d}+x\right]-\\
&\quad 2\,A\,b\,B\,d\,f\,g\,x\,\text{Log}\left[\frac{c}{d}+x\right]+2\,a\,A\,B\,d\,g^2\,x\,\text{Log}\left[\frac{c}{d}+x\right]+2\,b\,B^2\,d\,f^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]-2\,a\,B^2\,d\,f\,g\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]+\\
&\quad 2\,b\,B^2\,d\,f\,g\,x\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]-2\,a\,B^2\,d\,g^2\,x\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]-b\,B^2\,d\,f^2\,\text{Log}\left[\frac{c}{d}+x\right]^2+a\,B^2\,d\,f\,g\,\text{Log}\left[\frac{c}{d}+x\right]^2-b\,B^2\,d\,f\,g\,x\,\text{Log}\left[\frac{c}{d}+x\right]^2+\\
&\quad a\,B^2\,d\,g^2\,x\,\text{Log}\left[\frac{c}{d}+x\right]^2-2\,A\,b\,B\,d\,f^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+2\,A\,b\,B\,c\,f\,g\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+2\,a\,A\,B\,d\,f\,g\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-2\,a\,A\,B\,c\,g^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+\\
&\quad 2\,b\,B^2\,d\,f^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-2\,b\,B^2\,c\,f\,g\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+2\,b\,B^2\,d\,f\,g\,x\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-\\
&\quad 2\,b\,B^2\,c\,g^2\,x\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-2\,b\,B^2\,d\,f^2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+2\,a\,B^2\,d\,f\,g\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-\\
&\quad 2\,b\,B^2\,d\,f\,g\,x\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+2\,a\,B^2\,d\,g^2\,x\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-b\,B^2\,d\,f^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+b\,B^2\,c\,f\,g\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+\\
&\quad a\,B^2\,d\,f\,g\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2-a\,B^2\,c\,g^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2-2\,b\,B^2\,c\,f\,g\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]+2\,a\,B^2\,d\,f\,g\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]-\\
&\quad 2\,b\,B^2\,c\,g^2\,x\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]+2\,a\,B^2\,d\,g^2\,x\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]+b\,B^2\,c\,f\,g\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]^2-a\,B^2\,d\,f\,g\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]^2+\\
&\quad b\,B^2\,c\,g^2\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]^2-a\,B^2\,d\,g^2\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]^2-2\,b\,B^2\,c\,f\,g\,\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]+\\
&\quad 2\,a\,B^2\,d\,f\,g\,\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]-2\,b\,B^2\,c\,g^2\,x\,\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]+\\
&\quad 2\,a\,B^2\,d\,g^2\,x\,\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]-2\,b\,B^2\,c\,f\,g\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]+\\
&\quad 2\,a\,B^2\,d\,f\,g\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]-2\,b\,B^2\,c\,g^2\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]+\\
&\quad 2\,a\,B^2\,d\,g^2\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]+b\,B^2\,c\,f\,g\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]^2-a\,B^2\,d\,f\,g\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]^2+\\
&\quad b\,B^2\,c\,g^2\,x\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]^2-a\,B^2\,d\,g^2\,x\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]^2-2\,A\,b\,B\,d\,f^2\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+\\
&\quad 2\,A\,b\,B\,c\,f\,g\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-2\,A\,b\,B\,d\,f\,g\,x\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+2\,A\,b\,B\,c\,g^2\,x\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+2\,b\,B^2\,d\,f^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-
\end{aligned}
$$

$$2 a B^2 d f g \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+2 b B^2 d f g x \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-2 a B^2 d g^2 x \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-$$

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

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

$$2 b B^2 d f g x \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \operatorname{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+2 b B^2 c g^2 x \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \operatorname{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+2 A b B d f^2 \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-$$

$$2 a A B d f g \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]+2 A b B d f g x \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-2 a A B d g^2 x \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-2 b B^2 d f^2 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]+$$

$$2 a B^2 d f g \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-2 b B^2 d f g x \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]+2 a B^2 d g^2 x \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]+$$

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

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

$$2 b B^2 d f g x \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-2 b B^2 c g^2 x \operatorname{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \operatorname{Log}\left[\frac{d (f+g x)}{d f-c g}\right]+$$

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

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

Problem 246: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(f+g x)^3}\, dx$$

Optimal (type 4, 369 leaves, 9 steps):

$$\frac{B (b c-a d) g (a+b x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(b f-a g)^2 (d f-c g) (f+g x)}+\frac{b^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 g (b f-a g)^2}-\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 g (f+g x)^2}+\frac{B^2 (b c-a d)^2 g \operatorname{Log}\left[\frac{f+g x}{c+d x}\right]}{(b f-a g)^2 (d f-c g)^2}+$$

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

Result (type 4, 18 235 leaves) :

$$-\frac{A^2}{2\,g\,(f+g\,x)^2}+2\,A\,B\left(\frac{\frac{g\left(\frac{a}{b}+x\right)}{\left(-f+\frac{a\,g}{b}\right)^3\left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right)}-\left(\frac{g^2\left(\frac{a}{b}+x\right)^2}{\left(-f+\frac{a\,g}{b}\right)^4\left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right)^2}+\frac{2\,g\left(\frac{a}{b}+x\right)}{\left(-f+\frac{a\,g}{b}\right)^3\left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right)}\right)\mathrm{Log}\left[\frac{a}{b}+x\right]-\frac{\mathrm{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right]}{\left(-f+\frac{a\,g}{b}\right)^2}}{2\,g}-\right.$$

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

$$B^2\left(2\left(\frac{\frac{g\left(\frac{a}{b}+x\right)}{\left(-f+\frac{a\,g}{b}\right)^3\left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right)}-\left(\frac{g^2\left(\frac{a}{b}+x\right)^2}{\left(-f+\frac{a\,g}{b}\right)^4\left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right)^2}+\frac{2\,g\left(\frac{a}{b}+x\right)}{\left(-f+\frac{a\,g}{b}\right)^3\left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right)}\right)\mathrm{Log}\left[\frac{a}{b}+x\right]-\frac{\mathrm{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right]}{\left(-f+\frac{a\,g}{b}\right)^2}}{2\,g}-\right.\right.$$

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

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

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

$$\frac{1}{g}\left(-\frac{1}{2}\left(\frac{g^2\left(\frac{c}{d}+x\right)^2}{\left(-f+\frac{c g}{d}\right)^4\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right)^2}+\frac{2 g\left(\frac{c}{d}+x\right)}{\left(-f+\frac{c g}{d}\right)^3\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right)}\right)\text{Log}\left[\frac{c}{d}+x\right]^2+\frac{\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]}{\left(-f+\frac{c g}{d}\right)^2}+\right.$$

$$\text{Log}\left[\frac{c}{d}+x\right]\left(\frac{g\left(\frac{c}{d}+x\right)}{\left(-f+\frac{c g}{d}\right)^3\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right)}-\frac{\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]}{\left(-f+\frac{c g}{d}\right)^2}\right)-\frac{\text{PolyLog}\left[2,\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]}{\left(-f+\frac{c g}{d}\right)^2}\Bigg)-$$

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

$$\left(\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{d(f+g x)}{-d f+c g}\right]\right)+\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(-\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]+\text{Log}\left[-\frac{d(f+g x)}{-d f+c g}\right]\right)+$$

$$\frac{1}{2}\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]^2\left(\text{Log}\left[\frac{-b c+a d}{b d\left(\frac{a}{b}+x\right)}\right]+\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{(-b c+a d)(f+g x)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)+$$

$$\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)\text{PolyLog}\left[2,-\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]+\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)$$

$$\text{PolyLog}\left[2,\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]+\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(\text{PolyLog}\left[2,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]-\text{PolyLog}\left[2,-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)-$$

$$\text{PolyLog}\left[3,-\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]-\text{PolyLog}\left[3,\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]-\text{PolyLog}\left[3,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]+\text{PolyLog}\left[3,-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\Bigg)+$$

$$g^2 \Bigg(\frac{1}{g}\Bigg(\Bigg(\frac{(b f-a g)\left(\frac{2 a b x}{(b f-a g)^2}+\frac{2 a^2 b (f+g x)}{(b f-a g)^3}\right)}{b (f+g x)}-\frac{(b f-a g)\, x\left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)^2}-\frac{a\left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)}\Bigg) \operatorname{Log}\Big[\frac{a}{b}+x\Big] \operatorname{Log}\Big[\frac{c}{d}+x\Big]-$$

$$\frac{1}{d (b f-a g)\left(\frac{c}{d}+x\right)} 2 b (-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right)$$

$$\Bigg(\frac{(b f-a g)\left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)}+\frac{b (-d f+c g)\left(\frac{a}{b}+x\right)\left(-\frac{(-b c+a d)\, x}{b (-d f+c g)\left(\frac{a}{b}+x\right)}+\frac{c (-b c+a d)(f+g x)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}\right)}{(-b c+a d)(f+g x)}\Bigg) \operatorname{Log}\Big[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\Big]+$$

$$\Bigg(-\frac{(b f-a g)\left(\frac{2 a b x}{(b f-a g)^2}+\frac{2 a^2 b (f+g x)}{(b f-a g)^3}\right)}{b (f+g x)}+\frac{(b f-a g)\, x\left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)^2}+\frac{a\left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)}-\frac{(-d f+c g)\left(\frac{2 c d x}{(-d f+c g)^2}-\frac{2 c^2 d (f+g x)}{(-d f+c g)^3}\right)}{d (f+g x)}+$$

$$\frac{(-d f+c g)\, x\left(-\frac{d x}{-d f+c g}+\frac{c d (f+g x)}{(-d f+c g)^2}\right)}{d (f+g x)^2}-\frac{c\left(-\frac{d x}{-d f+c g}+\frac{c d (f+g x)}{(-d f+c g)^2}\right)}{d (f+g x)}\Bigg) \operatorname{Log}\Big[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\Big] \operatorname{Log}\Big[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\Big]+$$

$$\frac{1}{2}\Bigg(\frac{(b f-a g)\left(\frac{2 a b x}{(b f-a g)^2}+\frac{2 a^2 b (f+g x)}{(b f-a g)^3}\right)}{b (f+g x)}-\frac{(b f-a g)\, x\left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)^2}-\frac{a\left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)}+$$

$$\frac{b (-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{2 c (-b c+a d)\, x}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}-\frac{2 c^2 (-b c+a d)(f+g x)}{b (-d f+c g)^3\left(\frac{a}{b}+x\right)}\right)}{(-b c+a d)(f+g x)}-\frac{b (-d f+c g)\, x\left(\frac{a}{b}+x\right)\left(-\frac{(-b c+a d)\, x}{b (-d f+c g)\left(\frac{a}{b}+x\right)}+\frac{c (-b c+a d)(f+g x)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}\right)}{(-b c+a d)(f+g x)^2}+$$

$$\frac{b c\left(\frac{a}{b}+x\right)\left(-\frac{(-b c+a d)\, x}{b (-d f+c g)\left(\frac{a}{b}+x\right)}+\frac{c (-b c+a d)(f+g x)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}\right)}{(-b c+a d)(f+g x)}\Bigg) \operatorname{Log}\Big[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\Big]^2+2\Bigg(-\frac{(b f-a g)\left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)}-$$

$$\frac{(-d f+c g)\left(-\frac{d x}{-d f+c g}+\frac{c d (f+g x)}{(-d f+c g)^2}\right)}{d (f+g x)}\Bigg)\Bigg(-\frac{b (-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right) \operatorname{Log}\Big[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\Big]}{d (b f-a g)\left(\frac{c}{d}+x\right)}+$$

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]}{d g\left(\frac{c}{d}+x\right)}\Bigg)+\frac{1}{d g\left(\frac{c}{d}+x\right)}(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)$$

$$\Bigg(\left(\frac{(b f-a g)\left(\frac{b x}{b f-a g}+\frac{a b(f+g x)}{(b f-a g)^2}\right)}{b(f+g x)}+\frac{(-d f+c g)\left(-\frac{d x}{-d f+c g}+\frac{c d(f+g x)}{(-d f+c g)^2}\right)}{d(f+g x)}\right)\left(-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\right)+$$

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\left(\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{d(f+g x)}{-d f+c g}\right]\right)}{d g\left(\frac{c}{d}+x\right)}\Bigg)+\frac{1}{2}\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]$$

$$\Bigg(\frac{1}{d g\left(\frac{c}{d}+x\right)}2(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\left(\frac{(b f-a g)\left(\frac{b x}{b f-a g}+\frac{a b(f+g x)}{(b f-a g)^2}\right)}{b(f+g x)}+\frac{(-d f+c g)\left(-\frac{d x}{-d f+c g}+\frac{c d(f+g x)}{(-d f+c g)^2}\right)}{d(f+g x)}\right)+$$

$$\Bigg(\frac{(b f-a g)\left(\frac{2 a b x}{(b f-a g)^2}+\frac{2 a^2 b(f+g x)}{(b f-a g)^3}\right)}{b(f+g x)}-\frac{(b f-a g)x\left(\frac{b x}{b f-a g}+\frac{a b(f+g x)}{(b f-a g)^2}\right)}{b(f+g x)^2}-\frac{a\left(\frac{b x}{b f-a g}+\frac{a b(f+g x)}{(b f-a g)^2}\right)}{b(f+g x)}+$$

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

$$\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\Bigg)+\Bigg(\frac{(-d f+c g)\left(\frac{2 c^2 d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^3}-\frac{2 c d\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}\right)}{d g\left(\frac{c}{d}+x\right)}+\frac{c\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)}{d g\left(\frac{c}{d}+x\right)}-\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)}{d g^2\left(\frac{c}{d}+x\right)}\Bigg)$$

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

$$\frac{(-d f + c g) \left(-\frac{c d g \left(\frac{c}{d}+x\right)}{(-d f+c g)^2} + \frac{d \left(\frac{c}{d}+x\right)}{-d f+c g}\right)}{d g^2 \left(\frac{c}{d}+x\right)}\Bigg) \left(-2 \text{Log}\left[\frac{a}{b}+x\right] + \text{Log}\left[\frac{d g \left(\frac{c}{d}+x\right)}{-d f+c g}\right]\right) \left(\text{Log}\left[\frac{b (f+g x)}{b f-a g}\right] - \text{Log}\left[-\frac{d (f+g x)}{-d f+c g}\right]\right) +$$

$$\Bigg(-\frac{2 b (-d f+c g)^2 \left(\frac{a}{b}+x\right) \left(-\frac{c d g \left(\frac{c}{d}+x\right)}{(-d f+c g)^2} + \frac{d \left(\frac{c}{d}+x\right)}{-d f+c g}\right) \left(\frac{c d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g)^2 \left(\frac{a}{b}+x\right)} + \frac{a d \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\right)}{d^2 g (b f-a g) \left(\frac{c}{d}+x\right)^2} +$$

$$\Bigg(-\frac{b (-d f+c g) \left(\frac{a}{b}+x\right) \left(-\frac{2 c^2 d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g)^3 \left(\frac{a}{b}+x\right)} - \frac{2 a c d \left(\frac{c}{d}+x\right)}{b (-d f+c g)^2 \left(\frac{a}{b}+x\right)}\right)}{d (b f-a g) \left(\frac{c}{d}+x\right)} - \frac{b c \left(\frac{a}{b}+x\right) \left(\frac{c d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g)^2 \left(\frac{a}{b}+x\right)} + \frac{a d \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\right)}{d (b f-a g) \left(\frac{c}{d}+x\right)} -$$

$$\frac{a b (-d f+c g) \left(\frac{a}{b}+x\right) \left(\frac{c d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g)^2 \left(\frac{a}{b}+x\right)} + \frac{a d \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\right)}{d (b f-a g)^2 \left(\frac{c}{d}+x\right)}\Bigg) \text{Log}\left[\frac{d g \left(\frac{c}{d}+x\right)}{-d f+c g}\right] + \Bigg(\frac{(-d f+c g) \left(\frac{2 c^2 d g \left(\frac{c}{d}+x\right)}{(-d f+c g)^3} - \frac{2 c d \left(\frac{c}{d}+x\right)}{(-d f+c g)^2}\right)}{d g \left(\frac{c}{d}+x\right)} +$$

$$\frac{c \left(-\frac{c d g \left(\frac{c}{d}+x\right)}{(-d f+c g)^2} + \frac{d \left(\frac{c}{d}+x\right)}{-d f+c g}\right)}{d g \left(\frac{c}{d}+x\right)} - \frac{(-d f+c g) \left(-\frac{c d g \left(\frac{c}{d}+x\right)}{(-d f+c g)^2} + \frac{d \left(\frac{c}{d}+x\right)}{-d f+c g}\right)}{d g^2 \left(\frac{c}{d}+x\right)}\Bigg) \text{Log}\left[-\frac{d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\right]\Bigg)$$

$$\left(-\text{Log}\left[\frac{b (f+g x)}{b f-a g}\right] + \text{Log}\left[-\frac{d (f+g x)}{-d f+c g}\right]\right) + \frac{1}{2} \Bigg(\frac{2 b^2 (-d f+c g)^2 \left(\frac{a}{b}+x\right)^2 \left(\frac{c d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g)^2 \left(\frac{a}{b}+x\right)} + \frac{a d \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\right)^2}{d^2 (b f-a g)^2 \left(\frac{c}{d}+x\right)^2} -$$

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

$$\frac{2 b c \left(\frac{a}{b}+x\right) \left(\frac{c d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g)^2 \left(\frac{a}{b}+x\right)} + \frac{a d \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\right) \text{Log}\left[-\frac{d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\right]}{d (b f-a g) \left(\frac{c}{d}+x\right)} -$$

$$\frac{2ab(-df+cg)\left(\frac{a}{b}+x\right)\left(\frac{cd(bf-ag)\left(\frac{c}{d}+x\right)}{b(-df+cg)^2\left(\frac{a}{b}+x\right)}+\frac{ad\left(\frac{c}{d}+x\right)}{b(-df+cg)\left(\frac{a}{b}+x\right)}\right)\text{Log}\left[-\frac{d(bf-ag)\left(\frac{c}{d}+x\right)}{b(-df+cg)\left(\frac{a}{b}+x\right)}\right]}{d(bf-ag)^2\left(\frac{c}{d}+x\right)}\Bigg)$$

$$\left(\text{Log}\left[\frac{-bc+ad}{bd\left(\frac{a}{b}+x\right)}\right]+\text{Log}\left[\frac{b(f+gx)}{bf-ag}\right]-\text{Log}\left[-\frac{(-bc+ad)(f+gx)}{b(-df+cg)\left(\frac{a}{b}+x\right)}\right]\right)+\frac{(bf-ag)^2\left(-\frac{abg\left(\frac{a}{b}+x\right)}{(bf-ag)^2}-\frac{b\left(\frac{a}{b}+x\right)}{bf-ag}\right)^2\text{Log}\left[1+\frac{bg\left(\frac{a}{b}+x\right)}{bf-ag}\right]}{b^2g^2\left(\frac{a}{b}+x\right)^2}+$$

$$\frac{2(-df+cg)\left(-\frac{abg\left(\frac{a}{b}+x\right)}{(bf-ag)^2}-\frac{b\left(\frac{a}{b}+x\right)}{bf-ag}\right)\left(\frac{cd(bf-ag)\left(\frac{c}{d}+x\right)}{b(-df+cg)^2\left(\frac{a}{b}+x\right)}+\frac{ad\left(\frac{c}{d}+x\right)}{b(-df+cg)\left(\frac{a}{b}+x\right)}\right)\text{Log}\left[1+\frac{bg\left(\frac{a}{b}+x\right)}{bf-ag}\right]}{dg\left(\frac{c}{d}+x\right)}+$$

$$\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d(bf-ag)\left(\frac{c}{d}+x\right)}{b(-df+cg)\left(\frac{a}{b}+x\right)}\right]\right)\Bigg(\frac{(bf-ag)\left(-\frac{abg\left(\frac{a}{b}+x\right)}{(bf-ag)^2}-\frac{b\left(\frac{a}{b}+x\right)}{bf-ag}\right)\left(\frac{abg\left(\frac{a}{b}+x\right)}{(bf-ag)^2}+\frac{b\left(\frac{a}{b}+x\right)}{bf-ag}\right)}{bg\left(\frac{a}{b}+x\right)\left(1+\frac{bg\left(\frac{a}{b}+x\right)}{bf-ag}\right)}+$$

$$\frac{(bf-ag)\left(-\frac{2a^2bg\left(\frac{a}{b}+x\right)}{(bf-ag)^3}-\frac{2ab\left(\frac{a}{b}+x\right)}{(bf-ag)^2}\right)\text{Log}\left[1+\frac{bg\left(\frac{a}{b}+x\right)}{bf-ag}\right]}{bg\left(\frac{a}{b}+x\right)}-\frac{a\left(-\frac{abg\left(\frac{a}{b}+x\right)}{(bf-ag)^2}-\frac{b\left(\frac{a}{b}+x\right)}{bf-ag}\right)\text{Log}\left[1+\frac{bg\left(\frac{a}{b}+x\right)}{bf-ag}\right]}{bg\left(\frac{a}{b}+x\right)}-$$

$$\frac{(bf-ag)\left(-\frac{abg\left(\frac{a}{b}+x\right)}{(bf-ag)^2}-\frac{b\left(\frac{a}{b}+x\right)}{bf-ag}\right)\text{Log}\left[1+\frac{bg\left(\frac{a}{b}+x\right)}{bf-ag}\right]}{bg^2\left(\frac{a}{b}+x\right)}\Bigg)+\frac{(-df+cg)^2\left(-\frac{cdg\left(\frac{c}{d}+x\right)}{(-df+cg)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-df+cg}\right)^2\text{Log}\left[1-\frac{dg\left(\frac{c}{d}+x\right)}{-df+cg}\right]}{d^2g^2\left(\frac{c}{d}+x\right)^2}+$$

$$\Bigg(2b(-df+cg)^2\left(\frac{a}{b}+x\right)\left(-\frac{cdg\left(\frac{c}{d}+x\right)}{(-df+cg)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-df+cg}\right)\left(\frac{cd(bf-ag)\left(\frac{c}{d}+x\right)}{b(-df+cg)^2\left(\frac{a}{b}+x\right)}+\frac{ad\left(\frac{c}{d}+x\right)}{b(-df+cg)\left(\frac{a}{b}+x\right)}\right)$$

$$\text{Log}\left[1-\frac{dg\left(\frac{c}{d}+x\right)}{-df+cg}\right]\Bigg)\Big/\left(d^2g(bf-ag)\left(\frac{c}{d}+x\right)^2\right)+\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d(bf-ag)\left(\frac{c}{d}+x\right)}{b(-df+cg)\left(\frac{a}{b}+x\right)}\right]\right)$$

$$\Bigg(-\frac{(-df+cg)\left(\frac{cdg\left(\frac{c}{d}+x\right)}{(-df+cg)^2}-\frac{d\left(\frac{c}{d}+x\right)}{-df+cg}\right)\left(-\frac{cdg\left(\frac{c}{d}+x\right)}{(-df+cg)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-df+cg}\right)}{dg\left(\frac{c}{d}+x\right)\left(1-\frac{dg\left(\frac{c}{d}+x\right)}{-df+cg}\right)}-\frac{(-df+cg)\left(\frac{2c^2dg\left(\frac{c}{d}+x\right)}{(-df+cg)^3}-\frac{2cd\left(\frac{c}{d}+x\right)}{(-df+cg)^2}\right)\text{Log}\left[1-\frac{dg\left(\frac{c}{d}+x\right)}{-df+cg}\right]}{dg\left(\frac{c}{d}+x\right)}-$$

$$\frac{c\left(-\frac{c\,d\,g\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\text{Log}\left[1-\frac{d\,g\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]}{d\,g\left(\frac{c}{d}+x\right)}+\frac{(-d\,f+c\,g)\left(-\frac{c\,d\,g\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\text{Log}\left[1-\frac{d\,g\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]}{d\,g^2\left(\frac{c}{d}+x\right)}\Bigg)+$$

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

$$\text{Log}\left[-\frac{d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right]\Bigg(-\Bigg(\Bigg(b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)\left(-\frac{c\,d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\left(\frac{a}{b}+x\right)}-\frac{a\,d\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right)$$

$$\left(\frac{c\,d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\left(\frac{a}{b}+x\right)}+\frac{a\,d\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right)\Bigg)\Bigg/\left(d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)\left(1+\frac{d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right)\right)\Bigg)-$$

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

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

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

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

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

$$\left.\frac{b\,c\,\left(\frac{a}{b}+x\right)\left(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}+\frac{a\,b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)\left(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)^2\,\left(\frac{c}{d}+x\right)}\right)$$

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

$$\frac{c\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\text{PolyLog}\left[2,\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]}{d\,g\,\left(\frac{c}{d}+x\right)}+\frac{(-d\,f+c\,g)\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\text{PolyLog}\left[2,\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]}{d\,g^2\,\left(\frac{c}{d}+x\right)}+$$

$$\left(-\frac{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)\left(-\frac{2\,c^2\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^3\,\left(\frac{a}{b}+x\right)}-\frac{2\,a\,c\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}-\frac{b\,c\,\left(\frac{a}{b}+x\right)\left(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}-\right.$$

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

$$\left(-\frac{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)\left(-\frac{2\,c^2\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^3\,\left(\frac{a}{b}+x\right)}-\frac{2\,a\,c\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}-\frac{b\,c\,\left(\frac{a}{b}+x\right)\left(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}-\right.$$

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

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

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

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

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

$$\left.\frac{(-d f+c g)\left(-\frac{d x}{-d f+c g}+\frac{c d\,(f+g x)}{(-d f+c g)^2}\right)}{d\,(f+g x)}\right)\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\left(-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\right)+$$

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

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

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

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

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

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(-\text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+\text{Log}\left[-\frac{d (f+g x)}{-d f+c g}\right]\right)}{d g\left(\frac{c}{d}+x\right)}-\frac{1}{d (b f-a g)\left(\frac{c}{d}+x\right)}b (-d f+c g)$$

$$\left(\frac{a}{b}+x\right)\left(\frac{c d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right)\text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\Bigg(\text{Log}\left[\frac{-b c+a d}{b d\left(\frac{a}{b}+x\right)}\right]+\text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-$$

$$\text{Log}\left[-\frac{(-b c+a d)(f+g x)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\Bigg)+\frac{(b f-a g)\left(-\frac{a b g\left(\frac{a}{b}+x\right)}{(b f-a g)^2}-\frac{b\left(\frac{a}{b}+x\right)}{b f-a g}\right)\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)\text{Log}\left[1+\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]}{b g\left(\frac{a}{b}+x\right)}-$$

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)\text{Log}\left[1-\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d g\left(\frac{c}{d}+x\right)}-\frac{1}{d (b f-a g)\left(\frac{c}{d}+x\right)}$$

$$b (-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right)\text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\text{Log}\Bigg[$$

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

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

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\text{PolyLog}\left[2,\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d g\left(\frac{c}{d}+x\right)}-$$

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

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

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

$$\frac{1}{g^3}2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{b\,(f+g x)}{b f-a g}\right]+\frac{1}{2}\text{Log}\left[\frac{d g\,\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\left(-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d g\,\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\right)\right.$$

$$\left(\text{Log}\left[\frac{b\,(f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{d\,(f+g x)}{-d f+c g}\right]\right)+\text{Log}\left[\frac{d g\,\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\text{Log}\left[-\frac{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right]\left(-\text{Log}\left[\frac{b\,(f+g x)}{b f-a g}\right]+\text{Log}\left[-\frac{d\,(f+g x)}{-d f+c g}\right]\right)+$$

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

$$\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right]\right)\text{PolyLog}\left[2,-\frac{b g\,\left(\frac{a}{b}+x\right)}{b f-a g}\right]+\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right]\right)\text{PolyLog}\Big[$$

$$2,\frac{d g\,\left(\frac{c}{d}+x\right)}{-d f+c g}\Big]+\text{Log}\left[-\frac{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right]\left(\text{PolyLog}\left[2,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]-\text{PolyLog}\left[2,-\frac{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right]\right)-$$

$$\left.\text{PolyLog}\left[3,-\frac{b g\,\left(\frac{a}{b}+x\right)}{b f-a g}\right]-\text{PolyLog}\left[3,\frac{d g\,\left(\frac{c}{d}+x\right)}{-d f+c g}\right]-\text{PolyLog}\left[3,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]+\text{PolyLog}\left[3,-\frac{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right]\right)\right)+$$

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

$$\text{Log}\left[\frac{d g\,\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\left(-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d g\,\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\right)+$$

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

$$\frac{1}{2}\left(\frac{(b f-a g)\left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)}+\frac{b (-d f+c g)\left(\frac{a}{b}+x\right)\left(-\frac{(-b c+a d) x}{b (-d f+c g)\left(\frac{a}{b}+x\right)}+\frac{c (-b c+a d) (f+g x)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}\right)}{(-b c+a d) (f+g x)}\right) \text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]^2+$$

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right) \text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\left(\text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{d (f+g x)}{-d f+c g}\right]\right)}{2 d g\left(\frac{c}{d}+x\right)}+\frac{1}{2 d g\left(\frac{c}{d}+x\right)}(-d f+c g)$$

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

$$b (-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right) \text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\left(-\text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+\text{Log}\left[-\frac{d (f+g x)}{-d f+c g}\right]\right)+$$

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right) \text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(-\text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+\text{Log}\left[-\frac{d (f+g x)}{-d f+c g}\right]\right)}{d g\left(\frac{c}{d}+x\right)}-$$

$$\frac{1}{d (b f-a g)\left(\frac{c}{d}+x\right)} b (-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right)$$

$$\text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(\text{Log}\left[\frac{-b c+a d}{b d\left(\frac{a}{b}+x\right)}\right]+\text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{(-b c+a d) (f+g x)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)+$$

$$\frac{(b f-a g)\left(-\frac{a b g\left(\frac{a}{b}+x\right)}{(b f-a g)^2}-\frac{b\left(\frac{a}{b}+x\right)}{b f-a g}\right)\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right) \text{Log}\left[1+\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]}{b g\left(\frac{a}{b}+x\right)}-$$

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right) \text{Log}\left[1-\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d g\left(\frac{c}{d}+x\right)}-\frac{1}{d (b f-a g)\left(\frac{c}{d}+x\right)}$$

$$b (-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right) \text{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]$$

$$\text{Log}\left[1+\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]+\frac{(b\,f-a\,g)\,\left(-\frac{a\,b\,g\,\left(\frac{a}{b}+x\right)}{(b\,f-a\,g)^2}-\frac{b\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right)\,\text{PolyLog}\left[2,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right]}{b\,g\,\left(\frac{a}{b}+x\right)}+$$

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

$$\frac{(-d\,f+c\,g)\,\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\,\text{PolyLog}\left[2,\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]}{d\,g\,\left(\frac{c}{d}+x\right)}-$$

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

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

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

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

$$\left(\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-\text{Log}\left[-\frac{d\,(f+g\,x)}{-d\,f+c\,g}\right]\right)+\text{Log}\left[\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]\,\text{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\,\left(-\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+\text{Log}\left[-\frac{d\,(f+g\,x)}{-d\,f+c\,g}\right]\right)+$$

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

$$\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\right)\,\text{PolyLog}\left[2,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right]+\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\right)$$

$$\text{PolyLog}\left[2, \frac{d g \left(\frac{c}{d}+x\right)}{-d f+c g}\right]+\text{Log}\left[-\frac{d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\right] \left(\text{PolyLog}\left[2, \frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]-\text{PolyLog}\left[2, -\frac{d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\right]\right)-$$

$$\left.\left.\left.\text{PolyLog}\left[3, -\frac{b g \left(\frac{a}{b}+x\right)}{b f-a g}\right]-\text{PolyLog}\left[3, \frac{d g \left(\frac{c}{d}+x\right)}{-d f+c g}\right]-\text{PolyLog}\left[3, \frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]+\text{PolyLog}\left[3, -\frac{d (b f-a g) \left(\frac{c}{d}+x\right)}{b (-d f+c g) \left(\frac{a}{b}+x\right)}\right]\right)\right)\right)$$

Problem 247: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(f+g x)^4} \, dx$$

Optimal (type 4, 714 leaves, 12 steps):

$$\frac{B^2 (b c-a d)^2 g^2 (c+d x)}{3 (b f-a g)^2 (d f-c g)^3 (f+g x)}+\frac{B^2 (b c-a d)^3 g^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 (b f-a g)^3 (d f-c g)^3}-\frac{B (b c-a d) g^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b f-a g) (d f-c g)^3 (f+g x)^2}+$$

$$\frac{2 B (b c-a d) g (3 b d f-b c g-2 a d g) (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 (b f-a g)^3 (d f-c g)^2 (f+g x)}+\frac{b^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 g (b f-a g)^3}-\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 g (f+g x)^3}-$$

$$\frac{B^2 (b c-a d)^3 g^2 \text{Log}\left[\frac{f+g x}{c+d x}\right]}{3 (b f-a g)^3 (d f-c g)^3}+\frac{2 B^2 (b c-a d)^2 g (3 b d f-b c g-2 a d g) \text{Log}\left[\frac{f+g x}{c+d x}\right]}{3 (b f-a g)^3 (d f-c g)^3}+\frac{1}{3 (b f-a g)^3 (d f-c g)^3}$$

$$2 B (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}\left[1-\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]+$$

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

Result (type 4, 55 110 leaves): Display of huge result suppressed!

Problem 248: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(f+g x)^5} \, dx$$

Optimal (type 4, 1159 leaves, 15 steps) :

$$-\frac{B^2 (b c-a d)^2 g^3 (c+d x)^2}{12 (b f-a g)^2 (d f-c g)^4 (f+g x)^2}-\frac{B^2 (b c-a d)^3 g^3 (c+d x)}{6 (b f-a g)^3 (d f-c g)^4 (f+g x)}+$$
$$\frac{B^2 (b c-a d)^2 g^2 (4 b d f-b c g-3 a d g) (c+d x)}{4 (b f-a g)^3 (d f-c g)^4 (f+g x)}-\frac{B^2 (b c-a d)^4 g^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{6 (b f-a g)^4 (d f-c g)^4}+\frac{B^2 (b c-a d)^3 g^2 (4 b d f-b c g-3 a d g) \text{Log}\left[\frac{a+b x}{c+d x}\right]}{4 (b f-a g)^4 (d f-c g)^4}+$$
$$\frac{B (b c-a d) g^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 (b f-a g) (d f-c g)^4 (f+g x)^3}-\frac{B (b c-a d) g^2 (4 b d f-b c g-3 a d g) (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 (b f-a g)^2 (d f-c g)^4 (f+g x)^2}+$$
$$\left(B (b c-a d) g \left(3 a^2 d^2 g^2-2 a b d g (4 d f-c g)+b^2 \left(6 d^2 f^2-4 c d f g+c^2 g^2\right)\right) (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)\right)\Big/$$
$$\left(2 (b f-a g)^4 (d f-c g)^3 (f+g x)\right)+\frac{b^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 g (b f-a g)^4}-\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 g (f+g x)^4}+$$
$$\frac{B^2 (b c-a d)^4 g^3 \text{Log}\left[\frac{f+g x}{c+d x}\right]}{6 (b f-a g)^4 (d f-c g)^4}-\frac{B^2 (b c-a d)^3 g^2 (4 b d f-b c g-3 a d g) \text{Log}\left[\frac{f+g x}{c+d x}\right]}{4 (b f-a g)^4 (d f-c g)^4}+$$
$$\frac{B^2 (b c-a d)^2 g \left(3 a^2 d^2 g^2-2 a b d g (4 d f-c g)+b^2 \left(6 d^2 f^2-4 c d f g+c^2 g^2\right)\right) \text{Log}\left[\frac{f+g x}{c+d x}\right]}{2 (b f-a g)^4 (d f-c g)^4}-\frac{1}{2 (b f-a g)^4 (d f-c g)^4}$$
$$B (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}\left[1-\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]-$$
$$\frac{1}{2 (b f-a g)^4 (d f-c g)^4} B^2 (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 \left(2 d^2 f^2-2 c d f g+c^2 g^2\right)\right) \text{PolyLog}\left[2,\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]$$

Result (type 4, 142 893 leaves) : Display of huge result suppressed!

Problem 272: Result more than twice size of optimal antiderivative.

$$\int (f+g x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2 dx$$

Optimal (type 4, 869 leaves, 15 steps) :

$$\frac{2 B^2 (b c-a d)^3 g^3 x}{3 b^3 d^3}+\frac{B^2 (b c-a d)^2 g^2 (4 b d f-3 b c g-a d g) x}{b^3 d^3}+\frac{B^2 (b c-a d)^2 g^3 (c+d x)^2}{3 b^2 d^4}-\frac{1}{b^4 d^3}$$

$$B (b c-a d) g \left(a^2 d^2 g^2-2 a b d g (2 d f-c g)+b^2 (6 d^2 f^2-8 c d f g+3 c^2 g^2)\right) (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)-$$

$$\frac{B (b c-a d) g^2 (4 b d f-3 b c g-a d g) (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{2 b^2 d^4}-\frac{B (b c-a d) g^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 b d^4}-$$

$$\frac{(b f-a g)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{4 b^4 g}+\frac{(f+g x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{4 g}-\frac{1}{b^4 d^4}$$

$$B (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 (2 d^2 f^2-2 c d f g+c^2 g^2)\right) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]+$$

$$\frac{2 B^2 (b c-a d)^4 g^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 b^4 d^4}+\frac{B^2 (b c-a d)^3 g^2 (4 b d f-3 b c g-a d g) \text{Log}\left[\frac{a+b x}{c+d x}\right]}{b^4 d^4}+$$

$$\frac{2 B^2 (b c-a d)^4 g^3 \text{Log}[c+d x]}{3 b^4 d^4}+\frac{B^2 (b c-a d)^3 g^2 (4 b d f-3 b c g-a d g) \text{Log}[c+d x]}{b^4 d^4}+$$

$$\frac{2 B^2 (b c-a d)^2 g \left(a^2 d^2 g^2-2 a b d g (2 d f-c g)+b^2 (6 d^2 f^2-8 c d f g+3 c^2 g^2)\right) \text{Log}[c+d x]}{b^4 d^4}-\frac{1}{b^4 d^4}$$

$$2 B^2 (b c-a d) (2 b d f-b c g-a d g) \left(2 a b d^2 f g-a^2 d^2 g^2-b^2 (2 d^2 f^2-2 c d f g+c^2 g^2)\right) \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]$$

Result (type 4, 2279 leaves) :

$$A^2 f^3 x+\frac{3}{2} A^2 f^2 g x^2+A^2 f g^2 x^3+\frac{1}{4} A^2 g^3 x^4+\frac{2 A B f^3 \left(2 a d \text{Log}[a+b x]+b d x \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-2 b c \text{Log}[c+d x]\right)}{b d}+$$

$$\frac{1}{6} A B g^3 \left(\frac{6 a^3 x}{b^3}-\frac{6 c^3 x}{d^3}-\frac{3 a^2 x^2}{b^2}+\frac{3 c^2 x^2}{d^2}+\frac{2 a x^3}{b}-\frac{2 c x^3}{d}-\frac{6 a^4 \text{Log}[a+b x]}{b^4}+3 x^4 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+\frac{6 c^4 \text{Log}[c+d x]}{d^4}\right)+$$

$$2 A B f g^2 \left(\frac{(b c-a d) x (2 b c+2 a d-b d x)}{b^2 d^2}+\frac{2 a^3 \text{Log}[a+b x]}{b^3}+x^3 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-\frac{2 c^3 \text{Log}[c+d x]}{d^3}\right)+$$

$$\frac{3 A B f^2 g \left(-2 a^2 d^2 \text{Log}[a+b x]+b \left(2 d (-b c+a d) x+b d^2 x^2 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+2 b c^2 \text{Log}[c+d x]\right)\right)}{b^2 d^2}+$$

$$\frac{1}{b d} B^2 f^3 \left(4 a d \text{Log}\left[\frac{a}{b}+x\right]^2+4 b c \text{Log}\left[\frac{c}{d}+x\right]^2-8 a d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+8 a d \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-8 a d \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\right.$$

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

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

$$\frac{1}{12\,b^4\,d^4}\,B^2\,g^3\,\Bigg(-24\,b^4\,c^4+24\,a\,b^3\,c^3\,d+24\,a^3\,b\,c\,d^3-24\,a^4\,d^4-20\,b^4\,c^3\,d\,x+20\,a\,b^3\,c^2\,d^2\,x+20\,a^2\,b^2\,c\,d^3\,x-20\,a^3\,b\,d^4\,x+4\,b^4\,c^2\,d^2\,x^2-$$

$$8\,a\,b^3\,c\,d^3\,x^2+4\,a^2\,b^2\,d^4\,x^2-24\,a\,b^3\,c^3\,d\,\text{Log}\left[\frac{a}{b}+x\right]+24\,a^4\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]-12\,a^4\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]^2+24\,b^4\,c^4\,\text{Log}\left[\frac{c}{d}+x\right]-24\,a^3\,b\,c\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]-$$

$$12\,b^4\,c^4\,\text{Log}\left[\frac{c}{d}+x\right]^2-12\,a^2\,b^2\,c^2\,d^2\,\text{Log}[a+b\,x]-8\,a^3\,b\,c\,d^3\,\text{Log}[a+b\,x]+20\,a^4\,d^4\,\text{Log}[a+b\,x]+24\,a^4\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b\,x]-$$

$$24\,a^4\,d^4\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]+24\,a^4\,d^4\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-12\,b^4\,c^3\,d\,x\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]+12\,a^3\,b\,d^4\,x\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]+$$

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

$$12\,a^4\,d^4\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]+3\,b^4\,d^4\,x^4\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]^2+20\,b^4\,c^4\,\text{Log}[c+d\,x]-8\,a\,b^3\,c^3\,d\,\text{Log}[c+d\,x]-$$

$$12\,a^2\,b^2\,c^2\,d^2\,\text{Log}[c+d\,x]-24\,b^4\,c^4\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+24\,b^4\,c^4\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]+12\,b^4\,c^4\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\text{Log}[c+d\,x]+$$

$$24\,b^4\,c^4\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+24\,b^4\,c^4\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+24\,a^4\,d^4\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)+3\,B^2\,f^2\,g$$

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

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

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

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

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

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

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

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

Problem 273: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 542 leaves, 12 steps):

$$\frac{4\,B^2\,(b\,c-a\,d)^2\,g^2\,x}{3\,b^2\,d^2}-\frac{4\,B\,(b\,c-a\,d)\,g\,(3\,b\,d\,f-2\,b\,c\,g-a\,d\,g)\,(a+b\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{3\,b^3\,d^2}-$$

$$\frac{2\,B\,(b\,c-a\,d)\,g^2\,(c+d\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)}{3\,b\,d^3}-\frac{(b\,f-a\,g)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{3\,b^3\,g}+\frac{(f+g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{3\,g}+$$

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

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

$$\frac{8\,B^2\,(b\,c-a\,d)\left(a^2\,d^2\,g^2-a\,b\,d\,g\,(3\,d\,f-c\,g)+b^2\,(3\,d^2\,f^2-3\,c\,d\,f\,g+c^2\,g^2)\right)\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{3\,b^3\,d^3}$$

Result (type 4, 1323 leaves):

$$\frac{1}{3}\left(3 A^2 f^2 x + 3 A^2 f g x^2 + A^2 g^2 x^3 + \frac{6 A B f^2 \left(2 a d \,\text{Log}[a + b x] + b d x \,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] - 2 b c \,\text{Log}[c + d x]\right)}{b d} + \right.$$

$$2 A B g^2 \left(\frac{(b c - a d)\, x\, (2 b c + 2 a d - b d x)}{b^2 d^2} + \frac{2 a^3 \,\text{Log}[a + b x]}{b^3} + x^3 \,\text{Log}\left[\frac{e (a + b x)^2}{(c + d x)^2}\right] - \frac{2 c^3 \,\text{Log}[c + d x]}{d^3}\right) +$$

$$\frac{6 A B f g \left(-2 a^2 d^2 \,\text{Log}[a + b x] + b \left(2 d (-b c + a d)\, x + b d^2 x^2 \,\text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] + 2 b c^2 \,\text{Log}[c + d x]\right)\right)}{b^2 d^2} +$$

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

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

$$\left.\text{Log}\left[\frac{e (a + b x)^2}{(c + d x)^2}\right] \text{Log}[c + d x] - 8 b c \,\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] - 8 b c \,\text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right] - 8 a d \,\text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\right) + 6 B^2 f g$$

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

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

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

$$B^2 g^2 \left(x^3 \,\text{Log}\left[\frac{e (a + b x)^2}{(c + d x)^2}\right]^2 - \frac{1}{b^3 d^3} 2 \left(4 d (-b c + a d) (b c + a d) (a + b x) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) - 2 a^3 d^3 \,\text{Log}\left[\frac{a}{b} + x\right]^2 + \right.\right.$$

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

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

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

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

Problem 274: Result more than twice size of optimal antiderivative.

$$\int (f+g x)\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2 dx$$

Optimal (type 4, 281 leaves, 9 steps):

$$-\frac{2 B (b c-a d) g (a+b x)\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{b^2 d}-\frac{(b f-a g)^2\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{2 b^2 g}+\frac{(f+g x)^2\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{2 g}+\frac{2 B (b c-a d)(2 b d f-b c g-a d g)\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b^2 d^2}+\frac{4 B^2 (b c-a d)^2 g \operatorname{Log}[c+d x]}{b^2 d^2}+\frac{4 B^2 (b c-a d)(2 b d f-b c g-a d g) \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b^2 d^2}$$

Result (type 4, 767 leaves):

$$\frac{1}{2 b^2 d^2}\left(2 A^2 b^2 d^2 f x+A^2 b^2 d^2 g x^2+4 A b B d f\left(2 a d \operatorname{Log}[a+b x]+b d x \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-2 b c \operatorname{Log}[c+d x]\right)-\right.$$
$$2 A B g\left(2 a^2 d^2 \operatorname{Log}[a+b x]-b\left(2 d(-b c+a d) x+b d^2 x^2 \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+2 b c^2 \operatorname{Log}[c+d x]\right)\right)+$$
$$2 b B^2 d f\left(4 a d \operatorname{Log}\left[\frac{a}{b}+x\right]^2+4 b c \operatorname{Log}\left[\frac{c}{d}+x\right]^2-8 a d \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[a+b x]+8 a d \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[a+b x]-8 a d \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\right.$$
$$4 a d \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+b d x \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2+8 b c \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[c+d x]-8 b c \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[c+d x]-$$
$$\left.4 b c \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] \operatorname{Log}[c+d x]-8 b c \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-8 b c \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]-8 a d \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right)+$$
$$B^2 g\left(8 d(-b c+a d)(a+b x)\left(-1+\operatorname{Log}\left[\frac{a}{b}+x\right]\right)-4 a^2 d^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2+8 b(b c-a d)(c+d x)\left(-1+\operatorname{Log}\left[\frac{c}{d}+x\right]\right)-4 b^2 c^2 \operatorname{Log}\left[\frac{c}{d}+x\right]^2+\right.$$
$$b^2 d^2 x^2 \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2+4\left(2 \operatorname{Log}\left[\frac{a}{b}+x\right]-2 \operatorname{Log}\left[\frac{c}{d}+x\right]-\operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)\left(a^2 d^2 \operatorname{Log}[a+b x]-b\left(d(-b c+a d) x+b c^2 \operatorname{Log}[c+d x]\right)\right)+$$
$$\left.\left.8 b^2 c^2\left(\operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\operatorname{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]\right)+8 a^2 d^2\left(\operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right)\right)\right)$$

Problem 275: Result more than twice size of optimal antiderivative.

$$\int \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2 dx$$

Optimal (type 4, 129 leaves, 6 steps):

$$\frac{(a+b x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{b}+\frac{4 B (b c-a d) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b d}+\frac{8 B^2 (b c-a d) \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b d}$$

Result (type 4, 385 leaves):

$$\frac{1}{b d}\left(A^2 b d x+4 a B^2 d \operatorname{Log}\left[\frac{a}{b}+x\right]^2+4 b B^2 c \operatorname{Log}\left[\frac{c}{d}+x\right]^2+4 a A B d \operatorname{Log}[a+b x]-8 a B^2 d \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[a+b x]+8 a B^2 d \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[a+b x]-\right.$$
$$8 a B^2 d \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 A b B d x \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+4 a B^2 d \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+b B^2 d x \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2-$$
$$4 A b B c \operatorname{Log}[c+d x]+8 b B^2 c \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}[c+d x]-8 b B^2 c \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}[c+d x]-4 b B^2 c \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] \operatorname{Log}[c+d x]-$$
$$\left.8 b B^2 c \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-8 b B^2 c \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-8 a B^2 d \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)$$

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

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{f+g x} dx$$

Optimal (type 4, 285 leaves, 9 steps):

$$-\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2 \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{g}+\frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2 \operatorname{Log}\left[1-\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]}{g}-\frac{4 B \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{g}+$$
$$\frac{4 B \left(A+B \operatorname{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \operatorname{PolyLog}\left[2,\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]}{g}+\frac{8 B^2 \operatorname{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{g}-\frac{8 B^2 \operatorname{PolyLog}\left[3,\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]}{g}$$

Result (type 4, 1370 leaves):

$$\frac{1}{g}\Bigg(-4 B^2 \text{Log}\left[\frac{-b c+a d}{d (a+b x)}\right] \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]^2+A^2 \text{Log}[f+g x]-4 A B \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[f+g x]+$$
$$4 B^2 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}[f+g x]+4 A B \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[f+g x]-8 B^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[f+g x]+$$
$$4 B^2 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}[f+g x]+2 A B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] \text{Log}[f+g x]-4 B^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] \text{Log}[f+g x]+$$
$$4 B^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] \text{Log}[f+g x]+B^2 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2 \text{Log}[f+g x]+4 A B \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-$$
$$4 B^2 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+4 B^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+8 B^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-$$
$$4 B^2 \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]^2 \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+8 B^2 \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right] \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-$$
$$4 B^2 \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]^2 \text{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-4 A B \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]+8 B^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-$$
$$4 B^2 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-4 B^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right] \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-8 B^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]+$$
$$4 B^2 \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]^2 \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]-8 B^2 \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right] \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right] \text{Log}\left[\frac{d (f+g x)}{d f-c g}\right]+$$
$$4 B^2 \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]^2 \text{Log}\left[\frac{(-b c+a d) (f+g x)}{(d f-c g) (a+b x)}\right]+4 B \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+2 B \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]\right) \text{PolyLog}\left[2,\frac{g (a+b x)}{-b f+a g}\right]-$$
$$4 B \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+2 B \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]\right) \text{PolyLog}\left[2,\frac{g (c+d x)}{-d f+c g}\right]-8 B^2 \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]+$$
$$8 B^2 \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right] \text{PolyLog}\left[2,\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]+8 B^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]-8 B^2 \text{PolyLog}\left[3,\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]\Bigg)$$

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

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

Optimal (type 4, 200 leaves, 4 steps) :

$$\frac{(a+b x)\left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{(b f-a g) (f+g x)}+\frac{4 B (b c-a d)\left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}\left[1-\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]}{(b f-a g) (d f-c g)}+\frac{8 B^2 (b c-a d) \text{PolyLog}\left[2,\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]}{(b f-a g) (d f-c g)}$$

Result (type 4, 3314 leaves):

$$\frac{1}{g (-b f+a g) (-d f+c g) (f+g x)}$$

$$\Big(-A^2 b d f^2+A^2 b c f g+a A^2 d f g-a A^2 c g^2+4 A b B d f^2 \text{Log}\left[\frac{a}{b}+x\right]-4 A b B c f g \text{Log}\left[\frac{a}{b}+x\right]+4 A b B d f g x \text{Log}\left[\frac{a}{b}+x\right]-$$

$$4 A b B c g^2 x \text{Log}\left[\frac{a}{b}+x\right]-4 b B^2 d f^2 \text{Log}\left[\frac{a}{b}+x\right]^2+4 b B^2 c f g \text{Log}\left[\frac{a}{b}+x\right]^2-4 b B^2 d f g x \text{Log}\left[\frac{a}{b}+x\right]^2+4 b B^2 c g^2 x \text{Log}\left[\frac{a}{b}+x\right]^2-$$

$$4 A b B d f^2 \text{Log}\left[\frac{c}{d}+x\right]+4 a A B d f g \text{Log}\left[\frac{c}{d}+x\right]-4 A b B d f g x \text{Log}\left[\frac{c}{d}+x\right]+4 a A B d g^2 x \text{Log}\left[\frac{c}{d}+x\right]+8 b B^2 d f^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right]-$$

$$8 a B^2 d f g \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right]+8 b B^2 d f g x \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right]-8 a B^2 d g^2 x \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right]-$$

$$4 b B^2 d f^2 \text{Log}\left[\frac{c}{d}+x\right]^2+4 a B^2 d f g \text{Log}\left[\frac{c}{d}+x\right]^2-4 b B^2 d f g x \text{Log}\left[\frac{c}{d}+x\right]^2+4 a B^2 d g^2 x \text{Log}\left[\frac{c}{d}+x\right]^2-2 A b B d f^2 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+$$

$$2 A b B c f g \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+2 a A B d f g \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-2 a A B c g^2 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+4 b B^2 d f^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-$$

$$4 b B^2 c f g \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+4 b B^2 d f g x \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-4 b B^2 c g^2 x \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-$$

$$4 b B^2 d f^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+4 a B^2 d f g \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-4 b B^2 d f g x \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]+$$

$$4 a B^2 d g^2 x \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]-b B^2 d f^2 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2+b B^2 c f g \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2+a B^2 d f g \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2-$$

$$a B^2 c g^2 \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]^2-8 b B^2 c f g \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]+8 a B^2 d f g \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]-$$

$$8 b B^2 c g^2 x \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]+8 a B^2 d g^2 x \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]+4 b B^2 c f g \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]^2-4 a B^2 d f g \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]^2+$$

$$4 b B^2 c g^2 x \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]^2-4 a B^2 d g^2 x \text{Log}\left[\frac{g (c+d x)}{-d f+c g}\right]^2-8 b B^2 c f g \text{Log}\left[\frac{-b c+a d}{d (a+b x)}\right] \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]+$$

$$8 a B^2 d f g \text{Log}\left[\frac{-b c+a d}{d (a+b x)}\right] \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]-8 b B^2 c g^2 x \text{Log}\left[\frac{-b c+a d}{d (a+b x)}\right] \text{Log}\left[\frac{(b f-a g) (c+d x)}{(d f-c g) (a+b x)}\right]+$$

$$8\,a\,B^2\,d\,g^2\,x\,\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]-8\,b\,B^2\,c\,f\,g\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]+$$

$$8\,a\,B^2\,d\,f\,g\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]-8\,b\,B^2\,c\,g^2\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]+$$

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

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

$$4\,A\,b\,B\,d\,f^2\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+4\,A\,b\,B\,c\,f\,g\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-4\,A\,b\,B\,d\,f\,g\,x\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+4\,A\,b\,B\,c\,g^2\,x\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+$$

$$8\,b\,B^2\,d\,f^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-8\,a\,B^2\,d\,f\,g\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+8\,b\,B^2\,d\,f\,g\,x\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-$$

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

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

$$8\,b\,B^2\,c\,f\,g\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-8\,b\,B^2\,d\,f\,g\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+8\,b\,B^2\,c\,g^2\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+$$

$$4\,A\,b\,B\,d\,f^2\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]-4\,a\,A\,B\,d\,f\,g\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+4\,A\,b\,B\,d\,f\,g\,x\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]-4\,a\,A\,B\,d\,g^2\,x\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]-$$

$$8\,b\,B^2\,d\,f^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+8\,a\,B^2\,d\,f\,g\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]-8\,b\,B^2\,d\,f\,g\,x\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+$$

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

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

$$8\,b\,B^2\,c\,f\,g\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+8\,b\,B^2\,d\,f\,g\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]-8\,b\,B^2\,c\,g^2\,x\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+$$

$$8\,B^2\,(b\,c-a\,d)\,g\,(f+g\,x)\,\text{PolyLog}\left[2,\,\frac{g\,(a+b\,x)}{-b\,f+a\,g}\right]-8\,B^2\,(b\,c-a\,d)\,g\,(f+g\,x)\,\text{PolyLog}\left[2,\,\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]-8\,b\,B^2\,c\,f\,g\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]+$$

$$8\,a\,B^2\,d\,f\,g\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]-8\,b\,B^2\,c\,g^2\,x\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]+8\,a\,B^2\,d\,g^2\,x\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]\Bigg)$$

Problem 278: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)^2}{(c+d\,x)^2}\right]\right)^2}{(f+g\,x)^3}\,dx$$

Optimal (type 4, 381 leaves, 9 steps):

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

Result (type 4, 18 290 leaves):

$$-\frac{A^2}{2\,g\,(f+g\,x)^2}+2\,A\,B\left(\frac{\frac{g\left(\frac{a}{b}+x\right)}{\left(-f+\frac{a\,g}{b}\right)^3\left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right)}-\left(\frac{g^2\left(\frac{a}{b}+x\right)^2}{\left(-f+\frac{a\,g}{b}\right)^4\left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right)^2}+\frac{2\,g\left(\frac{a}{b}+x\right)}{\left(-f+\frac{a\,g}{b}\right)^3\left(1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right)}\right)\text{Log}\left[\frac{a}{b}+x\right]-\frac{\text{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right]}{\left(-f+\frac{a\,g}{b}\right)^2}}{g}-\right.$$
$$\frac{\frac{g\left(\frac{c}{d}+x\right)}{\left(-f+\frac{c\,g}{d}\right)^3\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right)}-\left(\frac{g^2\left(\frac{c}{d}+x\right)^2}{\left(-f+\frac{c\,g}{d}\right)^4\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right)^2}+\frac{2\,g\left(\frac{c}{d}+x\right)}{\left(-f+\frac{c\,g}{d}\right)^3\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right)}\right)\text{Log}\left[\frac{c}{d}+x\right]-\frac{\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right]}{\left(-f+\frac{c\,g}{d}\right)^2}}{g}-$$
$$\left.\frac{-2\,\text{Log}\left[\frac{a}{b}+x\right]+2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a^2\,e}{(c+d\,x)^2}+\frac{2\,a\,b\,e\,x}{(c+d\,x)^2}+\frac{b^2\,e\,x^2}{(c+d\,x)^2}\right]}{2\,g\,(f+g\,x)^2}\right)+$$

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

$$\left.\left.\frac{\frac{g\left(\frac{c}{d}+x\right)}{\left(-f+\frac{c g}{d}\right)^3\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right)}-\left(\frac{g^2\left(\frac{c}{d}+x\right)^2}{\left(-f+\frac{c g}{d}\right)^4\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right)^2}+\frac{2 g\left(\frac{c}{d}+x\right)}{\left(-f+\frac{c g}{d}\right)^3\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right)}\right)\text{Log}\left[\frac{c}{d}+x\right]-\frac{\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]}{\left(-f+\frac{c g}{d}\right)^2}}{g}\right)\right.$$

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

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

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

$$\frac{1}{g}4\left(-\frac{1}{2}\left(\frac{g^2\left(\frac{c}{d}+x\right)^2}{\left(-f+\frac{c g}{d}\right)^4\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right)^2}+\frac{2 g\left(\frac{c}{d}+x\right)}{\left(-f+\frac{c g}{d}\right)^3\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right)}\right)\text{Log}\left[\frac{c}{d}+x\right]^2+\frac{\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]}{\left(-f+\frac{c g}{d}\right)^2}+\right.$$

$$\left.\text{Log}\left[\frac{c}{d}+x\right]\left(\frac{g\left(\frac{c}{d}+x\right)}{\left(-f+\frac{c g}{d}\right)^3\left(1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right)}-\frac{\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]}{\left(-f+\frac{c g}{d}\right)^2}\right)-\frac{\text{PolyLog}\left[2,\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]}{\left(-f+\frac{c g}{d}\right)^2}\right)-$$

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

$$\left(\mathrm{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right] - \mathrm{Log}\left[-\frac{d\,(f+g\,x)}{-d\,f+c\,g}\right]\right) + \mathrm{Log}\left[\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right] \mathrm{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right] \left(-\mathrm{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right] + \mathrm{Log}\left[-\frac{d\,(f+g\,x)}{-d\,f+c\,g}\right]\right) +$$

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

$$\left(\mathrm{Log}\left[\frac{c}{d}+x\right] - \mathrm{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\right) \mathrm{PolyLog}\left[2, -\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right] + \left(\mathrm{Log}\left[\frac{a}{b}+x\right] + \mathrm{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\right)$$

$$\mathrm{PolyLog}\left[2, \frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right] + \mathrm{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right] \left(\mathrm{PolyLog}\left[2, \frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right] - \mathrm{PolyLog}\left[2, -\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\right) -$$

$$\mathrm{PolyLog}\left[3, -\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right] - \mathrm{PolyLog}\left[3, \frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right] - \mathrm{PolyLog}\left[3, \frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right] + \mathrm{PolyLog}\left[3, -\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\Bigg)\Bigg) +$$

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

$$\frac{1}{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)} 2\,b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right) \left(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)} + \frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)$$

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

$$\Bigg(-\frac{(b\,f-a\,g)\,\left(\frac{2\,a\,b\,x}{(b\,f-a\,g)^2} + \frac{2\,a^2\,b\,(f+g\,x)}{(b\,f-a\,g)^3}\right)}{b\,(f+g\,x)} + \frac{(b\,f-a\,g)\,x\,\left(\frac{b\,x}{b\,f-a\,g} + \frac{a\,b\,(f+g\,x)}{(b\,f-a\,g)^2}\right)}{b\,(f+g\,x)^2} + \frac{a\,\left(\frac{b\,x}{b\,f-a\,g} + \frac{a\,b\,(f+g\,x)}{(b\,f-a\,g)^2}\right)}{b\,(f+g\,x)} -$$

$$\frac{(-d f+c g)\left(\frac{2 c d x}{(-d f+c g)^2}-\frac{2 c^2 d (f+g x)}{(-d f+c g)^3}\right)}{d (f+g x)}+\frac{(-d f+c g) x \left(-\frac{d x}{-d f+c g}+\frac{c d (f+g x)}{(-d f+c g)^2}\right)}{d (f+g x)^2}-\frac{c\left(-\frac{d x}{-d f+c g}+\frac{c d (f+g x)}{(-d f+c g)^2}\right)}{d (f+g x)}\Bigg) \text{Log}\left[\frac{d g \left(\frac{c}{d}+x\right)}{-d f+c g}\right] \text{Log}\Bigg[$$

$$-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\Bigg]+\frac{1}{2}\Bigg(\frac{(b f-a g)\left(\frac{2 a b x}{(b f-a g)^2}+\frac{2 a^2 b (f+g x)}{(b f-a g)^3}\right)}{b (f+g x)}-\frac{(b f-a g) x\left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)^2}-\frac{a\left(\frac{b x}{b f-a g}+\frac{a b (f+g x)}{(b f-a g)^2}\right)}{b (f+g x)}+$$

$$\frac{b(-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{2 c(-b c+a d) x}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}-\frac{2 c^2(-b c+a d)(f+g x)}{b(-d f+c g)^3\left(\frac{a}{b}+x\right)}\right)}{(-b c+a d)(f+g x)}-\frac{b(-d f+c g) x\left(\frac{a}{b}+x\right)\left(-\frac{(-b c+a d) x}{b(-d f+c g)\left(\frac{a}{b}+x\right)}+\frac{c(-b c+a d)(f+g x)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}\right)}{(-b c+a d)(f+g x)^2}+$$

$$\frac{b c\left(\frac{a}{b}+x\right)\left(-\frac{(-b c+a d) x}{b(-d f+c g)\left(\frac{a}{b}+x\right)}+\frac{c(-b c+a d)(f+g x)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}\right)}{(-b c+a d)(f+g x)}\Bigg) \text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]^2+2\Bigg(-\frac{(b f-a g)\left(\frac{b x}{b f-a g}+\frac{a b(f+g x)}{(b f-a g)^2}\right)}{b(f+g x)}-$$

$$\frac{(-d f+c g)\left(-\frac{d x}{-d f+c g}+\frac{c d(f+g x)}{(-d f+c g)^2}\right)}{d(f+g x)}\Bigg)\Bigg(-\frac{b(-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right) \text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d(b f-a g)\left(\frac{c}{d}+x\right)}+$$

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]}{d g\left(\frac{c}{d}+x\right)}\Bigg)+\frac{1}{d g\left(\frac{c}{d}+x\right)}(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)$$

$$\Bigg(\Bigg(\frac{(b f-a g)\left(\frac{b x}{b f-a g}+\frac{a b(f+g x)}{(b f-a g)^2}\right)}{b(f+g x)}+\frac{(-d f+c g)\left(-\frac{d x}{-d f+c g}+\frac{c d(f+g x)}{(-d f+c g)^2}\right)}{d(f+g x)}\Bigg)\left(-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\right)+$$

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\left(\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{d(f+g x)}{-d f+c g}\right]\right)}{d g\left(\frac{c}{d}+x\right)}\Bigg)+\frac{1}{2}\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]$$

$$\Bigg(\frac{1}{d g \left(\frac{c}{d}+x\right)} 2 \left(-d f+c g\right) \left(-\frac{c d g \left(\frac{c}{d}+x\right)}{\left(-d f+c g\right)^2}+\frac{d \left(\frac{c}{d}+x\right)}{-d f+c g}\right) \left(\frac{\left(b f-a g\right) \left(\frac{b x}{b f-a g}+\frac{a b \left(f+g x\right)}{\left(b f-a g\right)^2}\right)}{b \left(f+g x\right)}+\frac{\left(-d f+c g\right) \left(-\frac{d x}{-d f+c g}+\frac{c d \left(f+g x\right)}{\left(-d f+c g\right)^2}\right)}{d \left(f+g x\right)}\right)+$$

$$\Bigg(\frac{\left(b f-a g\right) \left(\frac{2 a b x}{\left(b f-a g\right)^2}+\frac{2 a^2 b \left(f+g x\right)}{\left(b f-a g\right)^3}\right)}{b \left(f+g x\right)}-\frac{\left(b f-a g\right) x \left(\frac{b x}{b f-a g}+\frac{a b \left(f+g x\right)}{\left(b f-a g\right)^2}\right)}{b \left(f+g x\right)^2}-\frac{a \left(\frac{b x}{b f-a g}+\frac{a b \left(f+g x\right)}{\left(b f-a g\right)^2}\right)}{b \left(f+g x\right)}+$$

$$\frac{\left(-d f+c g\right) \left(\frac{2 c d x}{\left(-d f+c g\right)^2}-\frac{2 c^2 d \left(f+g x\right)}{\left(-d f+c g\right)^3}\right)}{d \left(f+g x\right)}-\frac{\left(-d f+c g\right) x \left(-\frac{d x}{-d f+c g}+\frac{c d \left(f+g x\right)}{\left(-d f+c g\right)^2}\right)}{d \left(f+g x\right)^2}+\frac{c \left(-\frac{d x}{-d f+c g}+\frac{c d \left(f+g x\right)}{\left(-d f+c g\right)^2}\right)}{d \left(f+g x\right)}\Bigg) \Bigg(-2 \text{Log}\left[\frac{a}{b}+x\right]+$$

$$\text{Log}\left[\frac{d g \left(\frac{c}{d}+x\right)}{-d f+c g}\right]\Bigg)+\left(\frac{\left(-d f+c g\right) \left(\frac{2 c^2 d g \left(\frac{c}{d}+x\right)}{\left(-d f+c g\right)^3}-\frac{2 c d \left(\frac{c}{d}+x\right)}{\left(-d f+c g\right)^2}\right)}{d g \left(\frac{c}{d}+x\right)}+\frac{c \left(-\frac{c d g \left(\frac{c}{d}+x\right)}{\left(-d f+c g\right)^2}+\frac{d \left(\frac{c}{d}+x\right)}{-d f+c g}\right)}{d g \left(\frac{c}{d}+x\right)}-\frac{\left(-d f+c g\right) \left(-\frac{c d g \left(\frac{c}{d}+x\right)}{\left(-d f+c g\right)^2}+\frac{d \left(\frac{c}{d}+x\right)}{-d f+c g}\right)}{d g^2 \left(\frac{c}{d}+x\right)}\right)$$

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

$$\frac{\left(-d f+c g\right) \left(-\frac{c d g \left(\frac{c}{d}+x\right)}{\left(-d f+c g\right)^2}+\frac{d \left(\frac{c}{d}+x\right)}{-d f+c g}\right)}{d g^2 \left(\frac{c}{d}+x\right)}\Bigg) \left(-2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d g \left(\frac{c}{d}+x\right)}{-d f+c g}\right]\right) \left(\text{Log}\left[\frac{b \left(f+g x\right)}{b f-a g}\right]-\text{Log}\left[-\frac{d \left(f+g x\right)}{-d f+c g}\right]\right)+$$

$$\Bigg(-\frac{2 b \left(-d f+c g\right)^2 \left(\frac{a}{b}+x\right) \left(-\frac{c d g \left(\frac{c}{d}+x\right)}{\left(-d f+c g\right)^2}+\frac{d \left(\frac{c}{d}+x\right)}{-d f+c g}\right) \left(\frac{c d \left(b f-a g\right) \left(\frac{c}{d}+x\right)}{b \left(-d f+c g\right)^2 \left(\frac{a}{b}+x\right)}+\frac{a d \left(\frac{c}{d}+x\right)}{b \left(-d f+c g\right) \left(\frac{a}{b}+x\right)}\right)}{d^2 g \left(b f-a g\right) \left(\frac{c}{d}+x\right)^2}+$$

$$\Bigg(-\frac{b \left(-d f+c g\right) \left(\frac{a}{b}+x\right) \left(-\frac{2 c^2 d \left(b f-a g\right) \left(\frac{c}{d}+x\right)}{b \left(-d f+c g\right)^3 \left(\frac{a}{b}+x\right)}-\frac{2 a c d \left(\frac{c}{d}+x\right)}{b \left(-d f+c g\right)^2 \left(\frac{a}{b}+x\right)}\right)}{d \left(b f-a g\right) \left(\frac{c}{d}+x\right)}-\frac{b c \left(\frac{a}{b}+x\right) \left(\frac{c d \left(b f-a g\right) \left(\frac{c}{d}+x\right)}{b \left(-d f+c g\right)^2 \left(\frac{a}{b}+x\right)}+\frac{a d \left(\frac{c}{d}+x\right)}{b \left(-d f+c g\right) \left(\frac{a}{b}+x\right)}\right)}{d \left(b f-a g\right) \left(\frac{c}{d}+x\right)}-$$

$$\frac{a b (-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d (b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)}{d(b f-a g)^2\left(\frac{c}{d}+x\right)}\Bigg) \text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]+\Bigg(\frac{(-d f+c g)\left(\frac{2 c^2 d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^3}-\frac{2 c d\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}\right)}{d g\left(\frac{c}{d}+x\right)}+$$

$$\frac{c\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)}{d g\left(\frac{c}{d}+x\right)}-\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)}{d g^2\left(\frac{c}{d}+x\right)}\Bigg)\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\Bigg)$$

$$\left(-\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]+\text{Log}\left[-\frac{d(f+g x)}{-d f+c g}\right]\right)+\frac{1}{2}\Bigg(\frac{2 b^2(-d f+c g)^2\left(\frac{a}{b}+x\right)^2\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)^2}{d^2(b f-a g)^2\left(\frac{c}{d}+x\right)^2}-$$

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

$$\frac{2 b c\left(\frac{a}{b}+x\right)\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]}{d(b f-a g)\left(\frac{c}{d}+x\right)}-$$

$$\frac{2 a b(-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]}{d(b f-a g)^2\left(\frac{c}{d}+x\right)}\Bigg)\Bigg(\text{Log}\left[\frac{-b c+a d}{b d\left(\frac{a}{b}+x\right)}\right]+$$

$$\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{(-b c+a d)(f+g x)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\Bigg)+\frac{(b f-a g)^2\left(-\frac{a b g\left(\frac{a}{b}+x\right)}{(b f-a g)^2}-\frac{b\left(\frac{a}{b}+x\right)}{b f-a g}\right)^2\text{Log}\left[1+\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]}{b^2 g^2\left(\frac{a}{b}+x\right)^2}+$$

$$\frac{2(-d f+c g)\left(-\frac{a b g\left(\frac{a}{b}+x\right)}{(b f-a g)^2}-\frac{b\left(\frac{a}{b}+x\right)}{b f-a g}\right)\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)\text{Log}\left[1+\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]}{d g\left(\frac{c}{d}+x\right)}+$$

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

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

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

$$(2\,b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)\,\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\,\left(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)$$

$$\text{Log}\left[1-\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right])\Big/\left(d^2\,g\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)^2\right)+\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\right)$$

$$(-\frac{(-d\,f+c\,g)\,\left(\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}-\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\,\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)}{d\,g\,\left(\frac{c}{d}+x\right)\,\left(1-\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)}-\frac{(-d\,f+c\,g)\,\left(\frac{2\,c^2\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^3}-\frac{2\,c\,d\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}\right)\,\text{Log}\left[1-\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]}{d\,g\,\left(\frac{c}{d}+x\right)}-$$

$$\frac{c\,\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\,\text{Log}\left[1-\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]}{d\,g\,\left(\frac{c}{d}+x\right)}+\frac{(-d\,f+c\,g)\,\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\,\text{Log}\left[1-\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]}{d\,g^2\,\left(\frac{c}{d}+x\right)})+$$

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

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

$$\left(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)\Bigg)\Bigg/\left(d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)\left(1+\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)\right)\Bigg)-$$

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

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

$$\frac{a\,b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)\left(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)\mathrm{Log}\left[1+\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]}{d\,(b\,f-a\,g)^2\,\left(\frac{c}{d}+x\right)}\Bigg)+$$

$$\frac{(b\,f-a\,g)\left(-\frac{2\,a^2\,b\,g\,\left(\frac{a}{b}+x\right)}{(b\,f-a\,g)^3}-\frac{2\,a\,b\,\left(\frac{a}{b}+x\right)}{(b\,f-a\,g)^2}\right)\mathrm{PolyLog}\left[2,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right]}{b\,g\,\left(\frac{a}{b}+x\right)}-\frac{a\left(-\frac{a\,b\,g\,\left(\frac{a}{b}+x\right)}{(b\,f-a\,g)^2}-\frac{b\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right)\mathrm{PolyLog}\left[2,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right]}{b\,g\,\left(\frac{a}{b}+x\right)}-$$

$$\frac{(b\,f-a\,g)\left(-\frac{a\,b\,g\,\left(\frac{a}{b}+x\right)}{(b\,f-a\,g)^2}-\frac{b\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right)\mathrm{PolyLog}\left[2,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right]}{b\,g^2\,\left(\frac{a}{b}+x\right)}+\Bigg(\frac{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)\left(-\frac{2\,c^2\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^3\,\left(\frac{a}{b}+x\right)}-\frac{2\,a\,c\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}+$$

$$\frac{b\,c\,\left(\frac{a}{b}+x\right)\left(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}+\frac{a\,b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)\left(\frac{c\,d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^2\,\left(\frac{a}{b}+x\right)}+\frac{a\,d\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right)}{d\,(b\,f-a\,g)^2\,\left(\frac{c}{d}+x\right)}\Bigg)\,\mathrm{PolyLog}\Big[2,$$

$$-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\Big]-\frac{(-d\,f+c\,g)\left(\frac{2\,c^2\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^3}-\frac{2\,c\,d\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}\right)\mathrm{PolyLog}\left[2,\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]}{d\,g\,\left(\frac{c}{d}+x\right)}-\frac{c\left(-\frac{c\,d\,g\,\left(\frac{c}{d}+x\right)}{(-d\,f+c\,g)^2}+\frac{d\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right)\mathrm{PolyLog}\left[2,\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]}{d\,g\,\left(\frac{c}{d}+x\right)}+$$

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

$$\frac{b c\left(\frac{a}{b}+x\right)\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)}{d(b f-a g)\left(\frac{c}{d}+x\right)}-\frac{a b(-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)}{d(b f-a g)^2\left(\frac{c}{d}+x\right)}\Bigg)\text{PolyLog}\Big[2,$$

$$\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\Big]+\Bigg(-\frac{b(-d f+c g)\left(\frac{a}{b}+x\right)\left(-\frac{2 c^2 d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^3\left(\frac{a}{b}+x\right)}-\frac{2 a c d\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}\right)}{d(b f-a g)\left(\frac{c}{d}+x\right)}-\frac{b c\left(\frac{a}{b}+x\right)\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)}{d(b f-a g)\left(\frac{c}{d}+x\right)}-$$

$$\frac{a b(-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)}{d(b f-a g)^2\left(\frac{c}{d}+x\right)}\Bigg)\left(\text{PolyLog}\left[2,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]-\text{PolyLog}\left[2,-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)-$$

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

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

$$\frac{a b(-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)\text{PolyLog}\left[2,-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]}{d(b f-a g)^2\left(\frac{c}{d}+x\right)}\Bigg)-$$

$$\frac{1}{g^2}2\Bigg(\frac{(b f-a g)\left(\frac{b x}{b f-a g}+\frac{a b(f+g x)}{(b f-a g)^2}\right)\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]}{b(f+g x)}+\frac{1}{2}\left(\frac{(b f-a g)\left(\frac{b x}{b f-a g}+\frac{a b(f+g x)}{(b f-a g)^2}\right)}{b(f+g x)}+\frac{(-d f+c g)\left(-\frac{d x}{-d f+c g}+\frac{c d(f+g x)}{(-d f+c g)^2}\right)}{d(f+g x)}\right)$$

$$\text{Log}\left[\frac{d\,g\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]\left(-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d\,g\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]\right)+$$

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

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

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

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

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

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

$$\frac{1}{d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)\left(\frac{c\,d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)^{2}\left(\frac{a}{b}+x\right)}+\frac{a\,d\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right)$$

$$\text{Log}\left[-\frac{d\,(b\,f-a\,g)\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right]\left(\text{Log}\left[\frac{-b\,c+a\,d}{b\,d\left(\frac{a}{b}+x\right)}\right]+\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-\text{Log}\left[-\frac{(-b\,c+a\,d)\,(f+g\,x)}{b\,(-d\,f+c\,g)\left(\frac{a}{b}+x\right)}\right]\right)+$$

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

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

$$(-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right)\operatorname{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]$$

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

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

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\operatorname{PolyLog}\left[2,\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d g\left(\frac{c}{d}+x\right)}-$$

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

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

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

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

$$\operatorname{Log}\left[-\frac{d (f+g x)}{-d f+c g}\right]\Bigg)+\operatorname{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\operatorname{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(-\operatorname{Log}\left[\frac{b (f+g x)}{b f-a g}\right]+\operatorname{Log}\left[-\frac{d (f+g x)}{-d f+c g}\right]\right)+\frac{1}{2}$$

$$\operatorname{Log}\left[-\frac{d (b f-a g)\left(\frac{c}{d}+x\right)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]^2\left(\operatorname{Log}\left[\frac{-b c+a d}{b d\left(\frac{a}{b}+x\right)}\right]+\operatorname{Log}\left[\frac{b (f+g x)}{b f-a g}\right]-\operatorname{Log}\left[-\frac{(-b c+a d)(f+g x)}{b (-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)+$$

$$\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\right)\text{PolyLog}\left[2,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\right]+\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\right)$$

$$\text{PolyLog}\left[2,\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]+\text{Log}\left[-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\left(\text{PolyLog}\left[2,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]-\text{PolyLog}\left[2,-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\right)-\text{PolyLog}\Big[$$

$$3,-\frac{b\,g\,\left(\frac{a}{b}+x\right)}{b\,f-a\,g}\Big]-\text{PolyLog}\left[3,\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]-\text{PolyLog}\left[3,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]+\text{PolyLog}\left[3,-\frac{d\,(b\,f-a\,g)\,\left(\frac{c}{d}+x\right)}{b\,(-d\,f+c\,g)\,\left(\frac{a}{b}+x\right)}\right]\Bigg)\Bigg)+$$

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

$$\left.\frac{(-d\,f+c\,g)\,\left(-\frac{d\,x}{-d\,f+c\,g}+\frac{c\,d\,(f+g\,x)}{(-d\,f+c\,g)^2}\right)}{d\,(f+g\,x)}\right)\text{Log}\left[\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]\left(-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d\,g\,\left(\frac{c}{d}+x\right)}{-d\,f+c\,g}\right]\right)+$$

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

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

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

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

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

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(-\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]+\text{Log}\left[-\frac{d(f+g x)}{-d f+c g}\right]\right)}{d g\left(\frac{c}{d}+x\right)}-\frac{1}{d(b f-a g)\left(\frac{c}{d}+x\right)}b(-d f+c g)$$

$$\left(\frac{a}{b}+x\right)\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(\text{Log}\left[\frac{-b c+a d}{b d\left(\frac{a}{b}+x\right)}\right]+\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]-\right.$$

$$\left.\text{Log}\left[-\frac{(-b c+a d)(f+g x)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)+\frac{(b f-a g)\left(-\frac{a b g\left(\frac{a}{b}+x\right)}{(b f-a g)^2}-\frac{b\left(\frac{a}{b}+x\right)}{b f-a g}\right)\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)\text{Log}\left[1+\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]}{b g\left(\frac{a}{b}+x\right)}-$$

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)\text{Log}\left[1-\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d g\left(\frac{c}{d}+x\right)}-\frac{1}{d(b f-a g)\left(\frac{c}{d}+x\right)}$$

$$b(-d f+c g)\left(\frac{a}{b}+x\right)\left(\frac{c d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right)\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\text{Log}\Big[$$

$$1+\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\Big]+\frac{(b f-a g)\left(-\frac{a b g\left(\frac{a}{b}+x\right)}{(b f-a g)^2}-\frac{b\left(\frac{a}{b}+x\right)}{b f-a g}\right)\text{PolyLog}\left[2,-\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]}{b g\left(\frac{a}{b}+x\right)}+$$

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

$$\frac{(-d f+c g)\left(-\frac{c d g\left(\frac{c}{d}+x\right)}{(-d f+c g)^2}+\frac{d\left(\frac{c}{d}+x\right)}{-d f+c g}\right)\text{PolyLog}\left[2,\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]}{d g\left(\frac{c}{d}+x\right)}-$$

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

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

$$\frac{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)\left(\frac{c d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)^2\left(\frac{a}{b}+x\right)}+\frac{a d\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right)\text{PolyLog}\left[2,-\frac{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right]}{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}\Bigg)-$$

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

$$\left(\text{Log}\left[\frac{b\,(f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{d\,(f+g x)}{-d f+c g}\right]\right)+\text{Log}\left[\frac{d g\,\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\text{Log}\left[-\frac{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right]\left(-\text{Log}\left[\frac{b\,(f+g x)}{b f-a g}\right]+\text{Log}\left[-\frac{d\,(f+g x)}{-d f+c g}\right]\right)+$$

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

$$\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right]\right)\text{PolyLog}\left[2,-\frac{b g\,\left(\frac{a}{b}+x\right)}{b f-a g}\right]+\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right]\right)\text{PolyLog}\Bigg[$$

$$2,\frac{d g\,\left(\frac{c}{d}+x\right)}{-d f+c g}\Bigg]+\text{Log}\left[-\frac{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right]\left(\text{PolyLog}\left[2,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]-\text{PolyLog}\left[2,-\frac{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right]\right)-$$

$$\text{PolyLog}\left[3,-\frac{b g\,\left(\frac{a}{b}+x\right)}{b f-a g}\right]-\text{PolyLog}\left[3,\frac{d g\,\left(\frac{c}{d}+x\right)}{-d f+c g}\right]-\text{PolyLog}\left[3,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]+\text{PolyLog}\left[3,-\frac{d\,(b f-a g)\,\left(\frac{c}{d}+x\right)}{b\,(-d f+c g)\,\left(\frac{a}{b}+x\right)}\right]\Bigg)\Bigg)\Bigg)$$

Problem 279: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[\frac{e\,(a+b x)^2}{(c+d x)^2}\right]\right)^2}{(f+g x)^4}\,dx$$

Optimal (type 4, 724 leaves, 12 steps) :

$$\frac{4 B^2 (b c-a d)^2 g^2 (c+d x)}{3 (b f-a g)^2 (d f-c g)^3 (f+g x)}-\frac{2 B (b c-a d) g^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 (b f-a g) (d f-c g)^3 (f+g x)^2}+$$

$$\frac{4 B (b c-a d) g (3 b d f-b c g-2 a d g) (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)}{3 (b f-a g)^3 (d f-c g)^2 (f+g x)}+\frac{b^3 \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{3 g (b f-a g)^3}-\frac{\left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{3 g (f+g x)^3}+$$

$$\frac{4 B^2 (b c-a d)^3 g^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 (b f-a g)^3 (d f-c g)^3}-\frac{4 B^2 (b c-a d)^3 g^2 \text{Log}\left[\frac{f+g x}{c+d x}\right]}{3 (b f-a g)^3 (d f-c g)^3}+\frac{8 B^2 (b c-a d)^2 g (3 b d f-b c g-2 a d g) \text{Log}\left[\frac{f+g x}{c+d x}\right]}{3 (b f-a g)^3 (d f-c g)^3}+\frac{1}{3 (b f-a g)^3 (d f-c g)^3}$$

$$4 B (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) \left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right) \text{Log}\left[1-\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]+$$

$$\frac{8 B^2 (b c-a d) \left(a^2 d^2 g^2-a b d g (3 d f-c g)+b^2 \left(3 d^2 f^2-3 c d f g+c^2 g^2\right)\right) \text{PolyLog}\left[2,\frac{(d f-c g) (a+b x)}{(b f-a g) (c+d x)}\right]}{3 (b f-a g)^3 (d f-c g)^3}$$

Result (type 4, 55 173 leaves) : Display of huge result suppressed!

Problem 280: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[\frac{e (a+b x)^2}{(c+d x)^2}\right]\right)^2}{(f+g x)^5} \, dx$$

Optimal (type 4, 1154 leaves, 15 steps) :

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

Result (type 4, 142 956 leaves) : Display of huge result suppressed!

Problem 305: Result more than twice size of optimal antiderivative.

$$\int \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 \, dx$$

Optimal (type 4, 137 leaves, 6 steps) :

$$\frac{2 B (b c-a d) n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b d}+$$
$$\frac{(a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{b}+\frac{2 B^2 (b c-a d) n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b d}$$

Result (type 4, 327 leaves) :

$$-\frac{1}{b\,d}\Big(2\,a\,A\,B\,d\,n+2\,a\,B^2\,d\,n^2-A^2\,b\,d\,x+a\,B^2\,d\,n^2\,\mathrm{Log}[a+b\,x]^2+$$
$$2\,A\,b\,B\,c\,n\,\mathrm{Log}[c+d\,x]+2\,a\,B^2\,d\,n^2\,\mathrm{Log}[c+d\,x]+b\,B^2\,c\,n^2\,\mathrm{Log}[c+d\,x]^2+2\,a\,B^2\,d\,n\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-$$
$$2\,A\,b\,B\,d\,x\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+2\,b\,B^2\,c\,n\,\mathrm{Log}[c+d\,x]\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-b\,B^2\,d\,x\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2-$$
$$2\,B\,n\,\mathrm{Log}[a+b\,x]\left(b\,B\,c\,n\,\mathrm{Log}[c+d\,x]+B\,(-b\,c+a\,d)\,n\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+a\,d\,\left(A+B\,n+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\right)+$$
$$2\,B^2\,(b\,c-a\,d)\,n^2\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\Big)$$

Problem 306: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{g+h\,x}\,dx$$

Optimal (type 4, 301 leaves, 10 steps):

$$-\frac{\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{h}+$$
$$\frac{\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2\,\mathrm{Log}\left[1-\frac{(d\,g-c\,h)\,(a+b\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{h}-\frac{2\,B\,n\,\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{h}+$$
$$\frac{2\,B\,n\,\left(A+B\,\mathrm{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\mathrm{PolyLog}\left[2,\frac{(d\,g-c\,h)\,(a+b\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{h}+\frac{2\,B^2\,n^2\,\mathrm{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{h}-\frac{2\,B^2\,n^2\,\mathrm{PolyLog}\left[3,\frac{(d\,g-c\,h)\,(a+b\,x)}{(b\,g-a\,h)\,(c+d\,x)}\right]}{h}$$

Result (type 4, 1082 leaves):

$$\frac{1}{h}\left(\left(A+B\left(-n\operatorname{Log}[a+b x]+n\operatorname{Log}[c+d x]+\operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)\right)^2\operatorname{Log}[g+h x]+\right.$$
$$2 B n\left(A+B\left(-n\operatorname{Log}[a+b x]+n\operatorname{Log}[c+d x]+\operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)\right)\left(\operatorname{Log}[a+b x]\operatorname{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]+\operatorname{PolyLog}\left[2,\frac{h\,(a+b x)}{-b g+a h}\right]\right)-$$
$$2 A B n\left(\operatorname{Log}[c+d x]\operatorname{Log}\left[\frac{d\,(g+h x)}{d g-c h}\right]+\operatorname{PolyLog}\left[2,\frac{h\,(c+d x)}{-d g+c h}\right]\right)-$$
$$2 B^2 n\left(-n\operatorname{Log}[a+b x]+n\operatorname{Log}[c+d x]+\operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)\left(\operatorname{Log}[c+d x]\operatorname{Log}\left[\frac{d\,(g+h x)}{d g-c h}\right]+\operatorname{PolyLog}\left[2,\frac{h\,(c+d x)}{-d g+c h}\right]\right)+$$
$$B^2 n^2\left(\operatorname{Log}[a+b x]^2\operatorname{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]+2\operatorname{Log}[a+b x]\operatorname{PolyLog}\left[2,\frac{h\,(a+b x)}{-b g+a h}\right]-2\operatorname{PolyLog}\left[3,\frac{h\,(a+b x)}{-b g+a h}\right]\right)+$$
$$B^2 n^2\left(\operatorname{Log}[c+d x]^2\operatorname{Log}\left[\frac{d\,(g+h x)}{d g-c h}\right]+2\operatorname{Log}[c+d x]\operatorname{PolyLog}\left[2,\frac{h\,(c+d x)}{-d g+c h}\right]-2\operatorname{PolyLog}\left[3,\frac{h\,(c+d x)}{-d g+c h}\right]\right)-$$
$$2 B^2 n^2\left(\operatorname{Log}[a+b x]\operatorname{Log}[c+d x]\operatorname{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]+\frac{1}{2}\operatorname{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right]\left(-2\operatorname{Log}[a+b x]+\operatorname{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right]\right)\right.$$
$$\left(\operatorname{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]-\operatorname{Log}\left[\frac{d\,(g+h x)}{d g-c h}\right]\right)+\operatorname{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right]\operatorname{Log}\left[\frac{(b g-a h)\,(c+d x)}{(d g-c h)\,(a+b x)}\right]\left(-\operatorname{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]+\operatorname{Log}\left[\frac{d\,(g+h x)}{d g-c h}\right]\right)+$$
$$\frac{1}{2}\operatorname{Log}\left[\frac{(b g-a h)\,(c+d x)}{(d g-c h)\,(a+b x)}\right]^2\left(\operatorname{Log}\left[\frac{-b c+a d}{d\,(a+b x)}\right]+\operatorname{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]-\operatorname{Log}\left[\frac{(-b c+a d)\,(g+h x)}{(d g-c h)\,(a+b x)}\right]\right)+$$
$$\left(\operatorname{Log}[c+d x]-\operatorname{Log}\left[\frac{(b g-a h)\,(c+d x)}{(d g-c h)\,(a+b x)}\right]\right)\operatorname{PolyLog}\left[2,\frac{h\,(a+b x)}{-b g+a h}\right]+\left(\operatorname{Log}[a+b x]+\operatorname{Log}\left[\frac{(b g-a h)\,(c+d x)}{(d g-c h)\,(a+b x)}\right]\right)\operatorname{PolyLog}\left[2,\frac{h\,(c+d x)}{-d g+c h}\right]+$$
$$\operatorname{Log}\left[\frac{(b g-a h)\,(c+d x)}{(d g-c h)\,(a+b x)}\right]\left(\operatorname{PolyLog}\left[2,\frac{b\,(c+d x)}{d\,(a+b x)}\right]-\operatorname{PolyLog}\left[2,\frac{(b g-a h)\,(c+d x)}{(d g-c h)\,(a+b x)}\right]\right)-$$
$$\left.\left.\operatorname{PolyLog}\left[3,\frac{h\,(a+b x)}{-b g+a h}\right]-\operatorname{PolyLog}\left[3,\frac{h\,(c+d x)}{-d g+c h}\right]-\operatorname{PolyLog}\left[3,\frac{b\,(c+d x)}{d\,(a+b x)}\right]+\operatorname{PolyLog}\left[3,\frac{(b g-a h)\,(c+d x)}{(d g-c h)\,(a+b x)}\right]\right)\right)$$

Problem 307: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\operatorname{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)^2}{(g+h x)^2}\,dx$$

Optimal (type 4, 208 leaves, 5 steps) :

$$\frac{(a+b x)\ (A+B \operatorname{Log}[e\ (a+b x)^n\ (c+d x)^{-n}])^2}{(b g-a h)\ (g+h x)}+\frac{2 B\ (b c-a d)\ n\ (A+B \operatorname{Log}[e\ (a+b x)^n\ (c+d x)^{-n}])\ \operatorname{Log}\left[1-\frac{(d g-c h)\ (a+b x)}{(b g-a h)\ (c+d x)}\right]}{(b g-a h)\ (d g-c h)}+\frac{2 B^2\ (b c-a d)\ n^2 \operatorname{PolyLog}\left[2,\frac{(d g-c h)\ (a+b x)}{(b g-a h)\ (c+d x)}\right]}{(b g-a h)\ (d g-c h)}$$

Result (type 4, 3460 leaves) :

$$\frac{1}{h\ (-b g+a h)\ (-d g+c h)\ (g+h x)}$$
$$\Big(-A^2 b d g^2+A^2 b c g h+a A^2 d g h-a A^2 c h^2+2 A b B d g^2 n \operatorname{Log}[a+b x]-2 A b B c g h n \operatorname{Log}[a+b x]+2 A b B d g h n x \operatorname{Log}[a+b x]-$$
$$2 A b B c h^2 n x \operatorname{Log}[a+b x]-b B^2 d g^2 n^2 \operatorname{Log}[a+b x]^2+b B^2 c g h n^2 \operatorname{Log}[a+b x]^2-b B^2 d g h n^2 x \operatorname{Log}[a+b x]^2+$$
$$b B^2 c h^2 n^2 x \operatorname{Log}[a+b x]^2-2 A b B d g^2 n \operatorname{Log}[c+d x]+2 a A B d g h n \operatorname{Log}[c+d x]-2 A b B d g h n x \operatorname{Log}[c+d x]+$$
$$2 a A B d h^2 n x \operatorname{Log}[c+d x]+2 b B^2 d g^2 n^2 \operatorname{Log}[a+b x] \operatorname{Log}[c+d x]-2 a B^2 d g h n^2 \operatorname{Log}[a+b x] \operatorname{Log}[c+d x]+$$
$$2 b B^2 d g h n^2 x \operatorname{Log}[a+b x] \operatorname{Log}[c+d x]-2 a B^2 d h^2 n^2 x \operatorname{Log}[a+b x] \operatorname{Log}[c+d x]-b B^2 d g^2 n^2 \operatorname{Log}[c+d x]^2+$$
$$a B^2 d g h n^2 \operatorname{Log}[c+d x]^2-b B^2 d g h n^2 x \operatorname{Log}[c+d x]^2+a B^2 d h^2 n^2 x \operatorname{Log}[c+d x]^2-2 b B^2 c g h n^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{h\ (c+d x)}{-d g+c h}\right]+$$
$$2 a B^2 d g h n^2 \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{h\ (c+d x)}{-d g+c h}\right]-2 b B^2 c h^2 n^2 x \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{h\ (c+d x)}{-d g+c h}\right]+2 a B^2 d h^2 n^2 x \operatorname{Log}[a+b x] \operatorname{Log}\left[\frac{h\ (c+d x)}{-d g+c h}\right]+$$
$$b B^2 c g h n^2 \operatorname{Log}\left[\frac{h\ (c+d x)}{-d g+c h}\right]^2-a B^2 d g h n^2 \operatorname{Log}\left[\frac{h\ (c+d x)}{-d g+c h}\right]^2+b B^2 c h^2 n^2 x \operatorname{Log}\left[\frac{h\ (c+d x)}{-d g+c h}\right]^2-a B^2 d h^2 n^2 x \operatorname{Log}\left[\frac{h\ (c+d x)}{-d g+c h}\right]^2-$$
$$2 b B^2 c g h n^2 \operatorname{Log}\left[\frac{-b c+a d}{d\ (a+b x)}\right] \operatorname{Log}\left[\frac{(b g-a h)\ (c+d x)}{(d g-c h)\ (a+b x)}\right]+2 a B^2 d g h n^2 \operatorname{Log}\left[\frac{-b c+a d}{d\ (a+b x)}\right] \operatorname{Log}\left[\frac{(b g-a h)\ (c+d x)}{(d g-c h)\ (a+b x)}\right]-$$
$$2 b B^2 c h^2 n^2 x \operatorname{Log}\left[\frac{-b c+a d}{d\ (a+b x)}\right] \operatorname{Log}\left[\frac{(b g-a h)\ (c+d x)}{(d g-c h)\ (a+b x)}\right]+2 a B^2 d h^2 n^2 x \operatorname{Log}\left[\frac{-b c+a d}{d\ (a+b x)}\right] \operatorname{Log}\left[\frac{(b g-a h)\ (c+d x)}{(d g-c h)\ (a+b x)}\right]-$$
$$2 b B^2 c g h n^2 \operatorname{Log}\left[\frac{h\ (c+d x)}{-d g+c h}\right] \operatorname{Log}\left[\frac{(b g-a h)\ (c+d x)}{(d g-c h)\ (a+b x)}\right]+2 a B^2 d g h n^2 \operatorname{Log}\left[\frac{h\ (c+d x)}{-d g+c h}\right] \operatorname{Log}\left[\frac{(b g-a h)\ (c+d x)}{(d g-c h)\ (a+b x)}\right]-$$
$$2 b B^2 c h^2 n^2 x \operatorname{Log}\left[\frac{h\ (c+d x)}{-d g+c h}\right] \operatorname{Log}\left[\frac{(b g-a h)\ (c+d x)}{(d g-c h)\ (a+b x)}\right]+2 a B^2 d h^2 n^2 x \operatorname{Log}\left[\frac{h\ (c+d x)}{-d g+c h}\right] \operatorname{Log}\left[\frac{(b g-a h)\ (c+d x)}{(d g-c h)\ (a+b x)}\right]+$$
$$b B^2 c g h n^2 \operatorname{Log}\left[\frac{(b g-a h)\ (c+d x)}{(d g-c h)\ (a+b x)}\right]^2-a B^2 d g h n^2 \operatorname{Log}\left[\frac{(b g-a h)\ (c+d x)}{(d g-c h)\ (a+b x)}\right]^2+b B^2 c h^2 n^2 x \operatorname{Log}\left[\frac{(b g-a h)\ (c+d x)}{(d g-c h)\ (a+b x)}\right]^2-$$
$$a B^2 d h^2 n^2 x \operatorname{Log}\left[\frac{(b g-a h)\ (c+d x)}{(d g-c h)\ (a+b x)}\right]^2-2 A b B d g^2 \operatorname{Log}[e\ (a+b x)^n\ (c+d x)^{-n}]+2 A b B c g h \operatorname{Log}[e\ (a+b x)^n\ (c+d x)^{-n}]+$$
$$2 a A B d g h \operatorname{Log}[e\ (a+b x)^n\ (c+d x)^{-n}]-2 a A B c h^2 \operatorname{Log}[e\ (a+b x)^n\ (c+d x)^{-n}]+2 b B^2 d g^2 n \operatorname{Log}[a+b x] \operatorname{Log}[e\ (a+b x)^n\ (c+d x)^{-n}]-$$
$$2 b B^2 c g h n \operatorname{Log}[a+b x] \operatorname{Log}[e\ (a+b x)^n\ (c+d x)^{-n}]+2 b B^2 d g h n x \operatorname{Log}[a+b x] \operatorname{Log}[e\ (a+b x)^n\ (c+d x)^{-n}]-$$
$$2 b B^2 c h^2 n x \operatorname{Log}[a+b x] \operatorname{Log}[e\ (a+b x)^n\ (c+d x)^{-n}]-2 b B^2 d g^2 n \operatorname{Log}[c+d x] \operatorname{Log}[e\ (a+b x)^n\ (c+d x)^{-n}]+$$

$$2\,a\,B^2\,d\,g\,h\,n\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-2\,b\,B^2\,d\,g\,h\,n\,x\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$2\,a\,B^2\,d\,h^2\,n\,x\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-b\,B^2\,d\,g^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+$$

$$b\,B^2\,c\,g\,h\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+a\,B^2\,d\,g\,h\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2-a\,B^2\,c\,h^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2-$$

$$2\,A\,b\,B\,d\,g^2\,n\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+2\,A\,b\,B\,c\,g\,h\,n\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-2\,A\,b\,B\,d\,g\,h\,n\,x\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+2\,A\,b\,B\,c\,h^2\,n\,x\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+$$

$$2\,b\,B^2\,d\,g^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-2\,a\,B^2\,d\,g\,h\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+2\,b\,B^2\,d\,g\,h\,n^2\,x\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-$$

$$2\,a\,B^2\,d\,h^2\,n^2\,x\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-2\,b\,B^2\,d\,g^2\,n^2\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+2\,b\,B^2\,c\,g\,h\,n^2\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-$$

$$2\,b\,B^2\,d\,g\,h\,n^2\,x\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+2\,b\,B^2\,c\,h^2\,n^2\,x\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-$$

$$2\,b\,B^2\,d\,g^2\,n\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+2\,b\,B^2\,c\,g\,h\,n\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-$$

$$2\,b\,B^2\,d\,g\,h\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+2\,b\,B^2\,c\,h^2\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+$$

$$2\,A\,b\,B\,d\,g^2\,n\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-2\,a\,A\,B\,d\,g\,h\,n\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+2\,A\,b\,B\,d\,g\,h\,n\,x\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-$$

$$2\,a\,A\,B\,d\,h^2\,n\,x\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-2\,b\,B^2\,d\,g^2\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+2\,a\,B^2\,d\,g\,h\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-$$

$$2\,b\,B^2\,d\,g\,h\,n^2\,x\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+2\,a\,B^2\,d\,h^2\,n^2\,x\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+2\,b\,B^2\,d\,g^2\,n^2\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-$$

$$2\,b\,B^2\,c\,g\,h\,n^2\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+2\,b\,B^2\,d\,g\,h\,n^2\,x\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-$$

$$2\,b\,B^2\,c\,h^2\,n^2\,x\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+2\,b\,B^2\,d\,g^2\,n\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-$$

$$2\,a\,B^2\,d\,g\,h\,n\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+2\,b\,B^2\,d\,g\,h\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-$$

$$2\,a\,B^2\,d\,h^2\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+2\,B^2\,(b\,c-a\,d)\,h\,n^2\,(g+h\,x)\,\text{PolyLog}\left[2,\frac{h\,(a+b\,x)}{-b\,g+a\,h}\right]-$$

$$2\,B^2\,(b\,c-a\,d)\,h\,n^2\,(g+h\,x)\,\text{PolyLog}\left[2,\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]-2\,b\,B^2\,c\,g\,h\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]+$$

$$2\,a\,B^2\,d\,g\,h\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]-2\,b\,B^2\,c\,h^2\,n^2\,x\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]+2\,a\,B^2\,d\,h^2\,n^2\,x\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]\Bigg]\Bigg)$$

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

$$\int \frac{\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{(g+h x)^3} \, dx$$

Optimal (type 4, 393 leaves, 10 steps):

$$\frac{B (b c-a d) h n (a+b x) \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{(b g-a h)^2 (d g-c h) (g+h x)}+\frac{b^2 \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 h (b g-a h)^2}-\frac{\left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 h (g+h x)^2}+$$
$$\frac{B^2 (b c-a d)^2 h n^2 \operatorname{Log}\left[\frac{g+h x}{c+d x}\right]}{(b g-a h)^2 (d g-c h)^2}+\frac{B (b c-a d) (2 b d g-b c h-a d h) n \left(A+B \operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \operatorname{Log}\left[1-\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{(b g-a h)^2 (d g-c h)^2}+$$
$$\frac{B^2 (b c-a d) (2 b d g-b c h-a d h) n^2 \operatorname{PolyLog}\left[2,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{(b g-a h)^2 (d g-c h)^2}$$

Result (type 4, 15 422 leaves):

$$-\frac{\left(A+B \left(-n \operatorname{Log}[a+b x]+n \operatorname{Log}[c+d x]+\operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)\right)^2}{2 h (g+h x)^2}+$$
$$\frac{1}{h}B n \left(A+B \left(-n \operatorname{Log}[a+b x]+n \operatorname{Log}[c+d x]+\operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)\right)$$
$$\left(\frac{b^2 h (a+b x)}{(-b g+a h)^3 \left(1-\frac{h (a+b x)}{-b g+a h}\right)}-\left(\frac{b^2 h^2 (a+b x)^2}{(-b g+a h)^4 \left(1-\frac{h (a+b x)}{-b g+a h}\right)^2}+\frac{2 b^2 h (a+b x)}{(-b g+a h)^3 \left(1-\frac{h (a+b x)}{-b g+a h}\right)}\right) \operatorname{Log}[a+b x]-\frac{b^2 \operatorname{Log}\left[1-\frac{h (a+b x)}{-b g+a h}\right]}{(-b g+a h)^2}\right)-$$
$$\frac{A B n \left(\frac{d^2 h (c+d x)}{(-d g+c h)^3 \left(1-\frac{h (c+d x)}{-d g+c h}\right)}-\left(\frac{d^2 h^2 (c+d x)^2}{(-d g+c h)^4 \left(1-\frac{h (c+d x)}{-d g+c h}\right)^2}+\frac{2 d^2 h (c+d x)}{(-d g+c h)^3 \left(1-\frac{h (c+d x)}{-d g+c h}\right)}\right) \operatorname{Log}[c+d x]-\frac{d^2 \operatorname{Log}\left[1-\frac{h (c+d x)}{-d g+c h}\right]}{(-d g+c h)^2}\right)}{h}-\frac{1}{h}$$
$$B^2 n \left(-n \operatorname{Log}[a+b x]+n \operatorname{Log}[c+d x]+\operatorname{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)$$
$$\left(\frac{d^2 h (c+d x)}{(-d g+c h)^3 \left(1-\frac{h (c+d x)}{-d g+c h}\right)}-\left(\frac{d^2 h^2 (c+d x)^2}{(-d g+c h)^4 \left(1-\frac{h (c+d x)}{-d g+c h}\right)^2}+\frac{2 d^2 h (c+d x)}{(-d g+c h)^3 \left(1-\frac{h (c+d x)}{-d g+c h}\right)}\right) \operatorname{Log}[c+d x]-\frac{d^2 \operatorname{Log}\left[1-\frac{h (c+d x)}{-d g+c h}\right]}{(-d g+c h)^2}\right)+$$
$$\frac{1}{h}B^2 n^2 \left(-\frac{1}{2} \left(\frac{b^2 h^2 (a+b x)^2}{(-b g+a h)^4 \left(1-\frac{h (a+b x)}{-b g+a h}\right)^2}+\frac{2 b^2 h (a+b x)}{(-b g+a h)^3 \left(1-\frac{h (a+b x)}{-b g+a h}\right)}\right) \operatorname{Log}[a+b x]^2+\frac{b^2 \operatorname{Log}\left[1-\frac{h (a+b x)}{-b g+a h}\right]}{(-b g+a h)^2}+\right.$$
$$\operatorname{Log}[a+b x] \left(\frac{b^2 h (a+b x)}{(-b g+a h)^3 \left(1-\frac{h (a+b x)}{-b g+a h}\right)}-\frac{b^2 \operatorname{Log}\left[1-\frac{h (a+b x)}{-b g+a h}\right]}{(-b g+a h)^2}-\frac{b^2 \operatorname{PolyLog}\left[2,\frac{h (a+b x)}{-b g+a h}\right]}{(-b g+a h)^2}\right)+$$

$$\frac{1}{h}B^2 n^2 \left(-\frac{1}{2}\left(\frac{d^2 h^2 (c+d x)^2}{(-d g+c h)^4 \left(1-\frac{h (c+d x)}{-d g+c h}\right)^2}+\frac{2 d^2 h (c+d x)}{(-d g+c h)^3 \left(1-\frac{h (c+d x)}{-d g+c h}\right)}\right) \text{Log}[c+d x]^2+\frac{d^2 \text{Log}\left[1-\frac{h (c+d x)}{-d g+c h}\right]}{(-d g+c h)^2}+\right.$$

$$\left.\text{Log}[c+d x]\left(\frac{d^2 h (c+d x)}{(-d g+c h)^3 \left(1-\frac{h (c+d x)}{-d g+c h}\right)}-\frac{d^2 \text{Log}\left[1-\frac{h (c+d x)}{-d g+c h}\right]}{(-d g+c h)^2}\right)-\frac{d^2 \text{PolyLog}\left[2,\frac{h (c+d x)}{-d g+c h}\right]}{(-d g+c h)^2}\right)-$$

$$\frac{1}{g^2} B^2 n^2 \left(\frac{1}{h} 2 \left(\text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]+\frac{1}{2} \text{Log}\left[\frac{h (c+d x)}{-d g+c h}\right] \left(-2 \text{Log}[a+b x]+\text{Log}\left[\frac{h (c+d x)}{-d g+c h}\right]\right)\right.\right.$$

$$\left(\text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]-\text{Log}\left[-\frac{d (g+h x)}{-d g+c h}\right]\right)+\text{Log}\left[\frac{h (c+d x)}{-d g+c h}\right] \text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right] \left(-\text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]+\text{Log}\left[-\frac{d (g+h x)}{-d g+c h}\right]\right)+$$

$$\frac{1}{2} \text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]^2 \left(\text{Log}\left[\frac{-b c+a d}{d (a+b x)}\right]+\text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]-\text{Log}\left[-\frac{(-b c+a d) (g+h x)}{(-d g+c h) (a+b x)}\right]\right)+$$

$$\left(\text{Log}[c+d x]-\text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]\right) \text{PolyLog}\left[2,-\frac{h (a+b x)}{b g-a h}\right]+\left(\text{Log}[a+b x]+\text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]\right)$$

$$\text{PolyLog}\left[2,\frac{h (c+d x)}{-d g+c h}\right]+\text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right] \left(\text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]-\text{PolyLog}\left[2,-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]\right)-$$

$$\left.\text{PolyLog}\left[3,-\frac{h (a+b x)}{b g-a h}\right]-\text{PolyLog}\left[3,\frac{h (c+d x)}{-d g+c h}\right]-\text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]+\text{PolyLog}\left[3,-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]\right)+$$

$$h^2 \left(\frac{1}{h} \left(\left(\frac{(b g-a h) \left(\frac{2 a b x}{(b g-a h)^2}+\frac{2 a^2 b (g+h x)}{(b g-a h)^3}\right)}{b (g+h x)}-\frac{(b g-a h) x \left(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\right)}{b (g+h x)^2}-\frac{a \left(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\right)}{b (g+h x)}\right) \text{Log}[a+b x] \text{Log}[c+d x]-\right.\right.$$

$$\frac{1}{(b g-a h) (c+d x)} 2 (-d g+c h) (a+b x) \left(\frac{c (b g-a h) (c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h) (a+b x)}\right) \left(\frac{(b g-a h) \left(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\right)}{b (g+h x)}+\right.$$

$$\left.\frac{(-d g+c h) (a+b x) \left(-\frac{(-b c+a d) x}{(-d g+c h) (a+b x)}+\frac{c (-b c+a d) (g+h x)}{(-d g+c h)^2 (a+b x)}\right)}{(-b c+a d) (g+h x)}\right) \text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]+\left(-\frac{(b g-a h) \left(\frac{2 a b x}{(b g-a h)^2}+\frac{2 a^2 b (g+h x)}{(b g-a h)^3}\right)}{b (g+h x)}+\right.$$

$$\frac{(b g-a h)\, x \left(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\right)}{b (g+h x)^2}+\frac{a \left(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\right)}{b (g+h x)}-\frac{(-d g+c h) \left(\frac{2 c d x}{(-d g+c h)^2}-\frac{2 c^2 d (g+h x)}{(-d g+c h)^3}\right)}{d (g+h x)}+\frac{(-d g+c h)\, x \left(-\frac{d x}{-d g+c h}+\frac{c d (g+h x)}{(-d g+c h)^2}\right)}{d (g+h x)^2}-$$

$$\frac{c \left(-\frac{d x}{-d g+c h}+\frac{c d (g+h x)}{(-d g+c h)^2}\right)}{d (g+h x)}\Bigg)\, \text{Log}\left[\frac{h (c+d x)}{-d g+c h}\right] \text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]+\frac{1}{2} \Bigg(\frac{(b g-a h) \left(\frac{2 a b x}{(b g-a h)^2}+\frac{2 a^2 b (g+h x)}{(b g-a h)^3}\right)}{b (g+h x)}-$$

$$\frac{(b g-a h)\, x \left(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\right)}{b (g+h x)^2}-\frac{a \left(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\right)}{b (g+h x)}+\frac{(-d g+c h) (a+b x) \left(\frac{2 c (-b c+a d)\, x}{(-d g+c h)^2 (a+b x)}-\frac{2 c^2 (-b c+a d) (g+h x)}{(-d g+c h)^3 (a+b x)}\right)}{(-b c+a d) (g+h x)}-$$

$$\frac{(-d g+c h)\, x\, (a+b x) \left(-\frac{(-b c+a d)\, x}{(-d g+c h) (a+b x)}+\frac{c (-b c+a d) (g+h x)}{(-d g+c h)^2 (a+b x)}\right)}{(-b c+a d) (g+h x)^2}+\frac{c (a+b x) \left(-\frac{(-b c+a d)\, x}{(-d g+c h) (a+b x)}+\frac{c (-b c+a d) (g+h x)}{(-d g+c h)^2 (a+b x)}\right)}{(-b c+a d) (g+h x)}\Bigg)$$

$$\text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]^2+2 \left(-\frac{(b g-a h) \left(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\right)}{b (g+h x)}-\frac{(-d g+c h) \left(-\frac{d x}{-d g+c h}+\frac{c d (g+h x)}{(-d g+c h)^2}\right)}{d (g+h x)}\right)$$

$$\left(-\frac{(-d g+c h) (a+b x) \left(\frac{c (b g-a h) (c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h) (a+b x)}\right) \text{Log}\left[\frac{h (c+d x)}{-d g+c h}\right]}{(b g-a h) (c+d x)}+\frac{(-d g+c h) \left(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right) \text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]}{h (c+d x)}\right)+$$

$$\frac{1}{h (c+d x)}(-d g+c h) \left(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right) \Bigg(\left(\frac{(b g-a h) \left(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\right)}{b (g+h x)}+\frac{(-d g+c h) \left(-\frac{d x}{-d g+c h}+\frac{c d (g+h x)}{(-d g+c h)^2}\right)}{d (g+h x)}\right)$$

$$\left(-2\, \text{Log}[a+b x]+\text{Log}\left[\frac{h (c+d x)}{-d g+c h}\right]\right)+\frac{(-d g+c h) \left(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right) \left(\text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]-\text{Log}\left[-\frac{d (g+h x)}{-d g+c h}\right]\right)}{h (c+d x)}\Bigg)+$$

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

$$\Bigg(\frac{(b g-a h) \left(\frac{2 a b x}{(b g-a h)^2}+\frac{2 a^2 b (g+h x)}{(b g-a h)^3}\right)}{b (g+h x)}-\frac{(b g-a h)\, x \left(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\right)}{b (g+h x)^2}-\frac{a \left(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\right)}{b (g+h x)}+\frac{(-d g+c h) \left(\frac{2 c d x}{(-d g+c h)^2}-\frac{2 c^2 d (g+h x)}{(-d g+c h)^3}\right)}{d (g+h x)}-$$

$$\frac{(-d g+c h)\, x \left(-\frac{d x}{-d g+c h}+\frac{c d (g+h x)}{(-d g+c h)^2}\right)}{d (g+h x)^2}+\frac{c \left(-\frac{d x}{-d g+c h}+\frac{c d (g+h x)}{(-d g+c h)^2}\right)}{d (g+h x)}\Bigg) \left(-2\, \text{Log}[a+b x]+\text{Log}\left[\frac{h (c+d x)}{-d g+c h}\right]\right)+$$

$$\Bigg(\frac{(-d\,g+c\,h)\left(\frac{2c^2h\,(c+d\,x)}{(-d\,g+c\,h)^3}-\frac{2c\,(c+d\,x)}{(-d\,g+c\,h)^2}\right)}{h\,(c+d\,x)}+\frac{c\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\right)}{h\,(c+d\,x)}-\frac{(-d\,g+c\,h)\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\right)}{h^2\,(c+d\,x)}\Bigg)$$

$$\left(\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-\text{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)\Bigg)+\frac{1}{2}\Bigg(\frac{(-d\,g+c\,h)\left(\frac{2c^2h\,(c+d\,x)}{(-d\,g+c\,h)^3}-\frac{2c\,(c+d\,x)}{(-d\,g+c\,h)^2}\right)}{h\,(c+d\,x)}+\frac{c\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\right)}{h\,(c+d\,x)}-$$

$$\frac{(-d\,g+c\,h)\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\right)}{h^2\,(c+d\,x)}\Bigg)\left(-2\,\text{Log}[a+b\,x]+\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\right)\left(\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-\text{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)+$$

$$\Bigg(-\frac{2\,(-d\,g+c\,h)^2\,(a+b\,x)\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\right)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)}{h\,(b\,g-a\,h)\,(c+d\,x)^2}+$$

$$\Bigg(-\frac{(-d\,g+c\,h)\,(a+b\,x)\left(-\frac{2c^2\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^3\,(a+b\,x)}-\frac{2a\,c\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}\right)}{(b\,g-a\,h)\,(c+d\,x)}-\frac{c\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)}{(b\,g-a\,h)\,(c+d\,x)}-$$

$$\frac{a\,(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)}{(b\,g-a\,h)^2\,(c+d\,x)}\Bigg)\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]+$$

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

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

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

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

$$\frac{2\,a\,(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]}{(b\,g-a\,h)^2\,(c+d\,x)}\Bigg)$$

$$\Big(\text{Log}\Big[\frac{-b c+a d}{d (a+b x)}\Big]+\text{Log}\Big[\frac{b (g+h x)}{b g-a h}\Big]-\text{Log}\Big[-\frac{(-b c+a d) (g+h x)}{(-d g+c h) (a+b x)}\Big]\Big)+\frac{(b g-a h)^2 \Big(-\frac{a h (a+b x)}{(b g-a h)^2}-\frac{a+b x}{b g-a h}\Big)^2 \text{Log}\Big[1+\frac{h (a+b x)}{b g-a h}\Big]}{h^2 (a+b x)^2}+$$

$$\frac{2 (-d g+c h) \Big(-\frac{a h (a+b x)}{(b g-a h)^2}-\frac{a+b x}{b g-a h}\Big) \Big(\frac{c (b g-a h) (c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h) (a+b x)}\Big) \text{Log}\Big[1+\frac{h (a+b x)}{b g-a h}\Big]}{h (c+d x)}+\Big(\text{Log}[c+d x]-\text{Log}\Big[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]\Big)$$

$$\Big(\frac{(b g-a h) \Big(-\frac{a h (a+b x)}{(b g-a h)^2}-\frac{a+b x}{b g-a h}\Big) \Big(\frac{a h (a+b x)}{(b g-a h)^2}+\frac{a+b x}{b g-a h}\Big)}{h (a+b x) \Big(1+\frac{h (a+b x)}{b g-a h}\Big)}+\frac{(b g-a h) \Big(-\frac{2 a^2 h (a+b x)}{(b g-a h)^3}-\frac{2 a (a+b x)}{(b g-a h)^2}\Big) \text{Log}\Big[1+\frac{h (a+b x)}{b g-a h}\Big]}{h (a+b x)}-$$

$$\frac{a \Big(-\frac{a h (a+b x)}{(b g-a h)^2}-\frac{a+b x}{b g-a h}\Big) \text{Log}\Big[1+\frac{h (a+b x)}{b g-a h}\Big]}{h (a+b x)}-\frac{(b g-a h) \Big(-\frac{a h (a+b x)}{(b g-a h)^2}-\frac{a+b x}{b g-a h}\Big) \text{Log}\Big[1+\frac{h (a+b x)}{b g-a h}\Big]}{h^2 (a+b x)}\Big)+$$

$$\frac{(-d g+c h)^2 \Big(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\Big)^2 \text{Log}\Big[1-\frac{h (c+d x)}{-d g+c h}\Big]}{h^2 (c+d x)^2}+\frac{1}{h (b g-a h) (c+d x)^2} 2 (-d g+c h)^2 (a+b x) \Big(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\Big)$$

$$\Big(\frac{c (b g-a h) (c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h) (a+b x)}\Big) \text{Log}\Big[1-\frac{h (c+d x)}{-d g+c h}\Big]+\Big(\text{Log}[a+b x]+\text{Log}\Big[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]\Big)$$

$$\Big(-\frac{(-d g+c h) \Big(\frac{c h (c+d x)}{(-d g+c h)^2}-\frac{c+d x}{-d g+c h}\Big) \Big(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\Big)}{h (c+d x) \Big(1-\frac{h (c+d x)}{-d g+c h}\Big)}-\frac{(-d g+c h) \Big(\frac{2 c^2 h (c+d x)}{(-d g+c h)^3}-\frac{2 c (c+d x)}{(-d g+c h)^2}\Big) \text{Log}\Big[1-\frac{h (c+d x)}{-d g+c h}\Big]}{h (c+d x)}-$$

$$\frac{c \Big(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\Big) \text{Log}\Big[1-\frac{h (c+d x)}{-d g+c h}\Big]}{h (c+d x)}+\frac{(-d g+c h) \Big(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\Big) \text{Log}\Big[1-\frac{h (c+d x)}{-d g+c h}\Big]}{h^2 (c+d x)}\Big)+$$

$$\frac{(-d g+c h)^2 (a+b x)^2 \Big(\frac{c (b g-a h) (c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h) (a+b x)}\Big)^2 \text{Log}\Big[1+\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]}{(b g-a h)^2 (c+d x)^2}+\text{Log}\Big[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]$$

$$\Big(-\frac{(-d g+c h) (a+b x) \Big(-\frac{c (b g-a h) (c+d x)}{(-d g+c h)^2 (a+b x)}-\frac{a (c+d x)}{(-d g+c h) (a+b x)}\Big) \Big(\frac{c (b g-a h) (c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h) (a+b x)}\Big)}{(b g-a h) (c+d x) \Big(1+\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big)}-$$

$$\frac{(-d g+c h) (a+b x) \Big(-\frac{2 c^2 (b g-a h) (c+d x)}{(-d g+c h)^3 (a+b x)}-\frac{2 a c (c+d x)}{(-d g+c h)^2 (a+b x)}\Big) \text{Log}\Big[1+\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]}{(b g-a h) (c+d x)}-$$

$$\frac{c (a+b x) \Big(\frac{c (b g-a h) (c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h) (a+b x)}\Big) \text{Log}\Big[1+\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]}{(b g-a h) (c+d x)}-$$

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

$$\frac{(b\,g-a\,h)\left(-\frac{2\,a^2\,h\,(a+b\,x)}{(b\,g-a\,h)^3}-\frac{2\,a\,(a+b\,x)}{(b\,g-a\,h)^2}\right)\text{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h\,(a+b\,x)}-\frac{a\left(-\frac{a\,h\,(a+b\,x)}{(b\,g-a\,h)^2}-\frac{a+b\,x}{b\,g-a\,h}\right)\text{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h\,(a+b\,x)}-$$

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

$$\left.\frac{c\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)}{(b\,g-a\,h)\,(c+d\,x)}+\frac{a\,(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)}{(b\,g-a\,h)^2\,(c+d\,x)}\right)\text{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]-$$

$$\frac{(-d\,g+c\,h)\left(\frac{2\,c^2\,h\,(c+d\,x)}{(-d\,g+c\,h)^3}-\frac{2\,c\,(c+d\,x)}{(-d\,g+c\,h)^2}\right)\text{PolyLog}\left[2,\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]}{h\,(c+d\,x)}-\frac{c\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\right)\text{PolyLog}\left[2,\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]}{h\,(c+d\,x)}+$$

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

$$\left.\frac{c\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)}{(b\,g-a\,h)\,(c+d\,x)}-\frac{a\,(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)}{(b\,g-a\,h)^2\,(c+d\,x)}\right)\text{PolyLog}\left[2,\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]+$$

$$\left(-\frac{(-d\,g+c\,h)\,(a+b\,x)\left(-\frac{2\,c^2\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^3\,(a+b\,x)}-\frac{2\,a\,c\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}\right)}{(b\,g-a\,h)\,(c+d\,x)}-\frac{c\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)}{(b\,g-a\,h)\,(c+d\,x)}-\right.$$

$$\left.\frac{a\,(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)}{(b\,g-a\,h)^2\,(c+d\,x)}\right)\left(\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]-\text{PolyLog}\left[2,-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)-$$

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

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

$$\frac{a\,(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^{2}\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)\mathrm{PolyLog}\left[2,-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]}{(b\,g-a\,h)^{2}\,(c+d\,x)}\Bigg)-$$

$$\frac{1}{h^{2}}\,2\Bigg(\frac{(b\,g-a\,h)\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^{2}}\right)\mathrm{Log}[a+b\,x]\,\mathrm{Log}[c+d\,x]}{b\,(g+h\,x)}+\frac{1}{2}\left(\frac{(b\,g-a\,h)\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^{2}}\right)}{b\,(g+h\,x)}+\frac{(-d\,g+c\,h)\left(-\frac{d\,x}{-d\,g+c\,h}+\frac{c\,d\,(g+h\,x)}{(-d\,g+c\,h)^{2}}\right)}{d\,(g+h\,x)}\right)$$

$$\mathrm{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\left(-2\,\mathrm{Log}[a+b\,x]+\mathrm{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\right)+$$

$$\left(-\frac{(b\,g-a\,h)\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^{2}}\right)}{b\,(g+h\,x)}-\frac{(-d\,g+c\,h)\left(-\frac{d\,x}{-d\,g+c\,h}+\frac{c\,d\,(g+h\,x)}{(-d\,g+c\,h)^{2}}\right)}{d\,(g+h\,x)}\right)\mathrm{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\mathrm{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]+$$

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

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

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

$$(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^{2}\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)\mathrm{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\left(-\mathrm{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+\mathrm{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)+$$

$$\frac{(-d\,g+c\,h)\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^{2}}+\frac{c+d\,x}{-d\,g+c\,h}\right)\mathrm{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\left(-\mathrm{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+\mathrm{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)}{h\,(c+d\,x)}-$$

$$\frac{1}{(b\,g-a\,h)\,(c+d\,x)}(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^{2}\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)$$

$$\mathrm{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\left(\mathrm{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]+\mathrm{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-\mathrm{Log}\left[-\frac{(-b\,c+a\,d)\,(g+h\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)+$$

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

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

$$(-d g+c h) (a+b x) \Bigg(\frac{c (b g-a h) (c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h) (a+b x)}\Bigg) \text{Log}\Big[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]$$

$$\text{Log}\Big[1+\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]+\frac{(b g-a h) \Big(-\frac{a h (a+b x)}{(b g-a h)^2}-\frac{a+b x}{b g-a h}\Big) \text{PolyLog}\Big[2,-\frac{h (a+b x)}{b g-a h}\Big]}{h (a+b x)}+$$

$$\frac{(-d g+c h) (a+b x) \Big(\frac{c (b g-a h) (c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h) (a+b x)}\Big) \text{PolyLog}\Big[2,-\frac{h (a+b x)}{b g-a h}\Big]}{(b g-a h) (c+d x)}-$$

$$\frac{(-d g+c h) \Big(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\Big) \text{PolyLog}\Big[2,\frac{h (c+d x)}{-d g+c h}\Big]}{h (c+d x)}-\frac{(-d g+c h) (a+b x) \Big(\frac{c (b g-a h) (c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h) (a+b x)}\Big) \text{PolyLog}\Big[2,\frac{h (c+d x)}{-d g+c h}\Big]}{(b g-a h) (c+d x)}-$$

$$\frac{1}{(b g-a h) (c+d x)}(-d g+c h) (a+b x) \Bigg(\frac{c (b g-a h) (c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h) (a+b x)}\Bigg) \Bigg(\text{PolyLog}\Big[2,\frac{b (c+d x)}{d (a+b x)}\Big]-\text{PolyLog}\Big[$$

$$2,-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]\Bigg)-\frac{(-d g+c h) (a+b x) \Big(\frac{c (b g-a h) (c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h) (a+b x)}\Big) \text{PolyLog}\Big[2,-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]}{(b g-a h) (c+d x)}\Bigg)+$$

$$\frac{1}{h^3}2 \Bigg(\text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\Big[\frac{b (g+h x)}{b g-a h}\Big]+\frac{1}{2} \text{Log}\Big[\frac{h (c+d x)}{-d g+c h}\Big] \Big(-2 \text{Log}[a+b x]+\text{Log}\Big[\frac{h (c+d x)}{-d g+c h}\Big]\Big)$$

$$\Big(\text{Log}\Big[\frac{b (g+h x)}{b g-a h}\Big]-\text{Log}\Big[-\frac{d (g+h x)}{-d g+c h}\Big]\Big)+\text{Log}\Big[\frac{h (c+d x)}{-d g+c h}\Big] \text{Log}\Big[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big] \Big(-\text{Log}\Big[\frac{b (g+h x)}{b g-a h}\Big]+\text{Log}\Big[-\frac{d (g+h x)}{-d g+c h}\Big]\Big)+$$

$$\frac{1}{2} \text{Log}\Big[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]^2 \Big(\text{Log}\Big[\frac{-b c+a d}{d (a+b x)}\Big]+\text{Log}\Big[\frac{b (g+h x)}{b g-a h}\Big]-\text{Log}\Big[-\frac{(-b c+a d) (g+h x)}{(-d g+c h) (a+b x)}\Big]\Big)+$$

$$\Big(\text{Log}[c+d x]-\text{Log}\Big[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]\Big) \text{PolyLog}\Big[2,-\frac{h (a+b x)}{b g-a h}\Big]+\Big(\text{Log}[a+b x]+\text{Log}\Big[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]\Big)$$

$$\text{PolyLog}\Big[2,\frac{h (c+d x)}{-d g+c h}\Big]+\text{Log}\Big[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big] \Big(\text{PolyLog}\Big[2,\frac{b (c+d x)}{d (a+b x)}\Big]-\text{PolyLog}\Big[2,-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]\Big)-$$

$$\text{PolyLog}\Big[3,-\frac{h (a+b x)}{b g-a h}\Big]-\text{PolyLog}\Big[3,\frac{h (c+d x)}{-d g+c h}\Big]-\text{PolyLog}\Big[3,\frac{b (c+d x)}{d (a+b x)}\Big]+\text{PolyLog}\Big[3,-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\Big]\Bigg)\Bigg)+$$

$$4 h \Bigg(\frac{1}{h}\Bigg(\frac{(b g-a h) \Big(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\Big) \text{Log}[a+b x] \text{Log}[c+d x]}{b (g+h x)}+\frac{1}{2}\Bigg(\frac{(b g-a h) \Big(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\Big)}{b (g+h x)}+\frac{(-d g+c h) \Big(-\frac{d x}{-d g+c h}+\frac{c d (g+h x)}{(-d g+c h)^2}\Big)}{d (g+h x)}\Bigg)$$

$$\mathrm{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\left(-2\,\mathrm{Log}[a+b\,x]+\mathrm{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\right)+$$

$$\left(-\frac{(b\,g-a\,h)\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^2}\right)}{b\,(g+h\,x)}-\frac{(-d\,g+c\,h)\left(-\frac{d\,x}{-d\,g+c\,h}+\frac{c\,d\,(g+h\,x)}{(-d\,g+c\,h)^2}\right)}{d\,(g+h\,x)}\right)\mathrm{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\mathrm{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]+$$

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

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

$$(-d\,g+c\,h)\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\right)\left(-2\,\mathrm{Log}[a+b\,x]+\mathrm{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\right)\left(\mathrm{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-\mathrm{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)-$$

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

$$\left(-\mathrm{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+\mathrm{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)+\frac{(-d\,g+c\,h)\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\right)\mathrm{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\left(-\mathrm{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+\mathrm{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)}{h\,(c+d\,x)}-$$

$$\frac{1}{(b\,g-a\,h)\,(c+d\,x)}(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)$$

$$\mathrm{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\left(\mathrm{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]+\mathrm{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-\mathrm{Log}\left[-\frac{(-b\,c+a\,d)\,(g+h\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)+$$

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

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

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

$$\frac{(b\,g-a\,h)\left(-\frac{a\,h\,(a+b\,x)}{(b\,g-a\,h)^2}-\frac{a+b\,x}{b\,g-a\,h}\right)\mathrm{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h\,(a+b\,x)}+\frac{(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)\mathrm{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{(b\,g-a\,h)\,(c+d\,x)}-$$

$$\frac{(-d\,g+c\,h)\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\right)\mathrm{PolyLog}\left[2,\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]}{h\,(c+d\,x)}-$$

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

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

$$\left.\frac{(-d g+c h)\,(a+b x)\left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)\text{PolyLog}\left[2,-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]}{(b g-a h)\,(c+d x)}\right)-$$

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

$$\left(\text{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]-\text{Log}\left[-\frac{d\,(g+h x)}{-d g+c h}\right]\right)+\text{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right]\text{Log}\left[-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]\left(-\text{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]+\text{Log}\left[-\frac{d\,(g+h x)}{-d g+c h}\right]\right)+$$

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

$$\left(\text{Log}[c+d x]-\text{Log}\left[-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]\right)\text{PolyLog}\left[2,-\frac{h\,(a+b x)}{b g-a h}\right]+\left(\text{Log}[a+b x]+\text{Log}\left[-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]\right)$$

$$\text{PolyLog}\left[2,\frac{h\,(c+d x)}{-d g+c h}\right]+\text{Log}\left[-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]\left(\text{PolyLog}\left[2,\frac{b\,(c+d x)}{d\,(a+b x)}\right]-\text{PolyLog}\left[2,-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]\right)-$$

$$\left.\left.\text{PolyLog}\left[3,-\frac{h\,(a+b x)}{b g-a h}\right]-\text{PolyLog}\left[3,\frac{h\,(c+d x)}{-d g+c h}\right]-\text{PolyLog}\left[3,\frac{b\,(c+d x)}{d\,(a+b x)}\right]+\text{PolyLog}\left[3,-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]\right)\right)$$

Problem 309: Result more than twice size of optimal antiderivative.

$$\int (g+h x)^2\,\left(A+B\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)^3\,dx$$

Optimal (type 4, 875 leaves, 19 steps) :

$$-\frac{B^3 (b c-a d)^3 h^2 n^3 \mathrm{Log}[c+d x]}{b^3 d^3}+\frac{B^2 (b c-a d)^2 h^2 n^2 (a+b x) \left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b^3 d^2}-$$

$$\frac{2 B^2 (b c-a d)^2 h (3 b d g-2 b c h-a d h) n^2 \mathrm{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b^3 d^3}-$$

$$\frac{B (b c-a d) h (3 b d g-2 b c h-a d h) n (a+b x) \left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{b^3 d^2}-$$

$$\frac{B (b c-a d) h^2 n (c+d x)^2 \left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 b d^3}+\frac{1}{b^3 d^3}$$

$$B (b c-a d) \left(a^2 d^2 h^2-a b d h (3 d g-c h)+b^2 \left(3 d^2 g^2-3 c d g h+c^2 h^2\right)\right) n \mathrm{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2-$$

$$\frac{(b g-a h)^3 \left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{3 b^3 h}+\frac{(g+h x)^3 \left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{3 h}-$$

$$\frac{B^2 (b c-a d)^3 h^2 n^2 \left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \mathrm{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 d^3}-\frac{2 B^3 (b c-a d)^2 h (3 b d g-2 b c h-a d h) n^3 \mathrm{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b^3 d^3}+$$

$$\frac{1}{b^3 d^3} 2 B^2 (b c-a d) \left(a^2 d^2 h^2-a b d h (3 d g-c h)+b^2 \left(3 d^2 g^2-3 c d g h+c^2 h^2\right)\right) n^2 \left(A+B \mathrm{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \mathrm{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]+$$

$$\frac{B^3 (b c-a d)^3 h^2 n^3 \mathrm{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 d^3}-\frac{2 B^3 (b c-a d) \left(a^2 d^2 h^2-a b d h (3 d g-c h)+b^2 \left(3 d^2 g^2-3 c d g h+c^2 h^2\right)\right) n^3 \mathrm{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{b^3 d^3}$$

Result (type 4, 7328 leaves):

$$-\frac{6 a A B^2 g^2 n^2}{b}-\frac{6 A B^2 c g^2 n^2}{d}+\frac{12 a A B^2 c g h n^2}{b d}-\frac{2 a A B^2 c^2 h^2 n^2}{b d^2}-\frac{2 a^2 A B^2 c h^2 n^2}{b^2 d}+\frac{6 a B^3 g^2 n^3}{b}-\frac{6 a^2 B^3 g h n^3}{b^2}-\frac{6 B^3 c^2 g h n^3}{d^2}+\frac{6 a B^3 c g h n^3}{b d}+$$

$$\frac{2 a^3 B^3 h^2 n^3}{b^3}+\frac{2 B^3 c^3 h^2 n^3}{d^3}-\frac{a B^3 c^2 h^2 n^3}{b d^2}-\frac{a^2 B^3 c h^2 n^3}{b^2 d}+A^3 g^2 x+\frac{3 a A^2 B g h n x}{b}-\frac{3 A^2 B c g h n x}{d}-\frac{a^2 A^2 B h^2 n x}{b^2}+\frac{A^2 B c^2 h^2 n x}{d^2}+$$

$$\frac{a^2 A B^2 h^2 n^2 x}{b^2}+\frac{A B^2 c^2 h^2 n^2 x}{d^2}-\frac{2 a A B^2 c h^2 n^2 x}{b d}+A^3 g h x^2+\frac{a A^2 B h^2 n x^2}{2 b}-\frac{A^2 B c h^2 n x^2}{2 d}+\frac{1}{3} A^3 h^2 x^3+\frac{3 a A^2 B g^2 n \mathrm{Log}[a+b x]}{b}-$$

$$\frac{3 a^2 A^2 B g h n \mathrm{Log}[a+b x]}{b^2}+\frac{a^3 A^2 B h^2 n \mathrm{Log}[a+b x]}{b^3}+\frac{6 a^2 A B^2 g h n^2 \mathrm{Log}[a+b x]}{b^2}-\frac{6 a A B^2 c g h n^2 \mathrm{Log}[a+b x]}{b d}-\frac{3 a^3 A B^2 h^2 n^2 \mathrm{Log}[a+b x]}{b^3}+$$

$$\frac{2 a A B^2 c^2 h^2 n^2 \mathrm{Log}[a+b x]}{b d^2}+\frac{a^2 A B^2 c h^2 n^2 \mathrm{Log}[a+b x]}{b^2 d}+\frac{6 a B^3 g^2 n^3 \mathrm{Log}[a+b x]}{b}+\frac{6 B^3 c g^2 n^3 \mathrm{Log}[a+b x]}{d}-\frac{12 a B^3 c g h n^3 \mathrm{Log}[a+b x]}{b d}+$$

$$\frac{a^3 B^3 h^2 n^3 \mathrm{Log}[a+b x]}{b^3}+\frac{3 a B^3 c^2 h^2 n^3 \mathrm{Log}[a+b x]}{b d^2}-\frac{3 a A B^2 g^2 n^2 \mathrm{Log}[a+b x]^2}{b}+\frac{3 a^2 A B^2 g h n^2 \mathrm{Log}[a+b x]^2}{b^2}-\frac{a^3 A B^2 h^2 n^2 \mathrm{Log}[a+b x]^2}{b^3}-$$

$$\frac{3 a^2 B^3 g h n^3 \mathrm{Log}[a+b x]^2}{b^2}+\frac{3 a B^3 c g h n^3 \mathrm{Log}[a+b x]^2}{b d}+\frac{3 a^3 B^3 h^2 n^3 \mathrm{Log}[a+b x]^2}{2 b^3}-\frac{a B^3 c^2 h^2 n^3 \mathrm{Log}[a+b x]^2}{b d^2}-\frac{a^2 B^3 c h^2 n^3 \mathrm{Log}[a+b x]^2}{2 b^2 d}+$$

$$\frac{a B^3 g^2 n^3 \mathrm{Log}[a+b x]^3}{b}-\frac{a^2 B^3 g h n^3 \mathrm{Log}[a+b x]^3}{b^2}+\frac{a^3 B^3 h^2 n^3 \mathrm{Log}[a+b x]^3}{3 b^3}-\frac{3 A^2 B c g^2 n \mathrm{Log}[c+d x]}{d}+\frac{3 A^2 B c^2 g h n \mathrm{Log}[c+d x]}{d^2}-$$

$$\frac{A^2 B c^3 h^2 n \mathrm{Log}[c+d x]}{d^3}+\frac{6 A B^2 c^2 g h n^2 \mathrm{Log}[c+d x]}{d^2}-\frac{6 a A B^2 c g h n^2 \mathrm{Log}[c+d x]}{b d}-\frac{3 A B^2 c^3 h^2 n^2 \mathrm{Log}[c+d x]}{d^3}+\frac{a A B^2 c^2 h^2 n^2 \mathrm{Log}[c+d x]}{b d^2}+$$

$$\frac{2 a^2 A B^2 c h^2 n^2 \mathrm{Log}[c+d x]}{b^2 d}-\frac{6 a B^3 g^2 n^3 \mathrm{Log}[c+d x]}{b}-\frac{6 B^3 c g^2 n^3 \mathrm{Log}[c+d x]}{d}+\frac{12 a B^3 c g h n^3 \mathrm{Log}[c+d x]}{b d}-\frac{B^3 c^3 h^2 n^3 \mathrm{Log}[c+d x]}{d^3}-$$

$$\frac{3 a^2 B^3 c h^2 n^3 \mathrm{Log}[c+d x]}{b^2 d}+\frac{6 a A B^2 g^2 n^2 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]}{b}+\frac{6 A B^2 c g^2 n^2 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]}{d}-\frac{6 a^2 A B^2 g h n^2 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]}{b^2}-$$

$$\frac{6 A B^2 c^2 g h n^2 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]}{d^2}+\frac{2 a^3 A B^2 h^2 n^2 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]}{b^3}+\frac{2 A B^2 c^3 h^2 n^2 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]}{d^3}-$$

$$\frac{6 B^3 c^2 g h n^3 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]}{d^2}+\frac{6 a B^3 c g h n^3 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]}{b d}+\frac{3 B^3 c^3 h^2 n^3 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]}{d^3}-$$

$$\frac{a B^3 c^2 h^2 n^3 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]}{b d^2}-\frac{2 a^2 B^3 c h^2 n^3 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]}{b^2 d}-\frac{6 a B^3 g^2 n^3 \mathrm{Log}[a+b x]^2 \mathrm{Log}[c+d x]}{b}-$$

$$\frac{3 B^3 c g^2 n^3 \mathrm{Log}[a+b x]^2 \mathrm{Log}[c+d x]}{d}+\frac{6 a^2 B^3 g h n^3 \mathrm{Log}[a+b x]^2 \mathrm{Log}[c+d x]}{b^2}+\frac{3 B^3 c^2 g h n^3 \mathrm{Log}[a+b x]^2 \mathrm{Log}[c+d x]}{d^2}-$$

$$\frac{2 a^3 B^3 h^2 n^3 \mathrm{Log}[a+b x]^2 \mathrm{Log}[c+d x]}{b^3}-\frac{B^3 c^3 h^2 n^3 \mathrm{Log}[a+b x]^2 \mathrm{Log}[c+d x]}{d^3}-\frac{6 a A B^2 g^2 n^2 \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \mathrm{Log}[c+d x]}{b}+$$

$$\frac{6 a^2 A B^2 g h n^2 \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \mathrm{Log}[c+d x]}{b^2}-\frac{2 a^3 A B^2 h^2 n^2 \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \mathrm{Log}[c+d x]}{b^3}+\frac{6 a B^3 g^2 n^3 \mathrm{Log}[a+b x] \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \mathrm{Log}[c+d x]}{b}-$$

$$\frac{6 a^2 B^3 g h n^3 \mathrm{Log}[a+b x] \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \mathrm{Log}[c+d x]}{b^2}+\frac{2 a^3 B^3 h^2 n^3 \mathrm{Log}[a+b x] \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \mathrm{Log}[c+d x]}{b^3}-\frac{3 A B^2 c g^2 n^2 \mathrm{Log}[c+d x]^2}{d}+$$

$$\frac{3 A B^2 c^2 g h n^2 \mathrm{Log}[c+d x]^2}{d^2}-\frac{A B^2 c^3 h^2 n^2 \mathrm{Log}[c+d x]^2}{d^3}+\frac{3 B^3 c^2 g h n^3 \mathrm{Log}[c+d x]^2}{d^2}-\frac{3 a B^3 c g h n^3 \mathrm{Log}[c+d x]^2}{b d}-\frac{3 B^3 c^3 h^2 n^3 \mathrm{Log}[c+d x]^2}{2 d^3}+$$

$$\frac{a B^3 c^2 h^2 n^3 \mathrm{Log}[c+d x]^2}{2 b d^2}+\frac{a^2 B^3 c h^2 n^3 \mathrm{Log}[c+d x]^2}{b^2 d}+\frac{3 a B^3 g^2 n^3 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]^2}{b}+\frac{6 B^3 c g^2 n^3 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]^2}{d}-$$

$$\frac{3 a^2 B^3 g h n^3 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]^2}{b^2}-\frac{6 B^3 c^2 g h n^3 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]^2}{d^2}+\frac{a^3 B^3 h^2 n^3 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]^2}{b^3}+$$

$$\frac{2 B^3 c^3 h^2 n^3 \mathrm{Log}[a+b x] \mathrm{Log}[c+d x]^2}{d^3}-\frac{3 a B^3 g^2 n^3 \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \mathrm{Log}[c+d x]^2}{b}-\frac{3 B^3 c g^2 n^3 \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \mathrm{Log}[c+d x]^2}{d}+$$

$$\frac{3 a^2 B^3 g h n^3 \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \mathrm{Log}[c+d x]^2}{b^2}+\frac{3 B^3 c^2 g h n^3 \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \mathrm{Log}[c+d x]^2}{d^2}-\frac{a^3 B^3 h^2 n^3 \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \mathrm{Log}[c+d x]^2}{b^3}-$$

$$\frac{B^3 c^3 h^2 n^3 \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \mathrm{Log}[c+d x]^2}{d^3}-\frac{B^3 c g^2 n^3 \mathrm{Log}[c+d x]^3}{d}+\frac{B^3 c^2 g h n^3 \mathrm{Log}[c+d x]^3}{d^2}-\frac{B^3 c^3 h^2 n^3 \mathrm{Log}[c+d x]^3}{3 d^3}-$$

$$\frac{6 A B^2 c g^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d}+\frac{6 A B^2 c^2 g h n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2}-\frac{2 A B^2 c^3 h^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^3}+$$

$$\frac{6 a^2 B^3 g h n^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2}+\frac{6 B^3 c^2 g h n^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2}-\frac{12 a B^3 c g h n^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b d}-$$

$$\frac{3 a^3 B^3 h^2 n^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3}-\frac{3 B^3 c^3 h^2 n^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^3}+\frac{3 a B^3 c^2 h^2 n^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b d^2}+$$

$$\frac{3 a^2 B^3 c h^2 n^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2 d}+\frac{3 a B^3 g^2 n^3 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b}+\frac{3 B^3 c g^2 n^3 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d}-$$

$$\frac{3 a^2 B^3 g h n^3 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^2}-\frac{3 B^3 c^2 g h n^3 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2}+\frac{a^3 B^3 h^2 n^3 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{b^3}+$$

$$\frac{B^3 c^3 h^2 n^3 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^3}-\frac{6 B^3 c g^2 n^3 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d}+\frac{6 B^3 c^2 g h n^3 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^2}-$$

$$\frac{2 B^3 c^3 h^2 n^3 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{d^3}-\frac{6 a B^3 g^2 n^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b}-\frac{6 B^3 c g^2 n^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d}+$$

$$\frac{12 a B^3 c g h n^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d}-\frac{2 a B^3 c^2 h^2 n^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d^2}-\frac{2 a^2 B^3 c h^2 n^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2 d}+$$

$$3 A^2 B g^2 x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+\frac{6 a A B^2 g h n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b}-\frac{6 A B^2 c g h n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d}-$$

$$\frac{2 a^2 A B^2 h^2 n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2}+\frac{2 A B^2 c^2 h^2 n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^2}+\frac{a^2 B^3 h^2 n^2 x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2}+$$

$$\frac{B^3 c^2 h^2 n^2 x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^2}-\frac{2 a B^3 c h^2 n^2 x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d}+3 A^2 B g h x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+$$

$$\frac{a A B^2 h^2 n x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b}-\frac{A B^2 c h^2 n x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d}+A^2 B h^2 x^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]+$$

$$\frac{6 a A B^2 g^2 n \text{Log}[a+b x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b}-\frac{6 a^2 A B^2 g h n \text{Log}[a+b x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2}+$$

$$\frac{2 a^3 A B^2 h^2 n \text{Log}[a+b x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^3}+\frac{6 a^2 B^3 g h n^2 \text{Log}[a+b x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2}-$$

$$\frac{6 a B^3 c g h n^2 \text{Log}[a+b x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d}-\frac{3 a^3 B^3 h^2 n^2 \text{Log}[a+b x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^3}+$$

$$\frac{2 a B^3 c^2 h^2 n^2 \text{Log}[a+b x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d^2}+\frac{a^2 B^3 c h^2 n^2 \text{Log}[a+b x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2 d}-$$

$$\frac{3 a B^3 g^2 n^2 \text{Log}[a+b x]^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b}+\frac{3 a^2 B^3 g h n^2 \text{Log}[a+b x]^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2}-$$

$$\frac{a^3 B^3 h^2 n^2 \text{Log}[a+b x]^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^3}-\frac{6 A B^2 c g^2 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d}+$$

$$\frac{6 A B^2 c^2 g h n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^2}-\frac{2 A B^2 c^3 h^2 n \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^3}+$$

$$\frac{6 B^3 c^2 g h n^2 \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^2}-\frac{6 a B^3 c g h n^2 \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d}-$$

$$\frac{3 B^3 c^3 h^2 n^2 \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^3}+\frac{a B^3 c^2 h^2 n^2 \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b d^2}+$$

$$\frac{2 a^2 B^3 c h^2 n^2 \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2 d}+\frac{6 a B^3 g^2 n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b}+$$

$$\frac{6 B^3 c g^2 n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d}-\frac{6 a^2 B^3 g h n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2}-$$

$$\frac{6 B^3 c^2 g h n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^2}+\frac{2 a^3 B^3 h^2 n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^3}+$$

$$\frac{2 B^3 c^3 h^2 n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^3}-\frac{6 a B^3 g^2 n^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b}+$$

$$\frac{6 a^2 B^3 g h n^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^2}-\frac{2 a^3 B^3 h^2 n^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{b^3}-$$

$$\frac{3 B^3 c g^2 n^2 \text{Log}[c+d x]^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d}+\frac{3 B^3 c^2 g h n^2 \text{Log}[c+d x]^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^2}-$$

$$\frac{B^3 c^3 h^2 n^2 \text{Log}[c+d x]^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^3}-\frac{6 B^3 c g^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d}+$$

$$\frac{6 B^3 c^2 g h n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^2}-\frac{2 B^3 c^3 h^2 n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]}{d^3}+$$

$$3 A B^2 g^2 x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+\frac{3 a B^3 g h n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{b}-\frac{3 B^3 c g h n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{d}-$$

$$\frac{a^2 B^3 h^2 n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{b^2}+\frac{B^3 c^2 h^2 n x \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{d^2}+3 A B^2 g h x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+$$

$$\frac{a B^3 h^2 n x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{2 b}-\frac{B^3 c h^2 n x^2 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{2 d}+A B^2 h^2 x^3 \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2+$$

$$\frac{3 a B^3 g^2 n \text{Log}[a+b x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{b}-\frac{3 a^2 B^3 g h n \text{Log}[a+b x] \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]^2}{b^2}+$$

$$\frac{a^3 B^3 h^2 n\,\text{Log}[a+b x]\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]^2}{b^3}-\frac{3 B^3 c\,g^2 n\,\text{Log}[c+d x]\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]^2}{d}+$$

$$\frac{3 B^3 c^2 g\,h\,n\,\text{Log}[c+d x]\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]^2}{d^2}-\frac{B^3 c^3 h^2 n\,\text{Log}[c+d x]\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]^2}{d^3}+$$

$$B^3 g^2 x\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]^3+B^3 g\,h\,x^2\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]^3+\frac{1}{3} B^3 h^2 x^3\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]^3-$$

$$\frac{1}{b^3 d^3} B^2 n^2 \Big(6 A\,b^3 c\,d^2 g^2-6 A\,b^3 c^2 d\,g\,h+2 A\,b^3 c^3 h^2-6 b^3 B\,c^2 d\,g\,h\,n+12 a\,b^2 B\,c\,d^2 g\,h\,n-6 a^2 b\,B\,d^3 g\,h\,n+3 b^3 B\,c^3 h^2 n-3 a\,b^2 B\,c^2 d\,h^2 n-$$
$$3 a^2 b\,B\,c\,d^2 h^2 n+3 a^3 B\,d^3 h^2 n-2 a\,B\,d^3\left(3 b^2 g^2-3 a\,b\,g\,h+a^2 h^2\right) n\,\text{Log}[a+b x]+2 b^3 B\,c\left(3 d^2 g^2-3 c\,d\,g\,h+c^2 h^2\right) n\,\text{Log}[c+d x]+6 b^3 B\,c\,d^2 g^2$$
$$\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]-6 b^3 B\,c^2 d\,g\,h\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]+2 b^3 B\,c^3 h^2\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\Big)\,\text{PolyLog}\left[2,\frac{d\,(a+b x)}{-b\,c+a\,d}\right]-$$

$$\frac{1}{b^3 d^3} 2 B^2 n^2 \Big(-a\,B\,d^3\left(3 b^2 g^2-3 a\,b\,g\,h+a^2 h^2\right) n\,\text{Log}[a+b x]+b^3 B\,c\left(3 d^2 g^2-3 c\,d\,g\,h+c^2 h^2\right) n\,\text{Log}[c+d x]+$$
$$a\,d^3\left(3 b^2 g^2-3 a\,b\,g\,h+a^2 h^2\right)\left(A+B\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)\Big)\,\text{PolyLog}\left[2,\frac{b\,(c+d x)}{b\,c-a\,d}\right]-\frac{6 a\,B^3 g^2 n^3\,\text{PolyLog}\left[3,\frac{d\,(a+b x)}{-b\,c+a\,d}\right]}{b}+$$

$$\frac{6 B^3 c\,g^2 n^3\,\text{PolyLog}\left[3,\frac{d\,(a+b x)}{-b\,c+a\,d}\right]}{d}+\frac{6 a^2 B^3 g\,h\,n^3\,\text{PolyLog}\left[3,\frac{d\,(a+b x)}{-b\,c+a\,d}\right]}{b^2}-\frac{6 B^3 c^2 g\,h\,n^3\,\text{PolyLog}\left[3,\frac{d\,(a+b x)}{-b\,c+a\,d}\right]}{d^2}-\frac{2 a^3 B^3 h^2 n^3\,\text{PolyLog}\left[3,\frac{d\,(a+b x)}{-b\,c+a\,d}\right]}{b^3}+$$

$$\frac{2 B^3 c^3 h^2 n^3\,\text{PolyLog}\left[3,\frac{d\,(a+b x)}{-b\,c+a\,d}\right]}{d^3}-\frac{6 a\,B^3 g^2 n^3\,\text{PolyLog}\left[3,\frac{b\,(c+d x)}{b\,c-a\,d}\right]}{b}+\frac{6 B^3 c\,g^2 n^3\,\text{PolyLog}\left[3,\frac{b\,(c+d x)}{b\,c-a\,d}\right]}{d}+\frac{6 a^2 B^3 g\,h\,n^3\,\text{PolyLog}\left[3,\frac{b\,(c+d x)}{b\,c-a\,d}\right]}{b^2}-$$

$$\frac{6 B^3 c^2 g\,h\,n^3\,\text{PolyLog}\left[3,\frac{b\,(c+d x)}{b\,c-a\,d}\right]}{d^2}-\frac{2 a^3 B^3 h^2 n^3\,\text{PolyLog}\left[3,\frac{b\,(c+d x)}{b\,c-a\,d}\right]}{b^3}+\frac{2 B^3 c^3 h^2 n^3\,\text{PolyLog}\left[3,\frac{b\,(c+d x)}{b\,c-a\,d}\right]}{d^3}$$

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

$$\int (g+h x)\left(A+B\,\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)^3\,dx$$

Optimal (type 4, 466 leaves, 13 steps) :

$$-\frac{3 B^2 (b c-a d)^2 h n^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{b^2 d^2}-\frac{3 B (b c-a d) h n (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 b^2 d}+$$
$$\frac{3 B (b c-a d) (2 b d g-b c h-a d h) n \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 b^2 d^2}-\frac{(b g-a h)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{2 b^2 h}+$$
$$\frac{(g+h x)^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{2 h}-\frac{3 B^3 (b c-a d)^2 h n^3 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b^2 d^2}+$$
$$\frac{3 B^2 (b c-a d) (2 b d g-b c h-a d h) n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b^2 d^2}-$$
$$\frac{3 B^3 (b c-a d) (2 b d g-b c h-a d h) n^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{b^2 d^2}$$

Result (type 4, 3919 leaves):

$$\frac{1}{2 b^2 d^2}\Big(-12 A b^2 B^2 c d g n^2-12 a A b B^2 d^2 g n^2+12 a A b B^2 c d h n^2+12 a b B^3 d^2 g n^3-6 b^2 B^3 c^2 h n^3+6 a b B^3 c d h n^3-6 a^2 B^3 d^2 h n^3+2 A^3 b^2 d^2 g x-$$
$$3 A^2 b^2 B c d h n x+3 a A^2 b B d^2 h n x+A^3 b^2 d^2 h x^2+6 a A^2 b B d^2 g n \text{Log}[a+b x]-3 a^2 A^2 B d^2 h n \text{Log}[a+b x]-6 a A b B^2 c d h n^2 \text{Log}[a+b x]+$$
$$6 a^2 A B^2 d^2 h n^2 \text{Log}[a+b x]+12 b^2 B^3 c d g n^3 \text{Log}[a+b x]+12 a b B^3 d^2 g n^3 \text{Log}[a+b x]-12 a b B^3 c d h n^3 \text{Log}[a+b x]-$$
$$6 a A b B^2 d^2 g n^2 \text{Log}[a+b x]^2+3 a^2 A B^2 d^2 h n^2 \text{Log}[a+b x]^2+3 a b B^3 c d h n^3 \text{Log}[a+b x]^2-3 a^2 B^3 d^2 h n^3 \text{Log}[a+b x]^2+$$
$$2 a b B^3 d^2 g n^3 \text{Log}[a+b x]^3-a^2 B^3 d^2 h n^3 \text{Log}[a+b x]^3-6 A^2 b^2 B c d g n \text{Log}[c+d x]+3 A^2 b^2 B c^2 h n \text{Log}[c+d x]+6 A b^2 B^2 c^2 h n^2 \text{Log}[c+d x]-$$
$$6 a A b B^2 c d h n^2 \text{Log}[c+d x]-12 b^2 B^3 c d g n^3 \text{Log}[c+d x]-12 a b B^3 d^2 g n^3 \text{Log}[c+d x]+12 a b B^3 c d h n^3 \text{Log}[c+d x]+$$
$$12 A b^2 B^2 c d g n^2 \text{Log}[a+b x] \text{Log}[c+d x]+12 a A b B^2 d^2 g n^2 \text{Log}[a+b x] \text{Log}[c+d x]-6 A b^2 B^2 c^2 h n^2 \text{Log}[a+b x] \text{Log}[c+d x]-$$
$$6 a^2 A B^2 d^2 h n^2 \text{Log}[a+b x] \text{Log}[c+d x]-6 b^2 B^3 c^2 h n^3 \text{Log}[a+b x] \text{Log}[c+d x]+6 a b B^3 c d h n^3 \text{Log}[a+b x] \text{Log}[c+d x]-$$
$$6 b^2 B^3 c d g n^3 \text{Log}[a+b x]^2 \text{Log}[c+d x]-12 a b B^3 d^2 g n^3 \text{Log}[a+b x]^2 \text{Log}[c+d x]+3 b^2 B^3 c^2 h n^3 \text{Log}[a+b x]^2 \text{Log}[c+d x]+$$
$$6 a^2 B^3 d^2 h n^3 \text{Log}[a+b x]^2 \text{Log}[c+d x]-12 a A b B^2 d^2 g n^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x]+6 a^2 A B^2 d^2 h n^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x]+$$
$$12 a b B^3 d^2 g n^3 \text{Log}[a+b x] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x]-6 a^2 B^3 d^2 h n^3 \text{Log}[a+b x] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x]-$$
$$6 A b^2 B^2 c d g n^2 \text{Log}[c+d x]^2+3 A b^2 B^2 c^2 h n^2 \text{Log}[c+d x]^2+3 b^2 B^3 c^2 h n^3 \text{Log}[c+d x]^2-3 a b B^3 c d h n^3 \text{Log}[c+d x]^2+$$
$$12 b^2 B^3 c d g n^3 \text{Log}[a+b x] \text{Log}[c+d x]^2+6 a b B^3 d^2 g n^3 \text{Log}[a+b x] \text{Log}[c+d x]^2-6 b^2 B^3 c^2 h n^3 \text{Log}[a+b x] \text{Log}[c+d x]^2-$$
$$3 a^2 B^3 d^2 h n^3 \text{Log}[a+b x] \text{Log}[c+d x]^2-6 b^2 B^3 c d g n^3 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x]^2-6 a b B^3 d^2 g n^3 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x]^2+$$
$$3 b^2 B^3 c^2 h n^3 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x]^2+3 a^2 B^3 d^2 h n^3 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}[c+d x]^2-2 b^2 B^3 c d g n^3 \text{Log}[c+d x]^3+b^2 B^3 c^2 h n^3 \text{Log}[c+d x]^3-$$
$$12 A b^2 B^2 c d g n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+6 A b^2 B^2 c^2 h n^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+6 b^2 B^3 c^2 h n^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-$$
$$12 a b B^3 c d h n^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+6 a^2 B^3 d^2 h n^3 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+6 b^2 B^3 c d g n^3 \text{Log}[a+b x]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+$$

$$6\,a\,b\,B^3\,d^2\,g\,n^3\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-3\,b^2\,B^3\,c^2\,h\,n^3\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-3\,a^2\,B^3\,d^2\,h\,n^3\,\text{Log}[a+b\,x]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$12\,b^2\,B^3\,c\,d\,g\,n^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+6\,b^2\,B^3\,c^2\,h\,n^3\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$12\,b^2\,B^3\,c\,d\,g\,n^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-12\,a\,b\,B^3\,d^2\,g\,n^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+12\,a\,b\,B^3\,c\,d\,h\,n^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$6\,A^2\,b^2\,B\,d^2\,g\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-6\,A\,b^2\,B^2\,c\,d\,h\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+6\,a\,A\,b\,B^2\,d^2\,h\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$3\,A^2\,b^2\,B\,d^2\,h\,x^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+12\,a\,A\,b\,B^2\,d^2\,g\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-$$

$$6\,a^2\,A\,B^2\,d^2\,h\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-6\,a\,b\,B^3\,c\,d\,h\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$6\,a^2\,B^3\,d^2\,h\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-6\,a\,b\,B^3\,d^2\,g\,n^2\,\text{Log}[a+b\,x]^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$3\,a^2\,B^3\,d^2\,h\,n^2\,\text{Log}[a+b\,x]^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-12\,A\,b^2\,B^2\,c\,d\,g\,n\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$6\,A\,b^2\,B^2\,c^2\,h\,n\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+6\,b^2\,B^3\,c^2\,h\,n^2\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-$$

$$6\,a\,b\,B^3\,c\,d\,h\,n^2\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+12\,b^2\,B^3\,c\,d\,g\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$12\,a\,b\,B^3\,d^2\,g\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-6\,b^2\,B^3\,c^2\,h\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-$$

$$6\,a^2\,B^3\,d^2\,h\,n^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-12\,a\,b\,B^3\,d^2\,g\,n^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$6\,a^2\,B^3\,d^2\,h\,n^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-6\,b^2\,B^3\,c\,d\,g\,n^2\,\text{Log}[c+d\,x]^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$3\,b^2\,B^3\,c^2\,h\,n^2\,\text{Log}[c+d\,x]^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]-12\,b^2\,B^3\,c\,d\,g\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+$$

$$6\,b^2\,B^3\,c^2\,h\,n^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+6\,A\,b^2\,B^2\,d^2\,g\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2-$$

$$3\,b^2\,B^3\,c\,d\,h\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+3\,a\,b\,B^3\,d^2\,h\,n\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+3\,A\,b^2\,B^2\,d^2\,h\,x^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+$$

$$6\,a\,b\,B^3\,d^2\,g\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2-3\,a^2\,B^3\,d^2\,h\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2-$$

$$6\,b^2\,B^3\,c\,d\,g\,n\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+3\,b^2\,B^3\,c^2\,h\,n\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^2+$$

$$2\,b^2\,B^3\,d^2\,g\,x\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^3+b^2\,B^3\,d^2\,h\,x^2\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]^3+$$

$$6\,B^2\,n^2\,\left(-2\,A\,b^2\,c\,d\,g+A\,b^2\,c^2\,h+b^2\,B\,c^2\,h\,n-2\,a\,b\,B\,c\,d\,h\,n+a^2\,B\,d^2\,h\,n+a\,B\,d^2\,(2\,b\,g-a\,h)\,n\,\text{Log}[a+b\,x]+b^2\,B\,c\,(-2\,d\,g+c\,h)\,n\,\text{Log}[c+d\,x]-\right.$$

$$\left.2\,b^2\,B\,c\,d\,g\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+b^2\,B\,c^2\,h\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$

$$6\,B^2\,n^2\,\left(a\,B\,d^2\,(2\,b\,g-a\,h)\,n\,\text{Log}[a+b\,x]+b^2\,B\,c\,(-2\,d\,g+c\,h)\,n\,\text{Log}[c+d\,x]+a\,d^2\,(-2\,b\,g+a\,h)\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\right)$$

$$\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+12\,b^2\,B^3\,c\,d\,g\,n^3\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-12\,a\,b\,B^3\,d^2\,g\,n^3\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-$$

$$6\,b^2\,B^3\,c^2\,h\,n^3\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+6\,a^2\,B^3\,d^2\,h\,n^3\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+12\,b^2\,B^3\,c\,d\,g\,n^3\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$\left.12\,a\,b\,B^3\,d^2\,g\,n^3\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-6\,b^2\,B^3\,c^2\,h\,n^3\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+6\,a^2\,B^3\,d^2\,h\,n^3\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)$$

Problem 311: Result more than twice size of optimal antiderivative.

$$\int \left(A + B \,\text{Log}\left[e \,(a + b\,x)^n \,(c + d\,x)^{-n}\right]\right)^3 dx$$

Optimal (type 4, 203 leaves, 6 steps):

$$\frac{3\,B\,(b\,c - a\,d)\,n\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\left(A + B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{b\,d} + \frac{(a+b\,x)\left(A + B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3}{b} + \frac{6\,B^2\,(b\,c-a\,d)\,n^2\left(A + B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,d} - \frac{6\,B^3\,(b\,c-a\,d)\,n^3\,\text{PolyLog}\left[3,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,d}$$

Result (type 4, 1465 leaves):

$$-\frac{1}{b d}\Big(6 A b B^2 c n^2+6 a A B^2 d n^2-6 a B^3 d n^3-A^3 b d x-3 a A^2 B d n \text{Log}[a+b x]-6 b B^3 c n^3 \text{Log}[a+b x]-6 a B^3 d n^3 \text{Log}[a+b x]+3 a A B^2 d n^2 \text{Log}[a+b x]^2-$$
$$a B^3 d n^3 \text{Log}[a+b x]^3+3 A^2 b B c n \text{Log}[c+d x]+6 b B^3 c n^3 \text{Log}[c+d x]+6 a B^3 d n^3 \text{Log}[c+d x]-6 A b B^2 c n^2 \text{Log}[a+b x] \text{Log}[c+d x]-$$
$$6 a A B^2 d n^2 \text{Log}[a+b x] \text{Log}[c+d x]+3 b B^3 c n^3 \text{Log}[a+b x]^2 \text{Log}[c+d x]+6 a B^3 d n^3 \text{Log}[a+b x]^2 \text{Log}[c+d x]+$$
$$6 a A B^2 d n^2 \text{Log}\Big[\frac{d (a+b x)}{-b c+a d}\Big] \text{Log}[c+d x]-6 a B^3 d n^3 \text{Log}[a+b x] \text{Log}\Big[\frac{d (a+b x)}{-b c+a d}\Big] \text{Log}[c+d x]+3 A b B^2 c n^2 \text{Log}[c+d x]^2-$$
$$6 b B^3 c n^3 \text{Log}[a+b x] \text{Log}[c+d x]^2-3 a B^3 d n^3 \text{Log}[a+b x] \text{Log}[c+d x]^2+3 b B^3 c n^3 \text{Log}\Big[\frac{d (a+b x)}{-b c+a d}\Big] \text{Log}[c+d x]^2+$$
$$3 a B^3 d n^3 \text{Log}\Big[\frac{d (a+b x)}{-b c+a d}\Big] \text{Log}[c+d x]^2+b B^3 c n^3 \text{Log}[c+d x]^3+6 A b B^2 c n^2 \text{Log}[a+b x] \text{Log}\Big[\frac{b (c+d x)}{b c-a d}\Big]-$$
$$3 b B^3 c n^3 \text{Log}[a+b x]^2 \text{Log}\Big[\frac{b (c+d x)}{b c-a d}\Big]-3 a B^3 d n^3 \text{Log}[a+b x]^2 \text{Log}\Big[\frac{b (c+d x)}{b c-a d}\Big]+6 b B^3 c n^3 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\Big[\frac{b (c+d x)}{b c-a d}\Big]+$$
$$6 b B^3 c n^2 \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]+6 a B^3 d n^2 \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]-3 A^2 b B d x \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]-$$
$$6 a A B^2 d n \text{Log}[a+b x] \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]+3 a B^3 d n^2 \text{Log}[a+b x]^2 \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]+$$
$$6 A b B^2 c n \text{Log}[c+d x] \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]-6 b B^3 c n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]-$$
$$6 a B^3 d n^2 \text{Log}[a+b x] \text{Log}[c+d x] \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]+6 a B^3 d n^2 \text{Log}\Big[\frac{d (a+b x)}{-b c+a d}\Big] \text{Log}[c+d x] \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]+$$
$$3 b B^3 c n^2 \text{Log}[c+d x]^2 \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]+6 b B^3 c n^2 \text{Log}[a+b x] \text{Log}\Big[\frac{b (c+d x)}{b c-a d}\Big] \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]-$$
$$3 A b B^2 d x \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]^2-3 a B^3 d n \text{Log}[a+b x] \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]^2+$$
$$3 b B^3 c n \text{Log}[c+d x] \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]^2-b B^3 d x \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]^3+$$
$$6 B^2 n^2 \big(-a B d n \text{Log}[a+b x]+b c \big(A+B n \text{Log}[c+d x]+B \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]\big)\big) \text{PolyLog}\Big[2,\frac{d (a+b x)}{-b c+a d}\Big]+$$
$$6 B^2 n^2 \big(-a B d n \text{Log}[a+b x]+b B c n \text{Log}[c+d x]+a d \big(A+B \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]\big)\big) \text{PolyLog}\Big[2,\frac{b (c+d x)}{b c-a d}\Big]-$$
$$6 b B^3 c n^3 \text{PolyLog}\Big[3,\frac{d (a+b x)}{-b c+a d}\Big]+6 a B^3 d n^3 \text{PolyLog}\Big[3,\frac{d (a+b x)}{-b c+a d}\Big]-6 b B^3 c n^3 \text{PolyLog}\Big[3,\frac{b (c+d x)}{b c-a d}\Big]+6 a B^3 d n^3 \text{PolyLog}\Big[3,\frac{b (c+d x)}{b c-a d}\Big]\Big)$$

Problem 312: Unable to integrate problem.

$$\int \frac{\big(A+B \text{Log}\big[e (a+b x)^n (c+d x)^{-n}\big]\big)^3}{g+h x}\,dx$$

Optimal (type 4, 425 leaves, 12 steps):

$$-\frac{\text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{h}+\frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3 \text{Log}\left[1-\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{h}-\frac{3 B n \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{h}+\frac{3 B n \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 \text{PolyLog}\left[2,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{h}+\frac{6 B^2 n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{h}-\frac{6 B^2 n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[3,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{h}-\frac{6 B^3 n^3 \text{PolyLog}\left[4,\frac{d (a+b x)}{b (c+d x)}\right]}{h}+\frac{6 B^3 n^3 \text{PolyLog}\left[4,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{h}$$

Result (type 8, 35 leaves):

$$\int \frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{g+h x} \, dx$$

Problem 313: Unable to integrate problem.

$$\int \frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(g+h x)^2} \, dx$$

Optimal (type 4, 302 leaves, 6 steps):

$$\frac{(a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(b g-a h) (g+h x)}+\frac{3 B (b c-a d) n \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 \text{Log}\left[1-\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{(b g-a h) (d g-c h)}+\frac{6 B^2 (b c-a d) n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{(b g-a h) (d g-c h)}-\frac{6 B^3 (b c-a d) n^3 \text{PolyLog}\left[3,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{(b g-a h) (d g-c h)}$$

Result (type 8, 35 leaves):

$$\int \frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(g+h x)^2} \, dx$$

Problem 314: Unable to integrate problem.

$$\int \frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(g+h x)^3} \, dx$$

Optimal (type 4, 629 leaves, 13 steps):

$$\frac{3 B (b c-a d) h n (a+b x) \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2}{2 (b g-a h)^2 (d g-c h) (g+h x)}+\frac{b^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{2 h (b g-a h)^2}-$$
$$\frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{2 h (g+h x)^2}+\frac{3 B^2 (b c-a d)^2 h n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{Log}\left[1-\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{(b g-a h)^2 (d g-c h)^2}+$$
$$\frac{3 B (b c-a d) (2 b d g-b c h-a d h) n \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^2 \text{Log}\left[1-\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{2 (b g-a h)^2 (d g-c h)^2}+\frac{3 B^3 (b c-a d)^2 h n^3 \text{PolyLog}\left[2,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{(b g-a h)^2 (d g-c h)^2}+$$
$$\frac{3 B^2 (b c-a d) (2 b d g-b c h-a d h) n^2 \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right) \text{PolyLog}\left[2,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{(b g-a h)^2 (d g-c h)^2}-$$
$$\frac{3 B^3 (b c-a d) (2 b d g-b c h-a d h) n^3 \text{PolyLog}\left[3,\frac{(d g-c h) (a+b x)}{(b g-a h) (c+d x)}\right]}{(b g-a h)^2 (d g-c h)^2}$$

Result (type 8, 35 leaves) :

$$\int \frac{\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^3}{(g+h x)^3} \, dx$$

Test results for the 263 problems in "3.2.2 (f+g x)^m (h+i x)^q (A+B log(e ((a+b x) over (c+d x))^n))^p.m"

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

$$\int \frac{(c i+d i x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(a g+b g x)^2} \, dx$$

Optimal (type 4, 142 leaves, 5 steps) :

$$-\frac{B i (c+d x)}{b g^2 (a+b x)}-\frac{i (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b g^2 (a+b x)}-\frac{d i \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^2 g^2}+\frac{B d i \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^2 g^2}$$

Result (type 4, 317 leaves) :

$$\frac{1}{2 b^2 g^2} i \left(\frac{2 A (-b c+a d)}{a+b x}+2 A d \text{Log}[a+b x]+2 b B c \left(\frac{d \text{Log}\left[\frac{c}{d}+x\right]}{b c-a d}+\frac{d \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]}{-b c+a d}-\frac{1+\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{a+b x}\right)+\right.$$
$$B d \left(\text{Log}\left[\frac{a}{b}+x\right]^2+\frac{2 a \left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{a+b x}+2 \left(\frac{a}{a+b x}+\text{Log}[a+b x]\right) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)+\right.$$
$$\left.\left.\frac{2 a \left((-b c+a d) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x) (\text{Log}[a+b x]-\text{Log}[c+d x])\right)}{(b c-a d) (a+b x)}-2 \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\right)$$

Problem 14: Result more than twice size of optimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{a g+b g x} \, dx$$

Optimal (type 4, 276 leaves, 10 steps):

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

Result (type 4, 615 leaves):

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

Problem 15: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^2 \left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 4, 247 leaves, 8 steps):

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

Result (type 4, 595 leaves):

$$\frac{1}{b^3\,g^2}\,i^2\left(A\,b\,d^2\,x-\frac{A\,(b\,c-a\,d)^2}{a+b\,x}+2\,A\,d\,(b\,c-a\,d)\,\text{Log}[a+b\,x]-\frac{b^2\,B\,c^2\left(-d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+(b\,c-a\,d)\left(1+\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\right)}{(b\,c-a\,d)\,(a+b\,x)}+\right.$$
$$b\,B\,c\,d\left(\text{Log}\left[\frac{a}{b}+x\right]^2+\frac{2\,a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{a+b\,x}+2\left(\frac{a}{a+b\,x}+\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)+\right.$$
$$\left.\frac{2\,a\left((-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])\right)}{(b\,c-a\,d)\,(a+b\,x)}-2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)-$$
$$B\,d^2\left(-(a+b\,x)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)+a\,\text{Log}\left[\frac{a}{b}+x\right]^2+\frac{a^2\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{a+b\,x}+b\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)-\right.$$
$$\left(b\,x-\frac{a^2}{a+b\,x}-2\,a\,\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)+$$
$$\left.\left.\frac{a^2\left((-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])\right)}{(b\,c-a\,d)\,(a+b\,x)}-2\,a\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\right)$$

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

$$\int \frac{(c\, i + d\, i\, x)^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(a g + b g x)^3} \, dx$$

Optimal (type 4, 230 leaves, 7 steps):

$$-\frac{B d i^2 (c+d x)}{b^2 g^3 (a+b x)} - \frac{B i^2 (c+d x)^2}{4 b g^3 (a+b x)^2} - \frac{d i^2 (c+d x) \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^2 g^3 (a+b x)} -$$
$$\frac{i^2 (c+d x)^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b g^3 (a+b x)^2} - \frac{d^2 i^2 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}\left[1 - \frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g^3} + \frac{B d^2 i^2 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g^3}$$

Result (type 4, 788 leaves):

$$\frac{1}{4 b^3 g^3}$$
$$i^2 \left(-\frac{2 A (b c - a d)^2}{(a+b x)^2} + \frac{8 A d (-b c + a d)}{a+b x} + 4 A d^2 \operatorname{Log}[a+b x] - \frac{1}{(b c - a d)^2 (a+b x)^2} b^2 B c^2 \left(b^2 c^2 - 4 a b c d + a^2 d^2 - 2 b^2 c d x - 2 a b d^2 x - 2 b^2 d^2 x^2 + \right.\right.$$
$$\left. 2 d^2 (a+b x)^2 \operatorname{Log}\left[\frac{c}{d} + x\right] - 2 d^2 (a+b x)^2 \operatorname{Log}\left[\frac{d (a+b x)}{-b c + a d}\right] + 2 b^2 c^2 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 4 a b c d \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 2 a^2 d^2 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) -$$
$$\frac{1}{(b c - a d)^2 (a+b x)^2} 2 b B c d \left(3 a b^2 c^2 - 4 a^2 b c d + a^3 d^2 + 4 b^3 c^2 x - 6 a b^2 c d x + 2 a^2 b d^2 x - 2 d (-2 b c + a d) (a+b x)^2 \operatorname{Log}[a+b x] + \right.$$
$$2 (b c - a d)^2 (a + 2 b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 4 a^2 b c d \operatorname{Log}[c+d x] + 2 a^3 d^2 \operatorname{Log}[c+d x] -$$
$$\left. 8 a b^2 c d x \operatorname{Log}[c+d x] + 4 a^2 b d^2 x \operatorname{Log}[c+d x] - 4 b^3 c d x^2 \operatorname{Log}[c+d x] + 2 a b^2 d^2 x^2 \operatorname{Log}[c+d x]\right) +$$
$$B d^2 \left(2 \operatorname{Log}\left[\frac{a}{b} + x\right]^2 + \frac{8 a \left(1 + \operatorname{Log}\left[\frac{a}{b} + x\right]\right)}{a+b x} - \frac{a^2 \left(1 + 2 \operatorname{Log}\left[\frac{a}{b} + x\right]\right)}{(a+b x)^2} + 2 \left(\frac{a (3 a + 4 b x)}{(a+b x)^2} + 2 \operatorname{Log}[a+b x]\right)\right.$$
$$\left(-\operatorname{Log}\left[\frac{a}{b} + x\right] + \operatorname{Log}\left[\frac{c}{d} + x\right] + \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) + \frac{8 a \left((-b c + a d) \operatorname{Log}\left[\frac{c}{d} + x\right] + d (a+b x) (\operatorname{Log}[a+b x] - \operatorname{Log}[c+d x])\right)}{(b c - a d)(a+b x)} +$$
$$\left.\left.\frac{2 a^2 \left(\operatorname{Log}\left[\frac{c}{d} + x\right] + \frac{d (a+b x) (b c - a d + d (a+b x) \operatorname{Log}[a+b x] - d (a+b x) \operatorname{Log}[c+d x])}{(b c - a d)^2}\right)}{(a+b x)^2} - 4 \left(\operatorname{Log}\left[\frac{c}{d} + x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c + a d}\right] + \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c - a d}\right]\right)\right)\right)$$

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

$$\int \frac{(c\,i + d\,i\,x)^2 \left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(a\,g + b\,g\,x)^4}\,dx$$

Optimal (type 3, 89 leaves, 2 steps):

$$-\frac{B\,i^2\,(c+d\,x)^3}{9\,(b\,c-a\,d)\,g^4\,(a+b\,x)^3} - \frac{i^2\,(c+d\,x)^3\left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,(b\,c-a\,d)\,g^4\,(a+b\,x)^3}$$

Result (type 3, 186 leaves):

$$\frac{1}{9\,b^3\,g^4} i^2 \left(-\frac{(3\,A+B)\,(b\,c-a\,d)^2}{(a+b\,x)^3} + \frac{3\,(3\,A+B)\,d\,(-b\,c+a\,d)}{(a+b\,x)^2} - \frac{3\,(3\,A+B)\,d^2}{a+b\,x} + \frac{3\,B\,d^3 \operatorname{Log}[a+b\,x]}{-b\,c+a\,d} - \frac{3\,B\left(a^2\,d^2 + a\,b\,d\,(c+3\,d\,x) + b^2\,(c^2+3\,c\,d\,x+3\,d^2\,x^2)\right) \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{(a+b\,x)^3} + \frac{3\,B\,d^3 \operatorname{Log}[c+d\,x]}{b\,c-a\,d}\right)$$

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

$$\int \frac{(c\,i + d\,i\,x)^3 \left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{a\,g + b\,g\,x}\,dx$$

Optimal (type 4, 356 leaves, 14 steps):

$$-\frac{5\,B\,d\,(b\,c-a\,d)^2\,i^3\,x}{6\,b^3\,g} - \frac{B\,(b\,c-a\,d)\,i^3\,(c+d\,x)^2}{6\,b^2\,g} - \frac{5\,B\,(b\,c-a\,d)^3\,i^3 \operatorname{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{6\,b^4\,g} + \frac{d\,(b\,c-a\,d)^2\,i^3\,(a+b\,x)\left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^4\,g} + \frac{(b\,c-a\,d)\,i^3\,(c+d\,x)^2\left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,b^2\,g} + \frac{i^3\,(c+d\,x)^3\left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,b\,g} - \frac{11\,B\,(b\,c-a\,d)^3\,i^3 \operatorname{Log}[c+d\,x]}{6\,b^4\,g} - \frac{(b\,c-a\,d)^3\,i^3\left(A + B \operatorname{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right) \operatorname{Log}\left[1 - \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g} + \frac{B\,(b\,c-a\,d)^3\,i^3 \operatorname{PolyLog}\left[2, \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g}$$

Result (type 4, 1004 leaves):

$$\frac{1}{6 b^4 g} i^3 \Big(18 b^3 B c^3 - 36 a b^2 B c^2 d + 24 a^2 b B c d^2 - 6 a^3 B d^3 + 18 A b^3 c^2 d x - 7 b^3 B c^2 d x - 18 a A b^2 c d^2 x + 12 a b^2 B c d^2 x + 6 a^2 A b d^3 x - 5 a^2 b B d^3 x + 9 A b^3 c d^2 x^2 - b^3 B c d^2 x^2 - 3 a A b^2 d^3 x^2 + a b^2 B d^3 x^2 + 2 A b^3 d^3 x^3 + 3 B (b c - a d)^3 \text{Log}\left[\frac{a}{b} + x\right]^2 - 18 b^3 B c^3 \text{Log}\left[\frac{c}{d} + x\right] + 18 a b^2 B c^2 d \text{Log}\left[\frac{c}{d} + x\right] - 6 a^2 b B c d^2 \text{Log}\left[\frac{c}{d} + x\right] + 6 A b^3 c^3 \text{Log}[a + b x] - 18 a A b^2 c^2 d \text{Log}[a + b x] + 18 a^2 A b c d^2 \text{Log}[a + b x] - 9 a^2 b B c d^2 \text{Log}[a + b x] - 6 a^3 A d^3 \text{Log}[a + b x] + 5 a^3 B d^3 \text{Log}[a + b x] + 6 b^3 B c^3 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] - 18 a b^2 B c^2 d \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] + 18 a^2 b B c d^2 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] - 6 a^3 B d^3 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] + 6 B \text{Log}\left[\frac{a}{b} + x\right] \left(a d (3 b^2 c^2 - 3 a b c d + a^2 d^2) - (b c - a d)^3 \text{Log}[a + b x]\right) - 6 b^3 B c^3 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + 18 a b^2 B c^2 d \text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] - 18 a^2 b B c d^2 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + 6 a^3 B d^3 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + 18 b^3 B c^2 d x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 18 a b^2 B c d^2 x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 6 a^2 b B d^3 x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 9 b^3 B c d^2 x^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 3 a b^2 B d^3 x^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 2 b^3 B d^3 x^3 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 6 b^3 B c^3 \text{Log}[a + b x] \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 18 a b^2 B c^2 d \text{Log}[a + b x] \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 18 a^2 b B c d^2 \text{Log}[a + b x] \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 6 a^3 B d^3 \text{Log}[a + b x] \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 7 b^3 B c^3 \text{Log}[c + d x] - 3 a b^2 B c^2 d \text{Log}[c + d x] - 6 B (b c - a d)^3 \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\Big)$$

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

$$\int \frac{(c i + d i x)^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(a g + b g x)^2} \, dx$$

Optimal (type 4, 373 leaves, 11 steps):

$$-\frac{B d^2 (b c - a d) i^3 x}{2 b^3 g^2} - \frac{B (b c - a d)^2 i^3 (c + d x)}{b^3 g^2 (a + b x)} - \frac{B d (b c - a d)^2 i^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{2 b^4 g^2} + \frac{2 d^2 (b c - a d) i^3 (a + b x) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g^2} - \frac{(b c - a d)^2 i^3 (c + d x) \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^3 g^2 (a + b x)} + \frac{d i^3 (c + d x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b^2 g^2} - \frac{5 B d (b c - a d)^2 i^3 \text{Log}[c + d x]}{2 b^4 g^2} - \frac{3 d (b c - a d)^2 i^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}\left[1 - \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2} + \frac{3 B d (b c - a d)^2 i^3 \text{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2}$$

Result (type 4, 967 leaves):

$$\frac{1}{2 b^4 g^2} i^3 \Bigg(2 A b d^2 (3 b c - 2 a d) x + A b^2 d^3 x^2 - \frac{2 A (b c - a d)^3}{a + b x} + 6 A d (b c - a d)^2 \text{Log}[a + b x] -$$

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

$$\Bigg(4 a^2 - \frac{4 a b c}{d} + a b x - \frac{b^2 c x}{d} + \frac{2 a^3}{a + b x} + 3 a^2 \text{Log}\left[\frac{a}{b} + x\right]^2 + \frac{4 a b c \text{Log}\left[\frac{c}{d} + x\right]}{d} - a^2 \text{Log}[a + b x] + \frac{2 a^3 d \text{Log}[a + b x]}{b c - a d} + 6 a^2 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] -$$

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

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

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

$$\frac{2 a \left((-b c + a d) \text{Log}\left[\frac{c}{d} + x\right] + d (a + b x) (\text{Log}[a + b x] - \text{Log}[c + d x])\right)}{(b c - a d) (a + b x)} - 2 \left(\text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\right)\Bigg) -$$

$$6 b B c d^2 \Bigg(-(a + b x) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) + a \text{Log}\left[\frac{a}{b} + x\right]^2 + \frac{a^2 \left(1 + \text{Log}\left[\frac{a}{b} + x\right]\right)}{a + b x} + b \left(\frac{c}{d} + x\right) \left(-1 + \text{Log}\left[\frac{c}{d} + x\right]\right) -$$

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

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

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

$$\int \frac{(c i + d i x)^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(a g + b g x)^3} \, dx$$

Optimal (type 4, 345 leaves, 9 steps):

$$-\frac{2 B d (b c-a d) i^3 (c+d x)}{b^3 g^3 (a+b x)}-\frac{B (b c-a d) i^3 (c+d x)^2}{4 b^2 g^3 (a+b x)^2}+\frac{d^3 i^3 (a+b x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g^3}-$$

$$\frac{2 d (b c-a d) i^3 (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^3 g^3 (a+b x)}-\frac{(b c-a d) i^3 (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b^2 g^3 (a+b x)^2}-\frac{B d^2 (b c-a d) i^3 \operatorname{Log}[c+d x]}{b^4 g^3}-$$

$$\frac{3 d^2 (b c-a d) i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^3}+\frac{3 B d^2 (b c-a d) i^3 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^3}$$

Result (type 4, 1170 leaves) :

$$\frac{1}{4\, b^4\, g^3}\, i^3 \Bigg(4\, A\, b\, d^3\, x - \frac{2\, A\, (b\, c - a\, d)^3}{(a + b\, x)^2} - \frac{12\, A\, d\, (b\, c - a\, d)^2}{a + b\, x} + 12\, A\, d^2\, (b\, c - a\, d)\, \text{Log}[a + b\, x] -$$

$$\frac{1}{(b\, c - a\, d)^2\, (a + b\, x)^2} b^3\, B\, c^3 \Bigg(b^2\, c^2 - 4\, a\, b\, c\, d + a^2\, d^2 - 2\, b^2\, c\, d\, x - 2\, a\, b\, d^2\, x - 2\, b^2\, d^2\, x^2 + 2\, d^2\, (a + b\, x)^2\, \text{Log}\Big[\frac{c}{d} + x\Big] -$$

$$2\, d^2\, (a + b\, x)^2\, \text{Log}\Big[\frac{d\, (a + b\, x)}{-b\, c + a\, d}\Big] + 2\, b^2\, c^2\, \text{Log}\Big[\frac{e\, (a + b\, x)}{c + d\, x}\Big] - 4\, a\, b\, c\, d\, \text{Log}\Big[\frac{e\, (a + b\, x)}{c + d\, x}\Big] + 2\, a^2\, d^2\, \text{Log}\Big[\frac{e\, (a + b\, x)}{c + d\, x}\Big]\Bigg) -$$

$$\frac{1}{(b\, c - a\, d)^2\, (a + b\, x)^2}\, 3\, b^2\, B\, c^2\, d \Bigg(3\, a\, b^2\, c^2 - 4\, a^2\, b\, c\, d + a^3\, d^2 + 4\, b^3\, c^2\, x - 6\, a\, b^2\, c\, d\, x + 2\, a^2\, b\, d^2\, x - 2\, d\, (-2\, b\, c + a\, d)\, (a + b\, x)^2\, \text{Log}[a + b\, x] +$$

$$2\, (b\, c - a\, d)^2\, (a + 2\, b\, x)\, \text{Log}\Big[\frac{e\, (a + b\, x)}{c + d\, x}\Big] - 4\, a^2\, b\, c\, d\, \text{Log}[c + d\, x] + 2\, a^3\, d^2\, \text{Log}[c + d\, x] -$$

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

$$3\, b\, B\, c\, d^2 \Bigg(2\, \text{Log}\Big[\frac{a}{b} + x\Big]^2 + \frac{8\, a\, \big(1 + \text{Log}\big[\frac{a}{b} + x\big]\big)}{a + b\, x} - \frac{a^2\, \big(1 + 2\, \text{Log}\big[\frac{a}{b} + x\big]\big)}{(a + b\, x)^2} + 2\, \Bigg(\frac{a\, (3\, a + 4\, b\, x)}{(a + b\, x)^2} + 2\, \text{Log}[a + b\, x]\Bigg)$$

$$\Bigg(-\text{Log}\Big[\frac{a}{b} + x\Big] + \text{Log}\Big[\frac{c}{d} + x\Big] + \text{Log}\Big[\frac{e\, (a + b\, x)}{c + d\, x}\Big]\Bigg) + \frac{8\, a\, \big(\big(-b\, c + a\, d\big)\, \text{Log}\big[\frac{c}{d} + x\big] + d\, (a + b\, x)\, (\text{Log}[a + b\, x] - \text{Log}[c + d\, x])\big)}{(b\, c - a\, d)\, (a + b\, x)} +$$

$$\frac{2\, a^2\, \Big(\text{Log}\big[\frac{c}{d} + x\big] + \frac{d\, (a+b\, x)\, (b\, c-a\, d+d\, (a+b\, x)\, \text{Log}[a+b\, x]-d\, (a+b\, x)\, \text{Log}[c+d\, x])}{(b\, c-a\, d)^2}\Big)}{(a + b\, x)^2} - 4\, \Bigg(\text{Log}\Big[\frac{c}{d} + x\Big]\, \text{Log}\Big[\frac{d\, (a + b\, x)}{-b\, c + a\, d}\Big] + \text{PolyLog}\Big[2, \frac{b\, (c + d\, x)}{b\, c - a\, d}\Big]\Bigg)\Bigg) -$$

$$B\, d^3 \Bigg(-4\, (a + b\, x)\, \Big(-1 + \text{Log}\Big[\frac{a}{b} + x\Big]\Big) + 6\, a\, \text{Log}\Big[\frac{a}{b} + x\Big]^2 + \frac{12\, a^2\, \big(1 + \text{Log}\big[\frac{a}{b} + x\big]\big)}{a + b\, x} - \frac{a^3\, \big(1 + 2\, \text{Log}\big[\frac{a}{b} + x\big]\big)}{(a + b\, x)^2} + 4\, b\, \Big(\frac{c}{d} + x\Big)\, \Big(-1 + \text{Log}\Big[\frac{c}{d} + x\Big]\Big) +$$

$$2\, \Bigg(-2\, b\, x + \frac{a^2\, (5\, a + 6\, b\, x)}{(a + b\, x)^2} + 6\, a\, \text{Log}[a + b\, x]\Bigg)\, \Bigg(-\text{Log}\Big[\frac{a}{b} + x\Big] + \text{Log}\Big[\frac{c}{d} + x\Big] + \text{Log}\Big[\frac{e\, (a + b\, x)}{c + d\, x}\Big]\Bigg) +$$

$$\frac{12\, a^2\, \big(\big(-b\, c + a\, d\big)\, \text{Log}\big[\frac{c}{d} + x\big] + d\, (a + b\, x)\, (\text{Log}[a + b\, x] - \text{Log}[c + d\, x])\big)}{(b\, c - a\, d)\, (a + b\, x)} +$$

$$\frac{2\, a^3\, \Big(\text{Log}\big[\frac{c}{d} + x\big] + \frac{d\, (a+b\, x)\, (b\, c-a\, d+d\, (a+b\, x)\, \text{Log}[a+b\, x]-d\, (a+b\, x)\, \text{Log}[c+d\, x])}{(b\, c-a\, d)^2}\Big)}{(a + b\, x)^2} - 12\, a\, \Bigg(\text{Log}\Big[\frac{c}{d} + x\Big]\, \text{Log}\Big[\frac{d\, (a + b\, x)}{-b\, c + a\, d}\Big] + \text{PolyLog}\Big[2, \frac{b\, (c + d\, x)}{b\, c - a\, d}\Big]\Bigg)\Bigg)\Bigg)$$

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

$$\int \frac{(c\,i+d\,i\,x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 4, 310 leaves, 9 steps):

$$-\frac{B d^2 i^3 (c+d x)}{b^3 g^4 (a+b x)}-\frac{B d i^3 (c+d x)^2}{4 b^2 g^4 (a+b x)^2}-\frac{B i^3 (c+d x)^3}{9 b g^4 (a+b x)^3}-\frac{d^2 i^3 (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^3 g^4 (a+b x)}-\frac{d i^3 (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b^2 g^4 (a+b x)^2}-$$
$$\frac{i^3 (c+d x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b g^4 (a+b x)^3}-\frac{d^3 i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^4}+\frac{B d^3 i^3 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^4}$$

Result (type 4, 1407 leaves):

$$\frac{1}{36 b^4 g^4} i^3 \left(-\frac{12 A (b c-a d)^3}{(a+b x)^3}-\frac{54 A d (b c-a d)^2}{(a+b x)^2}+\frac{108 A d^2 (-b c+a d)}{a+b x}+\right.$$
$$36 A d^3 \operatorname{Log}[a+b x]-\frac{1}{(b c-a d)^3 (a+b x)^3} 2 b^3 B c^3 \left(2 b^3 c^3-9 a b^2 c^2 d+18 a^2 b c d^2-2 a^3 d^3-3 b^3 c^2 d x+18 a b^2 c d^2 x+\right.$$
$$12 a^2 b d^3 x+6 b^3 c d^2 x^2+21 a b^2 d^3 x^2+9 b^3 d^3 x^3-6 d^3 (a+b x)^3 \operatorname{Log}\left[\frac{c}{d}+x\right]+6 d^3 (a+b x)^3 \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+$$
$$\left.6 b^3 c^3 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]-18 a b^2 c^2 d \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]+18 a^2 b c d^2 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]-6 a^3 d^3 \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)+$$
$$3 b^2 B c^2 d \left(-\frac{9 \left(1+2 \operatorname{Log}\left[\frac{a}{b}+x\right]\right)}{(a+b x)^2}+\frac{4 a \left(1+3 \operatorname{Log}\left[\frac{a}{b}+x\right]\right)}{(a+b x)^3}+\frac{6 (a+3 b x) \left(\operatorname{Log}\left[\frac{a}{b}+x\right]-\operatorname{Log}\left[\frac{c}{d}+x\right]-\operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(a+b x)^3}+\right.$$
$$6 a \left(-\frac{2 \operatorname{Log}\left[\frac{c}{d}+x\right]}{(a+b x)^3}+\frac{d \left(\frac{(b c-a d) (-b c+3 a d+2 b d x)}{(a+b x)^2}+2 d^2 \operatorname{Log}[a+b x]-2 d^2 \operatorname{Log}[c+d x]\right)}{(b c-a d)^3}\right)+$$
$$\left.\frac{18 \left(\operatorname{Log}\left[\frac{c}{d}+x\right]+\frac{d (a+b x) (b c-a d+d (a+b x) \operatorname{Log}[a+b x]-d (a+b x) \operatorname{Log}[c+d x])}{(b c-a d)^2}\right)}{(a+b x)^2}\right)-$$
$$6 b B c d^2 \left(\frac{18 \left(1+\operatorname{Log}\left[\frac{a}{b}+x\right]\right)}{a+b x}-\frac{9 a \left(1+2 \operatorname{Log}\left[\frac{a}{b}+x\right]\right)}{(a+b x)^2}+\frac{2 a^2 \left(1+3 \operatorname{Log}\left[\frac{a}{b}+x\right]\right)}{(a+b x)^3}-\right.$$

$$\frac{6\left(a^2+3abx+3b^2x^2\right)\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\right)}{(a+bx)^3}+\frac{18\left((-bc+ad)\,\text{Log}\left[\frac{c}{d}+x\right]+d(a+bx)\left(\text{Log}[a+bx]-\text{Log}[c+dx]\right)\right)}{(bc-ad)(a+bx)}+$$

$$3a^2\left(-\frac{2\,\text{Log}\left[\frac{c}{d}+x\right]}{(a+bx)^3}+\frac{d\left(\frac{(bc-ad)(-bc+3ad+2bdx)}{(a+bx)^2}+2d^2\,\text{Log}[a+bx]-2d^2\,\text{Log}[c+dx]\right)}{(bc-ad)^3}\right)+$$

$$\frac{18a\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d(a+bx)(bc-ad+d(a+bx)\text{Log}[a+bx]-d(a+bx)\text{Log}[c+dx])}{(bc-ad)^2}\right)}{(a+bx)^2}\Bigg)+$$

$$B\,d^3\left(18\,\text{Log}\left[\frac{a}{b}+x\right]^2+\frac{108a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{a+bx}-\frac{27a^2\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{(a+bx)^2}+\frac{4a^3\left(1+3\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{(a+bx)^3}+\right.$$

$$6\left(\frac{a\left(11a^2+27abx+18b^2x^2\right)}{(a+bx)^3}+6\,\text{Log}[a+bx]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\right)+$$

$$\frac{108a\left((-bc+ad)\,\text{Log}\left[\frac{c}{d}+x\right]+d(a+bx)\left(\text{Log}[a+bx]-\text{Log}[c+dx]\right)\right)}{(bc-ad)(a+bx)}+$$

$$6a^3\left(-\frac{2\,\text{Log}\left[\frac{c}{d}+x\right]}{(a+bx)^3}+\frac{d\left(\frac{(bc-ad)(-bc+3ad+2bdx)}{(a+bx)^2}+2d^2\,\text{Log}[a+bx]-2d^2\,\text{Log}[c+dx]\right)}{(bc-ad)^3}\right)+$$

$$\left.\left.\frac{54a^2\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d(a+bx)(bc-ad+d(a+bx)\text{Log}[a+bx]-d(a+bx)\text{Log}[c+dx])}{(bc-ad)^2}\right)}{(a+bx)^2}-36\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d(a+bx)}{-bc+ad}\right]+\text{PolyLog}\left[2,\frac{b(c+dx)}{bc-ad}\right]\right)\right)\right)$$

Problem 28: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^3\left(A+B\,\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\right)}{(a\,g+b\,g\,x)^5}\,dx$$

Optimal (type 3, 89 leaves, 2 steps):

$$-\frac{B\,i^3(c+dx)^4}{16(bc-ad)\,g^5(a+bx)^4}-\frac{i^3(c+dx)^4\left(A+B\,\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\right)}{4(bc-ad)\,g^5(a+bx)^4}$$

Result (type 3, 248 leaves):

$$\frac{1}{16 b^4 (b c - a d) g^5 (a + b x)^4} i^3 \Big(-(4 A + B) (b c - a d)^4 + 4 (4 A + B) d (-b c + a d)^3 (a + b x) - 6 (4 A + B) d^2 (b c - a d)^2 (a + b x)^2 + 4 (4 A + B) d^3 (-b c + a d) (a + b x)^3 - 4 B d^4 (a + b x)^4 \text{Log}[a + b x] - 4 B (b c - a d) \left((b c - a d)^3 + 4 d (b c - a d)^2 (a + b x) + 6 d^2 (b c - a d) (a + b x)^2 + 4 d^3 (a + b x)^3\right) \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 4 B d^4 (a + b x)^4 \text{Log}[c + d x]\Big)$$

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

$$\int \frac{(a g + b g x)^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{c i + d i x} \, dx$$

Optimal (type 4, 252 leaves, 6 steps):

$$\frac{g^3 (a + b x)^3 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 d i} - \frac{(b c - a d) g^3 (a + b x)^2 \left(3 A + B + 3 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 d^2 i} + \frac{(b c - a d)^2 g^3 (a + b x) \left(6 A + 5 B + 6 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 d^3 i} + \frac{(b c - a d)^3 g^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(6 A + 11 B + 6 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 d^4 i} + \frac{B (b c - a d)^3 g^3 \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i}$$

Result (type 4, 947 leaves):

$$\frac{1}{6 d^4 i} g^3 \Big(6 b^3 B c^3 - 24 a b^2 B c^2 d + 36 a^2 b B c d^2 - 18 a^3 B d^3 + 6 A b^3 c^2 d x + 5 b^3 B c^2 d x - 18 a A b^2 c d^2 x - 12 a b^2 B c d^2 x + 18 a^2 A b d^3 x + 7 a^2 b B d^3 x - 3 A b^3 c d^2 x^2 - b^3 B c d^2 x^2 + 9 a A b^2 d^3 x^2 + a b^2 B d^3 x^2 + 2 A b^3 d^3 x^3 - 6 b^3 B c^3 \text{Log}\left[\frac{c}{d} + x\right] + 18 a b^2 B c^2 d \text{Log}\left[\frac{c}{d} + x\right] - 18 a^2 b B c d^2 \text{Log}\left[\frac{c}{d} + x\right] + 3 b^3 B c^3 \text{Log}\left[\frac{c}{d} + x\right]^2 - 9 a b^2 B c^2 d \text{Log}\left[\frac{c}{d} + x\right]^2 + 9 a^2 b B c d^2 \text{Log}\left[\frac{c}{d} + x\right]^2 - 3 a^3 B d^3 \text{Log}\left[\frac{c}{d} + x\right]^2 + 3 a^2 b B c d^2 \text{Log}[a + b x] - 7 a^3 B d^3 \text{Log}[a + b x] + 6 b^3 B c^2 d x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 18 a b^2 B c d^2 x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 18 a^2 b B d^3 x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 3 b^3 B c d^2 x^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 9 a b^2 B d^3 x^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 2 b^3 B d^3 x^3 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 6 A b^3 c^3 \text{Log}[c + d x] - 5 b^3 B c^3 \text{Log}[c + d x] + 18 a A b^2 c^2 d \text{Log}[c + d x] + 9 a b^2 B c^2 d \text{Log}[c + d x] - 18 a^2 A b c d^2 \text{Log}[c + d x] + 6 a^3 A d^3 \text{Log}[c + d x] - 6 b^3 B c^3 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[c + d x] + 18 a b^2 B c^2 d \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[c + d x] - 18 a^2 b B c d^2 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[c + d x] + 6 a^3 B d^3 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[c + d x] - 6 b^3 B c^3 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] \text{Log}[c + d x] + 18 a b^2 B c^2 d \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] \text{Log}[c + d x] - 18 a^2 b B c d^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] \text{Log}[c + d x] + 6 a^3 B d^3 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] \text{Log}[c + d x] - 6 B \text{Log}\left[\frac{a}{b} + x\right] \left(-a d (b^2 c^2 - 3 a b c d + 3 a^2 d^2) - (b c - a d)^3 \text{Log}[c + d x] + (b c - a d)^3 \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right]\right) - 6 B (b c - a d)^3 \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\Big)$$

Problem 32: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{c i+d i x} \, dx$$

Optimal (type 4, 198 leaves, 5 steps):

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

Result (type 4, 575 leaves):

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

Problem 33: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{c i+d i x} \, dx$$

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

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

Result (type 4, 291 leaves):

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

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

$$\int\frac{(a\,g+b\,g\,x)^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 4, 341 leaves, 9 steps):

$$\frac{3\,B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)}{d^3\,i^2\,(c+d\,x)}-\frac{(6\,A+5\,B)\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)}{2\,d^3\,i^2\,(c+d\,x)}-\frac{3\,B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{d^3\,i^2\,(c+d\,x)}+$$
$$\frac{g^3\,(a+b\,x)^3\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,d\,i^2\,(c+d\,x)}-\frac{(b\,c-a\,d)\,g^3\,(a+b\,x)^2\left(3\,A+B+3\,B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,d^2\,i^2\,(c+d\,x)}-$$
$$\frac{b\,(b\,c-a\,d)^2\,g^3\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\left(6\,A+5\,B+6\,B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{2\,d^4\,i^2}-\frac{3\,b\,B\,(b\,c-a\,d)^2\,g^3\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i^2}$$

Result (type 4, 956 leaves):

$$\frac{1}{2 d^4 i^2} g^3 \left(-2 A b^2 d (2 b c - 3 a d) x + A b^3 d^2 x^2 + \frac{2 A (b c - a d)^3}{c + d x} + 6 A b (b c - a d)^2 \text{Log}[c + d x] + \frac{1}{(b c - a d) (c + d x)}\right.$$

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

$$3 a^2 b B d^2 \left(-\text{Log}\left[\frac{c}{d} + x\right]^2 + 2 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[c + d x] + 2 \left(-\frac{c}{c + d x} + \frac{b c \text{Log}[a + b x]}{-b c + a d} + \frac{b c \text{Log}[c + d x]}{b c - a d} - \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[c + d x] +\right.\right.$$

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

$$b^3 B \left(-4 c^2 + \frac{4 a c d}{b} - c d x + \frac{a d^2 x}{b} - \frac{2 c^3}{c + d x} + 4 c^2 \text{Log}\left[\frac{c}{d} + x\right] - 3 c^2 \text{Log}\left[\frac{c}{d} + x\right]^2 - \frac{a^2 d^2 \text{Log}[a + b x]}{b^2} + \frac{2 b c^3 \text{Log}[a + b x]}{-b c + a d} -\right.$$

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

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

$$6 a b^2 B d \left(d \left(\frac{a}{b} + x\right) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) - (c + d x) \left(-1 + \text{Log}\left[\frac{c}{d} + x\right]\right) + c \text{Log}\left[\frac{c}{d} + x\right]^2 + \frac{c^2 \left(1 + \text{Log}\left[\frac{c}{d} + x\right]\right)}{c + d x} +\right.$$

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

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

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

$$\int \frac{(a g + b g x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(c i + d i x)^2} \, dx$$

Optimal (type 4, 260 leaves, 8 steps) :

$$-\frac{2 B (b c-a d) g^2 (a+b x)}{d^2 i^2 (c+d x)}+\frac{(2 A+B) (b c-a d) g^2 (a+b x)}{d^2 i^2 (c+d x)}+\frac{2 B (b c-a d) g^2 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^2 i^2 (c+d x)}+$$
$$\frac{g^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d i^2 (c+d x)}+\frac{b (b c-a d) g^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(2 A+B+2 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^3 i^2}+\frac{2 b B (b c-a d) g^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^2}$$

Result (type 4, 588 leaves):

$$\frac{1}{d^3 i^2} g^2 \left(A b^2 d x-\frac{A (b c-a d)^2}{c+d x}+2 A b (-b c+a d) \text{Log}[c+d x]+\frac{1}{(b c-a d) (c+d x)}\right.$$
$$a^2 B d^2 \left(b c-a d+b (c+d x) \text{Log}\left[\frac{a}{b}+x\right]+(-b c+a d) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-b c \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-b d x \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+$$
$$a b B d \left(-\text{Log}\left[\frac{c}{d}+x\right]^2+2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+2 \left(-\frac{c}{c+d x}+\frac{b c \text{Log}[a+b x]}{-b c+a d}+\frac{b c \text{Log}[c+d x]}{b c-a d}-\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+\right.\right.$$
$$\left.\left.\text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \left(\frac{c}{c+d x}+\text{Log}[c+d x]\right)+\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)+$$
$$b^2 B \left(d \left(\frac{a}{b}+x\right) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)-(c+d x) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)+c \text{Log}\left[\frac{c}{d}+x\right]^2+\frac{c^2 \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{c+d x}+\right.$$
$$c^2 \left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{c+d x}+\frac{b (\text{Log}[a+b x]-\text{Log}[c+d x])}{b c-a d}\right)+\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \left(d x-\frac{c^2}{c+d x}-2 c \text{Log}[c+d x]\right)-$$
$$\left.\left.2 c \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)\right)$$

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

$$\int \frac{(a g+b g x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(c i+d i x)^2} \, dx$$

Optimal (type 4, 160 leaves, 7 steps):

$$-\frac{A g (a+b x)}{d i^2 (c+d x)}+\frac{B g (a+b x)}{d i^2 (c+d x)}-\frac{B g (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d i^2 (c+d x)}-\frac{b g \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^2 i^2}-\frac{b B g \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i^2}$$

Result (type 4, 333 leaves):

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

Problem 47: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g + b g x)^3 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(c i + d i x)^3} \, dx$$

Optimal (type 4, 361 leaves, 9 steps):

$$-\frac{3 B (b c - a d) g^3 (a + b x)^2}{4 d^2 i^3 (c + d x)^2} - \frac{3 b B (b c - a d) g^3 (a + b x)}{d^3 i^3 (c + d x)} + \frac{b (3 A + B) (b c - a d) g^3 (a + b x)}{d^3 i^3 (c + d x)} + \frac{3 b B (b c - a d) g^3 (a + b x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^3 i^3 (c + d x)} + \frac{g^3 (a + b x)^3 \left(A + B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d i^3 (c + d x)^2} + \frac{(b c - a d) g^3 (a + b x)^2 \left(3 A + B + 3 B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d^2 i^3 (c + d x)^2} + \frac{b^2 (b c - a d) g^3 \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(3 A + B + 3 B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^4 i^3} + \frac{3 b^2 B (b c - a d) g^3 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}$$

Result (type 4, 1161 leaves):

$$\frac{1}{4\,d^4\,i^3} g^3 \Bigg(4\,A\,b^3\,d\,x+\frac{2\,A\,(b\,c-a\,d)^3}{(c+d\,x)^2}-\frac{12\,A\,b\,(b\,c-a\,d)^2}{c+d\,x}+12\,A\,b^2\,(-b\,c+a\,d)\,\text{Log}[c+d\,x]-\frac{1}{(b\,c-a\,d)^2\,(c+d\,x)^2}3\,a^2\,b\,B\,d^2\,\Big(-b^2\,c^3+4\,a\,b\,c^2\,d-3\,a^2\,c\,d^2-$$

$$2\,b^2\,c^2\,d\,x+6\,a\,b\,c\,d^2\,x-4\,a^2\,d^3\,x-2\,b\,(b\,c-2\,a\,d)\,(c+d\,x)^2\,\text{Log}[a+b\,x]+2\,(b\,c-a\,d)^2\,(c+2\,d\,x)\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]+2\,b^2\,c^3\,\text{Log}[c+d\,x]-$$

$$4\,a\,b\,c^2\,d\,\text{Log}[c+d\,x]+4\,b^2\,c^2\,d\,x\,\text{Log}[c+d\,x]-8\,a\,b\,c\,d^2\,x\,\text{Log}[c+d\,x]+2\,b^2\,c\,d^2\,x^2\,\text{Log}[c+d\,x]-4\,a\,b\,d^3\,x^2\,\text{Log}[c+d\,x]\Big)-$$

$$\frac{1}{(b\,c-a\,d)^2\,(c+d\,x)^2}a^3\,B\,d^3\,\Big(-b^2\,c^2+4\,a\,b\,c\,d-a^2\,d^2+2\,b^2\,c\,d\,x+2\,a\,b\,d^2\,x+2\,b^2\,d^2\,x^2-2\,b^2\,(c+d\,x)^2\,\text{Log}\Big[\frac{a}{b}+x\Big]+$$

$$2\,(b\,c-a\,d)^2\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]+2\,b^2\,c^2\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]+4\,b^2\,c\,d\,x\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]+2\,b^2\,d^2\,x^2\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)+$$

$$3\,a\,b^2\,B\,d\,\Bigg(-2\,\text{Log}\Big[\frac{c}{d}+x\Big]^2-\frac{8\,c\,\big(1+\text{Log}\big[\frac{c}{d}+x\big]\big)}{c+d\,x}+\frac{c^2\,\big(1+2\,\text{Log}\big[\frac{c}{d}+x\big]\big)}{(c+d\,x)^2}+8\,c\,\Bigg(\frac{\text{Log}\big[\frac{a}{b}+x\big]}{c+d\,x}+\frac{b\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])}{-b\,c+a\,d}\Bigg)+$$

$$2\,\Big(-\text{Log}\Big[\frac{a}{b}+x\Big]+\text{Log}\Big[\frac{c}{d}+x\Big]+\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]\Big)\,\Big(\frac{c\,(3\,c+4\,d\,x)}{(c+d\,x)^2}+2\,\text{Log}[c+d\,x]\Big)+$$

$$\frac{2\,c^2\,\Big(-\text{Log}\big[\frac{a}{b}+x\big]+\frac{b\,(c+d\,x)\,(b\,c-a\,d+b\,(c+d\,x)\,\text{Log}[a+b\,x]-b\,(c+d\,x)\,\text{Log}[c+d\,x])}{(b\,c-a\,d)^2}\Big)}{(c+d\,x)^2}+4\,\Big(\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]+\text{PolyLog}\Big[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Big)\Bigg)-$$

$$b^3\,B\,\Bigg(-4\,d\,\Big(\frac{a}{b}+x\Big)\,\Big(-1+\text{Log}\Big[\frac{a}{b}+x\Big]\Big)+4\,(c+d\,x)\,\Big(-1+\text{Log}\Big[\frac{c}{d}+x\Big]\Big)-6\,c\,\text{Log}\Big[\frac{c}{d}+x\Big]^2-\frac{12\,c^2\,\big(1+\text{Log}\big[\frac{c}{d}+x\big]\big)}{c+d\,x}+$$

$$\frac{c^3\,\big(1+2\,\text{Log}\big[\frac{c}{d}+x\big]\big)}{(c+d\,x)^2}-12\,c^2\,\Bigg(-\frac{\text{Log}\big[\frac{a}{b}+x\big]}{c+d\,x}+\frac{b\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])}{b\,c-a\,d}\Bigg)+$$

$$2\,\Big(-\text{Log}\Big[\frac{a}{b}+x\Big]+\text{Log}\Big[\frac{c}{d}+x\Big]+\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]\Big)\,\Big(-2\,d\,x+\frac{c^2\,(5\,c+6\,d\,x)}{(c+d\,x)^2}+6\,c\,\text{Log}[c+d\,x]\Big)+$$

$$\frac{2\,c^3\,\Big(-\text{Log}\big[\frac{a}{b}+x\big]+\frac{b\,(c+d\,x)\,(b\,c-a\,d+b\,(c+d\,x)\,\text{Log}[a+b\,x]-b\,(c+d\,x)\,\text{Log}[c+d\,x])}{(b\,c-a\,d)^2}\Big)}{(c+d\,x)^2}+12\,c\,\Big(\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]+\text{PolyLog}\Big[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Big)\Bigg)\Bigg)$$

Problem 48: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{(c i+d i x)^3} \, dx$$

Optimal (type 4, 251 leaves, 8 steps):

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

Result (type 4, 790 leaves):

$$\frac{1}{4 d^3 i^3} g^2 \left(-\frac{2 A (b c-a d)^2}{(c+d x)^2}+\frac{8 A b (b c-a d)}{c+d x}+4 A b^2 \text{Log}[c+d x]-\frac{1}{(b c-a d)^2 (c+d x)^2} 2 a b B d \left(-b^2 c^3+4 a b c^2 d-3 a^2 c d^2-2 b^2 c^2 d x+6 a b c d^2 x-\right.\right.$$
$$4 a^2 d^3 x-2 b (b c-2 a d) (c+d x)^2 \text{Log}[a+b x]+2 (b c-a d)^2 (c+2 d x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+2 b^2 c^3 \text{Log}[c+d x]-$$
$$\left.4 a b c^2 d \text{Log}[c+d x]+4 b^2 c^2 d x \text{Log}[c+d x]-8 a b c d^2 x \text{Log}[c+d x]+2 b^2 c d^2 x^2 \text{Log}[c+d x]-4 a b d^3 x^2 \text{Log}[c+d x]\right)-$$
$$\frac{1}{(b c-a d)^2 (c+d x)^2} a^2 B d^2 \left(-b^2 c^2+4 a b c d-a^2 d^2+2 b^2 c d x+2 a b d^2 x+2 b^2 d^2 x^2-2 b^2 (c+d x)^2 \text{Log}\left[\frac{a}{b}+x\right]+\right.$$
$$\left.2 (b c-a d)^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+2 b^2 c^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+4 b^2 c d x \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 b^2 d^2 x^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+$$
$$b^2 B \left(-2 \text{Log}\left[\frac{c}{d}+x\right]^2-\frac{8 c \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{c+d x}+\frac{c^2 \left(1+2 \text{Log}\left[\frac{c}{d}+x\right]\right)}{(c+d x)^2}+8 c \left(\frac{\text{Log}\left[\frac{a}{b}+x\right]}{c+d x}+\frac{b (\text{Log}[a+b x]-\text{Log}[c+d x])}{-b c+a d}\right)+\right.$$
$$2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \left(\frac{c (3 c+4 d x)}{(c+d x)^2}+2 \text{Log}[c+d x]\right)+$$
$$\left.\left.\frac{2 c^2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b (c+d x) (b c-a d+b (c+d x) \text{Log}[a+b x]-b (c+d x) \text{Log}[c+d x])}{(b c-a d)^2}\right)}{(c+d x)^2}+4 \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)\right)$$

Problem 55: Result more than twice size of optimal antiderivative.

$$\int (a\,g+b\,g\,x)^3\,(c\,i+d\,i\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,dx$$

Optimal (type 4, 539 leaves, 11 steps):

$$\frac{3\,B^2\,(b\,c-a\,d)^4\,g^3\,i\,x}{10\,b\,d^3}-\frac{3\,B^2\,(b\,c-a\,d)^3\,g^3\,i\,(c+d\,x)^2}{20\,d^4}+\frac{b\,B^2\,(b\,c-a\,d)^2\,g^3\,i\,(c+d\,x)^3}{30\,d^4}-\frac{B\,(b\,c-a\,d)^2\,g^3\,i\,(a+b\,x)^3\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{30\,b^2\,d}-$$
$$\frac{B\,(b\,c-a\,d)\,g^3\,i\,(a+b\,x)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{10\,b^2}+\frac{(b\,c-a\,d)\,g^3\,i\,(a+b\,x)^4\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{20\,b^2}+\frac{g^3\,i\,(a+b\,x)^4\,(c+d\,x)\,\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{5\,b}+$$
$$\frac{B\,(b\,c-a\,d)^3\,g^3\,i\,(a+b\,x)^2\,\left(3\,A+B+3\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{60\,b^2\,d^2}-\frac{B\,(b\,c-a\,d)^4\,g^3\,i\,(a+b\,x)\,\left(6\,A+5\,B+6\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{60\,b^2\,d^3}-$$
$$\frac{B\,(b\,c-a\,d)^5\,g^3\,i\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(6\,A+11\,B+6\,B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{60\,b^2\,d^4}-\frac{B^2\,(b\,c-a\,d)^5\,g^3\,i\,\text{Log}[c+d\,x]}{10\,b^2\,d^4}-\frac{B^2\,(b\,c-a\,d)^5\,g^3\,i\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{10\,b^2\,d^4}$$

Result (type 4, 3093 leaves):

$$\frac{1}{60\,b^2\,d^4}\,g^3\,i\,\Big(-6\,b^5\,B^2\,c^5+36\,a\,b^4\,B^2\,c^4\,d-90\,a^2\,b^3\,B^2\,c^3\,d^2+90\,a^3\,b^2\,B^2\,c^2\,d^3-24\,a^4\,b\,B^2\,c\,d^4-6\,a^5\,B^2\,d^5-6\,A\,b^5\,B\,c^4\,d\,x+b^5\,B^2\,c^4\,d\,x+30\,a\,A\,b^4\,B\,c^3\,d^2\,x-$$
$$8\,a\,b^4\,B^2\,c^3\,d^2\,x-60\,a^2\,A\,b^3\,B\,c^2\,d^3\,x+24\,a^2\,b^3\,B^2\,c^2\,d^3\,x+60\,a^3\,A^2\,b^2\,c\,d^4\,x+30\,a^3\,A\,b^2\,B\,c\,d^4\,x-28\,a^3\,b^2\,B^2\,c\,d^4\,x+6\,a^4\,A\,b\,B\,d^5\,x+11\,a^4\,b\,B^2\,d^5\,x+$$
$$3\,A\,b^5\,B\,c^3\,d^2\,x^2-2\,b^5\,B^2\,c^3\,d^2\,x^2-15\,a\,A\,b^4\,B\,c^2\,d^3\,x^2+12\,a\,b^4\,B^2\,c^2\,d^3\,x^2+90\,a^2\,A^2\,b^3\,c\,d^4\,x^2-15\,a^2\,A\,b^3\,B\,c\,d^4\,x^2-18\,a^2\,b^3\,B^2\,c\,d^4\,x^2+$$
$$30\,a^3\,A^2\,b^2\,d^5\,x^2+27\,a^3\,A\,b^2\,B\,d^5\,x^2+8\,a^3\,b^2\,B^2\,d^5\,x^2-2\,A\,b^5\,B\,c^2\,d^3\,x^3+2\,b^5\,B^2\,c^2\,d^3\,x^3+60\,a\,A^2\,b^4\,c\,d^4\,x^3-20\,a\,A\,b^4\,B\,c\,d^4\,x^3-4\,a\,b^4\,B^2\,c\,d^4\,x^3+$$
$$60\,a^2\,A^2\,b^3\,d^5\,x^3+22\,a^2\,A\,b^3\,B\,d^5\,x^3+2\,a^2\,b^3\,B^2\,d^5\,x^3+15\,A^2\,b^5\,c\,d^4\,x^4-6\,A\,b^5\,B\,c\,d^4\,x^4+45\,a\,A^2\,b^4\,d^5\,x^4+6\,a\,A\,b^4\,B\,d^5\,x^4+12\,A^2\,b^5\,d^5\,x^5-$$
$$6\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{a}{b}+x\right]+30\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]-60\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]+30\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]+6\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{a}{b}+x\right]+$$
$$15\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]^2-3\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{a}{b}+x\right]^2+6\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{c}{d}+x\right]-30\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{c}{d}+x\right]+60\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{c}{d}+x\right]-$$
$$30\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]-6\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{c}{d}+x\right]-3\,b^5\,B^2\,c^5\,\text{Log}\left[\frac{c}{d}+x\right]^2+15\,a\,b^4\,B^2\,c^4\,d\,\text{Log}\left[\frac{c}{d}+x\right]^2-30\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}\left[\frac{c}{d}+x\right]^2+$$
$$30\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]^2-3\,a^2\,b^3\,B^2\,c^3\,d^2\,\text{Log}[a+b\,x]+13\,a^3\,b^2\,B^2\,c^2\,d^3\,\text{Log}[a+b\,x]+30\,a^4\,A\,b\,B\,c\,d^4\,\text{Log}[a+b\,x]+a^4\,b\,B^2\,c\,d^4\,\text{Log}[a+b\,x]-$$
$$6\,a^5\,A\,B\,d^5\,\text{Log}[a+b\,x]-11\,a^5\,B^2\,d^5\,\text{Log}[a+b\,x]-30\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[a+b\,x]+6\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[a+b\,x]+$$
$$30\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[a+b\,x]-6\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[a+b\,x]-30\,a^4\,b\,B^2\,c\,d^4\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$
$$6\,a^5\,B^2\,d^5\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,b^5\,B^2\,c^4\,d\,x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+30\,a\,b^4\,B^2\,c^3\,d^2\,x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-60\,a^2\,b^3\,B^2\,c^2\,d^3\,x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+$$
$$120\,a^3\,A\,b^2\,B\,c\,d^4\,x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+30\,a^3\,b^2\,B^2\,c\,d^4\,x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+6\,a^4\,b\,B^2\,d^5\,x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+3\,b^5\,B^2\,c^3\,d^2\,x^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-$$

$$15\,a\,b^4\,B^2\,c^2\,d^3\,x^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+180\,a^2\,A\,b^3\,B\,c\,d^4\,x^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-15\,a^2\,b^3\,B^2\,c\,d^4\,x^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+$$
$$60\,a^3\,A\,b^2\,B\,d^5\,x^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+27\,a^3\,b^2\,B^2\,d^5\,x^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-2\,b^5\,B^2\,c^2\,d^3\,x^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+120\,a\,A\,b^4\,B\,c\,d^4\,x^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-$$
$$20\,a\,b^4\,B^2\,c\,d^4\,x^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+120\,a^2\,A\,b^3\,B\,d^5\,x^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+22\,a^2\,b^3\,B^2\,d^5\,x^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+30\,A\,b^5\,B\,c\,d^4\,x^4\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-$$
$$6\,b^5\,B^2\,c\,d^4\,x^4\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+90\,a\,A\,b^4\,B\,d^5\,x^4\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+6\,a\,b^4\,B^2\,d^5\,x^4\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+24\,A\,b^5\,B\,d^5\,x^5\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+$$
$$30\,a^4\,b\,B^2\,c\,d^4\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-6\,a^5\,B^2\,d^5\,\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+60\,a^3\,b^2\,B^2\,c\,d^4\,x\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+$$
$$90\,a^2\,b^3\,B^2\,c\,d^4\,x^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+30\,a^3\,b^2\,B^2\,d^5\,x^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+60\,a\,b^4\,B^2\,c\,d^4\,x^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+$$
$$60\,a^2\,b^3\,B^2\,d^5\,x^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+15\,b^5\,B^2\,c\,d^4\,x^4\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+45\,a\,b^4\,B^2\,d^5\,x^4\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+12\,b^5\,B^2\,d^5\,x^5\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+$$
$$6\,A\,b^5\,B\,c^5\,\mathrm{Log}[c+d\,x]-b^5\,B^2\,c^5\,\mathrm{Log}[c+d\,x]-30\,a\,A\,b^4\,B\,c^4\,d\,\mathrm{Log}[c+d\,x]+11\,a\,b^4\,B^2\,c^4\,d\,\mathrm{Log}[c+d\,x]+60\,a^2\,A\,b^3\,B\,c^3\,d^2\,\mathrm{Log}[c+d\,x]-$$
$$37\,a^2\,b^3\,B^2\,c^3\,d^2\,\mathrm{Log}[c+d\,x]-60\,a^3\,A\,b^2\,B\,c^2\,d^3\,\mathrm{Log}[c+d\,x]+27\,a^3\,b^2\,B^2\,c^2\,d^3\,\mathrm{Log}[c+d\,x]-6\,b^5\,B^2\,c^5\,\mathrm{Log}\left[\frac{a}{b}+x\right]\,\mathrm{Log}[c+d\,x]+$$
$$30\,a\,b^4\,B^2\,c^4\,d\,\mathrm{Log}\left[\frac{a}{b}+x\right]\,\mathrm{Log}[c+d\,x]-60\,a^2\,b^3\,B^2\,c^3\,d^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\,\mathrm{Log}[c+d\,x]+60\,a^3\,b^2\,B^2\,c^2\,d^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]\,\mathrm{Log}[c+d\,x]+$$
$$6\,b^5\,B^2\,c^5\,\mathrm{Log}\left[\frac{c}{d}+x\right]\,\mathrm{Log}[c+d\,x]-30\,a\,b^4\,B^2\,c^4\,d\,\mathrm{Log}\left[\frac{c}{d}+x\right]\,\mathrm{Log}[c+d\,x]+60\,a^2\,b^3\,B^2\,c^3\,d^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\,\mathrm{Log}[c+d\,x]-$$
$$60\,a^3\,b^2\,B^2\,c^2\,d^3\,\mathrm{Log}\left[\frac{c}{d}+x\right]\,\mathrm{Log}[c+d\,x]+6\,b^5\,B^2\,c^5\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\mathrm{Log}[c+d\,x]-30\,a\,b^4\,B^2\,c^4\,d\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\mathrm{Log}[c+d\,x]+$$
$$60\,a^2\,b^3\,B^2\,c^3\,d^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\mathrm{Log}[c+d\,x]-60\,a^3\,b^2\,B^2\,c^2\,d^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\mathrm{Log}[c+d\,x]+6\,b^5\,B^2\,c^5\,\mathrm{Log}\left[\frac{a}{b}+x\right]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$
$$30\,a\,b^4\,B^2\,c^4\,d\,\mathrm{Log}\left[\frac{a}{b}+x\right]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+60\,a^2\,b^3\,B^2\,c^3\,d^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-60\,a^3\,b^2\,B^2\,c^2\,d^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$
$$6\,b^2\,B^2\,c^2\,\left(b^3\,c^3-5\,a\,b^2\,c^2\,d+10\,a^2\,b\,c\,d^2-10\,a^3\,d^3\right)\,\mathrm{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+6\,a^4\,B^2\,d^4\,(-5\,b\,c+a\,d)\,\mathrm{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Big)$$

Problem 56: Result more than twice size of optimal antiderivative.

$$\int (a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,dx$$

Optimal (type 4, 450 leaves, 10 steps) :

$$-\frac{B^2 (b c-a d)^3 g^2 i x}{3 b d^2}+\frac{B^2 (b c-a d)^2 g^2 i (c+d x)^2}{12 d^3}-\frac{B (b c-a d)^2 g^2 i (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{12 b^2 d}-\frac{B (b c-a d) g^2 i (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b^2}+\frac{(b c-a d) g^2 i (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{12 b^2}+\frac{g^2 i (a+b x)^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 b}+\frac{B (b c-a d)^3 g^2 i (a+b x) \left(2 A+B+2 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{12 b^2 d^2}+\frac{B (b c-a d)^4 g^2 i \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(2 A+3 B+2 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{12 b^2 d^3}+\frac{B^2 (b c-a d)^4 g^2 i \text{Log}[c+d x]}{6 b^2 d^3}+\frac{B^2 (b c-a d)^4 g^2 i \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{6 b^2 d^3}$$

Result (type 4, 2270 leaves) :

$$\frac{1}{12\, b^2\, d^3}\, g^2\, i\, \Big(2\, b^4\, B^2\, c^4 - 10\, a\, b^3\, B^2\, c^3\, d + 12\, a^2\, b^2\, B^2\, c^2\, d^2 - 2\, a^3\, b\, B^2\, c\, d^3 - 2\, a^4\, B^2\, d^4 + 2\, A\, b^4\, B\, c^3\, d\, x - b^4\, B^2\, c^3\, d\, x - 8\, a\, A\, b^3\, B\, c^2\, d^2\, x +$$

$$5\, a\, b^3\, B^2\, c^2\, d^2\, x + 12\, a^2\, A^2\, b^2\, c\, d^3\, x + 4\, a^2\, A\, b^2\, B\, c\, d^3\, x - 7\, a^2\, b^2\, B^2\, c\, d^3\, x + 2\, a^3\, A\, b\, B\, d^4\, x + 3\, a^3\, b\, B^2\, d^4\, x - A\, b^4\, B\, c^2\, d^2\, x^2 + b^4\, B^2\, c^2\, d^2\, x^2 +$$

$$12\, a\, A^2\, b^3\, c\, d^3\, x^2 - 4\, a\, A\, b^3\, B\, c\, d^3\, x^2 - 2\, a\, b^3\, B^2\, c\, d^3\, x^2 + 6\, a^2\, A^2\, b^2\, d^4\, x^2 + 5\, a^2\, A\, b^2\, B\, d^4\, x^2 + a^2\, b^2\, B^2\, d^4\, x^2 + 4\, A^2\, b^4\, c\, d^3\, x^3 - 2\, A\, b^4\, B\, c\, d^3\, x^3 +$$

$$8\, a\, A^2\, b^3\, d^4\, x^3 + 2\, a\, A\, b^3\, B\, d^4\, x^3 + 3\, A^2\, b^4\, d^4\, x^4 + 2\, a\, b^3\, B^2\, c^3\, d\, \text{Log}\left[\frac{a}{b} + x\right] - 8\, a^2\, b^2\, B^2\, c^2\, d^2\, \text{Log}\left[\frac{a}{b} + x\right] + 4\, a^3\, b\, B^2\, c\, d^3\, \text{Log}\left[\frac{a}{b} + x\right] +$$

$$2\, a^4\, B^2\, d^4\, \text{Log}\left[\frac{a}{b} + x\right] + 4\, a^3\, b\, B^2\, c\, d^3\, \text{Log}\left[\frac{a}{b} + x\right]^2 - a^4\, B^2\, d^4\, \text{Log}\left[\frac{a}{b} + x\right]^2 - 2\, b^4\, B^2\, c^4\, \text{Log}\left[\frac{c}{d} + x\right] + 8\, a\, b^3\, B^2\, c^3\, d\, \text{Log}\left[\frac{c}{d} + x\right] -$$

$$4\, a^2\, b^2\, B^2\, c^2\, d^2\, \text{Log}\left[\frac{c}{d} + x\right] - 2\, a^3\, b\, B^2\, c\, d^3\, \text{Log}\left[\frac{c}{d} + x\right] + b^4\, B^2\, c^4\, \text{Log}\left[\frac{c}{d} + x\right]^2 - 4\, a\, b^3\, B^2\, c^3\, d\, \text{Log}\left[\frac{c}{d} + x\right]^2 + 6\, a^2\, b^2\, B^2\, c^2\, d^2\, \text{Log}\left[\frac{c}{d} + x\right]^2 +$$

$$a^2\, b^2\, B^2\, c^2\, d^2\, \text{Log}[a + b\, x] + 8\, a^3\, A\, b\, B\, c\, d^3\, \text{Log}[a + b\, x] + 2\, a^3\, b\, B^2\, c\, d^3\, \text{Log}[a + b\, x] - 2\, a^4\, A\, B\, d^4\, \text{Log}[a + b\, x] - 3\, a^4\, B^2\, d^4\, \text{Log}[a + b\, x] -$$

$$8\, a^3\, b\, B^2\, c\, d^3\, \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[a + b\, x] + 2\, a^4\, B^2\, d^4\, \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[a + b\, x] + 8\, a^3\, b\, B^2\, c\, d^3\, \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b\, x] -$$

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

$$2\, b^4\, B^2\, c^3\, d\, x\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] - 8\, a\, b^3\, B^2\, c^2\, d^2\, x\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] + 24\, a^2\, A\, b^2\, B\, c\, d^3\, x\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] + 4\, a^2\, b^2\, B^2\, c\, d^3\, x\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] +$$

$$2\, a^3\, b\, B^2\, d^4\, x\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] - b^4\, B^2\, c^2\, d^2\, x^2\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] + 24\, a\, A\, b^3\, B\, c\, d^3\, x^2\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] - 4\, a\, b^3\, B^2\, c\, d^3\, x^2\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] +$$

$$12\, a^2\, A\, b^2\, B\, d^4\, x^2\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] + 5\, a^2\, b^2\, B^2\, d^4\, x^2\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] + 8\, A\, b^4\, B\, c\, d^3\, x^3\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] - 2\, b^4\, B^2\, c\, d^3\, x^3\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] +$$

$$16\, a\, A\, b^3\, B\, d^4\, x^3\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] + 2\, a\, b^3\, B^2\, d^4\, x^3\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] + 6\, A\, b^4\, B\, d^4\, x^4\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] + 8\, a^3\, b\, B^2\, c\, d^3\, \text{Log}[a + b\, x]\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] -$$

$$2\, a^4\, B^2\, d^4\, \text{Log}[a + b\, x]\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] + 12\, a^2\, b^2\, B^2\, c\, d^3\, x\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right]^2 + 12\, a\, b^3\, B^2\, c\, d^3\, x^2\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right]^2 +$$

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

$$2\, A\, b^4\, B\, c^4\, \text{Log}[c + d\, x] + b^4\, B^2\, c^4\, \text{Log}[c + d\, x] + 8\, a\, A\, b^3\, B\, c^3\, d\, \text{Log}[c + d\, x] - 6\, a\, b^3\, B^2\, c^3\, d\, \text{Log}[c + d\, x] - 12\, a^2\, A\, b^2\, B\, c^2\, d^2\, \text{Log}[c + d\, x] +$$

$$5\, a^2\, b^2\, B^2\, c^2\, d^2\, \text{Log}[c + d\, x] + 2\, b^4\, B^2\, c^4\, \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[c + d\, x] - 8\, a\, b^3\, B^2\, c^3\, d\, \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[c + d\, x] + 12\, a^2\, b^2\, B^2\, c^2\, d^2\, \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[c + d\, x] -$$

$$2\, b^4\, B^2\, c^4\, \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[c + d\, x] + 8\, a\, b^3\, B^2\, c^3\, d\, \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[c + d\, x] - 12\, a^2\, b^2\, B^2\, c^2\, d^2\, \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[c + d\, x] -$$

$$2\, b^4\, B^2\, c^4\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] \text{Log}[c + d\, x] + 8\, a\, b^3\, B^2\, c^3\, d\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] \text{Log}[c + d\, x] - 12\, a^2\, b^2\, B^2\, c^2\, d^2\, \text{Log}\left[\frac{e\, (a + b\, x)}{c + d\, x}\right] \text{Log}[c + d\, x] -$$

$$2\, b^4\, B^2\, c^4\, \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b\, (c + d\, x)}{b\, c - a\, d}\right] + 8\, a\, b^3\, B^2\, c^3\, d\, \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b\, (c + d\, x)}{b\, c - a\, d}\right] - 12\, a^2\, b^2\, B^2\, c^2\, d^2\, \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b\, (c + d\, x)}{b\, c - a\, d}\right] -$$

$$2\, b^2\, B^2\, c^2\, \left(b^2\, c^2 - 4\, a\, b\, c\, d + 6\, a^2\, d^2\right) \text{PolyLog}\left[2, \frac{d\, (a + b\, x)}{-b\, c + a\, d}\right] + 2\, a^3\, B^2\, d^3\, (-4\, b\, c + a\, d)\, \text{PolyLog}\left[2, \frac{b\, (c + d\, x)}{b\, c - a\, d}\right]\Big)$$

Problem 57: Result more than twice size of optimal antiderivative.

$$\int (a g+b g x) (c i+d i x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \, dx$$

Optimal (type 4, 343 leaves, 9 steps):

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

Result (type 4, 1443 leaves):

$$\frac{1}{6\,b^2\,d^2}\,g\,i\,\Big(-2\,b^3\,B^2\,c^3+2\,a\,b^2\,B^2\,c^2\,d+2\,a^2\,b\,B^2\,c\,d^2-2\,a^3\,B^2\,d^3-2\,A\,b^3\,B\,c^2\,d\,x+2\,b^3\,B^2\,c^2\,d\,x+6\,a\,A^2\,b^2\,c\,d^2\,x-4\,a\,b^2\,B^2\,c\,d^2\,x+2\,a^2\,A\,b\,B\,d^3\,x+2\,a^2\,b\,B^2\,d^3\,x+$$

$$3\,A^2\,b^3\,c\,d^2\,x^2-2\,A\,b^3\,B\,c\,d^2\,x^2+3\,a\,A^2\,b^2\,d^3\,x^2+2\,a\,A\,b^2\,B\,d^3\,x^2+2\,A^2\,b^3\,d^3\,x^3-2\,a\,b^2\,B^2\,c^2\,d\,\text{Log}\Big[\frac{a}{b}+x\Big]+2\,a^3\,B^2\,d^3\,\text{Log}\Big[\frac{a}{b}+x\Big]+$$

$$3\,a^2\,b\,B^2\,c\,d^2\,\text{Log}\Big[\frac{a}{b}+x\Big]^2-a^3\,B^2\,d^3\,\text{Log}\Big[\frac{a}{b}+x\Big]^2+2\,b^3\,B^2\,c^3\,\text{Log}\Big[\frac{c}{d}+x\Big]-2\,a^2\,b\,B^2\,c\,d^2\,\text{Log}\Big[\frac{c}{d}+x\Big]-b^3\,B^2\,c^3\,\text{Log}\Big[\frac{c}{d}+x\Big]^2+$$

$$3\,a\,b^2\,B^2\,c^2\,d\,\text{Log}\Big[\frac{c}{d}+x\Big]^2+6\,a^2\,A\,b\,B\,c\,d^2\,\text{Log}[a+b\,x]+2\,a^2\,b\,B^2\,c\,d^2\,\text{Log}[a+b\,x]-2\,a^3\,A\,B\,d^3\,\text{Log}[a+b\,x]-2\,a^3\,B^2\,d^3\,\text{Log}[a+b\,x]-$$

$$6\,a^2\,b\,B^2\,c\,d^2\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}[a+b\,x]+2\,a^3\,B^2\,d^3\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}[a+b\,x]+6\,a^2\,b\,B^2\,c\,d^2\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}[a+b\,x]-2\,a^3\,B^2\,d^3\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}[a+b\,x]-$$

$$6\,a^2\,b\,B^2\,c\,d^2\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+2\,a^3\,B^2\,d^3\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]-2\,b^3\,B^2\,c^2\,d\,x\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]+$$

$$12\,a\,A\,b^2\,B\,c\,d^2\,x\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]+2\,a^2\,b\,B^2\,d^3\,x\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]+6\,A\,b^3\,B\,c\,d^2\,x^2\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]-2\,b^3\,B^2\,c\,d^2\,x^2\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]+$$

$$6\,a\,A\,b^2\,B\,d^3\,x^2\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]+2\,a\,b^2\,B^2\,d^3\,x^2\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]+4\,A\,b^3\,B\,d^3\,x^3\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]+6\,a^2\,b\,B^2\,c\,d^2\,\text{Log}[a+b\,x]\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]-$$

$$2\,a^3\,B^2\,d^3\,\text{Log}[a+b\,x]\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]+6\,a\,b^2\,B^2\,c\,d^2\,x\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]^2+3\,b^3\,B^2\,c\,d^2\,x^2\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]^2+3\,a\,b^2\,B^2\,d^3\,x^2\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]^2+$$

$$2\,b^3\,B^2\,d^3\,x^3\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]^2+2\,A\,b^3\,B\,c^3\,\text{Log}[c+d\,x]-2\,b^3\,B^2\,c^3\,\text{Log}[c+d\,x]-6\,a\,A\,b^2\,B\,c^2\,d\,\text{Log}[c+d\,x]+2\,a\,b^2\,B^2\,c^2\,d\,\text{Log}[c+d\,x]-$$

$$2\,b^3\,B^2\,c^3\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}[c+d\,x]+6\,a\,b^2\,B^2\,c^2\,d\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}[c+d\,x]+2\,b^3\,B^2\,c^3\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}[c+d\,x]-6\,a\,b^2\,B^2\,c^2\,d\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}[c+d\,x]+$$

$$2\,b^3\,B^2\,c^3\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]\,\text{Log}[c+d\,x]-6\,a\,b^2\,B^2\,c^2\,d\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]\,\text{Log}[c+d\,x]+2\,b^3\,B^2\,c^3\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]-$$

$$6\,a\,b^2\,B^2\,c^2\,d\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]+2\,b^2\,B^2\,c^2\,(b\,c-3\,a\,d)\,\text{PolyLog}\Big[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+2\,a^2\,B^2\,d^2\,(-3\,b\,c+a\,d)\,\text{PolyLog}\Big[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)$$

Problem 58: Result more than twice size of optimal antiderivative.

$$\int(c\,i+d\,i\,x)\,\Big(A+B\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]\Big)^2\,dx$$

Optimal (type 4, 203 leaves, 7 steps):

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

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

Result (type 4, 734 leaves):

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

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

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

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

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

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

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

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

Problem 59: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 286 leaves, 8 steps):

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

Result (type 4, 1196 leaves) :

$$\frac{1}{3\,b^2\,g}\,i\,\Big(3\,A^2\,b\,d\,x+3\,A^2\,(b\,c-a\,d)\,\text{Log}[a+b\,x]-$$

$$3\,A\,B\,\Big(a\,d\,\text{Log}\Big[\frac{a}{b}+x\Big]^2-2\,a\,d\,\text{Log}\Big[\frac{a}{b}+x\Big]\,(1+\text{Log}[a+b\,x])+2\,\Big(-b\,c+a\,d+\text{Log}\Big[\frac{c}{d}+x\Big]\,\Big(b\,c+a\,d\,\text{Log}[a+b\,x]-a\,d\,\text{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Big)+$$

$$(-b\,d\,x+a\,d\,\text{Log}[a+b\,x])\,\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]\Big)-2\,a\,d\,\text{PolyLog}\Big[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)+3\,A\,b\,B\,c$$

$$\Big(\text{Log}\Big[\frac{a}{b}+x\Big]^2-2\,\text{Log}[a+b\,x]\,\Big(\text{Log}\Big[\frac{a}{b}+x\Big]-\text{Log}\Big[\frac{c}{d}+x\Big]-\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]\Big)-2\,\Big(\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+\text{PolyLog}\Big[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)\Big)-$$

$$B^2\,\Big(a\,d\,\text{Log}\Big[\frac{a}{b}+x\Big]^3-3\,d\,(a+b\,x)\,\Big(2-2\,\text{Log}\Big[\frac{a}{b}+x\Big]+\text{Log}\Big[\frac{a}{b}+x\Big]^2\Big)-3\,b\,(c+d\,x)\,\Big(2-2\,\text{Log}\Big[\frac{c}{d}+x\Big]+\text{Log}\Big[\frac{c}{d}+x\Big]^2\Big)-$$

$$3\,d\,(b\,x-a\,\text{Log}[a+b\,x])\,\Big(-\text{Log}\Big[\frac{a}{b}+x\Big]+\text{Log}\Big[\frac{c}{d}+x\Big]+\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]\Big)^2+6\,\Big(a\,d+2\,b\,d\,x-b\,d\,x\,\text{Log}\Big[\frac{c}{d}+x\Big]-b\,c\,\text{Log}[c+d\,x]+$$

$$\text{Log}\Big[\frac{a}{b}+x\Big]\,\Big(-d\,(a+b\,x)+d\,(a+b\,x)\,\text{Log}\Big[\frac{c}{d}+x\Big]+(b\,c-a\,d)\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)+(b\,c-a\,d)\,\text{PolyLog}\Big[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Big)-$$

$$3\,\Big(\text{Log}\Big[\frac{a}{b}+x\Big]-\text{Log}\Big[\frac{c}{d}+x\Big]-\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]\Big)\,\Big(-2\,b\,c+2\,a\,d-2\,d\,(a+b\,x)\,\text{Log}\Big[\frac{a}{b}+x\Big]+a\,d\,\text{Log}\Big[\frac{a}{b}+x\Big]^2+$$

$$2\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\Big(b\,(c+d\,x)-a\,d\,\text{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Big)-2\,a\,d\,\text{PolyLog}\Big[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)-$$

$$3\,a\,d\,\Big(\text{Log}\Big[\frac{a}{b}+x\Big]^2\,\Big(\text{Log}\Big[\frac{c}{d}+x\Big]-\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)-2\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{PolyLog}\Big[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+2\,\text{PolyLog}\Big[3,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Big)+$$

$$3\,a\,d\,\Big(\text{Log}\Big[\frac{c}{d}+x\Big]^2\,\text{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+2\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{PolyLog}\Big[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]-2\,\text{PolyLog}\Big[3,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)\Big)+$$

$$b\,B^2\,c\,\Big(\text{Log}\Big[\frac{a}{b}+x\Big]^3+3\,\text{Log}\Big[\frac{c}{d}+x\Big]^2\,\text{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+3\,\text{Log}[a+b\,x]\,\Big(-\text{Log}\Big[\frac{a}{b}+x\Big]+\text{Log}\Big[\frac{c}{d}+x\Big]+\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]\Big)^2+$$

$$3\,\text{Log}\Big[\frac{a}{b}+x\Big]^2\,\Big(-\text{Log}\Big[\frac{c}{d}+x\Big]+\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)+6\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{PolyLog}\Big[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+6\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{PolyLog}\Big[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]-$$

$$3\,\Big(\text{Log}\Big[\frac{a}{b}+x\Big]-\text{Log}\Big[\frac{c}{d}+x\Big]-\text{Log}\Big[\frac{e\,(a+b\,x)}{c+d\,x}\Big]\Big)\,\Big(\text{Log}\Big[\frac{a}{b}+x\Big]^2-2\,\Big(\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+\text{PolyLog}\Big[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)\Big)-$$

$$6\,\text{PolyLog}\Big[3,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]-6\,\text{PolyLog}\Big[3,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)\Big)$$

Problem 60: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\,i + d\,i\,x)\left(A + B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g + b\,g\,x)^2}\,dx$$

Optimal (type 4, 241 leaves, 7 steps):

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

Result (type 4, 1155 leaves):

$$\frac{1}{3\,b^2\,g^2}\,i\left(\frac{3\,A^2\,(-b\,c+a\,d)}{a+b\,x}+3\,A^2\,d\,\text{Log}[a+b\,x]-\right.$$

$$\frac{6\,A\,b\,B\,c\left(-d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+(b\,c-a\,d)\left(1+\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\right)}{(b\,c-a\,d)\,(a+b\,x)}-\frac{1}{(b\,c-a\,d)\,(a+b\,x)}$$

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

$$3\,A\,B\,d\left(\text{Log}\left[\frac{a}{b}+x\right]^2+\frac{2\,a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{a+b\,x}+2\left(\frac{a}{a+b\,x}+\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)+\right.$$

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

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

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

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

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

$$\left.\left((b\,c-a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)-2\,d\,(a+b\,x)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+6\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$\frac{1}{(b\,c-a\,d)\,(a+b\,x)}3\,a\left(\text{Log}\left[\frac{c}{d}+x\right]\left(b\,(c+d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]-2\,d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-2\,d\,(a+b\,x)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+$$

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

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

$$\left.\left.2\left(\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)-6\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)$$

Problem 64: Result more than twice size of optimal antiderivative.

$$\int (a g+b g x)^3 (c i+d i x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 711 leaves, 17 steps):

$$\frac{3 B^2 (b c-a d)^5 g^3 i^2 x}{20 b^2 d^3}+\frac{B^2 (b c-a d)^2 g^3 i^2 (a+b x)^4}{60 b^3}-\frac{3 B^2 (b c-a d)^4 g^3 i^2 (c+d x)^2}{40 b d^4}+\frac{B^2 (b c-a d)^3 g^3 i^2 (c+d x)^3}{60 d^4}-\frac{B (b c-a d)^3 g^3 i^2 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{90 b^3 d}-\frac{B (b c-a d)^2 g^3 i^2 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{20 b^3}-\frac{B (b c-a d) g^3 i^2 (a+b x)^4 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{15 b^2}+\frac{(b c-a d)^2 g^3 i^2 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{60 b^3}+\frac{(b c-a d) g^3 i^2 (a+b x)^4 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{15 b^2}+\frac{g^3 i^2 (a+b x)^4 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{6 b}+\frac{B (b c-a d)^4 g^3 i^2 (a+b x)^2 \left(3 A+B+3 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{180 b^3 d^2}-\frac{B (b c-a d)^5 g^3 i^2 (a+b x) \left(6 A+5 B+6 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{180 b^3 d^3}-\frac{B (b c-a d)^6 g^3 i^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(6 A+11 B+6 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{180 b^3 d^4}-\frac{B^2 (b c-a d)^6 g^3 i^2 \text{Log}[c+d x]}{20 b^3 d^4}-\frac{B^2 (b c-a d)^6 g^3 i^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{30 b^3 d^4}$$

Result (type 4, 4173 leaves):

$$\frac{1}{360 b^3 d^4} g^3 i^2 \Big(-12 b^6 B^2 c^6+84 a b^5 B^2 c^5 d-252 a^2 b^4 B^2 c^4 d^2+240 a^3 b^3 B^2 c^3 d^3+12 a^4 b^2 B^2 c^2 d^4-84 a^5 b B^2 c d^5+12 a^6 B^2 d^6-12 A b^6 B c^5 d x+8 b^6 B^2 c^5 d x+$$
$$72 a A b^5 B c^4 d^2 x-54 a b^5 B^2 c^4 d^2 x-180 a^2 A b^4 B c^3 d^3 x+154 a^2 b^4 B^2 c^3 d^3 x+360 a^3 A^2 b^3 c^2 d^4 x+60 a^3 A b^3 B c^2 d^4 x-194 a^3 b^3 B^2 c^2 d^4 x+$$
$$72 a^4 A b^2 B c d^5 x+102 a^4 b^2 B^2 c d^5 x-12 a^5 A b B d^6 x-16 a^5 b B^2 d^6 x+6 A b^6 B c^4 d^2 x^2-7 b^6 B^2 c^4 d^2 x^2-36 a A b^5 B c^3 d^3 x^2+46 a b^5 B^2 c^3 d^3 x^2+$$
$$540 a^2 A^2 b^4 c^2 d^4 x^2-180 a^2 A b^4 B c^2 d^4 x^2-60 a^2 b^4 B^2 c^2 d^4 x^2+360 a^3 A^2 b^3 c d^5 x^2+204 a^3 A b^3 B c d^5 x^2+10 a^3 b^3 B^2 c d^5 x^2+$$
$$6 a^4 A b^2 B d^6 x^2+11 a^4 b^2 B^2 d^6 x^2-4 A b^6 B c^3 d^3 x^3+6 b^6 B^2 c^3 d^3 x^3+360 a A^2 b^5 c^2 d^4 x^3-156 a A b^5 B c^2 d^4 x^3+6 a b^5 B^2 c^2 d^4 x^3+$$
$$720 a^2 A^2 b^4 c d^5 x^3+84 a^2 A b^4 B c d^5 x^3-30 a^2 b^4 B^2 c d^5 x^3+120 a^3 A^2 b^3 d^6 x^3+76 a^3 A b^3 B d^6 x^3+18 a^3 b^3 B^2 d^6 x^3+90 A^2 b^6 c^2 d^4 x^4-$$
$$42 A b^6 B c^2 d^4 x^4+6 b^6 B^2 c^2 d^4 x^4+540 a A^2 b^5 c d^5 x^4-36 a A b^5 B c d^5 x^4-12 a b^5 B^2 c d^5 x^4+270 a^2 A^2 b^4 d^6 x^4+78 a^2 A b^4 B d^6 x^4+$$
$$6 a^2 b^4 B^2 d^6 x^4+144 A^2 b^6 c d^5 x^5-24 A b^6 B c d^5 x^5+216 a A^2 b^5 d^6 x^5+24 a A b^5 B d^6 x^5+60 A^2 b^6 d^6 x^6-12 a b^5 B^2 c^5 d \text{Log}\left[\frac{a}{b}+x\right]+$$
$$72 a^2 b^4 B^2 c^4 d^2 \text{Log}\left[\frac{a}{b}+x\right]-180 a^3 b^3 B^2 c^3 d^3 \text{Log}\left[\frac{a}{b}+x\right]+60 a^4 b^2 B^2 c^2 d^4 \text{Log}\left[\frac{a}{b}+x\right]+72 a^5 b B^2 c d^5 \text{Log}\left[\frac{a}{b}+x\right]-12 a^6 B^2 d^6 \text{Log}\left[\frac{a}{b}+x\right]+$$
$$90 a^4 b^2 B^2 c^2 d^4 \text{Log}\left[\frac{a}{b}+x\right]^2-36 a^5 b B^2 c d^5 \text{Log}\left[\frac{a}{b}+x\right]^2+6 a^6 B^2 d^6 \text{Log}\left[\frac{a}{b}+x\right]^2+12 b^6 B^2 c^6 \text{Log}\left[\frac{c}{d}+x\right]-72 a b^5 B^2 c^5 d \text{Log}\left[\frac{c}{d}+x\right]+$$

$180 a^2 b^4 B^2 c^4 d^2 \text{Log}\left[\frac{c}{d}+x\right] - 60 a^3 b^3 B^2 c^3 d^3 \text{Log}\left[\frac{c}{d}+x\right] - 72 a^4 b^2 B^2 c^2 d^4 \text{Log}\left[\frac{c}{d}+x\right] + 12 a^5 b B^2 c d^5 \text{Log}\left[\frac{c}{d}+x\right] - 6 b^6 B^2 c^6 \text{Log}\left[\frac{c}{d}+x\right]^2 +$

$36 a b^5 B^2 c^5 d \text{Log}\left[\frac{c}{d}+x\right]^2 - 90 a^2 b^4 B^2 c^4 d^2 \text{Log}\left[\frac{c}{d}+x\right]^2 + 120 a^3 b^3 B^2 c^3 d^3 \text{Log}\left[\frac{c}{d}+x\right]^2 - 6 a^2 b^4 B^2 c^4 d^2 \text{Log}[a+b x] +$

$32 a^3 b^3 B^2 c^3 d^3 \text{Log}[a+b x] + 180 a^4 A b^2 B c^2 d^4 \text{Log}[a+b x] + 66 a^4 b^2 B^2 c^2 d^4 \text{Log}[a+b x] - 72 a^5 A b B c d^5 \text{Log}[a+b x] -$

$108 a^5 b B^2 c d^5 \text{Log}[a+b x] + 12 a^6 A B d^6 \text{Log}[a+b x] + 16 a^6 B^2 d^6 \text{Log}[a+b x] - 180 a^4 b^2 B^2 c^2 d^4 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] +$

$72 a^5 b B^2 c d^5 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] - 12 a^6 B^2 d^6 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 180 a^4 b^2 B^2 c^2 d^4 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] -$

$72 a^5 b B^2 c d^5 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] + 12 a^6 B^2 d^6 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 180 a^4 b^2 B^2 c^2 d^4 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] +$

$72 a^5 b B^2 c d^5 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] - 12 a^6 B^2 d^6 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] - 12 b^6 B^2 c^5 d x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$

$72 a b^5 B^2 c^4 d^2 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 180 a^2 b^4 B^2 c^3 d^3 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 720 a^3 A b^3 B c^2 d^4 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 60 a^3 b^3 B^2 c^2 d^4 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$

$72 a^4 b^2 B^2 c d^5 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 12 a^5 b B^2 d^6 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 6 b^6 B^2 c^4 d^2 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 36 a b^5 B^2 c^3 d^3 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$

$1080 a^2 A b^4 B c^2 d^4 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 180 a^2 b^4 B^2 c^2 d^4 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 720 a^3 A b^3 B c d^5 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$

$204 a^3 b^3 B^2 c d^5 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 6 a^4 b^2 B^2 d^6 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 4 b^6 B^2 c^3 d^3 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 720 a A b^5 B c^2 d^4 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] -$

$156 a b^5 B^2 c^2 d^4 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 1440 a^2 A b^4 B c d^5 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 84 a^2 b^4 B^2 c d^5 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$

$240 a^3 A b^3 B d^6 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 76 a^3 b^3 B^2 d^6 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 180 A b^6 B c^2 d^4 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 42 b^6 B^2 c^2 d^4 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$

$1080 a A b^5 B c d^5 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 36 a b^5 B^2 c d^5 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 540 a^2 A b^4 B d^6 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 78 a^2 b^4 B^2 d^6 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$

$288 A b^6 B c d^5 x^5 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 24 b^6 B^2 c d^5 x^5 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 432 a A b^5 B d^6 x^5 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 24 a b^5 B^2 d^6 x^5 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$

$120 A b^6 B d^6 x^6 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 180 a^4 b^2 B^2 c^2 d^4 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 72 a^5 b B^2 c d^5 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$

$12 a^6 B^2 d^6 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 360 a^3 b^3 B^2 c^2 d^4 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 540 a^2 b^4 B^2 c^2 d^4 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 +$

$360 a^3 b^3 B^2 c d^5 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 360 a b^5 B^2 c^2 d^4 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 720 a^2 b^4 B^2 c d^5 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 +$

$120 a^3 b^3 B^2 d^6 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 90 b^6 B^2 c^2 d^4 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 540 a b^5 B^2 c d^5 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 270 a^2 b^4 B^2 d^6 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 +$

$$144\, b^6 B^2 c\, d^5 x^5 \text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2 + 216\, a\, b^5 B^2 d^6 x^5 \text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2 + 60\, b^6 B^2 d^6 x^6 \text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2 + 12\, A\, b^6 B\, c^6 \text{Log}[c+d\,x] -$$

$$8\, b^6 B^2 c^6 \text{Log}[c+d\,x] - 72\, a\, A\, b^5 B\, c^5 d\, \text{Log}[c+d\,x] + 60\, a\, b^5 B^2 c^5 d\, \text{Log}[c+d\,x] + 180\, a^2 A\, b^4 B\, c^4 d^2 \text{Log}[c+d\,x] - 186\, a^2 b^4 B^2 c^4 d^2 \text{Log}[c+d\,x] -$$

$$240\, a^3 A\, b^3 B\, c^3 d^3 \text{Log}[c+d\,x] + 128\, a^3 b^3 B^2 c^3 d^3 \text{Log}[c+d\,x] + 6\, a^4 b^2 B^2 c^2 d^4 \text{Log}[c+d\,x] - 12\, b^6 B^2 c^6 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d\,x] +$$

$$72\, a\, b^5 B^2 c^5 d\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d\,x] - 180\, a^2 b^4 B^2 c^4 d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d\,x] + 240\, a^3 b^3 B^2 c^3 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d\,x] +$$

$$12\, b^6 B^2 c^6 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d\,x] - 72\, a\, b^5 B^2 c^5 d\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d\,x] + 180\, a^2 b^4 B^2 c^4 d^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d\,x] -$$

$$240\, a^3 b^3 B^2 c^3 d^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d\,x] + 12\, b^6 B^2 c^6 \text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right] \text{Log}[c+d\,x] - 72\, a\, b^5 B^2 c^5 d\, \text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right] \text{Log}[c+d\,x] +$$

$$180\, a^2 b^4 B^2 c^4 d^2 \text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right] \text{Log}[c+d\,x] - 240\, a^3 b^3 B^2 c^3 d^3 \text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right] \text{Log}[c+d\,x] + 12\, b^6 B^2 c^6 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] -$$

$$72\, a\, b^5 B^2 c^5 d\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] + 180\, a^2 b^4 B^2 c^4 d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] - 240\, a^3 b^3 B^2 c^3 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] +$$

$$12\, b^3 B^2 c^3 \left(b^3 c^3 - 6\, a\, b^2 c^2 d + 15\, a^2 b\, c\, d^2 - 20\, a^3 d^3\right) \text{PolyLog}\left[2, \frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] - 12\, a^4 B^2 d^4 \left(15\, b^2 c^2 - 6\, a\, b\, c\, d + a^2 d^2\right) \text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg]\Bigg)$$

Problem 65: Result more than twice size of optimal antiderivative.

$$\int (a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2 dx$$

Optimal (type 4, 761 leaves, 15 steps):

$$-\frac{B^2 (b c-a d)^4 g^2 i^2 x}{10 b^2 d^2}-\frac{B^2 (b c-a d)^3 g^2 i^2 (c+d x)^2}{20 b d^3}+\frac{B^2 (b c-a d)^2 g^2 i^2 (c+d x)^3}{30 d^3}+$$
$$\frac{B^2 (b c-a d)^5 g^2 i^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{30 b^3 d^3}-\frac{B (b c-a d)^3 g^2 i^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^3 d}-$$
$$\frac{B (b c-a d)^2 g^2 i^2 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{15 b^3}-\frac{B (b c-a d)^3 g^2 i^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{5 b d^3}+$$
$$\frac{4 B (b c-a d)^2 g^2 i^2 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{15 d^3}-\frac{b B (b c-a d) g^2 i^2 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 d^3}+$$
$$\frac{(b c-a d)^2 g^2 i^2 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{30 b^3}+\frac{(b c-a d) g^2 i^2 (a+b x)^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{10 b^2}+$$
$$\frac{g^2 i^2 (a+b x)^3 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 b}+\frac{B (b c-a d)^4 g^2 i^2 (a+b x) \left(2 A+B+2 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^3 d^2}+$$
$$\frac{B (b c-a d)^5 g^2 i^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(2 A+3 B+2 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b^3 d^3}+\frac{B^2 (b c-a d)^5 g^2 i^2 \text{Log}[c+d x]}{10 b^3 d^3}+\frac{B^2 (b c-a d)^5 g^2 i^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{15 b^3 d^3}$$

Result (type 4, 3042 leaves) :

$$\frac{1}{60 b^3 d^3} g^2 i^2 \Big(4 b^5 B^2 c^5-24 a b^4 B^2 c^4 d+20 a^2 b^3 B^2 c^3 d^2+20 a^3 b^2 B^2 c^2 d^3-24 a^4 b B^2 c d^4+4 a^5 B^2 d^5+4 A b^5 B c^4 d x-4 b^5 B^2 c^4 d x-20 a A b^4 B c^3 d^2 x+$$
$$22 a b^4 B^2 c^3 d^2 x+60 a^2 A^2 b^3 c^2 d^3 x-36 a^2 b^3 B^2 c^2 d^3 x+20 a^3 A b^2 B c d^4 x+22 a^3 b^2 B^2 c d^4 x-4 a^4 A b B d^5 x-4 a^4 b B^2 d^5 x-$$
$$2 A b^5 B c^3 d^2 x^2+3 b^5 B^2 c^3 d^2 x^2+60 a A^2 b^4 c^2 d^3 x^2-30 a A b^4 B c^2 d^3 x^2-3 a b^4 B^2 c^2 d^3 x^2+60 a^2 A^2 b^3 c d^4 x^2+30 a^2 A b^3 B c d^4 x^2-$$
$$3 a^2 b^3 B^2 c d^4 x^2+2 a^3 A b^2 B d^5 x^2+3 a^3 b^2 B^2 d^5 x^2+20 A^2 b^5 c^2 d^3 x^3-12 A b^5 B c^2 d^3 x^3+2 b^5 B^2 c^2 d^3 x^3+80 a A^2 b^4 c d^4 x^3-4 a b^4 B^2 c d^4 x^3+$$
$$20 a^2 A^2 b^3 d^5 x^3+12 a^2 A b^3 B d^5 x^3+2 a^2 b^3 B^2 d^5 x^3+30 A^2 b^5 c d^4 x^4-6 A b^5 B c d^4 x^4+30 a A^2 b^4 d^5 x^4+6 a A b^4 B d^5 x^4+12 A^2 b^5 d^5 x^5+$$
$$4 a b^4 B^2 c^4 d \text{Log}\left[\frac{a}{b}+x\right]-20 a^2 b^3 B^2 c^3 d^2 \text{Log}\left[\frac{a}{b}+x\right]+20 a^4 b B^2 c d^4 \text{Log}\left[\frac{a}{b}+x\right]-4 a^5 B^2 d^5 \text{Log}\left[\frac{a}{b}+x\right]+20 a^3 b^2 B^2 c^2 d^3 \text{Log}\left[\frac{a}{b}+x\right]^2-$$
$$10 a^4 b B^2 c d^4 \text{Log}\left[\frac{a}{b}+x\right]^2+2 a^5 B^2 d^5 \text{Log}\left[\frac{a}{b}+x\right]^2-4 b^5 B^2 c^5 \text{Log}\left[\frac{c}{d}+x\right]+20 a b^4 B^2 c^4 d \text{Log}\left[\frac{c}{d}+x\right]-20 a^3 b^2 B^2 c^2 d^3 \text{Log}\left[\frac{c}{d}+x\right]+$$
$$4 a^4 b B^2 c d^4 \text{Log}\left[\frac{c}{d}+x\right]+2 b^5 B^2 c^5 \text{Log}\left[\frac{c}{d}+x\right]^2-10 a b^4 B^2 c^4 d \text{Log}\left[\frac{c}{d}+x\right]^2+20 a^2 b^3 B^2 c^3 d^2 \text{Log}\left[\frac{c}{d}+x\right]^2+2 a^2 b^3 B^2 c^3 d^2 \text{Log}[a+b x]+$$
$$40 a^3 A b^2 B c^2 d^3 \text{Log}[a+b x]+18 a^3 b^2 B^2 c^2 d^3 \text{Log}[a+b x]-20 a^4 A b B c d^4 \text{Log}[a+b x]-24 a^4 b B^2 c d^4 \text{Log}[a+b x]+4 a^5 A B d^5 \text{Log}[a+b x]+$$
$$4 a^5 B^2 d^5 \text{Log}[a+b x]-40 a^3 b^2 B^2 c^2 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+20 a^4 b B^2 c d^4 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]-4 a^5 B^2 d^5 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+$$
$$40 a^3 b^2 B^2 c^2 d^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-20 a^4 b B^2 c d^4 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]+4 a^5 B^2 d^5 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-$$
$$40 a^3 b^2 B^2 c^2 d^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+20 a^4 b B^2 c d^4 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]-4 a^5 B^2 d^5 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+$$
$$4 b^5 B^2 c^4 d x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-20 a b^4 B^2 c^3 d^2 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+120 a^2 A b^3 B c^2 d^3 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+20 a^3 b^2 B^2 c d^4 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-$$

$$4 a^4 b B^2 d^5 x \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 2 b^5 B^2 c^3 d^2 x^2 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 120 a A b^4 B c^2 d^3 x^2 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 30 a b^4 B^2 c^2 d^3 x^2 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$120 a^2 A b^3 B c d^4 x^2 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 30 a^2 b^3 B^2 c d^4 x^2 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 2 a^3 b^2 B^2 d^5 x^2 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 40 A b^5 B c^2 d^3 x^3 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] -$$

$$12 b^5 B^2 c^2 d^3 x^3 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 160 a A b^4 B c d^4 x^3 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 40 a^2 A b^3 B d^5 x^3 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 12 a^2 b^3 B^2 d^5 x^3 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$60 A b^5 B c d^4 x^4 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 6 b^5 B^2 c d^4 x^4 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 60 a A b^4 B d^5 x^4 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 6 a b^4 B^2 d^5 x^4 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$24 A b^5 B d^5 x^5 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 40 a^3 b^2 B^2 c^2 d^3 \, \text{Log}[a+b x] \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 20 a^4 b B^2 c d^4 \, \text{Log}[a+b x] \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$4 a^5 B^2 d^5 \, \text{Log}[a+b x] \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 60 a^2 b^3 B^2 c^2 d^3 x \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 60 a b^4 B^2 c^2 d^3 x^2 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 +$$

$$60 a^2 b^3 B^2 c d^4 x^2 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 20 b^5 B^2 c^2 d^3 x^3 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 80 a b^4 B^2 c d^4 x^3 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 20 a^2 b^3 B^2 d^5 x^3 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 +$$

$$30 b^5 B^2 c d^4 x^4 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 30 a b^4 B^2 d^5 x^4 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 12 b^5 B^2 d^5 x^5 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 - 4 A b^5 B c^5 \, \text{Log}[c+d x] +$$

$$4 b^5 B^2 c^5 \, \text{Log}[c+d x] + 20 a A b^4 B c^4 d \, \text{Log}[c+d x] - 24 a b^4 B^2 c^4 d \, \text{Log}[c+d x] - 40 a^2 A b^3 B c^3 d^2 \, \text{Log}[c+d x] + 18 a^2 b^3 B^2 c^3 d^2 \, \text{Log}[c+d x] +$$

$$2 a^3 b^2 B^2 c^2 d^3 \, \text{Log}[c+d x] + 4 b^5 B^2 c^5 \, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] - 20 a b^4 B^2 c^4 d \, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] + 40 a^2 b^3 B^2 c^3 d^2 \, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] -$$

$$4 b^5 B^2 c^5 \, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] + 20 a b^4 B^2 c^4 d \, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] - 40 a^2 b^3 B^2 c^3 d^2 \, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] -$$

$$4 b^5 B^2 c^5 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c+d x] + 20 a b^4 B^2 c^4 d \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c+d x] - 40 a^2 b^3 B^2 c^3 d^2 \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c+d x] -$$

$$4 b^5 B^2 c^5 \, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] + 20 a b^4 B^2 c^4 d \, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] - 40 a^2 b^3 B^2 c^3 d^2 \, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] -$$

$$\left.\left. 4 b^3 B^2 c^3 \left(b^2 c^2 - 5 a b c d + 10 a^2 d^2\right) \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right] - 4 a^3 B^2 d^3 \left(10 b^2 c^2 - 5 a b c d + a^2 d^2\right) \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right)\right)$$

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

$$\int (a g + b g x) \, (c i + d i x)^2 \left(A + B \, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 589 leaves, 14 steps) :

$$\frac{B^2 (b c-a d)^3 g i^2 x}{12 b^2 d}+\frac{B^2 (b c-a d)^2 g i^2 (c+d x)^2}{12 b d^2}-\frac{B^2 (b c-a d)^4 g i^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{12 b^3 d^2}-\frac{B (b c-a d)^3 g i^2 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b^3 d}-$$
$$\frac{B (b c-a d)^2 g i^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b^3}+\frac{B (b c-a d)^2 g i^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 b d^2}-$$
$$\frac{B (b c-a d) g i^2 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 d^2}+\frac{(b c-a d)^2 g i^2 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{12 b^3}+$$
$$\frac{(b c-a d) g i^2 (a+b x)^2 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{6 b^2}+\frac{g i^2 (a+b x)^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 b}-$$
$$\frac{B (b c-a d)^4 g i^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b^3 d^2}-\frac{B^2 (b c-a d)^4 g i^2 \text{Log}[c+d x]}{4 b^3 d^2}-\frac{B^2 (b c-a d)^4 g i^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{6 b^3 d^2}$$

Result (type 4, 2268 leaves) :

$$
\begin{aligned}
&\frac{1}{12\, b^3 d^2}\, g\, i^2 \Big(-2 b^4 B^2 c^4 - 2 a b^3 B^2 c^3 d + 12 a^2 b^2 B^2 c^2 d^2 - 10 a^3 b B^2 c d^3 + 2 a^4 B^2 d^4 - 2 A b^4 B c^3 d x + 3 b^4 B^2 c^3 d x + 12 a A^2 b^3 c^2 d^2 x - \\
&4 a A b^3 B c^2 d^2 x - 7 a b^3 B^2 c^2 d^2 x + 8 a^2 A b^2 B c d^3 x + 5 a^2 b^2 B^2 c d^3 x - 2 a^3 A b B d^4 x - a^3 b B^2 d^4 x + 6 A^2 b^4 c^2 d^2 x^2 - 5 A b^4 B c^2 d^2 x^2 + \\
&b^4 B^2 c^2 d^2 x^2 + 12 a A^2 b^3 c d^3 x^2 + 4 a A b^3 B c d^3 x^2 - 2 a b^3 B^2 c d^3 x^2 + a^2 A b^2 B d^4 x^2 + a^2 b^2 B^2 d^4 x^2 + 8 A^2 b^4 c d^3 x^3 - 2 A b^4 B c d^3 x^3 + \\
&4 a A^2 b^3 d^4 x^3 + 2 a A b^3 B d^4 x^3 + 3 A^2 b^4 d^4 x^4 - 2 a b^3 B^2 c^3 d\, \text{Log}\left[\frac{a}{b}+x\right] - 4 a^2 b^2 B^2 c^2 d^2\, \text{Log}\left[\frac{a}{b}+x\right] + 8 a^3 b B^2 c d^3\, \text{Log}\left[\frac{a}{b}+x\right] - \\
&2 a^4 B^2 d^4\, \text{Log}\left[\frac{a}{b}+x\right] + 6 a^2 b^2 B^2 c^2 d^2\, \text{Log}\left[\frac{a}{b}+x\right]^2 - 4 a^3 b B^2 c d^3\, \text{Log}\left[\frac{a}{b}+x\right]^2 + a^4 B^2 d^4\, \text{Log}\left[\frac{a}{b}+x\right]^2 + 2 b^4 B^2 c^4\, \text{Log}\left[\frac{c}{d}+x\right] + \\
&4 a b^3 B^2 c^3 d\, \text{Log}\left[\frac{c}{d}+x\right] - 8 a^2 b^2 B^2 c^2 d^2\, \text{Log}\left[\frac{c}{d}+x\right] + 2 a^3 b B^2 c d^3\, \text{Log}\left[\frac{c}{d}+x\right] - b^4 B^2 c^4\, \text{Log}\left[\frac{c}{d}+x\right]^2 + 4 a b^3 B^2 c^3 d\, \text{Log}\left[\frac{c}{d}+x\right]^2 + \\
&12 a^2 A b^2 B c^2 d^2\, \text{Log}[a+b x] + 5 a^2 b^2 B^2 c^2 d^2\, \text{Log}[a+b x] - 8 a^3 A b B c d^3\, \text{Log}[a+b x] - 6 a^3 b B^2 c d^3\, \text{Log}[a+b x] + \\
&2 a^4 A B d^4\, \text{Log}[a+b x] + a^4 B^2 d^4\, \text{Log}[a+b x] - 12 a^2 b^2 B^2 c^2 d^2\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 8 a^3 b B^2 c d^3\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] - \\
&2 a^4 B^2 d^4\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 12 a^2 b^2 B^2 c^2 d^2\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 8 a^3 b B^2 c d^3\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] + \\
&2 a^4 B^2 d^4\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 12 a^2 b^2 B^2 c^2 d^2\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + 8 a^3 b B^2 c d^3\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] - \\
&2 a^4 B^2 d^4\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] - 2 b^4 B^2 c^3 d x\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 24 a A b^3 B c^2 d^2 x\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 4 a b^3 B^2 c^2 d^2 x\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + \\
&8 a^2 b^2 B^2 c d^3 x\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 2 a^3 b B^2 d^4 x\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 12 A b^4 B c^2 d^2 x^2\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 5 b^4 B^2 c^2 d^2 x^2\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + \\
&24 a A b^3 B c d^3 x^2\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 4 a b^3 B^2 c d^3 x^2\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + a^2 b^2 B^2 d^4 x^2\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 16 A b^4 B c d^3 x^3\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - \\
&2 b^4 B^2 c d^3 x^3\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 8 a A b^3 B d^4 x^3\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 2 a b^3 B^2 d^4 x^3\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 6 A b^4 B d^4 x^4\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + \\
&12 a^2 b^2 B^2 c^2 d^2\, \text{Log}[a+b x]\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 8 a^3 b B^2 c d^3\, \text{Log}[a+b x]\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 2 a^4 B^2 d^4\, \text{Log}[a+b x]\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + \\
&12 a b^3 B^2 c^2 d^2 x\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 6 b^4 B^2 c^2 d^2 x^2\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 12 a b^3 B^2 c d^3 x^2\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 8 b^4 B^2 c d^3 x^3\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + \\
&4 a b^3 B^2 d^4 x^3\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 3 b^4 B^2 d^4 x^4\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 2 A b^4 B c^4\, \text{Log}[c+d x] - 3 b^4 B^2 c^4\, \text{Log}[c+d x] - 8 a A b^3 B c^3 d\, \text{Log}[c+d x] + \\
&2 a b^3 B^2 c^3 d\, \text{Log}[c+d x] + a^2 b^2 B^2 c^2 d^2\, \text{Log}[c+d x] - 2 b^4 B^2 c^4\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] + 8 a b^3 B^2 c^3 d\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] + \\
&2 b^4 B^2 c^4\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] - 8 a b^3 B^2 c^3 d\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] + 2 b^4 B^2 c^4\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c+d x] - \\
&8 a b^3 B^2 c^3 d\, \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c+d x] + 2 b^4 B^2 c^4\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] - 8 a b^3 B^2 c^3 d\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] + \\
&2 b^3 B^2 c^3 (b c-4 a d)\, \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right] - 2 a^2 B^2 d^2 \left(6 b^2 c^2-4 a b c d+a^2 d^2\right) \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\Big)
\end{aligned}
$$

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

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

Optimal (type 4, 334 leaves, 11 steps):

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

Result (type 4, 1278 leaves):

$$
\begin{aligned}
&\frac{1}{6\, b^3\, d} i^2 \Bigg(6 A^2 b^3 c^2 d x + 6 A^2 b^3 c d^2 x^2 + 2 A^2 b^3 d^3 x^3 + 2 A b B d (b c - a d) x (2 b c + 2 a d - b d x) + 12 b B^2 c d (-b c + a d) (a + b x) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) - \\
&\quad 4 B^2 d (-b c + a d) (b c + a d) (a + b x) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) - 6 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b} + x\right]^2 + 2 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b} + x\right]^2 + \\
&\quad 12 b^2 B^2 c (b c - a d) (c + d x) \left(-1 + \text{Log}\left[\frac{c}{d} + x\right]\right) - 4 b B^2 (b c - a d) (b c + a d) (c + d x) \left(-1 + \text{Log}\left[\frac{c}{d} + x\right]\right) - 4 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d} + x\right]^2 - \\
&\quad 12 a^2 A b B c d^2 \text{Log}[a + b x] + 4 a^3 A B d^3 \text{Log}[a + b x] + B^2 d^2 (-b c + a d) \left(b x (2 a - b x) + 2 b^2 x^2 \text{Log}\left[\frac{a}{b} + x\right] - 2 a^2 \text{Log}[a + b x]\right) + \\
&\quad 4 A b^3 B d^3 x^3 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 6 b^3 B^2 c d^2 x^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right]^2 + 2 b^3 B^2 d^3 x^3 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right]^2 - 4 A b^3 B c^3 \text{Log}[c + d x] + \\
&\quad 12 A b^2 B c^2 \left(a d \text{Log}[a + b x] + b d x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - b c \text{Log}[c + d x]\right) - b^2 B^2 (b c - a d) \left(d x (-2 c + d x) - 2 d^2 x^2 \text{Log}\left[\frac{c}{d} + x\right] + 2 c^2 \text{Log}[c + d x]\right) + \\
&\quad 12 A b^2 B c \left(d (-b c + a d) x + b d^2 x^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + b c^2 \text{Log}[c + d x]\right) + \\
&\quad 2 B^2 \left(\text{Log}\left[\frac{a}{b} + x\right] - \text{Log}\left[\frac{c}{d} + x\right] - \text{Log}\left[\frac{e (a + b x)}{c + d x}\right]\right) \left(b d (b c - a d) x (-2 b c - 2 a d + b d x) - 2 a^3 d^3 \text{Log}[a + b x] + 2 b^3 c^3 \text{Log}[c + d x]\right) + \\
&\quad 12 b B^2 c \left(\text{Log}\left[\frac{a}{b} + x\right] - \text{Log}\left[\frac{c}{d} + x\right] - \text{Log}\left[\frac{e (a + b x)}{c + d x}\right]\right) \left(a^2 d^2 \text{Log}[a + b x] - b \left(d (-b c + a d) x + b c^2 \text{Log}[c + d x]\right)\right) + \\
&\quad 8 b^3 B^2 c^3 \left(\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\right) + \\
&\quad 12 a^2 b B^2 c d^2 \left(\text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\right) - 4 a^3 B^2 d^3 \left(\text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\right) + \\
&\quad 6 b^2 B^2 c^2 \Bigg(a d \text{Log}\left[\frac{a}{b} + x\right]^2 + b c \text{Log}\left[\frac{c}{d} + x\right]^2 - 2 a d \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[a + b x] + 2 a d \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] - 2 a d \text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + \\
&\qquad 2 a d \text{Log}[a + b x] \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + b d x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right]^2 + 2 b c \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[c + d x] - 2 b c \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[c + d x] - \\
&\qquad 2 b c \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] \text{Log}[c + d x] - 2 b c \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] - 2 b c \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right] - 2 a d \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\Bigg)\Bigg)
\end{aligned}
$$

Problem 68: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\, i + d\, i\, x)^2 \left(A + B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{a g + b g x} \, dx$$

Optimal (type 4, 535 leaves, 15 steps) :

$$-\frac{B\,d\,(b\,c-a\,d)\,i^2\,(a+b\,x)\,\left(A+B\,Log\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g}+\frac{2\,B\,(b\,c-a\,d)^2\,i^2\,Log\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(A+B\,Log\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{b^3\,g}+$$

$$\frac{d\,(b\,c-a\,d)\,i^2\,(a+b\,x)\,\left(A+B\,Log\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{b^3\,g}+\frac{i^2\,(c+d\,x)^2\,\left(A+B\,Log\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,b\,g}+\frac{B^2\,(b\,c-a\,d)^2\,i^2\,Log[c+d\,x]}{b^3\,g}+$$

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

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

$$\frac{2\,B\,(b\,c-a\,d)^2\,i^2\,\left(A+B\,Log\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\,PolyLog\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}+\frac{2\,B^2\,(b\,c-a\,d)^2\,i^2\,PolyLog\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}$$

Result (type 4, 2547 leaves) :

$$\frac{1}{12\,b^3\,g}\,i^2\,\Bigg(12\,A^2\,b\,d\,(2\,b\,c-a\,d)\,x+6\,A^2\,b^2\,d^2\,x^2+12\,A^2\,(b\,c-a\,d)^2\,Log[a+b\,x]-$$

$$24\,A\,b\,B\,c\,\left(a\,d\,Log\left[\frac{a}{b}+x\right]^2-2\,a\,d\,Log\left[\frac{a}{b}+x\right]\,(1+Log[a+b\,x])+2\,\left(-b\,c+a\,d+Log\left[\frac{c}{d}+x\right]\,\left(b\,c+a\,d\,Log[a+b\,x]-a\,d\,Log\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+\right.\right.$$

$$\left.\left.(-b\,d\,x+a\,d\,Log[a+b\,x])\,Log\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)-2\,a\,d\,PolyLog\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+12\,A\,b^2\,B\,c^2$$

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

$$6\,A\,B\,\left(-4\,a\,d^2\,(a+b\,x)\,\left(-1+Log\left[\frac{a}{b}+x\right]\right)+2\,a^2\,d^2\,Log\left[\frac{a}{b}+x\right]^2+4\,a\,b\,d\,(c+d\,x)\,\left(-1+Log\left[\frac{c}{d}+x\right]\right)+\right.$$

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

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

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

$$8\,b\,B^2\,c\,\left(a\,d\,Log\left[\frac{a}{b}+x\right]^3-3\,d\,(a+b\,x)\,\left(2-2\,Log\left[\frac{a}{b}+x\right]+Log\left[\frac{a}{b}+x\right]^2\right)-3\,b\,(c+d\,x)\,\left(2-2\,Log\left[\frac{c}{d}+x\right]+Log\left[\frac{c}{d}+x\right]^2\right)-\right.$$

$$3\,d\,(b\,x-a\,Log[a+b\,x])\,\left(-Log\left[\frac{a}{b}+x\right]+Log\left[\frac{c}{d}+x\right]+Log\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2+6\,\left(a\,d+2\,b\,d\,x-b\,d\,x\,Log\left[\frac{c}{d}+x\right]-b\,c\,Log[c+d\,x]+\right.$$

$$\text{Log}[\tfrac{a}{b}+x] \, (-d (a+b x)+d (a+b x) \text{Log}[\tfrac{c}{d}+x]+(b c-a d) \text{Log}[\tfrac{b (c+d x)}{b c-a d}]) + (b c-a d) \text{PolyLog}[2, \tfrac{d (a+b x)}{-b c+a d}]) -$$

$$3 (\text{Log}[\tfrac{a}{b}+x]-\text{Log}[\tfrac{c}{d}+x]-\text{Log}[\tfrac{e (a+b x)}{c+d x}]) \, (-2 b c+2 a d-2 d (a+b x) \text{Log}[\tfrac{a}{b}+x]+a d \text{Log}[\tfrac{a}{b}+x]^2+$$

$$2 \text{Log}[\tfrac{c}{d}+x] \, (b (c+d x)-a d \text{Log}[\tfrac{d (a+b x)}{-b c+a d}])-2 a d \text{PolyLog}[2,\tfrac{b (c+d x)}{b c-a d}]) -$$

$$3 a d (\text{Log}[\tfrac{a}{b}+x]^2 (\text{Log}[\tfrac{c}{d}+x]-\text{Log}[\tfrac{b (c+d x)}{b c-a d}]) - 2 \text{Log}[\tfrac{a}{b}+x] \text{PolyLog}[2,\tfrac{d (a+b x)}{-b c+a d}]+2 \text{PolyLog}[3,\tfrac{d (a+b x)}{-b c+a d}]) +$$

$$3 a d (\text{Log}[\tfrac{c}{d}+x]^2 \text{Log}[\tfrac{d (a+b x)}{-b c+a d}]+2 \text{Log}[\tfrac{c}{d}+x] \text{PolyLog}[2,\tfrac{b (c+d x)}{b c-a d}]-2 \text{PolyLog}[3,\tfrac{b (c+d x)}{b c-a d}]))) +$$

$$B^2 (4 a^2 d^2 \text{Log}[\tfrac{a}{b}+x]^3-12 a d^2 (a+b x) (2-2 \text{Log}[\tfrac{a}{b}+x]+\text{Log}[\tfrac{a}{b}+x]^2) -$$

$$3 d^2 (a+b x) (7 a-b x+(-6 a+2 b x) \text{Log}[\tfrac{a}{b}+x]+2 (a-b x) \text{Log}[\tfrac{a}{b}+x]^2)-12 a b d (c+d x) (2-2 \text{Log}[\tfrac{c}{d}+x]+\text{Log}[\tfrac{c}{d}+x]^2) -$$

$$3 b^2 (c+d x) (7 c-d x+(-6 c+2 d x) \text{Log}[\tfrac{c}{d}+x]+2 (c-d x) \text{Log}[\tfrac{c}{d}+x]^2)+6 d^2 (b x (-2 a+b x)+2 a^2 \text{Log}[a+b x])$$

$$(-\text{Log}[\tfrac{a}{b}+x]+\text{Log}[\tfrac{c}{d}+x]+\text{Log}[\tfrac{e (a+b x)}{c+d x}])^2 - 6 (\text{Log}[\tfrac{a}{b}+x]-\text{Log}[\tfrac{c}{d}+x]-\text{Log}[\tfrac{e (a+b x)}{c+d x}]) \, (-4 a d^2 (a+b x) (-1+\text{Log}[\tfrac{a}{b}+x]) +$$

$$2 a^2 d^2 \text{Log}[\tfrac{a}{b}+x]^2+4 a b d (c+d x) (-1+\text{Log}[\tfrac{c}{d}+x])+d^2 (b x (2 a-b x)+2 b^2 x^2 \text{Log}[\tfrac{a}{b}+x]-2 a^2 \text{Log}[a+b x]) +$$

$$b^2 (d x (-2 c+d x)-2 d^2 x^2 \text{Log}[\tfrac{c}{d}+x]+2 c^2 \text{Log}[c+d x])-4 a^2 d^2 (\text{Log}[\tfrac{c}{d}+x] \text{Log}[\tfrac{d (a+b x)}{-b c+a d}]+\text{PolyLog}[2,\tfrac{b (c+d x)}{b c-a d}])) +$$

$$6 (2 a b c d+3 b^2 c d x+3 a b d^2 x-b^2 d^2 x^2-2 a b d^2 x \text{Log}[\tfrac{c}{d}+x]+b^2 d^2 x^2 \text{Log}[\tfrac{c}{d}+x]-a^2 d^2 \text{Log}[a+b x]-b^2 c^2 \text{Log}[c+d x] -$$

$$2 a b c d \text{Log}[c+d x]-\text{Log}[\tfrac{a}{b}+x] \, (b d (2 a c+b x (2 c-d x))-2 d^2 (a^2-b^2 x^2) \text{Log}[\tfrac{c}{d}+x]+(-2 b^2 c^2+2 a^2 d^2) \text{Log}[\tfrac{b (c+d x)}{b c-a d}]) +$$

$$2 (b^2 c^2-a^2 d^2) \text{PolyLog}[2,\tfrac{d (a+b x)}{-b c+a d}]+4 a d (a d+2 b d x-b d x \text{Log}[\tfrac{c}{d}+x]-b c \text{Log}[c+d x] +$$

$$\text{Log}[\tfrac{a}{b}+x] \, (-d (a+b x)+d (a+b x) \text{Log}[\tfrac{c}{d}+x]+(b c-a d) \text{Log}[\tfrac{b (c+d x)}{b c-a d}]) + (b c-a d) \text{PolyLog}[2, \tfrac{d (a+b x)}{-b c+a d}]) -$$

$$2 a^2 d^2 (\text{Log}[\tfrac{a}{b}+x]^2 (\text{Log}[\tfrac{c}{d}+x]-\text{Log}[\tfrac{b (c+d x)}{b c-a d}])-2 \text{Log}[\tfrac{a}{b}+x] \text{PolyLog}[2,\tfrac{d (a+b x)}{-b c+a d}]+2 \text{PolyLog}[3,\tfrac{d (a+b x)}{-b c+a d}])) +$$

$$12 a^2 d^2 (\text{Log}[\tfrac{c}{d}+x]^2 \text{Log}[\tfrac{d (a+b x)}{-b c+a d}]+2 \text{Log}[\tfrac{c}{d}+x] \text{PolyLog}[2,\tfrac{b (c+d x)}{b c-a d}]-2 \text{PolyLog}[3,\tfrac{b (c+d x)}{b c-a d}])) +$$

$$4 b^2 B^2 c^2 \left(\text{Log}\left[\frac{a}{b}+x\right]^3+3 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+3 \text{Log}[a+b x] \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2+\right.$$

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

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

$$\left.6 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]-6 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\right)\Bigg)$$

Problem 69: Result more than twice size of optimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a g+b g x)^2} \, dx$$

Optimal (type 4, 442 leaves, 11 steps):

$$-\frac{2 B^2 (b c-a d) i^2 (c+d x)}{b^2 g^2 (a+b x)}-\frac{2 B (b c-a d) i^2 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^2 g^2 (a+b x)}+\frac{2 B d (b c-a d) i^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^3 g^2}+$$

$$\frac{d^2 i^2 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^3 g^2}-\frac{(b c-a d) i^2 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^2 g^2 (a+b x)}-\frac{2 d (b c-a d) i^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g^2}+$$

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

Result (type 4, 2775 leaves):

$$\frac{A^2 d^2 i^2 x}{b^2 g^2}+\frac{-A^2 b^2 c^2 i^2+2 a A^2 b c d i^2-a^2 A^2 d^2 i^2}{b^3 g^2 (a+b x)}-\frac{2 \left(-A^2 b c d i^2+a A^2 d^2 i^2\right) \text{Log}[a+b x]}{b^3 g^2}+\frac{1}{b (b c-a d) g^2 (a+b x)}$$

$$B^2 c^2 i^2 \left(-2 b c+2 a d-2 d (a+b x) \text{Log}[a+b x]+(-2 b c+2 a d) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-b (c+d x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+2 d (a+b x) \text{Log}[c+d x]\right)+$$

$$\frac{2\,A\,B\,c^2\,i^2\left(-\frac{\left(\frac{a}{b}+x\right)\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{(a+b\,x)^2\,\text{Log}\left[\frac{a}{b}+x\right]}-\frac{\frac{b\left(\frac{c}{d}+x\right)\text{Log}\left[\frac{c}{d}+x\right]}{\left(-a+\frac{b\,c}{d}\right)^2\left(1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right)}+\frac{\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]}{-a+\frac{b\,c}{d}}}{b}-\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\right]}{b\,(a+b\,x)}\right)}{g^2}+$$

$$\frac{1}{g^2}2\,A\,B\,d^2\,i^2\left(\frac{\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^2}-\frac{a\,\text{Log}\left[\frac{a}{b}+x\right]^2}{b^3}-\frac{a^2\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3\,(a+b\,x)}-\right.$$

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

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

$$\frac{1}{g^2}4\,A\,B\,c\,d\,i^2\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2\,b^2}+\frac{a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^2\,(a+b\,x)}+\frac{a\left(\left(-b\,c+a\,d\right)\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\left(\text{Log}[a+b\,x]-\text{Log}[c+d\,x]\right)\right)}{b^2\,(b\,c-a\,d)\,(a+b\,x)}+\right.$$

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

$$\frac{1}{g^2}B^2\,d^2\,i^2\left(-\frac{2\,a\,\text{Log}\left[\frac{a}{b}+x\right]^3}{3\,b^3}+\frac{(a+b\,x)\left(2-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^3}-\frac{a^2\left(2+2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^3\,(a+b\,x)}+\right.$$

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

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

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

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

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

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

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

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

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

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

$$\frac{1}{g^2}2\,B^2\,c\,d\,i^2\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^3}{3\,b^2}+\frac{a\left(2+2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^2\,(a+b\,x)}+\frac{\left(\frac{a}{a+b\,x}+\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\right]\right)^2}{b^2}-\right.$$

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

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

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

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

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

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

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

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

$$\int \frac{(c\,i+d\,i\,x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(a\,g+b\,g\,x)^3}\,dx$$

Optimal (type 4, 387 leaves, 10 steps):

$$-\frac{2 B^2 d\, i^2 (c+d x)}{b^2 g^3 (a+b x)}-\frac{B^2 i^2 (c+d x)^2}{4 b g^3 (a+b x)^2}-\frac{2 B d\, i^2 (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^2 g^3 (a+b x)}-\frac{B\, i^2 (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b g^3 (a+b x)^2}-\frac{d\, i^2 (c+d x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^2 g^3 (a+b x)}-\frac{i^2 (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b g^3 (a+b x)^2}-\frac{d^2 i^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \operatorname{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g^3}+\frac{2 B d^2 i^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g^3}+\frac{2 B^2 d^2 i^2 \operatorname{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g^3}$$

Result (type 4, 3601 leaves):

$$-\frac{A^2 \left(b^2 c^2-2 a b c d+a^2 d^2\right) i^2}{2 b^3 g^3 (a+b x)^2}+\frac{2 \left(-A^2 b c d\, i^2+a A^2 d^2 i^2\right)}{b^3 g^3 (a+b x)}+\frac{A^2 d^2 i^2 \operatorname{Log}[a+b x]}{b^3 g^3}-$$
$$\Big(B^2 c^2 i^2 \Big(b^2 c^2-8 a b c d+7 a^2 d^2-6 b^2 c d x+6 a b d^2 x-6 d^2 (a+b x)^2 \operatorname{Log}[a+b x]+2 (b c-a d) (b c-3 a d-2 b d x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]+$$
$$2 b (c+d x) (b c-2 a d-b d x) \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+6 a^2 d^2 \operatorname{Log}[c+d x]+12 a b d^2 x \operatorname{Log}[c+d x]+6 b^2 d^2 x^2 \operatorname{Log}[c+d x]\Big)\Big)\Big/$$
$$\left(4 b (b c-a d)^2 g^3 (a+b x)^2\right)+\frac{1}{g^3} 2 A B c^2 i^2 \left(-\frac{\left(\frac{a}{b}+x\right)\left(2 \operatorname{Log}\left[\frac{a}{b}+x\right]+4 \operatorname{Log}\left[\frac{a}{b}+x\right]^2\right)}{8 (a+b x)^3 \operatorname{Log}\left[\frac{a}{b}+x\right]}-\right.$$

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

$$\frac{1}{g^3}4 A B c d i^2\Bigg(-\frac{1+\text{Log}\left[\frac{a}{b}+x\right]}{b^2\left(a+b x\right)}+\frac{a\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^2\left(a+b x\right)^2}-\frac{\left(-b c+a d\right)\text{Log}\left[\frac{c}{d}+x\right]+d\left(a+b x\right)\left(\text{Log}[a+b x]-\text{Log}[c+d x]\right)}{b^2\left(b c-a d\right)\left(a+b x\right)}-$$

$$\frac{a\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d\,(a+b x)\,(b c-a d+d\,(a+b x)\,\text{Log}[a+b x]-d\,(a+b x)\,\text{Log}[c+d x])}{(b c-a d)^2}\right)}{2 b^2\left(a+b x\right)^2}-\frac{\left(a+2 b x\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)}{2 b^2\left(a+b x\right)^2}\Bigg)+\frac{1}{g^3}$$

$$2 A B d^2 i^2\Bigg(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^3}+\frac{2 a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3\left(a+b x\right)}-\frac{a^2\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^3\left(a+b x\right)^2}+\frac{2 a\left(\left(-b c+a d\right)\text{Log}\left[\frac{c}{d}+x\right]+d\left(a+b x\right)\left(\text{Log}[a+b x]-\text{Log}[c+d x]\right)\right)}{b^3\left(b c-a d\right)\left(a+b x\right)}+$$

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

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

$$\frac{1}{g^3}2 B^2 c d i^2\Bigg(-\frac{2+2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2}{b^2\left(a+b x\right)}+\frac{a\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4 b^2\left(a+b x\right)^2}+2\Bigg(-\frac{1+\text{Log}\left[\frac{a}{b}+x\right]}{b^2\left(a+b x\right)}+\frac{a\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^2\left(a+b x\right)^2}-$$

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

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

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

$$2\,\text{Log}\left[\frac{a}{b}+x\right]\left(\left(b c-a d\right)\text{Log}\left[\frac{c}{d}+x\right]+d\left(a+b x\right)\text{Log}\left[\frac{b\left(c+d x\right)}{b c-a d}\right]\right)-2 d\left(a+b x\right)\text{PolyLog}\left[2,\frac{d\left(a+b x\right)}{-b c+a d}\right]\Bigg)+$$

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

$$\left(d\,(a+b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\,(b\,c-a\,d)\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)-2\,d\,(a+b\,x)\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\right)\Bigg)\Bigg)\Big/$$

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

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

$$\left(b\,(c+d\,x)+d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+2\,d^2\,(a+b\,x)^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)\Bigg)\Big/\left(2\,b^2\,(b\,c-a\,d)^2\,(a+b\,x)^2\right)\Bigg)+$$

$$\frac{1}{g^3}B^2\,d^2\,i^2\Bigg(\frac{\text{Log}\left[\frac{a}{b}+x\right]^3}{3\,b^3}+\frac{2\,a\left(2+2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^3\,(a+b\,x)}-\frac{a^2\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4\,b^3\,(a+b\,x)^2}+$$

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

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

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

$$2\,d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]\left(b\,(c+d\,x)+d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+2\,d^2\,(a+b\,x)^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)\Bigg)\Big/$$

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

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

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

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

$$2\,\text{Log}\left[\frac{a}{b}+x\right]\left((b\,c-a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)-2\,d\,(a+b\,x)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\Bigg)-$$

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

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

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

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

Problem 74: Result more than twice size of optimal antiderivative.

$$\int \left(a g+b g x\right)^3 \left(c i+d i x\right)^3 \left(A+B \,\text{Log}\left[\frac{e \left(a+b x\right)}{c+d x}\right]\right)^2 dx$$

Optimal (type 4, 1089 leaves, 22 steps):

$$\frac{5 B^2 (b c-a d)^6 g^3 i^3 x}{84 b^3 d^3}+\frac{B^2 (b c-a d)^3 g^3 i^3 (a+b x)^4}{140 b^4}-\frac{29 B^2 (b c-a d)^5 g^3 i^3 (c+d x)^2}{840 b^2 d^4}+$$
$$\frac{47 B^2 (b c-a d)^4 g^3 i^3 (c+d x)^3}{1260 b d^4}-\frac{13 B^2 (b c-a d)^3 g^3 i^3 (c+d x)^4}{420 d^4}+\frac{b B^2 (b c-a d)^2 g^3 i^3 (c+d x)^5}{105 d^4}-$$
$$\frac{B^2 (b c-a d)^7 g^3 i^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{210 b^4 d^4}-\frac{B (b c-a d)^4 g^3 i^3 (a+b x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{210 b^4 d}-$$
$$\frac{3 B (b c-a d)^3 g^3 i^3 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{140 b^4}-\frac{B (b c-a d)^2 g^3 i^3 (a+b x)^4 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{35 b^3}+$$
$$\frac{2 B (b c-a d)^4 g^3 i^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{21 b d^4}-\frac{3 B (b c-a d)^3 g^3 i^3 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{14 d^4}+$$
$$\frac{6 b B (b c-a d)^2 g^3 i^3 (c+d x)^5 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{35 d^4}-\frac{b^2 B (b c-a d) g^3 i^3 (c+d x)^6 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{21 d^4}+$$
$$\frac{(b c-a d)^3 g^3 i^3 (a+b x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{140 b^4}+\frac{(b c-a d)^2 g^3 i^3 (a+b x)^4 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{35 b^3}+$$
$$\frac{(b c-a d) g^3 i^3 (a+b x)^4 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{14 b^2}+\frac{g^3 i^3 (a+b x)^4 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{7 b}+$$
$$\frac{B (b c-a d)^5 g^3 i^3 (a+b x)^2 \left(3 A+B+3 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{420 b^4 d^2}-\frac{B (b c-a d)^6 g^3 i^3 (a+b x) \left(6 A+5 B+6 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{420 b^4 d^3}-$$
$$\frac{B (b c-a d)^7 g^3 i^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(6 A+11 B+6 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{420 b^4 d^4}-\frac{11 B^2 (b c-a d)^7 g^3 i^3 \text{Log}[c+d x]}{420 b^4 d^4}-\frac{B^2 (b c-a d)^7 g^3 i^3 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{70 b^4 d^4}$$

Result (type 4, 5123 leaves) :

$$\frac{1}{2520 b^4 d^4}$$
$$g^3 i^3 \Big(-36 b^7 B^2 c^7+288 a b^6 B^2 c^6 d-1008 a^2 b^5 B^2 c^5 d^2+756 a^3 b^4 B^2 c^4 d^3+756 a^4 b^3 B^2 c^3 d^4-1008 a^5 b^2 B^2 c^2 d^5+288 a^6 b B^2 c d^6-36 a^7 B^2 d^7-36 A b^7 B$$
$$c^6 d x+36 b^7 B^2 c^6 d x+252 a A b^6 B c^5 d^2 x-270 a b^6 B^2 c^5 d^2 x-756 a^2 A b^5 B c^4 d^3 x+876 a^2 b^5 B^2 c^4 d^3 x+2520 a^3 A^2 b^4 c^3 d^4 x-1284 a^3 b^4 B^2 c^3 d^4 x+$$
$$756 a^4 A b^3 B c^2 d^5 x+876 a^4 b^3 B^2 c^2 d^5 x-252 a^5 A b^2 B c d^6 x-270 a^5 b^2 B^2 c d^6 x+36 a^6 A b B d^7 x+36 a^6 b B^2 d^7 x+18 A b^7 B c^5 d^2 x^2-$$
$$27 b^7 B^2 c^5 d^2 x^2-126 a A b^6 B c^4 d^3 x^2+201 a b^6 B^2 c^4 d^3 x^2+3780 a^2 A^2 b^5 c^3 d^4 x^2-1512 a^2 A b^5 B c^3 d^4 x^2-174 a^2 b^5 B^2 c^3 d^4 x^2+3780 a^3 A^2 b^4 c^2 d^5 x^2+$$
$$1512 a^3 A b^4 B c^2 d^5 x^2-174 a^3 b^4 B^2 c^2 d^5 x^2+126 a^4 A b^3 B c d^6 x^2+201 a^4 b^3 B^2 c d^6 x^2-18 a^5 A b^2 B d^7 x^2-27 a^5 b^2 B^2 d^7 x^2-12 A b^7 B c^4 d^3 x^3+$$
$$22 b^7 B^2 c^4 d^3 x^3+2520 a A^2 b^6 c^3 d^4 x^3-1176 a A b^6 B c^3 d^4 x^3+152 a b^6 B^2 c^3 d^4 x^3+7560 a^2 A^2 b^5 c^2 d^5 x^3-348 a^2 b^5 B^2 c^2 d^5 x^3+2520 a^3 A^2 b^4 c d^6 x^3+$$
$$1176 a^3 A b^4 B c d^6 x^3+152 a^3 b^4 B^2 c d^6 x^3+12 a^4 A b^3 B d^7 x^3+22 a^4 b^3 B^2 d^7 x^3+630 A^2 b^7 c^3 d^4 x^4-306 A b^7 B c^3 d^4 x^4+60 b^7 B^2 c^3 d^4 x^4+$$
$$5670 a A^2 b^6 c^2 d^5 x^4-882 a A b^6 B c^2 d^5 x^4-60 a b^6 B^2 c^2 d^5 x^4+5670 a^2 A^2 b^5 c d^6 x^4+882 a^2 A b^5 B c d^6 x^4-60 a^2 b^5 B^2 c d^6 x^4+630 a^3 A^2 b^4 d^7 x^4+$$
$$306 a^3 A b^4 B d^7 x^4+60 a^3 b^4 B^2 d^7 x^4+1512 A^2 b^7 c^2 d^5 x^5-360 A b^7 B c^2 d^5 x^5+24 b^7 B^2 c^2 d^5 x^5+4536 a A^2 b^6 c d^6 x^5-48 a b^6 B^2 c d^6 x^5+$$
$$1512 a^2 A^2 b^5 d^7 x^5+360 a^2 A b^5 B d^7 x^5+24 a^2 b^5 B^2 d^7 x^5+1260 A^2 b^7 c d^6 x^6-120 A b^7 B c d^6 x^6+1260 a A^2 b^6 d^7 x^6+120 a A b^6 B d^7 x^6+360 A^2 b^7 d^7 x^7-$$

$$36 a b^6 B^2 c^6 d \text{Log}\left[\frac{a}{b}+x\right] + 252 a^2 b^5 B^2 c^5 d^2 \text{Log}\left[\frac{a}{b}+x\right] - 756 a^3 b^4 B^2 c^4 d^3 \text{Log}\left[\frac{a}{b}+x\right] + 756 a^5 b^2 B^2 c^2 d^5 \text{Log}\left[\frac{a}{b}+x\right] - 252 a^6 b B^2 c d^6 \text{Log}\left[\frac{a}{b}+x\right] +$$

$$36 a^7 B^2 d^7 \text{Log}\left[\frac{a}{b}+x\right] + 630 a^4 b^3 B^2 c^3 d^4 \text{Log}\left[\frac{a}{b}+x\right]^2 - 378 a^5 b^2 B^2 c^2 d^5 \text{Log}\left[\frac{a}{b}+x\right]^2 + 126 a^6 b B^2 c d^6 \text{Log}\left[\frac{a}{b}+x\right]^2 - 18 a^7 B^2 d^7 \text{Log}\left[\frac{a}{b}+x\right]^2 +$$

$$36 b^7 B^2 c^7 \text{Log}\left[\frac{c}{d}+x\right] - 252 a b^6 B^2 c^6 d \text{Log}\left[\frac{c}{d}+x\right] + 756 a^2 b^5 B^2 c^5 d^2 \text{Log}\left[\frac{c}{d}+x\right] - 756 a^4 b^3 B^2 c^3 d^4 \text{Log}\left[\frac{c}{d}+x\right] + 252 a^5 b^2 B^2 c^2 d^5 \text{Log}\left[\frac{c}{d}+x\right] -$$

$$36 a^6 b B^2 c d^6 \text{Log}\left[\frac{c}{d}+x\right] - 18 b^7 B^2 c^7 \text{Log}\left[\frac{c}{d}+x\right]^2 + 126 a b^6 B^2 c^6 d \text{Log}\left[\frac{c}{d}+x\right]^2 - 378 a^2 b^5 B^2 c^5 d^2 \text{Log}\left[\frac{c}{d}+x\right]^2 + 630 a^3 b^4 B^2 c^4 d^3 \text{Log}\left[\frac{c}{d}+x\right]^2 -$$

$$18 a^2 b^5 B^2 c^5 d^2 \text{Log}[a+b x] + 114 a^3 b^4 B^2 c^4 d^3 \text{Log}[a+b x] + 1260 a^4 A b^3 B c^3 d^4 \text{Log}[a+b x] + 642 a^4 b^3 B^2 c^3 d^4 \text{Log}[a+b x] -$$

$$756 a^5 A b^2 B c^2 d^5 \text{Log}[a+b x] - 990 a^5 b^2 B^2 c^2 d^5 \text{Log}[a+b x] + 252 a^6 A b B c d^6 \text{Log}[a+b x] + 288 a^6 b B^2 c d^6 \text{Log}[a+b x] -$$

$$36 a^7 A B d^7 \text{Log}[a+b x] - 36 a^7 B^2 d^7 \text{Log}[a+b x] - 1260 a^4 b^3 B^2 c^3 d^4 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 756 a^5 b^2 B^2 c^2 d^5 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] -$$

$$252 a^6 b B^2 c d^6 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 36 a^7 B^2 d^7 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 1260 a^4 b^3 B^2 c^3 d^4 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] -$$

$$756 a^5 b^2 B^2 c^2 d^5 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] + 252 a^6 b B^2 c d^6 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 36 a^7 B^2 d^7 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] -$$

$$1260 a^4 b^3 B^2 c^3 d^4 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + 756 a^5 b^2 B^2 c^2 d^5 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] - 252 a^6 b B^2 c d^6 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] +$$

$$36 a^7 B^2 d^7 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] - 36 b^7 B^2 c^6 d x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 252 a b^6 B^2 c^5 d^2 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] -$$

$$756 a^2 b^5 B^2 c^4 d^3 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 5040 a^3 A b^4 B c^3 d^4 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 756 a^4 b^3 B^2 c^2 d^5 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] -$$

$$252 a^5 b^2 B^2 c d^6 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 36 a^6 b B^2 d^7 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 18 b^7 B^2 c^5 d^2 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 126 a b^6 B^2 c^4 d^3 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$7560 a^2 A b^5 B c^3 d^4 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 1512 a^2 b^5 B^2 c^3 d^4 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 7560 a^3 A b^4 B c^2 d^5 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$1512 a^3 b^4 B^2 c^2 d^5 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 126 a^4 b^3 B^2 c d^6 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 18 a^5 b^2 B^2 d^7 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 12 b^7 B^2 c^4 d^3 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$5040 a A b^6 B c^3 d^4 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 1176 a b^6 B^2 c^3 d^4 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 15120 a^2 A b^5 B c^2 d^5 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$5040 a^3 A b^4 B c d^6 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 1176 a^3 b^4 B^2 c d^6 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 12 a^4 b^3 B^2 d^7 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$1260 A b^7 B c^3 d^4 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 306 b^7 B^2 c^3 d^4 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 11340 a A b^6 B c^2 d^5 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] -$$

$$882 a b^6 B^2 c^2 d^5 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 11340 a^2 A b^5 B c d^6 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 882 a^2 b^5 B^2 c d^6 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$1260 a^3 A b^4 B d^7 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 306 a^3 b^4 B^2 d^7 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 3024 A b^7 B c^2 d^5 x^5 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 360 b^7 B^2 c^2 d^5 x^5 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$9072\,a\,A\,b^6\,B\,c\,d^6\,x^5\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+3024\,a^2\,A\,b^5\,B\,d^7\,x^5\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+360\,a^2\,b^5\,B^2\,d^7\,x^5\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+$$
$$2520\,A\,b^7\,B\,c\,d^6\,x^6\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-120\,b^7\,B^2\,c\,d^6\,x^6\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+2520\,a\,A\,b^6\,B\,d^7\,x^6\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+120\,a\,b^6\,B^2\,d^7\,x^6\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+$$
$$720\,A\,b^7\,B\,d^7\,x^7\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+1260\,a^4\,b^3\,B^2\,c^3\,d^4\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-756\,a^5\,b^2\,B^2\,c^2\,d^5\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+$$
$$252\,a^6\,b\,B^2\,c\,d^6\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-36\,a^7\,B^2\,d^7\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+2520\,a^3\,b^4\,B^2\,c^3\,d^4\,x\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+$$
$$3780\,a^2\,b^5\,B^2\,c^3\,d^4\,x^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+3780\,a^3\,b^4\,B^2\,c^2\,d^5\,x^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+2520\,a\,b^6\,B^2\,c^3\,d^4\,x^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+$$
$$7560\,a^2\,b^5\,B^2\,c^2\,d^5\,x^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+2520\,a^3\,b^4\,B^2\,c\,d^6\,x^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+630\,b^7\,B^2\,c^3\,d^4\,x^4\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+$$
$$5670\,a\,b^6\,B^2\,c^2\,d^5\,x^4\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+5670\,a^2\,b^5\,B^2\,c\,d^6\,x^4\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+630\,a^3\,b^4\,B^2\,d^7\,x^4\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+$$
$$1512\,b^7\,B^2\,c^2\,d^5\,x^5\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+4536\,a\,b^6\,B^2\,c\,d^6\,x^5\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+1512\,a^2\,b^5\,B^2\,d^7\,x^5\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+$$
$$1260\,b^7\,B^2\,c\,d^6\,x^6\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+1260\,a\,b^6\,B^2\,d^7\,x^6\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+360\,b^7\,B^2\,d^7\,x^7\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+36\,A\,b^7\,B\,c^7\,\text{Log}[c+d\,x]-$$
$$36\,b^7\,B^2\,c^7\,\text{Log}[c+d\,x]-252\,a\,A\,b^6\,B\,c^6\,d\,\text{Log}[c+d\,x]+288\,a\,b^6\,B^2\,c^6\,d\,\text{Log}[c+d\,x]+756\,a^2\,A\,b^5\,B\,c^5\,d^2\,\text{Log}[c+d\,x]-990\,a^2\,b^5\,B^2\,c^5\,d^2\,\text{Log}[c+d\,x]-$$
$$1260\,a^3\,A\,b^4\,B\,c^4\,d^3\,\text{Log}[c+d\,x]+642\,a^3\,b^4\,B^2\,c^4\,d^3\,\text{Log}[c+d\,x]+114\,a^4\,b^3\,B^2\,c^3\,d^4\,\text{Log}[c+d\,x]-18\,a^5\,b^2\,B^2\,c^2\,d^5\,\text{Log}[c+d\,x]-$$
$$36\,b^7\,B^2\,c^7\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+252\,a\,b^6\,B^2\,c^6\,d\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-756\,a^2\,b^5\,B^2\,c^5\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+$$
$$1260\,a^3\,b^4\,B^2\,c^4\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+36\,b^7\,B^2\,c^7\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-252\,a\,b^6\,B^2\,c^6\,d\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]+$$
$$756\,a^2\,b^5\,B^2\,c^5\,d^2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-1260\,a^3\,b^4\,B^2\,c^4\,d^3\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]+36\,b^7\,B^2\,c^7\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\text{Log}[c+d\,x]-$$
$$252\,a\,b^6\,B^2\,c^6\,d\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\text{Log}[c+d\,x]+756\,a^2\,b^5\,B^2\,c^5\,d^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\text{Log}[c+d\,x]-1260\,a^3\,b^4\,B^2\,c^4\,d^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\text{Log}[c+d\,x]+$$
$$36\,b^7\,B^2\,c^7\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-252\,a\,b^6\,B^2\,c^6\,d\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+756\,a^2\,b^5\,B^2\,c^5\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$
$$1260\,a^3\,b^4\,B^2\,c^4\,d^3\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+36\,b^4\,B^2\,c^4\,\left(b^3\,c^3-7\,a\,b^2\,c^2\,d+21\,a^2\,b\,c\,d^2-35\,a^3\,d^3\right)\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$
$$\left.36\,a^4\,B^2\,d^4\,\left(-35\,b^3\,c^3+21\,a\,b^2\,c^2\,d-7\,a^2\,b\,c\,d^2+a^3\,d^3\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)$$

Problem 75: Result more than twice size of optimal antiderivative.

$$\int (a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,dx$$

Optimal (type 4, 908 leaves, 20 steps):

$$-\frac{7\,B^2\,(b\,c-a\,d)^5\,g^2\,i^3\,x}{180\,b^3\,d^2}-\frac{7\,B^2\,(b\,c-a\,d)^4\,g^2\,i^3\,(c+d\,x)^2}{360\,b^2\,d^3}-\frac{B^2\,(b\,c-a\,d)^3\,g^2\,i^3\,(c+d\,x)^3}{60\,b\,d^3}+$$
$$\frac{B^2\,(b\,c-a\,d)^2\,g^2\,i^3\,(c+d\,x)^4}{60\,d^3}+\frac{B^2\,(b\,c-a\,d)^6\,g^2\,i^3\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{36\,b^4\,d^3}-\frac{B\,(b\,c-a\,d)^4\,g^2\,i^3\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{60\,b^4\,d}-$$
$$\frac{B\,(b\,c-a\,d)^3\,g^2\,i^3\,(a+b\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{30\,b^4}-\frac{B\,(b\,c-a\,d)^4\,g^2\,i^3\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{10\,b^2\,d^3}+$$
$$\frac{B\,(b\,c-a\,d)^3\,g^2\,i^3\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{45\,b\,d^3}+\frac{7\,B\,(b\,c-a\,d)^2\,g^2\,i^3\,(c+d\,x)^4\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{60\,d^3}-$$
$$\frac{b\,B\,(b\,c-a\,d)\,g^2\,i^3\,(c+d\,x)^5\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{15\,d^3}+\frac{(b\,c-a\,d)^3\,g^2\,i^3\,(a+b\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{60\,b^4}+$$
$$\frac{(b\,c-a\,d)^2\,g^2\,i^3\,(a+b\,x)^3\,(c+d\,x)\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{20\,b^3}+\frac{(b\,c-a\,d)\,g^2\,i^3\,(a+b\,x)^3\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{10\,b^2}+$$
$$\frac{g^2\,i^3\,(a+b\,x)^3\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{6\,b}+\frac{B\,(b\,c-a\,d)^5\,g^2\,i^3\,(a+b\,x)\,\left(2\,A+B+2\,B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{60\,b^4\,d^2}+$$
$$\frac{B\,(b\,c-a\,d)^6\,g^2\,i^3\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\,\left(2\,A+3\,B+2\,B\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{60\,b^4\,d^3}+\frac{11\,B^2\,(b\,c-a\,d)^6\,g^2\,i^3\,\mathrm{Log}[c+d\,x]}{180\,b^4\,d^3}+\frac{B^2\,(b\,c-a\,d)^6\,g^2\,i^3\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{30\,b^4\,d^3}$$

Result (type 4, 4173 leaves):

$$\frac{1}{360\,b^4\,d^3}$$
$$g^2\,i^3\,\Big(12\,b^6\,B^2\,c^6-84\,a\,b^5\,B^2\,c^5\,d+12\,a^2\,b^4\,B^2\,c^4\,d^2+240\,a^3\,b^3\,B^2\,c^3\,d^3-252\,a^4\,b^2\,B^2\,c^2\,d^4+84\,a^5\,b\,B^2\,c\,d^5-12\,a^6\,B^2\,d^6+12\,A\,b^6\,B\,c^5\,d\,x-16\,b^6\,B^2\,c^5\,d\,x-$$
$$72\,a\,A\,b^5\,B\,c^4\,d^2\,x+102\,a\,b^5\,B^2\,c^4\,d^2\,x+360\,a^2\,A^2\,b^4\,c^3\,d^3\,x-60\,a^2\,A\,b^4\,B\,c^3\,d^3\,x-194\,a^2\,b^4\,B^2\,c^3\,d^3\,x+180\,a^3\,A\,b^3\,B\,c^2\,d^4\,x+154\,a^3\,b^3\,B^2\,c^2\,d^4\,x-$$
$$72\,a^4\,A\,b^2\,B\,c\,d^5\,x-54\,a^4\,b^2\,B^2\,c\,d^5\,x+12\,a^5\,A\,b\,B\,d^6\,x+8\,a^5\,b\,B^2\,d^6\,x-6\,A\,b^6\,B\,c^4\,d^2\,x^2+11\,b^6\,B^2\,c^4\,d^2\,x^2+360\,a\,A^2\,b^5\,c^3\,d^3\,x^2-$$
$$204\,a\,A\,b^5\,B\,c^3\,d^3\,x^2+10\,a\,b^5\,B^2\,c^3\,d^3\,x^2+540\,a^2\,A^2\,b^4\,c^2\,d^4\,x^2+180\,a^2\,A\,b^4\,B\,c^2\,d^4\,x^2-60\,a^2\,b^4\,B^2\,c^2\,d^4\,x^2+36\,a^3\,A\,b^3\,B\,c\,d^5\,x^2+46\,a^3\,b^3\,B^2\,c\,d^5\,x^2-$$
$$6\,a^4\,A\,b^2\,B\,d^6\,x^2-7\,a^4\,b^2\,B^2\,d^6\,x^2+120\,A^2\,b^6\,c^3\,d^3\,x^3-76\,A\,b^6\,B\,c^3\,d^3\,x^3+18\,b^6\,B^2\,c^3\,d^3\,x^3+720\,a\,A^2\,b^5\,c^2\,d^4\,x^3-84\,a\,A\,b^5\,B\,c^2\,d^4\,x^3-$$
$$30\,a\,b^5\,B^2\,c^2\,d^4\,x^3+360\,a^2\,A^2\,b^4\,c\,d^5\,x^3+156\,a^2\,A\,b^4\,B\,c\,d^5\,x^3+6\,a^2\,b^4\,B^2\,c\,d^5\,x^3+4\,a^3\,A\,b^3\,B\,d^6\,x^3+6\,a^3\,b^3\,B^2\,d^6\,x^3+270\,A^2\,b^6\,c^2\,d^4\,x^4-$$
$$78\,A\,b^6\,B\,c^2\,d^4\,x^4+6\,b^6\,B^2\,c^2\,d^4\,x^4+540\,a\,A^2\,b^5\,c\,d^5\,x^4+36\,a\,A\,b^5\,B\,c\,d^5\,x^4-12\,a\,b^5\,B^2\,c\,d^5\,x^4+90\,a^2\,A^2\,b^4\,d^6\,x^4+42\,a^2\,A\,b^4\,B\,d^6\,x^4+$$
$$6\,a^2\,b^4\,B^2\,d^6\,x^4+216\,A^2\,b^6\,c\,d^5\,x^5-24\,A\,b^6\,B\,c\,d^5\,x^5+144\,a\,A^2\,b^5\,d^6\,x^5+24\,a\,A\,b^5\,B\,d^6\,x^5+60\,A^2\,b^6\,d^6\,x^6+12\,a\,b^5\,B^2\,c^5\,d\,\mathrm{Log}\left[\frac{a}{b}+x\right]-$$
$$72\,a^2\,b^4\,B^2\,c^4\,d^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]-60\,a^3\,b^3\,B^2\,c^3\,d^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]+180\,a^4\,b^2\,B^2\,c^2\,d^4\,\mathrm{Log}\left[\frac{a}{b}+x\right]-72\,a^5\,b\,B^2\,c\,d^5\,\mathrm{Log}\left[\frac{a}{b}+x\right]+12\,a^6\,B^2\,d^6\,\mathrm{Log}\left[\frac{a}{b}+x\right]+$$

$$120\, a^3\, b^3\, B^2\, c^3\, d^3\, \text{Log}\left[\frac{a}{b}+x\right]^2 - 90\, a^4\, b^2\, B^2\, c^2\, d^4\, \text{Log}\left[\frac{a}{b}+x\right]^2 + 36\, a^5\, b\, B^2\, c\, d^5\, \text{Log}\left[\frac{a}{b}+x\right]^2 - 6\, a^6\, B^2\, d^6\, \text{Log}\left[\frac{a}{b}+x\right]^2 - 12\, b^6\, B^2\, c^6\, \text{Log}\left[\frac{c}{d}+x\right] +$$

$$72\, a\, b^5\, B^2\, c^5\, d\, \text{Log}\left[\frac{c}{d}+x\right] + 60\, a^2\, b^4\, B^2\, c^4\, d^2\, \text{Log}\left[\frac{c}{d}+x\right] - 180\, a^3\, b^3\, B^2\, c^3\, d^3\, \text{Log}\left[\frac{c}{d}+x\right] + 72\, a^4\, b^2\, B^2\, c^2\, d^4\, \text{Log}\left[\frac{c}{d}+x\right] - 12\, a^5\, b\, B^2\, c\, d^5\, \text{Log}\left[\frac{c}{d}+x\right] +$$

$$6\, b^6\, B^2\, c^6\, \text{Log}\left[\frac{c}{d}+x\right]^2 - 36\, a\, b^5\, B^2\, c^5\, d\, \text{Log}\left[\frac{c}{d}+x\right]^2 + 90\, a^2\, b^4\, B^2\, c^4\, d^2\, \text{Log}\left[\frac{c}{d}+x\right]^2 + 6\, a^2\, b^4\, B^2\, c^4\, d^2\, \text{Log}[a+b\, x] + 240\, a^3\, A\, b^3\, B\, c^3\, d^3\, \text{Log}[a+b\, x] +$$

$$128\, a^3\, b^3\, B^2\, c^3\, d^3\, \text{Log}[a+b\, x] - 180\, a^4\, A\, b^2\, B\, c^2\, d^4\, \text{Log}[a+b\, x] - 186\, a^4\, b^2\, B^2\, c^2\, d^4\, \text{Log}[a+b\, x] + 72\, a^5\, A\, b\, B\, c\, d^5\, \text{Log}[a+b\, x] +$$

$$60\, a^5\, b\, B^2\, c\, d^5\, \text{Log}[a+b\, x] - 12\, a^6\, A\, B\, d^6\, \text{Log}[a+b\, x] - 8\, a^6\, B^2\, d^6\, \text{Log}[a+b\, x] - 240\, a^3\, b^3\, B^2\, c^3\, d^3\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\, x] +$$

$$180\, a^4\, b^2\, B^2\, c^2\, d^4\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\, x] - 72\, a^5\, b\, B^2\, c\, d^5\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\, x] + 12\, a^6\, B^2\, d^6\, \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\, x] +$$

$$240\, a^3\, b^3\, B^2\, c^3\, d^3\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\, x] - 180\, a^4\, b^2\, B^2\, c^2\, d^4\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\, x] + 72\, a^5\, b\, B^2\, c\, d^5\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\, x] -$$

$$12\, a^6\, B^2\, d^6\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\, x] - 240\, a^3\, b^3\, B^2\, c^3\, d^3\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\, x)}{-b\, c+a\, d}\right] + 180\, a^4\, b^2\, B^2\, c^2\, d^4\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\, x)}{-b\, c+a\, d}\right] -$$

$$72\, a^5\, b\, B^2\, c\, d^5\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\, x)}{-b\, c+a\, d}\right] + 12\, a^6\, B^2\, d^6\, \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\, x)}{-b\, c+a\, d}\right] + 12\, b^6\, B^2\, c^5\, d\, x\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] -$$

$$72\, a\, b^5\, B^2\, c^4\, d^2\, x\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 720\, a^2\, A\, b^4\, B\, c^3\, d^3\, x\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] - 60\, a^2\, b^4\, B^2\, c^3\, d^3\, x\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 180\, a^3\, b^3\, B^2\, c^2\, d^4\, x\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] -$$

$$72\, a^4\, b^2\, B^2\, c\, d^5\, x\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 12\, a^5\, b\, B^2\, d^6\, x\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] - 6\, b^6\, B^2\, c^4\, d^2\, x^2\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 720\, a\, A\, b^5\, B\, c^3\, d^3\, x^2\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] -$$

$$204\, a\, b^5\, B^2\, c^3\, d^3\, x^2\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 1080\, a^2\, A\, b^4\, B\, c^2\, d^4\, x^2\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 180\, a^2\, b^4\, B^2\, c^2\, d^4\, x^2\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] +$$

$$36\, a^3\, b^3\, B^2\, c\, d^5\, x^2\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] - 6\, a^4\, b^2\, B^2\, d^6\, x^2\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 240\, A\, b^6\, B\, c^3\, d^3\, x^3\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] - 76\, b^6\, B^2\, c^3\, d^3\, x^3\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] +$$

$$1440\, a\, A\, b^5\, B\, c^2\, d^4\, x^3\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] - 84\, a\, b^5\, B^2\, c^2\, d^4\, x^3\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 720\, a^2\, A\, b^4\, B\, c\, d^5\, x^3\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] +$$

$$156\, a^2\, b^4\, B^2\, c\, d^5\, x^3\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 4\, a^3\, b^3\, B^2\, d^6\, x^3\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 540\, A\, b^6\, B\, c^2\, d^4\, x^4\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] - 78\, b^6\, B^2\, c^2\, d^4\, x^4\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] +$$

$$1080\, a\, A\, b^5\, B\, c\, d^5\, x^4\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 36\, a\, b^5\, B^2\, c\, d^5\, x^4\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 180\, a^2\, A\, b^4\, B\, d^6\, x^4\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 42\, a^2\, b^4\, B^2\, d^6\, x^4\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] +$$

$$432\, A\, b^6\, B\, c\, d^5\, x^5\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] - 24\, b^6\, B^2\, c\, d^5\, x^5\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 288\, a\, A\, b^5\, B\, d^6\, x^5\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 24\, a\, b^5\, B^2\, d^6\, x^5\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] +$$

$$120\, A\, b^6\, B\, d^6\, x^6\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 240\, a^3\, b^3\, B^2\, c^3\, d^3\, \text{Log}[a+b\, x]\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] - 180\, a^4\, b^2\, B^2\, c^2\, d^4\, \text{Log}[a+b\, x]\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] +$$

$$72\, a^5\, b\, B^2\, c\, d^5\, \text{Log}[a+b\, x]\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] - 12\, a^6\, B^2\, d^6\, \text{Log}[a+b\, x]\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right] + 360\, a^2\, b^4\, B^2\, c^3\, d^3\, x\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right]^2 +$$

$$360\, a\, b^5\, B^2\, c^3\, d^3\, x^2\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right]^2 + 540\, a^2\, b^4\, B^2\, c^2\, d^4\, x^2\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right]^2 + 120\, b^6\, B^2\, c^3\, d^3\, x^3\, \text{Log}\left[\frac{e\,(a+b\, x)}{c+d\, x}\right]^2 +$$

$720\,a\,b^5\,B^2\,c^2\,d^4\,x^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2 + 360\,a^2\,b^4\,B^2\,c\,d^5\,x^3\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2 + 270\,b^6\,B^2\,c^2\,d^4\,x^4\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2 +$
$540\,a\,b^5\,B^2\,c\,d^5\,x^4\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2 + 90\,a^2\,b^4\,B^2\,d^6\,x^4\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2 + 216\,b^6\,B^2\,c\,d^5\,x^5\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2 + 144\,a\,b^5\,B^2\,d^6\,x^5\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2 +$
$60\,b^6\,B^2\,d^6\,x^6\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2 - 12\,A\,b^6\,B\,c^6\,\text{Log}[c+d\,x] + 16\,b^6\,B^2\,c^6\,\text{Log}[c+d\,x] + 72\,a\,A\,b^5\,B\,c^5\,d\,\text{Log}[c+d\,x] - 108\,a\,b^5\,B^2\,c^5\,d\,\text{Log}[c+d\,x] -$
$180\,a^2\,A\,b^4\,B\,c^4\,d^2\,\text{Log}[c+d\,x] + 66\,a^2\,b^4\,B^2\,c^4\,d^2\,\text{Log}[c+d\,x] + 32\,a^3\,b^3\,B^2\,c^3\,d^3\,\text{Log}[c+d\,x] - 6\,a^4\,b^2\,B^2\,c^2\,d^4\,\text{Log}[c+d\,x] +$
$12\,b^6\,B^2\,c^6\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[c+d\,x] - 72\,a\,b^5\,B^2\,c^5\,d\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[c+d\,x] + 180\,a^2\,b^4\,B^2\,c^4\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[c+d\,x] -$
$12\,b^6\,B^2\,c^6\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[c+d\,x] + 72\,a\,b^5\,B^2\,c^5\,d\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[c+d\,x] - 180\,a^2\,b^4\,B^2\,c^4\,d^2\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[c+d\,x] -$
$12\,b^6\,B^2\,c^6\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[c+d\,x] + 72\,a\,b^5\,B^2\,c^5\,d\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[c+d\,x] - 180\,a^2\,b^4\,B^2\,c^4\,d^2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\,\text{Log}[c+d\,x] -$
$12\,b^6\,B^2\,c^6\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] + 72\,a\,b^5\,B^2\,c^5\,d\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] - 180\,a^2\,b^4\,B^2\,c^4\,d^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] -$
$12\,b^4\,B^2\,c^4\,(b^2\,c^2-6\,a\,b\,c\,d+15\,a^2\,d^2)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] + 12\,a^3\,B^2\,d^3\,(-20\,b^3\,c^3+15\,a\,b^2\,c^2\,d-6\,a^2\,b\,c\,d^2+a^3\,d^3)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Big)$

Problem 76: Result more than twice size of optimal antiderivative.

$$\int (a\,g+b\,g\,x)\,(c\,i+d\,i\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2\,dx$$

Optimal (type 4, 730 leaves, 19 steps):

$$\frac{B^2 (b c-a d)^4 g i^3 x}{60 b^3 d}+\frac{B^2 (b c-a d)^3 g i^3 (c+d x)^2}{30 b^2 d^2}+\frac{B^2 (b c-a d)^2 g i^3 (c+d x)^3}{30 b d^2}-$$
$$\frac{B^2 (b c-a d)^5 g i^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{12 b^4 d^2}-\frac{B (b c-a d)^4 g i^3 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^4 d}-$$
$$\frac{B (b c-a d)^3 g i^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^4}+\frac{3 B (b c-a d)^3 g i^3 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{20 b^2 d^2}+$$
$$\frac{B (b c-a d)^2 g i^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{30 b d^2}-\frac{B (b c-a d) g i^3 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 d^2}+$$
$$\frac{(b c-a d)^3 g i^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{20 b^4}+\frac{(b c-a d)^2 g i^3 (a+b x)^2 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{10 b^3}+$$
$$\frac{3 (b c-a d) g i^3 (a+b x)^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{20 b^2}+\frac{g i^3 (a+b x)^2 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{5 b}-$$
$$\frac{B (b c-a d)^5 g i^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{10 b^4 d^2}-\frac{11 B^2 (b c-a d)^5 g i^3 \text{Log}[c+d x]}{60 b^4 d^2}-\frac{B^2 (b c-a d)^5 g i^3 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{10 b^4 d^2}$$

Result (type 4, 3093 leaves):

$$\frac{1}{60 b^4 d^2} g i^3 \Big(-6 b^5 B^2 c^5-24 a b^4 B^2 c^4 d+90 a^2 b^3 B^2 c^3 d^2-90 a^3 b^2 B^2 c^2 d^3+36 a^4 b B^2 c d^4-6 a^5 B^2 d^5-6 A b^5 B c^4 d x+11 b^5 B^2 c^4 d x+60 a A^2 b^4 c^3 d^2 x-$$
$$30 a A b^4 B c^3 d^2 x-28 a b^4 B^2 c^3 d^2 x+60 a^2 A b^3 B c^2 d^3 x+24 a^2 b^3 B^2 c^2 d^3 x-30 a^3 A b^2 B c d^4 x-8 a^3 b^2 B^2 c d^4 x+6 a^4 A b B d^5 x+a^4 b B^2 d^5 x+$$
$$30 A^2 b^5 c^3 d^2 x^2-27 A b^5 B c^3 d^2 x^2+8 b^5 B^2 c^3 d^2 x^2+90 a A^2 b^4 c^2 d^3 x^2+15 a A b^4 B c^2 d^3 x^2-18 a b^4 B^2 c^2 d^3 x^2+15 a^2 A b^3 B c d^4 x^2+$$
$$12 a^2 b^3 B^2 c d^4 x^2-3 a^3 A b^2 B d^5 x^2-2 a^3 b^2 B^2 d^5 x^2+60 A^2 b^5 c^2 d^3 x^3-22 A b^5 B c^2 d^3 x^3+2 b^5 B^2 c^2 d^3 x^3+60 a A^2 b^4 c d^4 x^3+20 a A b^4 B c d^4 x^3-$$
$$4 a b^4 B^2 c d^4 x^3+2 a^2 A b^3 B d^5 x^3+2 a^2 b^3 B^2 d^5 x^3+45 A^2 b^5 c d^4 x^4-6 A b^5 B c d^4 x^4+15 a A^2 b^4 d^5 x^4+6 a A b^4 B d^5 x^4+12 A^2 b^5 d^5 x^5-$$
$$6 a b^4 B^2 c^4 d \text{Log}\left[\frac{a}{b}+x\right]-30 a^2 b^3 B^2 c^3 d^2 \text{Log}\left[\frac{a}{b}+x\right]+60 a^3 b^2 B^2 c^2 d^3 \text{Log}\left[\frac{a}{b}+x\right]-30 a^4 b B^2 c d^4 \text{Log}\left[\frac{a}{b}+x\right]+6 a^5 B^2 d^5 \text{Log}\left[\frac{a}{b}+x\right]+$$
$$30 a^2 b^3 B^2 c^3 d^2 \text{Log}\left[\frac{a}{b}+x\right]^2-30 a^3 b^2 B^2 c^2 d^3 \text{Log}\left[\frac{a}{b}+x\right]^2+15 a^4 b B^2 c d^4 \text{Log}\left[\frac{a}{b}+x\right]^2-3 a^5 B^2 d^5 \text{Log}\left[\frac{a}{b}+x\right]^2+6 b^5 B^2 c^5 \text{Log}\left[\frac{c}{d}+x\right]+$$
$$30 a b^4 B^2 c^4 d \text{Log}\left[\frac{c}{d}+x\right]-60 a^2 b^3 B^2 c^3 d^2 \text{Log}\left[\frac{c}{d}+x\right]+30 a^3 b^2 B^2 c^2 d^3 \text{Log}\left[\frac{c}{d}+x\right]-6 a^4 b B^2 c d^4 \text{Log}\left[\frac{c}{d}+x\right]-3 b^5 B^2 c^5 \text{Log}\left[\frac{c}{d}+x\right]^2+$$
$$15 a b^4 B^2 c^4 d \text{Log}\left[\frac{c}{d}+x\right]^2+60 a^2 A b^3 B c^3 d^2 \text{Log}[a+b x]+27 a^2 b^3 B^2 c^3 d^2 \text{Log}[a+b x]-60 a^3 A b^2 B c^2 d^3 \text{Log}[a+b x]-$$
$$37 a^3 b^2 B^2 c^2 d^3 \text{Log}[a+b x]+30 a^4 A b B c d^4 \text{Log}[a+b x]+11 a^4 b B^2 c d^4 \text{Log}[a+b x]-6 a^5 A B d^5 \text{Log}[a+b x]-a^5 B^2 d^5 \text{Log}[a+b x]-$$
$$60 a^2 b^3 B^2 c^3 d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+60 a^3 b^2 B^2 c^2 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]-30 a^4 b B^2 c d^4 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+$$
$$6 a^5 B^2 d^5 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+60 a^2 b^3 B^2 c^3 d^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-60 a^3 b^2 B^2 c^2 d^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]+$$
$$30 a^4 b B^2 c d^4 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-6 a^5 B^2 d^5 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-60 a^2 b^3 B^2 c^3 d^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+$$

$$60 a^3 b^2 B^2 c^2 d^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]-30 a^4 b B^2 c d^4 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+6 a^5 B^2 d^5 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]-$$

$$6 b^5 B^2 c^4 d x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+120 a A b^4 B c^3 d^2 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-30 a b^4 B^2 c^3 d^2 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+60 a^2 b^3 B^2 c^2 d^3 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-$$

$$30 a^3 b^2 B^2 c d^4 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+6 a^4 b B^2 d^5 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+60 A b^5 B c^3 d^2 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-27 b^5 B^2 c^3 d^2 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+$$

$$180 a A b^4 B c^2 d^3 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+15 a b^4 B^2 c^2 d^3 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+15 a^2 b^3 B^2 c d^4 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-3 a^3 b^2 B^2 d^5 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+$$

$$120 A b^5 B c^2 d^3 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-22 b^5 B^2 c^2 d^3 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+120 a A b^4 B c d^4 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+20 a b^4 B^2 c d^4 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+$$

$$2 a^2 b^3 B^2 d^5 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+90 A b^5 B c d^4 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-6 b^5 B^2 c d^4 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+30 a A b^4 B d^5 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+$$

$$6 a b^4 B^2 d^5 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+24 A b^5 B d^5 x^5 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+60 a^2 b^3 B^2 c^3 d^2 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-$$

$$60 a^3 b^2 B^2 c^2 d^3 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+30 a^4 b B^2 c d^4 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-6 a^5 B^2 d^5 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+$$

$$60 a b^4 B^2 c^3 d^2 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+30 b^5 B^2 c^3 d^2 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+90 a b^4 B^2 c^2 d^3 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+$$

$$60 b^5 B^2 c^2 d^3 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+60 a b^4 B^2 c d^4 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+45 b^5 B^2 c d^4 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+15 a b^4 B^2 d^5 x^4 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+$$

$$12 b^5 B^2 d^5 x^5 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+6 A b^5 B c^5 \text{Log}[c+d x]-11 b^5 B^2 c^5 \text{Log}[c+d x]-30 a A b^4 B c^4 d \text{Log}[c+d x]+a b^4 B^2 c^4 d \text{Log}[c+d x]+$$

$$13 a^2 b^3 B^2 c^3 d^2 \text{Log}[c+d x]-3 a^3 b^2 B^2 c^2 d^3 \text{Log}[c+d x]-6 b^5 B^2 c^5 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+30 a b^4 B^2 c^4 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+$$

$$6 b^5 B^2 c^5 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]-30 a b^4 B^2 c^4 d \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+6 b^5 B^2 c^5 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c+d x]-$$

$$30 a b^4 B^2 c^4 d \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c+d x]+6 b^5 B^2 c^5 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-30 a b^4 B^2 c^4 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+$$

$$6 b^4 B^2 c^4 (b c-5 a d) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+6 a^2 B^2 d^2 \left(-10 b^3 c^3+10 a b^2 c^2 d-5 a^2 b c d^2+a^3 d^3\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\Big)$$

Problem 77: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 420 leaves, 15 steps):

$$\frac{5 B^2 (b c-a d)^3 i^3 x}{12 b^3}+\frac{B^2 (b c-a d)^2 i^3 (c+d x)^2}{12 b^2 d}+\frac{5 B^2 (b c-a d)^4 i^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{12 b^4 d}-\frac{B (b c-a d)^3 i^3 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b^4}-$$

$$\frac{B (b c-a d)^2 i^3 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{4 b^2 d}-\frac{B (b c-a d) i^3 (c+d x)^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{6 b d}+\frac{i^3 (c+d x)^4 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{4 d}+$$

$$\frac{11 B^2 (b c-a d)^4 i^3 \text{Log}[c+d x]}{12 b^4 d}+\frac{B (b c-a d)^4 i^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{2 b^4 d}-\frac{B^2 (b c-a d)^4 i^3 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{2 b^4 d}$$

Result (type 4, 2110 leaves) :

$$\frac{1}{12 b^4 d} i^3 \Big(-18 b^4 B^2 c^4 + 54 a b^3 B^2 c^3 d - 60 a^2 b^2 B^2 c^2 d^2 + 30 a^3 b B^2 c d^3 - 6 a^4 B^2 d^4 + 12 A^2 b^4 c^3 d x - 18 A b^4 B c^3 d x + 7 b^4 B^2 c^3 d x + 36 a A b^3 B c^2 d^2 x -$$

$$19 a b^3 B^2 c^2 d^2 x - 24 a^2 A b^2 B c d^3 x + 17 a^2 b^2 B^2 c d^3 x + 6 a^3 A b B d^4 x - 5 a^3 b B^2 d^4 x + 18 A^2 b^4 c^2 d^2 x^2 - 9 A b^4 B c^2 d^2 x^2 + b^4 B^2 c^2 d^2 x^2 +$$

$$12 a A b^3 B c d^3 x^2 - 2 a b^3 B^2 c d^3 x^2 - 3 a^2 A b^2 B d^4 x^2 + a^2 b^2 B^2 d^4 x^2 + 12 A^2 b^4 c d^3 x^3 - 2 A b^4 B c d^3 x^3 + 2 a A b^3 B d^4 x^3 + 3 A^2 b^4 d^4 x^4 -$$

$$18 a b^3 B^2 c^3 d \,\text{Log}\left[\frac{a}{b} + x\right] + 36 a^2 b^2 B^2 c^2 d^2 \,\text{Log}\left[\frac{a}{b} + x\right] - 24 a^3 b B^2 c d^3 \,\text{Log}\left[\frac{a}{b} + x\right] + 6 a^4 B^2 d^4 \,\text{Log}\left[\frac{a}{b} + x\right] + 12 a b^3 B^2 c^3 d \,\text{Log}\left[\frac{a}{b} + x\right]^2 -$$

$$18 a^2 b^2 B^2 c^2 d^2 \,\text{Log}\left[\frac{a}{b} + x\right]^2 + 12 a^3 b B^2 c d^3 \,\text{Log}\left[\frac{a}{b} + x\right]^2 - 3 a^4 B^2 d^4 \,\text{Log}\left[\frac{a}{b} + x\right]^2 + 18 b^4 B^2 c^4 \,\text{Log}\left[\frac{c}{d} + x\right] - 36 a b^3 B^2 c^3 d \,\text{Log}\left[\frac{c}{d} + x\right] +$$

$$24 a^2 b^2 B^2 c^2 d^2 \,\text{Log}\left[\frac{c}{d} + x\right] - 6 a^3 b B^2 c d^3 \,\text{Log}\left[\frac{c}{d} + x\right] + 3 b^4 B^2 c^4 \,\text{Log}\left[\frac{c}{d} + x\right]^2 + 24 a A b^3 B c^3 d \,\text{Log}[a + b x] - 36 a^2 A b^2 B c^2 d^2 \,\text{Log}[a + b x] +$$

$$9 a^2 b^2 B^2 c^2 d^2 \,\text{Log}[a + b x] + 24 a^3 A b B c d^3 \,\text{Log}[a + b x] - 14 a^3 b B^2 c d^3 \,\text{Log}[a + b x] - 6 a^4 A B d^4 \,\text{Log}[a + b x] + 5 a^4 B^2 d^4 \,\text{Log}[a + b x] -$$

$$24 a b^3 B^2 c^3 d \,\text{Log}\left[\frac{a}{b} + x\right] \text{Log}[a + b x] + 36 a^2 b^2 B^2 c^2 d^2 \,\text{Log}\left[\frac{a}{b} + x\right] \text{Log}[a + b x] - 24 a^3 b B^2 c d^3 \,\text{Log}\left[\frac{a}{b} + x\right] \text{Log}[a + b x] +$$

$$6 a^4 B^2 d^4 \,\text{Log}\left[\frac{a}{b} + x\right] \text{Log}[a + b x] + 24 a b^3 B^2 c^3 d \,\text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] - 36 a^2 b^2 B^2 c^2 d^2 \,\text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] +$$

$$24 a^3 b B^2 c d^3 \,\text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] - 6 a^4 B^2 d^4 \,\text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] - 24 a b^3 B^2 c^3 d \,\text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] +$$

$$36 a^2 b^2 B^2 c^2 d^2 \,\text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] - 24 a^3 b B^2 c d^3 \,\text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + 6 a^4 B^2 d^4 \,\text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] +$$

$$24 A b^4 B c^3 d x \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 18 b^4 B^2 c^3 d x \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 36 a b^3 B^2 c^2 d^2 x \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 24 a^2 b^2 B^2 c d^3 x \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] +$$

$$6 a^3 b B^2 d^4 x \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 36 A b^4 B c^2 d^2 x^2 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 9 b^4 B^2 c^2 d^2 x^2 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 12 a b^3 B^2 c d^3 x^2 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] -$$

$$3 a^2 b^2 B^2 d^4 x^2 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 24 A b^4 B c d^3 x^3 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 2 b^4 B^2 c d^3 x^3 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 2 a b^3 B^2 d^4 x^3 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] +$$

$$6 A b^4 B d^4 x^4 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 24 a b^3 B^2 c^3 d \,\text{Log}[a + b x] \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 36 a^2 b^2 B^2 c^2 d^2 \,\text{Log}[a + b x] \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] +$$

$$24 a^3 b B^2 c d^3 \,\text{Log}[a + b x] \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 6 a^4 B^2 d^4 \,\text{Log}[a + b x] \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 12 b^4 B^2 c^3 d x \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right]^2 +$$

$$18 b^4 B^2 c^2 d^2 x^2 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right]^2 + 12 b^4 B^2 c d^3 x^3 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right]^2 + 3 b^4 B^2 d^4 x^4 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right]^2 - 6 A b^4 B c^4 \,\text{Log}[c + d x] -$$

$$7 b^4 B^2 c^4 \,\text{Log}[c + d x] + 10 a b^3 B^2 c^3 d \,\text{Log}[c + d x] - 3 a^2 b^2 B^2 c^2 d^2 \,\text{Log}[c + d x] + 6 b^4 B^2 c^4 \,\text{Log}\left[\frac{a}{b} + x\right] \text{Log}[c + d x] -$$

$$6 b^4 B^2 c^4 \,\text{Log}\left[\frac{c}{d} + x\right] \text{Log}[c + d x] - 6 b^4 B^2 c^4 \,\text{Log}\left[\frac{e (a + b x)}{c + d x}\right] \text{Log}[c + d x] - 6 b^4 B^2 c^4 \,\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] -$$

$$6 b^4 B^2 c^4 \,\text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right] + 6 a B^2 d \left(-4 b^3 c^3 + 6 a b^2 c^2 d - 4 a^2 b c d^2 + a^3 d^3\right) \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right] \Big)$$

Problem 78: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 712 leaves, 26 steps):

$$\frac{B^2 d (b c-a d)^2 i^3 x}{3 b^3 g}+\frac{B^2 (b c-a d)^3 i^3 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{3 b^4 g}-\frac{5 B d (b c-a d)^2 i^3 (a+b x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^4 g}-$$
$$\frac{B (b c-a d) i^3 (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{3 b^2 g}+\frac{2 B (b c-a d)^3 i^3 \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g}+$$
$$\frac{d (b c-a d)^2 i^3 (a+b x) \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^4 g}+\frac{(b c-a d) i^3 (c+d x)^2 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^2 g}+$$
$$\frac{i^3 (c+d x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{3 b g}+\frac{2 B^2 (b c-a d)^3 i^3 \operatorname{Log}[c+d x]}{b^4 g}+\frac{5 B (b c-a d)^3 i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{3 b^4 g}-$$
$$\frac{(b c-a d)^3 i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \operatorname{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g}+\frac{2 B^2 (b c-a d)^3 i^3 \operatorname{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b^4 g}-\frac{5 B^2 (b c-a d)^3 i^3 \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{3 b^4 g}+$$
$$\frac{2 B (b c-a d)^3 i^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \operatorname{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g}+\frac{2 B^2 (b c-a d)^3 i^3 \operatorname{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g}$$

Result (type 4, 5055 leaves):

$$\frac{1}{12 b^4 g}$$
$$i^3 \left(72 A b^3 B c^3+9 b^3 B^2 c^3-144 a A b^2 B c^2 d-23 a b^2 B^2 c^2 d+96 a^2 A b B c d^2-51 a^2 b B^2 c d^2-24 a^3 A B d^3+21 a^3 B^2 d^3+36 A^2 b^3 c^2 d x-28 A b^3 B c^2 d x+\right.$$
$$4 b^3 B^2 c^2 d x-36 a A^2 b^2 c d^2 x+48 a A b^2 B c d^2 x-8 a b^2 B^2 c d^2 x+12 a^2 A^2 b d^3 x-20 a^2 A b B d^3 x+4 a^2 b B^2 d^3 x+18 A^2 b^3 c d^2 x^2-$$
$$4 A b^3 B c d^2 x^2-6 a A^2 b^2 d^3 x^2+4 a A b^2 B d^3 x^2+4 A^2 b^3 d^3 x^3-72 b^3 B^2 c^3 \operatorname{Log}\left[\frac{a}{b}+x\right]+72 a A b^2 B c^2 d \operatorname{Log}\left[\frac{a}{b}+x\right]+116 a b^2 B^2 c^2 d \operatorname{Log}\left[\frac{a}{b}+x\right]-$$
$$72 a^2 A b B c d^2 \operatorname{Log}\left[\frac{a}{b}+x\right]-30 a^2 b B^2 c d^2 \operatorname{Log}\left[\frac{a}{b}+x\right]+24 a^3 A B d^3 \operatorname{Log}\left[\frac{a}{b}+x\right]+6 a^3 B^2 d^3 \operatorname{Log}\left[\frac{a}{b}+x\right]+12 A b^3 B c^3 \operatorname{Log}\left[\frac{a}{b}+x\right]^2-$$
$$36 a A b^2 B c^2 d \operatorname{Log}\left[\frac{a}{b}+x\right]^2-36 a b^2 B^2 c^2 d \operatorname{Log}\left[\frac{a}{b}+x\right]^2+36 a^2 A b B c d^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2+18 a^2 b B^2 c d^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2-$$
$$12 a^3 A B d^3 \operatorname{Log}\left[\frac{a}{b}+x\right]^2-2 a^3 B^2 d^3 \operatorname{Log}\left[\frac{a}{b}+x\right]^2-8 b^3 B^2 c^3 \operatorname{Log}\left[\frac{a}{b}+x\right]^3+24 a b^2 B^2 c^2 d \operatorname{Log}\left[\frac{a}{b}+x\right]^3-24 a^2 b B^2 c d^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^3+$$
$$8 a^3 B^2 d^3 \operatorname{Log}\left[\frac{a}{b}+x\right]^3-72 A b^3 B c^3 \operatorname{Log}\left[\frac{c}{d}+x\right]+54 b^3 B^2 c^3 \operatorname{Log}\left[\frac{c}{d}+x\right]+72 a A b^2 B c^2 d \operatorname{Log}\left[\frac{c}{d}+x\right]-90 a b^2 B^2 c^2 d \operatorname{Log}\left[\frac{c}{d}+x\right]-$$

$24 a^2 A b B c d^2 \text{Log}\left[\frac{c}{d}+x\right] + 72 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d}+x\right] - 24 a^3 B^2 d^3 \text{Log}\left[\frac{c}{d}+x\right] + 72 b^3 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] -$
$72 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] + 60 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] - 20 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] -$
$50 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d}+x\right]^2 + 42 a b^2 B^2 c^2 d \text{Log}\left[\frac{c}{d}+x\right]^2 - 12 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d}+x\right]^2 + 12 A^2 b^3 c^3 \text{Log}[a+b x] - 36 a A^2 b^2 c^2 d \text{Log}[a+b x] +$
$36 a^2 A^2 b c d^2 \text{Log}[a+b x] - 36 a^2 A b B c d^2 \text{Log}[a+b x] - 14 a^2 b B^2 c d^2 \text{Log}[a+b x] - 12 a^3 A^2 d^3 \text{Log}[a+b x] +$
$20 a^3 A B d^3 \text{Log}[a+b x] - 6 a^3 B^2 d^3 \text{Log}[a+b x] - 24 A b^3 B c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 72 a A b^2 B c^2 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] -$
$72 a^2 A b B c d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 36 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 24 a^3 A B d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] -$
$20 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 12 b^3 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}[a+b x] - 36 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}[a+b x] +$
$36 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}[a+b x] - 12 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}[a+b x] + 24 A b^3 B c^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] -$
$72 a A b^2 B c^2 d \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] + 72 a^2 A b B c d^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 36 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] -$
$24 a^3 A B d^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] + 20 a^3 B^2 d^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 24 b^3 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] +$
$72 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 72 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] +$
$24 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] + 12 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}[a+b x] - 36 a b^2 B^2 c^2 d \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}[a+b x] +$
$36 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}[a+b x] - 12 a^3 B^2 d^3 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}[a+b x] - 24 A b^3 B c^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] +$
$72 a A b^2 B c^2 d \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] - 72 a^2 A b B c d^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + 24 a^3 A B d^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] +$
$24 b^3 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] - 72 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] +$
$72 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] - 24 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] -$
$12 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + 36 a b^2 B^2 c^2 d \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] - 36 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] +$
$12 a^3 B^2 d^3 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + 72 b^3 B^2 c^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 144 a b^2 B^2 c^2 d \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$
$96 a^2 b B^2 c d^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 24 a^3 B^2 d^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 72 A b^3 B c^2 d x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 28 b^3 B^2 c^2 d x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] -$
$72 a A b^2 B c d^2 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 48 a b^2 B^2 c d^2 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 24 a^2 A b B d^3 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 20 a^2 b B^2 d^3 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$
$36 A b^3 B c d^2 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 4 b^3 B^2 c d^2 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 12 a A b^2 B d^3 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 4 a b^2 B^2 d^3 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$

$$8 A b^3 B d^3 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 72 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 72 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$24 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 12 b^3 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 36 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$36 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 12 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 72 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$72 a b^2 B^2 c^2 d \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 24 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 24 A b^3 B c^3 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] -$$

$$72 a A b^2 B c^2 d \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 72 a^2 A b B c d^2 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 36 a^2 b B^2 c d^2 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] -$$

$$24 a^3 A B d^3 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 20 a^3 B^2 d^3 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 24 b^3 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$72 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 72 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$24 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 24 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] -$$

$$72 a b^2 B^2 c^2 d \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 72 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] -$$

$$24 a^3 B^2 d^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 24 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$72 a b^2 B^2 c^2 d \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] - 72 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] +$$

$$24 a^3 B^2 d^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] + 36 b^3 B^2 c^2 d x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 - 36 a b^2 B^2 c d^2 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 +$$

$$12 a^2 b B^2 d^3 x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 18 b^3 B^2 c d^2 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 - 6 a b^2 B^2 d^3 x^2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 4 b^3 B^2 d^3 x^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 +$$

$$12 b^3 B^2 c^3 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 - 36 a b^2 B^2 c^2 d \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 36 a^2 b B^2 c d^2 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 -$$

$$12 a^3 B^2 d^3 \text{Log}[a+b x] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 + 28 A b^3 B c^3 \text{Log}[c+d x] + 42 b^3 B^2 c^3 \text{Log}[c+d x] - 12 a A b^2 B c^2 d \text{Log}[c+d x] -$$

$$98 a b^2 B^2 c^2 d \text{Log}[c+d x] + 44 a^2 b B^2 c d^2 \text{Log}[c+d x] - 28 b^3 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] + 12 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] +$$

$$28 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] - 12 a b^2 B^2 c^2 d \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] + 28 b^3 B^2 c^3 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c+d x] -$$

$$12 a b^2 B^2 c^2 d \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}[c+d x] - 44 b^3 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] + 132 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] -$$

$$132\, a^2 b B^2 c\, d^2 \,\text{Log}[\frac{a}{b}+x]\, \text{Log}[\frac{b\,(c+d\,x)}{b\,c-a\,d}] + 44\, a^3 B^2 d^3 \,\text{Log}[\frac{a}{b}+x]\, \text{Log}[\frac{b\,(c+d\,x)}{b\,c-a\,d}] + 12\, b^3 B^2 c^3 \,\text{Log}[\frac{a}{b}+x]^2 \,\text{Log}[\frac{b\,(c+d\,x)}{b\,c-a\,d}] -$$

$$36\, a\, b^2 B^2 c^2 d \,\text{Log}[\frac{a}{b}+x]^2 \,\text{Log}[\frac{b\,(c+d\,x)}{b\,c-a\,d}] + 36\, a^2 b B^2 c\, d^2 \,\text{Log}[\frac{a}{b}+x]^2 \,\text{Log}[\frac{b\,(c+d\,x)}{b\,c-a\,d}] - 12\, a^3 B^2 d^3 \,\text{Log}[\frac{a}{b}+x]^2 \,\text{Log}[\frac{b\,(c+d\,x)}{b\,c-a\,d}] +$$

$$4\, B^2 (b\,c-a\,d)^3 \left(-11+6\,\text{Log}[\frac{a}{b}+x]\right) \text{PolyLog}[2, \frac{d\,(a+b\,x)}{-b\,c+a\,d}] - 24\, B\, (b\,c-a\,d)^3 \left(A - B\,\text{Log}[\frac{a}{b}+x] + B\,\text{Log}[\frac{e\,(a+b\,x)}{c+d\,x}]\right) \text{PolyLog}[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}] -$$

$$24\, b^3 B^2 c^3 \,\text{PolyLog}[3, \frac{d\,(a+b\,x)}{-b\,c+a\,d}] + 72\, a\, b^2 B^2 c^2 d \,\text{PolyLog}[3, \frac{d\,(a+b\,x)}{-b\,c+a\,d}] -$$

$$72\, a^2 b B^2 c\, d^2 \,\text{PolyLog}[3, \frac{d\,(a+b\,x)}{-b\,c+a\,d}] + 24\, a^3 B^2 d^3 \,\text{PolyLog}[3, \frac{d\,(a+b\,x)}{-b\,c+a\,d}] - 24\, b^3 B^2 c^3 \,\text{PolyLog}[3, \frac{b\,(c+d\,x)}{b\,c-a\,d}] +$$

$$72\, a\, b^2 B^2 c^2 d \,\text{PolyLog}[3, \frac{b\,(c+d\,x)}{b\,c-a\,d}] - 72\, a^2 b B^2 c\, d^2 \,\text{PolyLog}[3, \frac{b\,(c+d\,x)}{b\,c-a\,d}] + 24\, a^3 B^2 d^3 \,\text{PolyLog}[3, \frac{b\,(c+d\,x)}{b\,c-a\,d}]])$$

Problem 79: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^3 \left(A+B\,\text{Log}[\frac{e\,(a+b\,x)}{c+d\,x}]\right)^2}{(a\,g+b\,g\,x)^2}\, dx$$

Optimal (type 4, 692 leaves, 17 steps):

$$-\frac{2\,B^2 (b\,c-a\,d)^2\, i^3\, (c+d\,x)}{b^3 g^2\, (a+b\,x)} - \frac{B\,d^2\, (b\,c-a\,d)\, i^3\, (a+b\,x)\, \left(A+B\,\text{Log}[\frac{e\,(a+b\,x)}{c+d\,x}]\right)}{b^4 g^2} - \frac{2\,B\,(b\,c-a\,d)^2\, i^3\, (c+d\,x)\, \left(A+B\,\text{Log}[\frac{e\,(a+b\,x)}{c+d\,x}]\right)}{b^3 g^2\, (a+b\,x)} +$$

$$\frac{4\,B\,d\,(b\,c-a\,d)^2\, i^3\, \text{Log}[\frac{b\,c-a\,d}{b\,(c+d\,x)}]\, \left(A+B\,\text{Log}[\frac{e\,(a+b\,x)}{c+d\,x}]\right)}{b^4 g^2} + \frac{2\,d^2\, (b\,c-a\,d)\, i^3\, (a+b\,x)\, \left(A+B\,\text{Log}[\frac{e\,(a+b\,x)}{c+d\,x}]\right)^2}{b^4 g^2} -$$

$$\frac{(b\,c-a\,d)^2\, i^3\, (c+d\,x)\, \left(A+B\,\text{Log}[\frac{e\,(a+b\,x)}{c+d\,x}]\right)^2}{b^3 g^2\, (a+b\,x)} + \frac{d\, i^3\, (c+d\,x)^2 \left(A+B\,\text{Log}[\frac{e\,(a+b\,x)}{c+d\,x}]\right)^2}{2\, b^2 g^2} + \frac{B^2 d\, (b\,c-a\,d)^2\, i^3\, \text{Log}[c+d\,x]}{b^4 g^2} +$$

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

$$\frac{4\,B^2 d\,(b\,c-a\,d)^2\, i^3\, \text{PolyLog}[2, \frac{d\,(a+b\,x)}{b\,(c+d\,x)}]}{b^4 g^2} - \frac{B^2 d\,(b\,c-a\,d)^2\, i^3\, \text{PolyLog}[2, \frac{b\,(c+d\,x)}{d\,(a+b\,x)}]}{b^4 g^2} +$$

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

Result (type 4, 4817 leaves):

$$\frac{A^2 d^2 \left(3 b c-2 a d\right) i^3 x}{b^3 g^2}+\frac{A^2 d^3 i^3 x^2}{2 b^2 g^2}+\frac{-A^2 b^3 c^3 i^3+3 a A^2 b^2 c^2 d i^3-3 a^2 A^2 b c d^2 i^3+a^3 A^2 d^3 i^3}{b^4 g^2 \left(a+b x\right)}+$$

$$\frac{3 \left(A^2 b^2 c^2 d i^3-2 a A^2 b c d^2 i^3+a^2 A^2 d^3 i^3\right) \text{Log}[a+b x]}{b^4 g^2}+\frac{1}{b \left(b c-a d\right) g^2 \left(a+b x\right)}$$

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

$$\frac{2 A B c^3 i^3 \left(-\frac{\left(\frac{a}{b}+x\right) \left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{(a+b x)^2 \text{Log}\left[\frac{a}{b}+x\right]}-\frac{\frac{b \left(\frac{c}{d}+x\right) \text{Log}\left[\frac{c}{d}+x\right]}{\left(-a+\frac{b c}{d}\right)^2 \left(1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right)}+\frac{\text{Log}\left[1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]}{-a+\frac{b c}{d}}}{b}-\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]}{b (a+b x)}\right)}{g^2}+$$

$$\frac{1}{g^2} 2 A B d^3 i^3 \left(-\frac{2 a \left(\frac{a}{b}+x\right) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3}+\frac{3 a^2 \text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^4}+\frac{a^3 \left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^4 \left(a+b x\right)}+\frac{2 a \left(\frac{c}{d}+x\right) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^3}+\right.$$

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

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

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

$$6 A B c d^2 i^3 \left(\frac{\left(\frac{a}{b}+x\right) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^2}-\frac{a \text{Log}\left[\frac{a}{b}+x\right]^2}{b^3}-\frac{a^2 \left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3 \left(a+b x\right)}-\frac{\left(\frac{c}{d}+x\right) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^2}-\right.$$

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

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

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

$$\frac{1}{g^2}B^2\,d^3\,i^3\left(\frac{a^2\,\text{Log}\left[\frac{a}{b}+x\right]^3}{b^4}-\frac{2\,a\,(a+b\,x)\left(2-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^4}+\frac{a^3\left(2+2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^4\,(a+b\,x)}+\frac{(a+b\,x)\left(-7\,a+b\,x+(6\,a-2\,b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]-2\,(a-b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4\,b^4}-\frac{2\,a\,(c+d\,x)\left(2-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{b^3\,d}+\frac{(c+d\,x)\left(-7\,c+d\,x+(6\,c-2\,d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]-2\,(c-d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{4\,b^2\,d^2}+\frac{\left(-4\,a\,b\,x+b^2\,x^2+\frac{2\,a^3}{a+b\,x}+6\,a^2\,\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\right]\right)^2}{2\,b^4}-\frac{1}{b^4\,(b\,c-a\,d)\,(a+b\,x)}a^3\left(-b\,(c+d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]^2+2\,d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,d\,(a+b\,x)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\right]\right)\left(-\frac{2\,a\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3}+\frac{3\,a^2\,\text{Log}\left[\frac{a}{b}+x\right]^2}{2\,b^4}+\frac{a^3\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^4\,(a+b\,x)}+\frac{2\,a\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^3}+\frac{-\frac{1}{2}\,b\left(-\frac{a\,x}{b^2}+\frac{x^2}{2\,b}+\frac{a^2\,\text{Log}[a+b\,x]}{b^3}\right)+\frac{1}{2}\,x^2\,\text{Log}\left[\frac{a+b\,x}{b}\right]}{b^2}+\frac{a^3\left((-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])\right)}{b^4\,(b\,c-a\,d)\,(a+b\,x)}-\frac{-\frac{1}{2}\,d\left(-\frac{c\,x}{d^2}+\frac{x^2}{2\,d}+\frac{c^2\,\text{Log}[c+d\,x]}{d^3}\right)+\frac{1}{2}\,x^2\,\text{Log}\left[\frac{c+d\,x}{d}\right]}{b^2}-\frac{3\,a^2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)}{b^4}\right)-$$

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

$$\frac{1}{2 b^4 (b c - a d) (a + b x)} a^3 \Big(d (a + b x) \text{Log}\Big[\frac{a}{b} + x\Big]^2 + 2 \Big(\Big(-b c + a d\Big) \text{Log}\Big[\frac{c}{d} + x\Big] + d (a + b x) \big(\text{Log}[a + b x] - \text{Log}[c + d x]\big)\Big) -$$

$$2 \text{Log}\Big[\frac{a}{b} + x\Big] \Big((b c - a d) \text{Log}\Big[\frac{c}{d} + x\Big] + d (a + b x) \text{Log}\Big[\frac{b (c + d x)}{b c - a d}\Big]\Big) - 2 d (a + b x) \text{PolyLog}\Big[2, \frac{d (a + b x)}{-b c + a d}\Big]\Big) + \frac{1}{2 b^4}$$

$$3 a^2 \Big(\text{Log}\Big[\frac{a}{b} + x\Big]^2 \Big(\text{Log}\Big[\frac{c}{d} + x\Big] - \text{Log}\Big[\frac{b (c + d x)}{b c - a d}\Big]\Big) - 2 \text{Log}\Big[\frac{a}{b} + x\Big] \text{PolyLog}\Big[2, \frac{d (a + b x)}{-b c + a d}\Big] + 2 \text{PolyLog}\Big[3, \frac{d (a + b x)}{-b c + a d}\Big]\Big)\Big) +$$

$$\frac{3 a^2 \Big(\text{Log}\big[\frac{c}{d} + x\big]^2 \text{Log}\big[\frac{d (a+b x)}{-b c+a d}\big] + 2 \text{Log}\big[\frac{c}{d} + x\big] \text{PolyLog}\big[2, \frac{b (c+d x)}{b c-a d}\big] - 2 \text{PolyLog}\big[3, \frac{b (c+d x)}{b c-a d}\big]\Big)}{b^4}\Bigg) +$$

$$\frac{1}{g^2} 3 B^2 c d^2 i^3 \Bigg(-\frac{2 a \text{Log}\big[\frac{a}{b} + x\big]^3}{3 b^3} + \frac{(a + b x) \Big(2 - 2 \text{Log}\big[\frac{a}{b} + x\big] + \text{Log}\big[\frac{a}{b} + x\big]^2\Big)}{b^3} - \frac{a^2 \Big(2 + 2 \text{Log}\big[\frac{a}{b} + x\big] + \text{Log}\big[\frac{a}{b} + x\big]^2\Big)}{b^3 (a + b x)} +$$

$$\frac{(c + d x) \Big(2 - 2 \text{Log}\big[\frac{c}{d} + x\big] + \text{Log}\big[\frac{c}{d} + x\big]^2\Big)}{b^2 d} + \frac{\Big(b x - \frac{a^2}{a+b x} - 2 a \text{Log}[a + b x]\Big) \Big(-\text{Log}\big[\frac{a}{b} + x\big] + \text{Log}\big[\frac{c}{d} + x\big] + \text{Log}\big[\frac{a e}{c+d x} + \frac{b e x}{c+d x}\big]\Big)^2}{b^3} +$$

$$\frac{1}{b^3 (b c - a d) (a + b x)} a^2 \Big(-b (c + d x) \text{Log}\Big[\frac{c}{d} + x\Big]^2 + 2 d (a + b x) \text{Log}\Big[\frac{c}{d} + x\Big] \text{Log}\Big[\frac{d (a + b x)}{-b c + a d}\Big] + 2 d (a + b x) \text{PolyLog}\Big[2, \frac{b (c + d x)}{b c - a d}\Big]\Big) +$$

$$2 \Big(-\text{Log}\Big[\frac{a}{b} + x\Big] + \text{Log}\Big[\frac{c}{d} + x\Big] + \text{Log}\Big[\frac{a e}{c + d x} + \frac{b e x}{c + d x}\Big]\Big)$$

$$\Bigg(\frac{\big(\frac{a}{b} + x\big) \big(-1 + \text{Log}\big[\frac{a}{b} + x\big]\big)}{b^2} - \frac{a \text{Log}\big[\frac{a}{b} + x\big]^2}{b^3} - \frac{a^2 \big(1 + \text{Log}\big[\frac{a}{b} + x\big]\big)}{b^3 (a + b x)} - \frac{\big(\frac{c}{d} + x\big) \big(-1 + \text{Log}\big[\frac{c}{d} + x\big]\big)}{b^2} -$$

$$\frac{a^2 \Big(\big(-b c + a d\big) \text{Log}\big[\frac{c}{d} + x\big] + d (a + b x) \big(\text{Log}[a + b x] - \text{Log}[c + d x]\big)\Big)}{b^3 (b c - a d) (a + b x)} + \frac{2 a \Big(\text{Log}\big[\frac{c}{d} + x\big] \text{Log}\big[\frac{d (a+b x)}{-b c+a d}\big] + \text{PolyLog}\big[2, \frac{b (c+d x)}{b c-a d}\big]\Big)}{b^3}\Bigg) -$$

$$2 \Bigg(\frac{1}{b^3 d}\Big(a d + 2 b d x - b d x \text{Log}\Big[\frac{c}{d} + x\Big] - b c \text{Log}[c + d x] + \text{Log}\Big[\frac{a}{b} + x\Big] \Big(-d (a + b x) + d (a + b x) \text{Log}\Big[\frac{c}{d} + x\Big] + (b c - a d) \text{Log}\Big[\frac{b (c + d x)}{b c - a d}\Big]\Big) +$$

$$(b c - a d) \text{PolyLog}\Big[2, \frac{d (a + b x)}{-b c + a d}\Big]\Big) + \frac{1}{2 b^3 (b c - a d) (a + b x)}$$

$$a^2 \Big(d (a + b x) \text{Log}\Big[\frac{a}{b} + x\Big]^2 + 2 \Big(\big(-b c + a d\big) \text{Log}\Big[\frac{c}{d} + x\Big] + d (a + b x) \big(\text{Log}[a + b x] - \text{Log}[c + d x]\big)\Big) -$$

$$2 \text{Log}\Big[\frac{a}{b} + x\Big] \Big((b c - a d) \text{Log}\Big[\frac{c}{d} + x\Big] + d (a + b x) \text{Log}\Big[\frac{b (c + d x)}{b c - a d}\Big]\Big) - 2 d (a + b x) \text{PolyLog}\Big[2, \frac{d (a + b x)}{-b c + a d}\Big]\Big) - \frac{1}{b^3}$$

$$a \Big(\text{Log}\Big[\frac{a}{b} + x\Big]^2 \Big(\text{Log}\Big[\frac{c}{d} + x\Big] - \text{Log}\Big[\frac{b (c + d x)}{b c - a d}\Big]\Big) - 2 \text{Log}\Big[\frac{a}{b} + x\Big] \text{PolyLog}\Big[2, \frac{d (a + b x)}{-b c + a d}\Big] + 2 \text{PolyLog}\Big[3, \frac{d (a + b x)}{-b c + a d}\Big]\Big)\Big) -$$

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

$$\frac{1}{g^2}3\,B^2\,c^2\,d\,i^3\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^3}{3\,b^2}+\frac{a\left(2+2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^2\,(a+b\,x)}+\frac{\left(\frac{a}{a+b\,x}+\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\right]\right)^2}{b^2}-\right.$$

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

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

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

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

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

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

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

Problem 80: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)^3}\,dx$$

Optimal (type 4, 604 leaves, 13 steps):

$$-\frac{4 B^2 d (b c-a d) i^3 (c+d x)}{b^3 g^3 (a+b x)}-\frac{B^2 (b c-a d) i^3 (c+d x)^2}{4 b^2 g^3 (a+b x)^2}-\frac{4 B d (b c-a d) i^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^3 g^3 (a+b x)}-$$

$$\frac{B (b c-a d) i^3 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 b^2 g^3 (a+b x)^2}+\frac{2 B d^2 (b c-a d) i^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{b^4 g^3}+$$

$$\frac{d^3 i^3 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^4 g^3}-\frac{2 d (b c-a d) i^3 (c+d x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{b^3 g^3 (a+b x)}-\frac{(b c-a d) i^3 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 b^2 g^3 (a+b x)^2}-$$

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

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

Result (type 4, 5661 leaves):

$$\frac{A^2 d^3 i^3 x}{b^3 g^3}-\frac{A^2 \left(b^3 c^3-3 a b^2 c^2 d+3 a^2 b c d^2-a^3 d^3\right) i^3}{2 b^4 g^3 (a+b x)^2}-\frac{3 \left(A^2 b^2 c^2 d i^3-2 a A^2 b c d^2 i^3+a^2 A^2 d^3 i^3\right)}{b^4 g^3 (a+b x)}-\frac{3 \left(-A^2 b c d^2 i^3+a A^2 d^3 i^3\right) \text{Log}[a+b x]}{b^4 g^3}-$$

$$\left(B^2 c^3 i^3 \left(b^2 c^2-8 a b c d+7 a^2 d^2-6 b^2 c d x+6 a b d^2 x-6 d^2 (a+b x)^2 \text{Log}[a+b x]+2 (b c-a d) (b c-3 a d-2 b d x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+\right.\right.$$

$$\left.\left.2 b (c+d x) (b c-2 a d-b d x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+6 a^2 d^2 \text{Log}[c+d x]+12 a b d^2 x \text{Log}[c+d x]+6 b^2 d^2 x^2 \text{Log}[c+d x]\right)\right)\Big/$$

$$\left(4 b (b c-a d)^2 g^3 (a+b x)^2\right)+\frac{1}{g^3}2 A B c^3 i^3 \left(-\frac{\left(\frac{a}{b}+x\right) \left(2 \text{Log}\left[\frac{a}{b}+x\right]+4 \text{Log}\left[\frac{a}{b}+x\right]^2\right)}{8 (a+b x)^3 \text{Log}\left[\frac{a}{b}+x\right]}-\right.$$

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

$$\frac{1}{g^3} 6 A B c^2 d i^3 \left(-\frac{1+\text{Log}\left[\frac{a}{b}+x\right]}{b^2 (a+b x)}+\frac{a \left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^2 (a+b x)^2}-\frac{(-b c+a d) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x) (\text{Log}[a+b x]-\text{Log}[c+d x])}{b^2 (b c-a d) (a+b x)}-\right.$$

$$\left.\frac{a \left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d (a+b x) (b c-a d+d (a+b x) \text{Log}[a+b x]-d (a+b x) \text{Log}[c+d x])}{(b c-a d)^2}\right)}{2 b^2 (a+b x)^2}-\frac{(a+2 b x) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)}{2 b^2 (a+b x)^2}\right)+$$

$$\frac{1}{g^3} 2 A B d^3 i^3 \left(\frac{\left(\frac{a}{b}+x\right) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3}-\frac{3 a \text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^4}-\frac{3 a^2 \left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^4 (a+b x)}+\frac{a^3 \left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^4 (a+b x)^2}-\frac{\left(\frac{c}{d}+x\right) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^3}-\right.$$

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

$$\left.\frac{\left(-2 b x+\frac{a^2 (5 a+6 b x)}{(a+b x)^2}+6 a \text{Log}[a+b x]\right) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)}{2 b^4}+\frac{3 a \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right)}{b^4}\right)+$$

$$\frac{1}{g^3} 6 A B c d^2 i^3 \left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^3}+\frac{2 a \left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3 (a+b x)}-\frac{a^2 \left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^3 (a+b x)^2}+\frac{2 a \left((-b c+a d) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x) (\text{Log}[a+b x]-\text{Log}[c+d x])\right)}{b^3 (b c-a d) (a+b x)}+\right.$$

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

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

$$\frac{1}{g^3} 3 B^2 c^2 d i^3 \left(-\frac{2+2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2}{b^2 (a+b x)}+\frac{a \left(1+2 \text{Log}\left[\frac{a}{b}+x\right]+2 \text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4 b^2 (a+b x)^2}+2 \left(-\frac{1+\text{Log}\left[\frac{a}{b}+x\right]}{b^2 (a+b x)}+\frac{a \left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^2 (a+b x)^2}-\right.\right.$$

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

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

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

$$2\,\text{Log}\left[\frac{a}{b}+x\right]\,\Big(\left(b\,c-a\,d\right)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,\left(a+b\,x\right)\,\text{Log}\left[\frac{b\,\left(c+d\,x\right)}{b\,c-a\,d}\right]\Big)-2\,d\,\left(a+b\,x\right)\,\text{PolyLog}\left[2,\,\frac{d\,\left(a+b\,x\right)}{-b\,c+a\,d}\right]\Big)+$$

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

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

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

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

$$\Big(b\,\left(c+d\,x\right)+d\,\left(a+b\,x\right)\,\text{Log}\left[\frac{d\,\left(a+b\,x\right)}{-b\,c+a\,d}\right]\Big)+2\,d^2\,\left(a+b\,x\right)^2\,\text{PolyLog}\left[2,\,\frac{b\,\left(c+d\,x\right)}{b\,c-a\,d}\right]\Big)\Big)\Big/\Big(2\,b^2\,\left(b\,c-a\,d\right)^2\,\left(a+b\,x\right)^2\Big)\Big)+$$

$$\frac{1}{g^3}\,B^2\,d^3\,i^3\,\Bigg(-\frac{a\,\text{Log}\left[\frac{a}{b}+x\right]^3}{b^4}+\frac{\left(a+b\,x\right)\,\left(2-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^4}-\frac{3\,a^2\,\left(2+2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^4\,\left(a+b\,x\right)}+$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\left.\left.2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\right)-\frac{3\,a\left(\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)}{b^4}\Bigg)+$$

$$\frac{1}{g^3}\,3\,B^2\,c\,d^2\,i^3\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^3}{3\,b^3}+\frac{2\,a\left(2+2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^3\,(a+b\,x)}-\frac{a^2\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4\,b^3\,(a+b\,x)^2}+\right.$$

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

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

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

$$\left.\left.2\,d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]\left(b\,(c+d\,x)+d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+2\,d^2\,(a+b\,x)^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\Big/$$

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

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

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

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

$$2\,\text{Log}\left[\frac{a}{b}+x\right]\left((b\,c-a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)-2\,d\,(a+b\,x)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\Big)-$$

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

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

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

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

Problem 81: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{(a\,g+b\,g\,x)^5}\,dx$$

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

$$-\frac{B^2\,i^3\,(c+d\,x)^4}{32\,(b\,c-a\,d)\,g^5\,(a+b\,x)^4}-\frac{B\,i^3\,(c+d\,x)^4\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{8\,(b\,c-a\,d)\,g^5\,(a+b\,x)^4}-\frac{i^3\,(c+d\,x)^4\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{4\,(b\,c-a\,d)\,g^5\,(a+b\,x)^4}$$

Result (type 3, 327 leaves):

$$\frac{1}{32\,b^4\,(b\,c-a\,d)\,g^5\,(a+b\,x)^4}\,i^3\left(-\left(8\,A^2+4\,A\,B+B^2\right)(b\,c-a\,d)^4+4\left(8\,A^2+4\,A\,B+B^2\right)d\,(-b\,c+a\,d)^3\,(a+b\,x)-6\left(8\,A^2+4\,A\,B+B^2\right)d^2\,(b\,c-a\,d)^2\,(a+b\,x)^2+4\left(8\,A^2+4\,A\,B+B^2\right)d^3\,(-b\,c+a\,d)\,(a+b\,x)^3-4\,B\,(4\,A+B)\,d^4\,(a+b\,x)^4\,\text{Log}[a+b\,x]-4\,B\,(4\,A+B)\,(b\,c-a\,d)\left((b\,c-a\,d)^3+4\,d\,(b\,c-a\,d)^2\,(a+b\,x)+6\,d^2\,(b\,c-a\,d)\,(a+b\,x)^2+4\,d^3\,(a+b\,x)^3\right)\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]-8\,b^4\,B^2\,(c+d\,x)^4\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+4\,B\,(4\,A+B)\,d^4\,(a+b\,x)^4\,\text{Log}[c+d\,x]\right)$$

Problem 84: Result more than twice size of optimal antiderivative.

$$\int \frac{(a\,g+b\,g\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{c\,i+d\,i\,x}\,dx$$

Optimal (type 4, 718 leaves, 25 steps):

$$\frac{b\,B^2\,(b\,c-a\,d)^2\,g^3\,x}{3\,d^3\,i}+\frac{B^2\,(b\,c-a\,d)^3\,g^3\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{3\,d^4\,i}+\frac{7\,B\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,d^3\,i}-\frac{b^2\,B\,(b\,c-a\,d)\,g^3\,(c+d\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{3\,d^4\,i}+\frac{6\,B\,(b\,c-a\,d)^3\,g^3\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^4\,i}+\frac{3\,(b\,c-a\,d)^2\,g^3\,(a+b\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^3\,i}-\frac{3\,b^2\,(b\,c-a\,d)\,g^3\,(c+d\,x)^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{2\,d^4\,i}+\frac{b^3\,g^3\,(c+d\,x)^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{3\,d^4\,i}+\frac{(b\,c-a\,d)^3\,g^3\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^4\,i}-\frac{2\,B^2\,(b\,c-a\,d)^3\,g^3\,\text{Log}[c+d\,x]}{d^4\,i}-\frac{7\,B\,(b\,c-a\,d)^3\,g^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{3\,d^4\,i}+\frac{6\,B^2\,(b\,c-a\,d)^3\,g^3\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i}+\frac{2\,B\,(b\,c-a\,d)^3\,g^3\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i}+\frac{7\,B^2\,(b\,c-a\,d)^3\,g^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{3\,d^4\,i}-\frac{2\,B^2\,(b\,c-a\,d)^3\,g^3\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i}$$

Result (type 4, 5057 leaves):

$$\frac{1}{12\,d^4\,i}\,g^3\left(24\,A\,b^3\,B\,c^3+45\,b^3\,B^2\,c^3-96\,a\,A\,b^2\,B\,c^2\,d-155\,a\,b^2\,B^2\,c^2\,d+144\,a^2\,A\,b\,B\,c\,d^2+129\,a^2\,b\,B^2\,c\,d^2-72\,a^3\,A\,B\,d^3-63\,a^3\,B^2\,d^3+12\,A^2\,b^3\,c^2\,d\,x+20\,A\,b^3\,B\,c^2\,d\,x+\right.$$

$$4 b^3 B^2 c^2 d x - 36 a A^2 b^2 c d^2 x - 48 a A b^2 B c d^2 x - 8 a b^2 B^2 c d^2 x + 36 a^2 A^2 b d^3 x + 28 a^2 A b B d^3 x + 4 a^2 b B^2 d^3 x - 6 A^2 b^3 c d^2 x^2 - 4 A b^3 B c d^2 x^2 +$$

$$18 a A^2 b^2 d^3 x^2 + 4 a A b^2 B d^3 x^2 + 4 A^2 b^3 d^3 x^3 - 24 b^3 B^2 c^3 \text{Log}\left[\frac{a}{b} + x\right] + 24 a A b^2 B c^2 d \text{Log}\left[\frac{a}{b} + x\right] + 116 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b} + x\right] -$$

$$72 a^2 A b B c d^2 \text{Log}\left[\frac{a}{b} + x\right] - 198 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b} + x\right] + 72 a^3 A B d^3 \text{Log}\left[\frac{a}{b} + x\right] + 126 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b} + x\right] - 12 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b} + x\right]^2 +$$

$$42 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b} + x\right]^2 - 50 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b} + x\right]^2 - 24 A b^3 B c^3 \text{Log}\left[\frac{c}{d} + x\right] - 18 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d} + x\right] + 72 a A b^2 B c^2 d \text{Log}\left[\frac{c}{d} + x\right] +$$

$$30 a b^2 B^2 c^2 d \text{Log}\left[\frac{c}{d} + x\right] - 72 a^2 A b B c d^2 \text{Log}\left[\frac{c}{d} + x\right] + 72 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d} + x\right] - 72 a^3 B^2 d^3 \text{Log}\left[\frac{c}{d} + x\right] + 24 b^3 B^2 c^3 \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{c}{d} + x\right] -$$

$$72 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{c}{d} + x\right] + 60 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{c}{d} + x\right] + 28 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{c}{d} + x\right] + 12 A b^3 B c^3 \text{Log}\left[\frac{c}{d} + x\right]^2 -$$

$$2 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d} + x\right]^2 - 36 a A b^2 B c^2 d \text{Log}\left[\frac{c}{d} + x\right]^2 + 18 a b^2 B^2 c^2 d \text{Log}\left[\frac{c}{d} + x\right]^2 + 36 a^2 A b B c d^2 \text{Log}\left[\frac{c}{d} + x\right]^2 - 36 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d} + x\right]^2 -$$

$$12 a^3 A B d^3 \text{Log}\left[\frac{c}{d} + x\right]^2 + 8 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d} + x\right]^3 - 24 a b^2 B^2 c^2 d \text{Log}\left[\frac{c}{d} + x\right]^3 + 24 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d} + x\right]^3 - 8 a^3 B^2 d^3 \text{Log}\left[\frac{c}{d} + x\right]^3 +$$

$$12 a^2 A b B c d^2 \text{Log}[a + b x] + 10 a^2 b B^2 c d^2 \text{Log}[a + b x] - 28 a^3 A B d^3 \text{Log}[a + b x] - 30 a^3 B^2 d^3 \text{Log}[a + b x] - 12 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[a + b x] +$$

$$28 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[a + b x] + 12 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] - 28 a^3 B^2 d^3 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] -$$

$$12 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d} + x\right]^2 \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + 36 a b^2 B^2 c^2 d \text{Log}\left[\frac{c}{d} + x\right]^2 \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] - 36 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d} + x\right]^2 \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] +$$

$$12 a^3 B^2 d^3 \text{Log}\left[\frac{c}{d} + x\right]^2 \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + 24 b^3 B^2 c^3 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 96 a b^2 B^2 c^2 d \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 144 a^2 b B^2 c d^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] -$$

$$72 a^3 B^2 d^3 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 24 A b^3 B c^2 d x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 20 b^3 B^2 c^2 d x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 72 a A b^2 B c d^2 x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] -$$

$$48 a b^2 B^2 c d^2 x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 72 a^2 A b B d^3 x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 28 a^2 b B^2 d^3 x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 12 A b^3 B c d^2 x^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] -$$

$$4 b^3 B^2 c d^2 x^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 36 a A b^2 B d^3 x^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 4 a b^2 B^2 d^3 x^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 8 A b^3 B d^3 x^3 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] +$$

$$24 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 72 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 72 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] -$$

$$24 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 72 a b^2 B^2 c^2 d \text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 72 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] +$$

$$12 b^3 B^2 c^3 \text{Log}\left[\frac{c}{d} + x\right]^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 36 a b^2 B^2 c^2 d \text{Log}\left[\frac{c}{d} + x\right]^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 36 a^2 b B^2 c d^2 \text{Log}\left[\frac{c}{d} + x\right]^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] -$$

$$12 a^3 B^2 d^3 \text{Log}\left[\frac{c}{d} + x\right]^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] + 12 a^2 b B^2 c d^2 \text{Log}[a + b x] \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] - 28 a^3 B^2 d^3 \text{Log}[a + b x] \text{Log}\left[\frac{e (a + b x)}{c + d x}\right] +$$

$$12 b^3 B^2 c^2 d x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right]^2 - 36 a b^2 B^2 c d^2 x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right]^2 + 36 a^2 b B^2 d^3 x \text{Log}\left[\frac{e (a + b x)}{c + d x}\right]^2 - 6 b^3 B^2 c d^2 x^2 \text{Log}\left[\frac{e (a + b x)}{c + d x}\right]^2 +$$

$$18\,a\,b^2\,B^2\,d^3\,x^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+4\,b^3\,B^2\,d^3\,x^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2-12\,A^2\,b^3\,c^3\,\mathrm{Log}[c+d\,x]-20\,A\,b^3\,B\,c^3\,\mathrm{Log}[c+d\,x]+$$

$$18\,b^3\,B^2\,c^3\,\mathrm{Log}[c+d\,x]+36\,a\,A^2\,b^2\,c^2\,d\,\mathrm{Log}[c+d\,x]+36\,a\,A\,b^2\,B\,c^2\,d\,\mathrm{Log}[c+d\,x]-74\,a\,b^2\,B^2\,c^2\,d\,\mathrm{Log}[c+d\,x]-36\,a^2\,A^2\,b\,c\,d^2\,\mathrm{Log}[c+d\,x]+$$

$$44\,a^2\,b\,B^2\,c\,d^2\,\mathrm{Log}[c+d\,x]+12\,a^3\,A^2\,d^3\,\mathrm{Log}[c+d\,x]+24\,A\,b^3\,B\,c^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}[c+d\,x]+20\,b^3\,B^2\,c^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}[c+d\,x]-$$

$$72\,a\,A\,b^2\,B\,c^2\,d\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}[c+d\,x]-36\,a\,b^2\,B^2\,c^2\,d\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}[c+d\,x]+72\,a^2\,A\,b\,B\,c\,d^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}[c+d\,x]-$$

$$24\,a^3\,A\,B\,d^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}[c+d\,x]-12\,b^3\,B^2\,c^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]^2\mathrm{Log}[c+d\,x]+36\,a\,b^2\,B^2\,c^2\,d\,\mathrm{Log}\left[\frac{a}{b}+x\right]^2\mathrm{Log}[c+d\,x]-$$

$$36\,a^2\,b\,B^2\,c\,d^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]^2\mathrm{Log}[c+d\,x]+12\,a^3\,B^2\,d^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]^2\mathrm{Log}[c+d\,x]-24\,A\,b^3\,B\,c^3\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}[c+d\,x]-$$

$$20\,b^3\,B^2\,c^3\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}[c+d\,x]+72\,a\,A\,b^2\,B\,c^2\,d\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}[c+d\,x]+36\,a\,b^2\,B^2\,c^2\,d\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}[c+d\,x]-$$

$$72\,a^2\,A\,b\,B\,c\,d^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}[c+d\,x]+24\,a^3\,A\,B\,d^3\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}[c+d\,x]+24\,b^3\,B^2\,c^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}[c+d\,x]-$$

$$72\,a\,b^2\,B^2\,c^2\,d\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}[c+d\,x]+72\,a^2\,b\,B^2\,c\,d^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}[c+d\,x]-$$

$$24\,a^3\,B^2\,d^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}[c+d\,x]-12\,b^3\,B^2\,c^3\,\mathrm{Log}\left[\frac{c}{d}+x\right]^2\mathrm{Log}[c+d\,x]+36\,a\,b^2\,B^2\,c^2\,d\,\mathrm{Log}\left[\frac{c}{d}+x\right]^2\mathrm{Log}[c+d\,x]-$$

$$36\,a^2\,b\,B^2\,c\,d^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]^2\mathrm{Log}[c+d\,x]+12\,a^3\,B^2\,d^3\,\mathrm{Log}\left[\frac{c}{d}+x\right]^2\mathrm{Log}[c+d\,x]-24\,A\,b^3\,B\,c^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]-$$

$$20\,b^3\,B^2\,c^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]+72\,a\,A\,b^2\,B\,c^2\,d\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]+36\,a\,b^2\,B^2\,c^2\,d\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]-$$

$$72\,a^2\,A\,b\,B\,c\,d^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]+24\,a^3\,A\,B\,d^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]+24\,b^3\,B^2\,c^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]-$$

$$72\,a\,b^2\,B^2\,c^2\,d\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]+72\,a^2\,b\,B^2\,c\,d^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]-$$

$$24\,a^3\,B^2\,d^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]-24\,b^3\,B^2\,c^3\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]+$$

$$72\,a\,b^2\,B^2\,c^2\,d\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]-72\,a^2\,b\,B^2\,c\,d^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]+$$

$$24\,a^3\,B^2\,d^3\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\mathrm{Log}[c+d\,x]-12\,b^3\,B^2\,c^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2\mathrm{Log}[c+d\,x]+$$

$$36\,a\,b^2\,B^2\,c^2\,d\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2\mathrm{Log}[c+d\,x]-36\,a^2\,b\,B^2\,c\,d^2\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2\mathrm{Log}[c+d\,x]+12\,a^3\,B^2\,d^3\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2\mathrm{Log}[c+d\,x]-$$

$$24\,A\,b^3\,B\,c^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-44\,b^3\,B^2\,c^3\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+72\,a\,A\,b^2\,B\,c^2\,d\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$132\,a\,b^2\,B^2\,c^2\,d\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-72\,a^2\,A\,b\,B\,c\,d^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-132\,a^2\,b\,B^2\,c\,d^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$24 a^3 A B d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+44 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+12 b^3 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-$$
$$36 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+36 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-12 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-$$
$$24 b^3 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+72 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-$$
$$72 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+24 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-$$
$$24 b^3 B^2 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+72 a b^2 B^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-$$
$$72 a^2 b B^2 c d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+24 a^3 B^2 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-$$
$$4 B (b c-a d)^3 \left(6 A+11 B+6 B \text{Log}\left[\frac{c}{d}+x\right]+6 B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-$$
$$24 B^2 (b c-a d)^3 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+24 b^3 B^2 c^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]-72 a b^2 B^2 c^2 d \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]+$$
$$72 a^2 b B^2 c d^2 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]-24 a^3 B^2 d^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]+24 b^3 B^2 c^3 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]-$$
$$72 a b^2 B^2 c^2 d \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]+72 a^2 b B^2 c d^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]-24 a^3 B^2 d^3 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\Bigg)$$

Problem 85: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{c i+d i x} \, dx$$

Optimal (type 4, 536 leaves, 15 steps):

$$-\frac{B (b c-a d) g^2 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^2 i}-\frac{4 B (b c-a d)^2 g^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^3 i}-$$

$$\frac{2 (b c-a d) g^2 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^2 i}+\frac{b^2 g^2 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 d^3 i}-\frac{(b c-a d)^2 g^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^3 i}+$$

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

$$\frac{2 B (b c-a d)^2 g^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i}-\frac{B^2 (b c-a d)^2 g^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{d^3 i}+\frac{2 B^2 (b c-a d)^2 g^2 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i}$$

Result (type 4, 2562 leaves) :

$$\frac{1}{12 d^3 i} g^2 \Bigg(-12 A^2 b d (b c-2 a d) x+6 A^2 b^2 d^2 x^2+12 A^2 (b c-a d)^2 \text{Log}[c+d x]+$$

$$12 A B \Bigg(-2 b^2 c^2+2 a b c d-b^2 c d x+a b d^2 x+2 b^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]-b^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]^2-a^2 d^2 \text{Log}[a+b x]-2 b^2 c d x \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+$$

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

$$2 b c \text{Log}\left[\frac{a}{b}+x\right] \left(a d+b c \text{Log}[c+d x]-b c \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+2 b^2 c^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Bigg)-12 a^2 A B d^2$$

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

$$24 a A B d \Bigg(-2 d (a+b x) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)+2 b (c+d x) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)-b c \text{Log}\left[\frac{c}{d}+x\right]^2+$$

$$2 b \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) (d x-c \text{Log}[c+d x])+2 b c \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\Bigg)+$$

$$4 a^2 B^2 d^2 \Bigg(\text{Log}\left[\frac{c}{d}+x\right]^3+3 \text{Log}\left[\frac{c}{d}+x\right]^2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right)+3 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2 \text{Log}[c+d x]+$$

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

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

$$6 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-6 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]-6 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\Bigg)+$$

$$8\,a\,B^2\,d\left(3\,d\,(a+b\,x)\left(2-2\,\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{a}{b}+x\right]^2\right)-b\,c\,\mathrm{Log}\left[\frac{c}{d}+x\right]^3+3\,b\,(c+d\,x)\left(2-2\,\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{c}{d}+x\right]^2\right)+\right.$$

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

$$\left.\mathrm{Log}\left[\frac{a}{b}+x\right]\left(-d\,(a+b\,x)+d\,(a+b\,x)\,\mathrm{Log}\left[\frac{c}{d}+x\right]+(b\,c-a\,d)\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+(b\,c-a\,d)\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+$$

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

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

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

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

$$B^2\left(12\,b\,c\,d\,(a+b\,x)\left(2-2\,\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{a}{b}+x\right]^2\right)+3\,d^2\,(a+b\,x)\left(7\,a-b\,x+(-6\,a+2\,b\,x)\,\mathrm{Log}\left[\frac{a}{b}+x\right]+2\,(a-b\,x)\,\mathrm{Log}\left[\frac{a}{b}+x\right]^2\right)-\right.$$

$$4\,b^2\,c^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]^3+12\,b^2\,c\,(c+d\,x)\left(2-2\,\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{c}{d}+x\right]^2\right)+$$

$$3\,b^2\,(c+d\,x)\left(7\,c-d\,x+(-6\,c+2\,d\,x)\,\mathrm{Log}\left[\frac{c}{d}+x\right]+2\,(c-d\,x)\,\mathrm{Log}\left[\frac{c}{d}+x\right]^2\right)-6\,b^2\left(-\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2$$

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

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

$$\left.b^2\left(d\,x\,(-2\,c+d\,x)-2\,d^2\,x^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]+2\,c^2\,\mathrm{Log}[c+d\,x]\right)+4\,b^2\,c^2\left(\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\right)-$$

$$12\,b^2\,c^2\left(\mathrm{Log}\left[\frac{a}{b}+x\right]^2\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-2\,\mathrm{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-$$

$$6\left(2\,a\,b\,c\,d+3\,b^2\,c\,d\,x+3\,a\,b\,d^2\,x-b^2\,d^2\,x^2-2\,a\,b\,d^2\,x\,\mathrm{Log}\left[\frac{c}{d}+x\right]+b^2\,d^2\,x^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]-a^2\,d^2\,\mathrm{Log}[a+b\,x]-b^2\,c^2\,\mathrm{Log}[c+d\,x]-\right.$$

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

$$2\,(b^2\,c^2-a^2\,d^2)\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+4\,b\,c\left(a\,d+2\,b\,d\,x-b\,d\,x\,\mathrm{Log}\left[\frac{c}{d}+x\right]-b\,c\,\mathrm{Log}[c+d\,x]+\right.$$

$$\text{Log}\left[\frac{a}{b}+x\right]\left(-d\,(a+b\,x)+d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]+(b\,c-a\,d)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+(b\,c-a\,d)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\Bigg)-$$

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

Problem 86: Result more than twice size of optimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{c\,i+d\,i\,x}\,dx$$

Optimal (type 4, 283 leaves, 9 steps):

$$\frac{2\,B\,(b\,c-a\,d)\,g\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^2\,i}+\frac{g\,(a+b\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d\,i}+\frac{(b\,c-a\,d)\,g\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^2\,i}+$$

$$\frac{2\,B^2\,(b\,c-a\,d)\,g\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^2\,i}+\frac{2\,B\,(b\,c-a\,d)\,g\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^2\,i}-\frac{2\,B^2\,(b\,c-a\,d)\,g\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^2\,i}$$

Result (type 4, 1209 leaves):

$$\frac{1}{3 d^2 i} g \Big(3 A^2 b d x - 3 A^2 (b c - a d) \text{Log}[c + d x] - 3 a A B d$$

$$\Big(\text{Log}[\tfrac{c}{d}+x]^2 + 2 \Big(\text{Log}[\tfrac{a}{b}+x] - \text{Log}[\tfrac{c}{d}+x] - \text{Log}[\tfrac{e (a+b x)}{c+d x}]\Big) \text{Log}[c+d x] - 2 \Big(\text{Log}[\tfrac{a}{b}+x] \text{Log}[\tfrac{b (c+d x)}{b c-a d}] + \text{PolyLog}[2, \tfrac{d (a+b x)}{-b c+a d}]\Big)\Big) -$$

$$3 A B \Big(-2 d (a+b x) \Big(-1+\text{Log}[\tfrac{a}{b}+x]\Big) + 2 b (c+d x) \Big(-1+\text{Log}[\tfrac{c}{d}+x]\Big) - b c \text{Log}[\tfrac{c}{d}+x]^2 +$$

$$2 b \Big(\text{Log}[\tfrac{a}{b}+x] - \text{Log}[\tfrac{c}{d}+x] - \text{Log}[\tfrac{e (a+b x)}{c+d x}]\Big) (d x - c \text{Log}[c+d x]) + 2 b c \Big(\text{Log}[\tfrac{a}{b}+x] \text{Log}[\tfrac{b (c+d x)}{b c-a d}] + \text{PolyLog}[2, \tfrac{d (a+b x)}{-b c+a d}]\Big)\Big) +$$

$$a B^2 d \Big(\text{Log}[\tfrac{c}{d}+x]^3 + 3 \text{Log}[\tfrac{c}{d}+x]^2 \Big(-\text{Log}[\tfrac{a}{b}+x] + \text{Log}[\tfrac{d (a+b x)}{-b c+a d}]\Big) + 3 \Big(-\text{Log}[\tfrac{a}{b}+x] + \text{Log}[\tfrac{c}{d}+x] + \text{Log}[\tfrac{e (a+b x)}{c+d x}]\Big)^2 \text{Log}[c+d x] +$$

$$3 \text{Log}[\tfrac{a}{b}+x]^2 \text{Log}[\tfrac{b (c+d x)}{b c-a d}] + 6 \text{Log}[\tfrac{a}{b}+x] \text{PolyLog}[2, \tfrac{d (a+b x)}{-b c+a d}] +$$

$$3 \Big(\text{Log}[\tfrac{a}{b}+x] - \text{Log}[\tfrac{c}{d}+x] - \text{Log}[\tfrac{e (a+b x)}{c+d x}]\Big) \Big(\text{Log}[\tfrac{c}{d}+x]^2 - 2 \Big(\text{Log}[\tfrac{a}{b}+x] \text{Log}[\tfrac{b (c+d x)}{b c-a d}] + \text{PolyLog}[2, \tfrac{d (a+b x)}{-b c+a d}]\Big)\Big) +$$

$$6 \text{Log}[\tfrac{c}{d}+x] \text{PolyLog}[2, \tfrac{b (c+d x)}{b c-a d}] - 6 \text{PolyLog}[3, \tfrac{d (a+b x)}{-b c+a d}] - 6 \text{PolyLog}[3, \tfrac{b (c+d x)}{b c-a d}]\Big) +$$

$$B^2 \Big(3 d (a+b x) \Big(2 - 2 \text{Log}[\tfrac{a}{b}+x] + \text{Log}[\tfrac{a}{b}+x]^2\Big) - b c \text{Log}[\tfrac{c}{d}+x]^3 + 3 b (c+d x) \Big(2 - 2 \text{Log}[\tfrac{c}{d}+x] + \text{Log}[\tfrac{c}{d}+x]^2\Big) +$$

$$3 b \Big(-\text{Log}[\tfrac{a}{b}+x] + \text{Log}[\tfrac{c}{d}+x] + \text{Log}[\tfrac{e (a+b x)}{c+d x}]\Big)^2 (d x - c \text{Log}[c+d x]) - 6 \Big(a d + 2 b d x - b d x \text{Log}[\tfrac{c}{d}+x] - b c \text{Log}[c+d x] +$$

$$\text{Log}[\tfrac{a}{b}+x] \Big(-d (a+b x) + d (a+b x) \text{Log}[\tfrac{c}{d}+x] + (b c-a d) \text{Log}[\tfrac{b (c+d x)}{b c-a d}]\Big) + (b c-a d) \text{PolyLog}[2, \tfrac{d (a+b x)}{-b c+a d}]\Big) +$$

$$3 \Big(\text{Log}[\tfrac{a}{b}+x] - \text{Log}[\tfrac{c}{d}+x] - \text{Log}[\tfrac{e (a+b x)}{c+d x}]\Big) \Big(-2 d (a+b x) \Big(-1+\text{Log}[\tfrac{a}{b}+x]\Big) + 2 b (c+d x) \Big(-1+\text{Log}[\tfrac{c}{d}+x]\Big) -$$

$$b c \text{Log}[\tfrac{c}{d}+x]^2 + 2 b c \Big(\text{Log}[\tfrac{a}{b}+x] \text{Log}[\tfrac{b (c+d x)}{b c-a d}] + \text{PolyLog}[2, \tfrac{d (a+b x)}{-b c+a d}]\Big)\Big) -$$

$$3 b c \Big(\text{Log}[\tfrac{a}{b}+x]^2 \text{Log}[\tfrac{b (c+d x)}{b c-a d}] + 2 \text{Log}[\tfrac{a}{b}+x] \text{PolyLog}[2, \tfrac{d (a+b x)}{-b c+a d}] - 2 \text{PolyLog}[3, \tfrac{d (a+b x)}{-b c+a d}]\Big) +$$

$$3 b c \Big(\text{Log}[\tfrac{c}{d}+x]^2 \Big(\text{Log}[\tfrac{a}{b}+x] - \text{Log}[\tfrac{d (a+b x)}{-b c+a d}]\Big) - 2 \text{Log}[\tfrac{c}{d}+x] \text{PolyLog}[2, \tfrac{b (c+d x)}{b c-a d}] + 2 \text{PolyLog}[3, \tfrac{b (c+d x)}{b c-a d}]\Big)\Big)\Big)$$

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

$$\int \frac{\left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{c i+d i x} \, dx$$

Optimal (type 4, 127 leaves, 4 steps):

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

Result (type 4, 458 leaves):

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

Problem 92: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x)^3 \left(A+B \operatorname{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(c i+d i x)^2} \, dx$$

Optimal (type 4, 722 leaves, 18 steps):

$$\frac{2 A B (b c-a d)^2 g^3 (a+b x)}{d^3 i^2 (c+d x)}-\frac{2 B^2 (b c-a d)^2 g^3 (a+b x)}{d^3 i^2 (c+d x)}+\frac{2 B^2 (b c-a d)^2 g^3 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^3 i^2 (c+d x)}-$$

$$\frac{b B (b c-a d) g^3 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^3 i^2}-\frac{6 b B (b c-a d)^2 g^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^4 i^2}-$$

$$\frac{3 b (b c-a d) g^3 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^3 i^2}-\frac{(b c-a d)^2 g^3 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^3 i^2 (c+d x)}+$$

$$\frac{b^3 g^3 (c+d x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 d^4 i^2}-\frac{3 b (b c-a d)^2 g^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^4 i^2}+\frac{b B^2 (b c-a d)^2 g^3 \text{Log}[c+d x]}{d^4 i^2}+$$

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

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

Result (type 4, 4743 leaves):

$$-\frac{A^2 b^2 (2 b c-3 a d) g^3 x}{d^3 i^2}+\frac{A^2 b^3 g^3 x^2}{2 d^2 i^2}+\frac{A^2 b^3 c^3 g^3-3 a A^2 b^2 c^2 d g^3+3 a^2 A^2 b c d^2 g^3-a^3 A^2 d^3 g^3}{d^4 i^2 (c+d x)}+$$

$$\frac{a^3 B^2 g^3 (a+b x) \left(2-2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]+\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2\right)}{(b c-a d) i^2 (c+d x)}+\frac{3 \left(A^2 b^3 c^2 g^3-2 a A^2 b^2 c d g^3+a^2 A^2 b d^2 g^3\right) \text{Log}[c+d x]}{d^4 i^2}+$$

$$\frac{2 a^3 A B g^3 \left(\frac{\left(\frac{c}{d}+x\right) \left(\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{(c+d x)^2 \text{Log}\left[\frac{c}{d}+x\right]}+\frac{\frac{d \left(\frac{a}{b}+x\right) \text{Log}\left[\frac{a}{b}+x\right]}{\left(-c+\frac{a d}{b}\right)^2 \left(1-\frac{d \left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right)}+\frac{\text{Log}\left[1-\frac{d \left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]}{-c+\frac{a d}{b}}}{d}-\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]}{d (c+d x)}\right)}{i^2}+$$

$$\frac{1}{i^2} 2 A b^3 B g^3 \left(-\frac{2 c \left(\frac{a}{b}+x\right) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{d^3}+\frac{2 c \left(\frac{c}{d}+x\right) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3}-\frac{3 c^2 \text{Log}\left[\frac{c}{d}+x\right]^2}{2 d^4}-\right.$$

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

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

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

$$6\,a\,A\,b^2\,B\,g^3\left(\frac{\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{d^2}-\frac{\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^2}+\frac{c\,\text{Log}\left[\frac{c}{d}+x\right]^2}{d^3}+\frac{c^2\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3\left(c+d\,x\right)}+\frac{c^2\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d^2}+\right.$$

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

$$\frac{1}{i^2}6\,a^2\,A\,b\,B\,g^3\left(-\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2\,d^2}-\frac{c\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^2\left(c+d\,x\right)}-\frac{c\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d}+\right.$$

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

$$\frac{1}{i^2}\,b^3\,B^2\,g^3\left(-\frac{2\,c\,(a+b\,x)\left(2-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b\,d^3}+\frac{(a+b\,x)\left(-7\,a+b\,x+(6\,a-2\,b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]-2\,(a-b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4\,b^2\,d^2}+\right.$$

$$\frac{c^2\,\text{Log}\left[\frac{c}{d}+x\right]^3}{d^4}-\frac{2\,c\,(c+d\,x)\left(2-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^4}+\frac{c^3\left(2+2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^4\left(c+d\,x\right)}+$$

$$\frac{(c+d\,x)\left(-7\,c+d\,x+(6\,c-2\,d\,x)\,\mathrm{Log}\left[\frac{c}{d}+x\right]-2\,(c-d\,x)\,\mathrm{Log}\left[\frac{c}{d}+x\right]^2\right)}{4\,d^4}+$$

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

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

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

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

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

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

$$\left.\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[\frac{a}{b}+x\right]\left(-d\,(a+b\,x)+d\,(a+b\,x)\,\mathrm{Log}\left[\frac{c}{d}+x\right]+(b\,c-a\,d)\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+(b\,c-a\,d)\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+$$

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

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

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

$$\left.\left.\left.2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\,\mathrm{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,\mathrm{Log}[c+d\,x]\right)-2\,b\,(c+d\,x)\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\Big/\left(2\,d^4\,(-b\,c+a\,d)\,(c+d\,x)\right)+\frac{1}{2\,d^4}$$

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

$$\frac{1}{i^2} 3 a b^2 B^2 g^3 \left(\frac{(a+b x) \left(2-2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b d^2}-\frac{2 c \text{Log}\left[\frac{c}{d}+x\right]^3}{3 d^3}+\frac{(c+d x) \left(2-2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^3}-\right.$$

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

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

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

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

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

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

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

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

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

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

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

$$2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)$$

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

$$\frac{\text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-2 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]}{d^2}-$$

$$2 \left(-\left(\left(c \left(2 (b c-a d) \text{Log}\left[\frac{a}{b}+x\right] \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+b (c+d x) \left(\text{Log}\left[\frac{c}{d}+x\right]^2-2 \text{Log}[a+b x]-2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 \text{Log}[c+d x]\right)-\right.\right.\right.\right.$$

$$\left.\left.\left.2 b (c+d x) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\bigg/\left(2 d^2 (-b c+a d) (c+d x)\right)\right)+\frac{1}{2 d^2}$$

$$\left.\left.\left(\text{Log}\left[\frac{c}{d}+x\right]^2 \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right)-2 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\right)$$

Problem 93: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(c i+d i x)^2} \, dx$$

Optimal (type 4, 469 leaves, 12 steps):

$$-\frac{2\,A\,B\,(b\,c-a\,d)\,g^2\,(a+b\,x)}{d^2\,i^2\,(c+d\,x)}+\frac{2\,B^2\,(b\,c-a\,d)\,g^2\,(a+b\,x)}{d^2\,i^2\,(c+d\,x)}-\frac{2\,B^2\,(b\,c-a\,d)\,g^2\,(a+b\,x)\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]}{d^2\,i^2\,(c+d\,x)}+$$

$$\frac{2\,b\,B\,(b\,c-a\,d)\,g^2\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)}{d^3\,i^2}+\frac{b\,g^2\,(a+b\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^2\,i^2}+\frac{(b\,c-a\,d)\,g^2\,(a+b\,x)\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^2\,i^2\,(c+d\,x)}+$$

$$\frac{2\,b\,(b\,c-a\,d)\,g^2\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)^2}{d^3\,i^2}+\frac{2\,b\,B^2\,(b\,c-a\,d)\,g^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^3\,i^2}+$$

$$\frac{4\,b\,B\,(b\,c-a\,d)\,g^2\left(A+B\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]\right)\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^3\,i^2}-\frac{4\,b\,B^2\,(b\,c-a\,d)\,g^2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^3\,i^2}$$

Result (type 4, 2704 leaves) :

$$\frac{A^2\,b^2\,g^2\,x}{d^2\,i^2}+\frac{-A^2\,b^2\,c^2\,g^2+2\,a\,A^2\,b\,c\,d\,g^2-a^2\,A^2\,d^2\,g^2}{d^3\,i^2\,(c+d\,x)}+\frac{a^2\,B^2\,g^2\,(a+b\,x)\left(2-2\,\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]+\text{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2\right)}{(b\,c-a\,d)\,i^2\,(c+d\,x)}+$$

$$\frac{2\left(-A^2\,b^2\,c\,g^2+a\,A^2\,b\,d\,g^2\right)\text{Log}[c+d\,x]}{d^3\,i^2}+\frac{2\,a^2\,A\,B\,g^2\left(\frac{\left(\frac{c}{d}+x\right)\left(\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{(c+d\,x)^2\,\text{Log}\left[\frac{c}{d}+x\right]}+\frac{\frac{d\left(\frac{a}{b}+x\right)\text{Log}\left[\frac{a}{b}+x\right]}{\left(-c+\frac{a\,d}{b}\right)^2\left(1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right)}+\frac{\text{Log}\left[1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right]}{-c+\frac{a\,d}{b}}}{d}-\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\right]}{d\,(c+d\,x)}\right)}{i^2}+\frac{1}{i^2}$$

$$2\,A\,b^2\,B\,g^2\left(\frac{\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{d^2}-\frac{\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^2}+\frac{c\,\text{Log}\left[\frac{c}{d}+x\right]^2}{d^3}+\frac{c^2\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3\,(c+d\,x)}+\frac{c^2\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d^2}+\right.$$

$$\left.\frac{\left(d\,x-\frac{c^2}{c+d\,x}-2\,c\,\text{Log}[c+d\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\right]\right)}{d^3}-\frac{2\,c\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{d^3}\right)+$$

$$\frac{1}{i^2}4\,a\,A\,b\,B\,g^2\left(-\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2\,d^2}-\frac{c\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^2\,(c+d\,x)}-\frac{c\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d}+\right.$$

$$\frac{\left(\frac{c}{c+d x}+\text{Log}[c+d x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)}{d^2}+\frac{\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]}{d^2}\Bigg)+$$

$$\frac{1}{i^2}b^2 B^2 g^2\Bigg(\frac{(a+b x)\left(2-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b d^2}-\frac{2 c\,\text{Log}\left[\frac{c}{d}+x\right]^3}{3 d^3}+\frac{(c+d x)\left(2-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^3}-$$

$$\frac{c^2\left(2+2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^3(c+d x)}+\frac{\left(d x-\frac{c^2}{c+d x}-2 c\,\text{Log}[c+d x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)^2}{d^3}+$$

$$\frac{1}{d^3(-b c+a d)(c+d x)}c^2\left(-d(a+b x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2 b(c+d x)\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]+2 b(c+d x)\,\text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]\right)+$$

$$2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)\Bigg(\frac{\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{d^2}-\frac{\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^2}+\frac{c\,\text{Log}\left[\frac{c}{d}+x\right]^2}{d^3}+$$

$$\frac{c^2\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3(c+d x)}+\frac{c^2\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d(c+d x)}-\frac{b\,\text{Log}[a+b x]}{d(-b c+a d)}+\frac{b\,\text{Log}[c+d x]}{d(-b c+a d)}\right)}{d^2}-\frac{2 c\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]\right)}{d^3}\Bigg)-$$

$$\frac{2 c\left(\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]-2\,\text{PolyLog}\left[3,\frac{d(a+b x)}{-b c+a d}\right]\right)}{d^3}-$$

$$2\Bigg(\frac{1}{b d^3}\Bigg(a d+2 b d x-b d x\,\text{Log}\left[\frac{c}{d}+x\right]-b c\,\text{Log}[c+d x]+\text{Log}\left[\frac{a}{b}+x\right]\left(-d(a+b x)+d(a+b x)\,\text{Log}\left[\frac{c}{d}+x\right]+(b c-a d)\,\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]\right)+$$

$$(b c-a d)\,\text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]\Bigg)+\Bigg(c^2\Bigg(2(b c-a d)\,\text{Log}\left[\frac{a}{b}+x\right]\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+b(c+d x)\Bigg(\text{Log}\left[\frac{c}{d}+x\right]^2-2\,\text{Log}[a+b x]-$$

$$2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d(a+b x)}{-b c+a d}\right]+2\,\text{Log}[c+d x]\Bigg)-2 b(c+d x)\,\text{PolyLog}\left[2,\frac{b(c+d x)}{b c-a d}\right]\Bigg)\Bigg)\Big/\left(2 d^3(-b c+a d)(c+d x)\right)-\frac{1}{d^3}$$

$$c\left(\text{Log}\left[\frac{c}{d}+x\right]^2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d(a+b x)}{-b c+a d}\right]\right)-2\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b(c+d x)}{b c-a d}\right]+2\,\text{PolyLog}\left[3,\frac{b(c+d x)}{b c-a d}\right]\right)\Bigg)\Bigg)+$$

$$\frac{1}{i^2} 2 a b B^2 g^2 \left(\frac{\text{Log}\left[\frac{c}{d}+x\right]^3}{3 d^2} + \frac{c \left(2+2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^2 (c+d x)} + \frac{\left(\frac{c}{c+d x}+\text{Log}[c+d x]\right) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)^2}{d^2} - \right.$$

$$\frac{1}{d^2 (-b c+a d) (c+d x)} c \left(-d (a+b x) \text{Log}\left[\frac{a}{b}+x\right]^2 + 2 b (c+d x) \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] + 2 b (c+d x) \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]\right) +$$

$$2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)$$

$$\left(-\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2 d^2} - \frac{c \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^2 (c+d x)} - \frac{c \left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d (c+d x)} - \frac{b \text{Log}[a+b x]}{d (-b c+a d)} + \frac{b \text{Log}[c+d x]}{d (-b c+a d)}\right)}{d} + \frac{\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] + \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]}{d^2}\right) +$$

$$\frac{\text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] + 2 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right] - 2 \text{PolyLog}\left[3, \frac{d (a+b x)}{-b c+a d}\right]}{d^2} -$$

$$2 \left(-\left(\left(c \left(2 (b c-a d) \text{Log}\left[\frac{a}{b}+x\right] \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right) + b (c+d x) \left(\text{Log}\left[\frac{c}{d}+x\right]^2 - 2 \text{Log}[a+b x] - 2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + 2 \text{Log}[c+d x]\right) - \right.\right.\right.\right.$$

$$\left.\left.\left.\left. 2 b (c+d x) \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right)\right)\right) \Big/ \left(2 d^2 (-b c+a d) (c+d x)\right)\right) + \frac{1}{2 d^2}$$

$$\left.\left(\text{Log}\left[\frac{c}{d}+x\right]^2 \left(\text{Log}\left[\frac{a}{b}+x\right] - \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right) - 2 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right] + 2 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]\right)\right)\right)$$

Problem 94: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{(c i+d i x)^2} \, dx$$

Optimal (type 4, 261 leaves, 9 steps):

$$\frac{2 A B g (a+b x)}{d i^2 (c+d x)} - \frac{2 B^2 g (a+b x)}{d i^2 (c+d x)} + \frac{2 B^2 g (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d i^2 (c+d x)} - \frac{g (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d i^2 (c+d x)} -$$

$$\frac{b g \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^2 i^2} - \frac{2 b B g \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i^2} + \frac{2 b B^2 g \text{PolyLog}\left[3, \frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i^2}$$

Result (type 4, 1145 leaves):

$$\frac{1}{i^2}g\left(\frac{A^2(bc-ad)}{d^2(c+dx)}+\frac{aB^2(a+bx)\left(2-2\,\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]+\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]^2\right)}{(bc-ad)(c+dx)}+\frac{A^2 b\,\text{Log}[c+dx]}{d^2}-\frac{1}{d(-bc+ad)(c+dx)}\right.$$

$$2aAB\left(bc-ad+b(c+dx)\,\text{Log}\left[\frac{a}{b}+x\right]+(-bc+ad)\,\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]-bc\,\text{Log}\left[\frac{b(c+dx)}{bc-ad}\right]-bdx\,\text{Log}\left[\frac{b(c+dx)}{bc-ad}\right]\right)+\frac{1}{d^2}$$

$$AbB\left(-\text{Log}\left[\frac{c}{d}+x\right]^2+2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+dx]+2\left(-\frac{c}{c+dx}+\frac{bc\,\text{Log}[a+bx]}{-bc+ad}+\frac{bc\,\text{Log}[c+dx]}{bc-ad}-\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+dx]+\right.\right.$$

$$\left.\left.\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\left(\frac{c}{c+dx}+\text{Log}[c+dx]\right)+\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b(c+dx)}{bc-ad}\right]\right)+2\,\text{PolyLog}\left[2,\frac{d(a+bx)}{-bc+ad}\right]\right)+$$

$$\frac{1}{3d^2(bc-ad)(c+dx)}bB^2\left((bc-ad)(c+dx)\,\text{Log}\left[\frac{c}{d}+x\right]^3+3c(bc-ad)\left(2+2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)+\right.$$

$$3(bc-ad)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\right)^2\left(c+(c+dx)\,\text{Log}[c+dx]\right)+$$

$$3c\,\text{Log}\left[\frac{a}{b}+x\right]\left(-d(a+bx)\,\text{Log}\left[\frac{a}{b}+x\right]+2b(c+dx)\,\text{Log}\left[\frac{b(c+dx)}{bc-ad}\right]\right)+6bc(c+dx)\,\text{PolyLog}\left[2,\frac{d(a+bx)}{-bc+ad}\right]+$$

$$3\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\right)\left((bc-ad)(c+dx)\,\text{Log}\left[\frac{c}{d}+x\right]^2+2c(bc-ad)\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+2c\left((-bc+ad)\,\text{Log}\left[\frac{a}{b}+\right.\right.\right.$$

$$\left.\left.\left.x\right]+b(c+dx)\left(\text{Log}[a+bx]-\text{Log}[c+dx]\right)\right)-2(bc-ad)(c+dx)\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b(c+dx)}{bc-ad}\right]+\text{PolyLog}\left[2,\frac{d(a+bx)}{-bc+ad}\right]\right)\right)+$$

$$3(bc-ad)(c+dx)\left(\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b(c+dx)}{bc-ad}\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d(a+bx)}{-bc+ad}\right]-2\,\text{PolyLog}\left[3,\frac{d(a+bx)}{-bc+ad}\right]\right)-$$

$$3\left(c\left(2(bc-ad)\,\text{Log}\left[\frac{a}{b}+x\right]\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+b(c+dx)\left(\text{Log}\left[\frac{c}{d}+x\right]^2-2\,\text{Log}[a+bx]-2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d(a+bx)}{-bc+ad}\right]+2\,\text{Log}[c+dx]\right)-\right.\right.$$

$$\left.2b(c+dx)\,\text{PolyLog}\left[2,\frac{b(c+dx)}{bc-ad}\right]\right)+(bc-ad)(c+dx)$$

$$\left.\left.\left.\left(\text{Log}\left[\frac{c}{d}+x\right]^2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d(a+bx)}{-bc+ad}\right]\right)-2\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b(c+dx)}{bc-ad}\right]+2\,\text{PolyLog}\left[3,\frac{b(c+dx)}{bc-ad}\right]\right)\right)\right)\right)$$

Problem 100: Result more than twice size of optimal antiderivative.

$$\int\frac{(ag+bgx)^3\left(A+B\,\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\right)^2}{(ci+dix)^3}\,dx$$

Optimal (type 4, 635 leaves, 14 steps) :

$$\frac{B^2 (b c-a d) g^3 (a+b x)^2}{4 d^2 i^3 (c+d x)^2}-\frac{4 A b B (b c-a d) g^3 (a+b x)}{d^3 i^3 (c+d x)}+\frac{4 b B^2 (b c-a d) g^3 (a+b x)}{d^3 i^3 (c+d x)}-\frac{4 b B^2 (b c-a d) g^3 (a+b x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]}{d^3 i^3 (c+d x)}-\frac{B (b c-a d) g^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{2 d^2 i^3 (c+d x)^2}+\frac{2 b^2 B (b c-a d) g^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)}{d^4 i^3}+\frac{b^2 g^3 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^3 i^3}+\frac{(b c-a d) g^3 (a+b x)^2 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{2 d^2 i^3 (c+d x)^2}+\frac{2 b (b c-a d) g^3 (a+b x) \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^3 i^3 (c+d x)}+\frac{3 b^2 (b c-a d) g^3 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right)^2}{d^4 i^3}+\frac{2 b^2 B^2 (b c-a d) g^3 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}+\frac{6 b^2 B (b c-a d) g^3 \left(A+B \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}-\frac{6 b^2 B^2 (b c-a d) g^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}$$

Result (type 4, 5648 leaves) :

$$\frac{A^2 b^3 g^3 x}{d^3 i^3}-\frac{A^2 (-b^3 c^3+3 a b^2 c^2 d-3 a^2 b c d^2+a^3 d^3) g^3}{2 d^4 i^3 (c+d x)^2}-\frac{3 (A^2 b^3 c^2 g^3-2 a A^2 b^2 c d g^3+a^2 A^2 b d^2 g^3)}{d^4 i^3 (c+d x)}+\frac{3 (-A^2 b^3 c g^3+a A^2 b^2 d g^3) \text{Log}[c+d x]}{d^4 i^3}+$$

$$\Bigg(a^3 B^2 g^3 \Bigg(-7 b^2 c^2+8 a b c d-a^2 d^2-6 b^2 c d x+6 a b d^2 x-6 b^2 (c+d x)^2 \text{Log}[a+b x]+2 (b c-a d) (3 b c-a d+2 b d x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]-$$
$$2 d (a+b x) (-2 b c+a d-b d x) \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2+6 b^2 c^2 \text{Log}[c+d x]+12 b^2 c d x \text{Log}[c+d x]+6 b^2 d^2 x^2 \text{Log}[c+d x]\Bigg)\Bigg)\Bigg/$$

$$\left(4 d (b c-a d)^2 i^3 (c+d x)^2\right)+\frac{1}{i^3}2 a^3 A B g^3 \left(\frac{\left(\frac{c}{d}+x\right) \left(2 \text{Log}\left[\frac{c}{d}+x\right]+4 \text{Log}\left[\frac{c}{d}+x\right]^2\right)}{8 (c+d x)^3 \text{Log}\left[\frac{c}{d}+x\right]}+\right.$$

$$\frac{\frac{d\left(\frac{a}{b}+x\right)}{\left(-c+\frac{a d}{b}\right)^3\left(1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right)}-\left(\frac{d^2\left(\frac{a}{b}+x\right)^2}{\left(-c+\frac{a d}{b}\right)^4\left(1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right)^2}+\frac{2 d\left(\frac{a}{b}+x\right)}{\left(-c+\frac{a d}{b}\right)^3\left(1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right)}\right)\text{Log}\left[\frac{a}{b}+x\right]-\frac{\text{Log}\left[1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]}{\left(-c+\frac{a d}{b}\right)^2}}{2 d}-\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]}{2 d\,(c+d x)^2}\Bigg)+$$

$$\frac{1}{i^3}6 a^2 A b B g^3\left(\frac{1+\text{Log}\left[\frac{c}{d}+x\right]}{d^2(c+d x)}-\frac{c\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)}{4 d^2(c+d x)^2}+\frac{-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d(c+d x)}-\frac{b\,\text{Log}[a+b x]}{d(-b c+a d)}+\frac{b\,\text{Log}[c+d x]}{d(-b c+a d)}}{d}-\right.$$

$$\left.\frac{c\left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b(c+d x)\left(b c-a d+b(c+d x)\,\text{Log}[a+b x]-b(c+d x)\,\text{Log}[c+d x]\right)}{(b c-a d)^2}\right)}{2 d^2(c+d x)^2}-\frac{(c+2 d x)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)}{2 d^2(c+d x)^2}\right)+$$

$$\frac{1}{i^3}2 A b^3 B g^3\left(\frac{\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{d^3}-\frac{\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3}+\frac{3 c\,\text{Log}\left[\frac{c}{d}+x\right]^2}{2 d^4}+\frac{3 c^2\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^4(c+d x)}-\frac{c^3\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)}{4 d^4(c+d x)^2}+\right.$$

$$\frac{3 c^2\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d(c+d x)}-\frac{b\,\text{Log}[a+b x]}{d(-b c+a d)}+\frac{b\,\text{Log}[c+d x]}{d(-b c+a d)}\right)}{d^3}-\frac{c^3\left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b(c+d x)\left(b c-a d+b(c+d x)\,\text{Log}[a+b x]-b(c+d x)\,\text{Log}[c+d x]\right)}{(b c-a d)^2}\right)}{2 d^4(c+d x)^2}-$$

$$\left.\frac{\left(-2 d x+\frac{c^2(5 c+6 d x)}{(c+d x)^2}+6 c\,\text{Log}[c+d x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)}{2 d^4}-\frac{3 c\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]\right)}{d^4}\right)+$$

$$\frac{1}{i^3}6 a A b^2 B g^3\left(-\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2 d^3}-\frac{2 c\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3(c+d x)}+\frac{c^2\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)}{4 d^3(c+d x)^2}-\frac{2 c\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d(c+d x)}-\frac{b\,\text{Log}[a+b x]}{d(-b c+a d)}+\frac{b\,\text{Log}[c+d x]}{d(-b c+a d)}\right)}{d^2}+\right.$$

$$\frac{c^2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b(c+d x)\left(b c-a d+b(c+d x)\,\text{Log}[a+b x]-b(c+d x)\,\text{Log}[c+d x]\right)}{(b c-a d)^2}\right)}{2 d^3(c+d x)^2}+$$

$$\frac{\left(\frac{c\,(3c+4dx)}{(c+dx)^2}+2\,\text{Log}[c+dx]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{ae}{c+dx}+\frac{bex}{c+dx}\right]\right)}{2\,d^3}+\frac{\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+dx)}{bc-ad}\right]+\text{PolyLog}\left[2,\frac{d\,(a+bx)}{-bc+ad}\right]}{d^3}\Bigg)+$$

$$\frac{1}{i^3}\,3\,a^2\,b\,B^2\,g^3\left(-\frac{2+2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2}{d^2\,(c+dx)}+\frac{c\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]+2\,\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{4\,d^2\,(c+dx)^2}+\right.$$

$$2\left(\frac{1+\text{Log}\left[\frac{c}{d}+x\right]}{d^2\,(c+dx)}-\frac{c\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)}{4\,d^2\,(c+dx)^2}+\frac{-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+dx)}-\frac{b\,\text{Log}[a+bx]}{d\,(-bc+ad)}+\frac{b\,\text{Log}[c+dx]}{d\,(-bc+ad)}}{d}-\frac{c\left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b\,(c+dx)\,(bc-ad+b\,(c+dx)\,\text{Log}[a+bx]-b\,(c+dx)\,\text{Log}[c+dx])}{(bc-ad)^2}\right)}{2\,d^2\,(c+dx)^2}\right)$$

$$\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{ae}{c+dx}+\frac{bex}{c+dx}\right]\right)-\frac{(c+2dx)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{ae}{c+dx}+\frac{bex}{c+dx}\right]\right)^2}{2\,d^2\,(c+dx)^2}+$$

$$\frac{-d\,(a+bx)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\,b\,(c+dx)\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+dx)}{bc-ad}\right]+2\,b\,(c+dx)\,\text{PolyLog}\left[2,\frac{d\,(a+bx)}{-bc+ad}\right]}{d^2\,(-bc+ad)\,(c+dx)}+$$

$$\Bigg(c\,\Bigg(d\,(a+bx)\,(ad-b\,(2c+dx))\,\text{Log}\left[\frac{a}{b}+x\right]^2-2\,b^2\,(c+dx)^2\,\text{Log}\left[\frac{b\,(c+dx)}{bc-ad}\right]+2\,b\,(c+dx)\,\text{Log}\left[\frac{a}{b}+x\right]$$

$$\left(d\,(a+bx)+b\,(c+dx)\,\text{Log}\left[\frac{b\,(c+dx)}{bc-ad}\right]\right)+2\,b^2\,(c+dx)^2\,\text{PolyLog}\left[2,\frac{d\,(a+bx)}{-bc+ad}\right]\Bigg)\Bigg)\Big/\left(2\,d^2\,(bc-ad)^2\,(c+dx)^2\right)-$$

$$2\,\Bigg(\Bigg(2\,(bc-ad)\,\text{Log}\left[\frac{a}{b}+x\right]\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+b\,(c+dx)\left(\text{Log}\left[\frac{c}{d}+x\right]^2-2\,\text{Log}[a+bx]-2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+bx)}{-bc+ad}\right]+2\,\text{Log}[c+dx]\right)-$$

$$2\,b\,(c+dx)\,\text{PolyLog}\left[2,\frac{b\,(c+dx)}{bc-ad}\right]\Bigg)\Big/\left(2\,d^2\,(-bc+ad)\,(c+dx)\right)+\Bigg(c\,\Bigg(-b\,(bc-ad)\,(c+dx)+(bc-ad)^2\,\text{Log}\left[\frac{a}{b}+x\right]$$

$$\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)-b^2\,(c+dx)^2\,\text{Log}[a+bx]+b^2\,(c+dx)^2\,\text{Log}[c+dx]+b\,(c+dx)\,\Bigg(b\,(c+dx)\,\text{Log}\left[\frac{c}{d}+x\right]^2-2\,(bc-ad)$$

$$\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)-2\,b\,(c+dx)\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+bx)}{-bc+ad}\right]+\text{PolyLog}\left[2,\frac{b\,(c+dx)}{bc-ad}\right]\right)\Bigg)\Bigg)\Bigg)\Big/\left(4\,d^2\,(bc-ad)^2\,(c+dx)^2\right)\Bigg)\Bigg)+$$

$$\frac{1}{i^3}\,b^3\,B^2\,g^3\left(\frac{(a+bx)\left(2-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b\,d^3}-\frac{c\,\text{Log}\left[\frac{c}{d}+x\right]^3}{d^4}+\frac{(c+dx)\left(2-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^4}-\right.$$

$$\frac{3 c^2 \left(2+2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^4 (c+d x)}+\frac{c^3 \left(1+2 \text{Log}\left[\frac{c}{d}+x\right]+2 \text{Log}\left[\frac{c}{d}+x\right]^2\right)}{4 d^4 (c+d x)^2}-$$

$$\frac{\left(-2 d x+\frac{c^2 (5 c+6 d x)}{(c+d x)^2}+6 c \text{Log}[c+d x]\right) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)^2}{2 d^4}+\frac{1}{d^4 (-b c+a d) (c+d x)}$$

$$3 c^2 \left(-d (a+b x) \text{Log}\left[\frac{a}{b}+x\right]^2+2 b (c+d x) \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 b (c+d x) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)+$$

$$\left(c^3 \left(d (a+b x) (a d-b (2 c+d x)) \text{Log}\left[\frac{a}{b}+x\right]^2-2 b^2 (c+d x)^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 b (c+d x) \text{Log}\left[\frac{a}{b}+x\right]\right.\right.$$

$$\left.\left.\left(d (a+b x)+b (c+d x) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+2 b^2 (c+d x)^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)\Big/\left(2 d^4 (b c-a d)^2 (c+d x)^2\right)+$$

$$2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right) \left(\frac{\left(\frac{a}{b}+x\right) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{d^3}-\frac{\left(\frac{c}{d}+x\right) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3}+\right.$$

$$\frac{3 c \text{Log}\left[\frac{c}{d}+x\right]^2}{2 d^4}+\frac{3 c^2 \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^4 (c+d x)}-\frac{c^3 \left(1+2 \text{Log}\left[\frac{c}{d}+x\right]\right)}{4 d^4 (c+d x)^2}+\frac{3 c^2 \left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d (c+d x)}-\frac{b \text{Log}[a+b x]}{d (-b c+a d)}+\frac{b \text{Log}[c+d x]}{d (-b c+a d)}\right)}{d^3}-$$

$$\left.\frac{c^3 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b (c+d x) (b c-a d+b (c+d x) \text{Log}[a+b x]-b (c+d x) \text{Log}[c+d x])}{(b c-a d)^2}\right)}{2 d^4 (c+d x)^2}-\frac{3 c \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{d^4}\right)-$$

$$\frac{3 c \left(\text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-2 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]\right)}{d^4}-$$

$$2 \left(\frac{1}{b d^4}\left(a d+2 b d x-b d x \text{Log}\left[\frac{c}{d}+x\right]-b c \text{Log}[c+d x]+\text{Log}\left[\frac{a}{b}+x\right] \left(-d (a+b x)+d (a+b x) \text{Log}\left[\frac{c}{d}+x\right]+(b c-a d) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+\right.\right.$$

$$\left.(b c-a d) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)+\left(3 c^2 \left(2 (b c-a d) \text{Log}\left[\frac{a}{b}+x\right] \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+\right.\right.$$

$$\left.\left.b (c+d x) \left(\text{Log}\left[\frac{c}{d}+x\right]^2-2 \text{Log}[a+b x]-2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 \text{Log}[c+d x]\right)-2 b (c+d x) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\Big/$$

$$\left(2 d^4 (-b c+a d) (c+d x)\right)+\left(c^3 \left(-b (b c-a d) (c+d x)+(b c-a d)^2 \text{Log}\left[\frac{a}{b}+x\right] \left(1+2 \text{Log}\left[\frac{c}{d}+x\right]\right)-b^2 (c+d x)^2 \text{Log}[a+b x]+\right.\right.$$

$$b^2 (c+d x)^2 \text{Log}[c+d x]+b (c+d x) \left(b (c+d x) \text{Log}\left[\frac{c}{d}+x\right]^2-2 (b c-a d) \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)-2 b (c+d x) \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\Bigg)\Bigg/\left(4 d^4 (b c-a d)^2 \left(c+d x\right)^2\right)-\frac{1}{2 d^4}$$

$$3 c \left(\text{Log}\left[\frac{c}{d}+x\right]^2 \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right)-2 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\right)\Bigg)+$$

$$\frac{1}{i^3} 3 a b^2 B^2 g^3 \left(\frac{\text{Log}\left[\frac{c}{d}+x\right]^3}{3 d^3}+\frac{2 c \left(2+2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^3 (c+d x)}-\frac{c^2 \left(1+2 \text{Log}\left[\frac{c}{d}+x\right]+2 \text{Log}\left[\frac{c}{d}+x\right]^2\right)}{4 d^3 (c+d x)^2}+\right.$$

$$\frac{\left(\frac{c (3 c+4 d x)}{(c+d x)^2}+2 \text{Log}[c+d x]\right) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)^2}{2 d^3}-\frac{1}{d^3 (-b c+a d) (c+d x)}$$

$$2 c \left(-d (a+b x) \text{Log}\left[\frac{a}{b}+x\right]^2+2 b (c+d x) \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 b (c+d x) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)-$$

$$\left(c^2 \left(d (a+b x) (a d-b (2 c+d x)) \text{Log}\left[\frac{a}{b}+x\right]^2-2 b^2 (c+d x)^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\right.\right.$$

$$\left.\left.2 b (c+d x) \text{Log}\left[\frac{a}{b}+x\right] \left(d (a+b x)+b (c+d x) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+2 b^2 (c+d x)^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)\Bigg/$$

$$\left(2 d^3 (b c-a d)^2 \left(c+d x\right)^2\right)+2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a e}{c+d x}+\frac{b e x}{c+d x}\right]\right)$$

$$\left(-\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2 d^3}-\frac{2 c \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3 (c+d x)}+\frac{c^2 \left(1+2 \text{Log}\left[\frac{c}{d}+x\right]\right)}{4 d^3 (c+d x)^2}-\frac{2 c \left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d (c+d x)}-\frac{b \text{Log}[a+b x]}{d (-b c+a d)}+\frac{b \text{Log}[c+d x]}{d (-b c+a d)}\right)}{d^2}+\right.$$

$$\left.\frac{c^2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b (c+d x) (b c-a d+b (c+d x) \text{Log}[a+b x]-b (c+d x) \text{Log}[c+d x])}{(b c-a d)^2}\right)}{2 d^3 (c+d x)^2}+\frac{\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]}{d^3}\right)+$$

$$\frac{\text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-2 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]}{d^3}-$$

$$2\left(-\frac{1}{d^3(-bc+ad)(c+dx)}c\left(2(bc-ad)\text{Log}\left[\frac{a}{b}+x\right]\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+b(c+dx)\left(\text{Log}\left[\frac{c}{d}+x\right]^2-2\text{Log}[a+bx]-2\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d(a+bx)}{-bc+ad}\right]+2\text{Log}[c+dx]\right)-2b(c+dx)\text{PolyLog}\left[2,\frac{b(c+dx)}{bc-ad}\right]\right)-\left(c^2\left(-b(bc-ad)(c+dx)+(bc-ad)^2\text{Log}\left[\frac{a}{b}+x\right]\left(1+2\text{Log}\left[\frac{c}{d}+x\right]\right)-b^2(c+dx)^2\text{Log}[a+bx]+b^2(c+dx)^2\text{Log}[c+dx]+b(c+dx)\left(b(c+dx)\text{Log}\left[\frac{c}{d}+x\right]^2-2(bc-ad)\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)-2b(c+dx)\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d(a+bx)}{-bc+ad}\right]+\text{PolyLog}\left[2,\frac{b(c+dx)}{bc-ad}\right]\right)\right)\right)\right)\Big/\left(4d^3(bc-ad)^2(c+dx)^2\right)+\frac{1}{2d^3}\left(\text{Log}\left[\frac{c}{d}+x\right]^2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d(a+bx)}{-bc+ad}\right]\right)-2\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b(c+dx)}{bc-ad}\right]+2\text{PolyLog}\left[3,\frac{b(c+dx)}{bc-ad}\right]\right)\right)$$

Problem 101: Result more than twice size of optimal antiderivative.

$$\int\frac{(ag+bgx)^2\left(A+B\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\right)^2}{(ci+dix)^3}\,dx$$

Optimal (type 4, 410 leaves, 11 steps):

$$-\frac{B^2g^2(a+bx)^2}{4di^3(c+dx)^2}+\frac{2AbBg^2(a+bx)}{d^2i^3(c+dx)}-\frac{2bB^2g^2(a+bx)}{d^2i^3(c+dx)}+\frac{2bB^2g^2(a+bx)\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]}{d^2i^3(c+dx)}+\frac{Bg^2(a+bx)^2\left(A+B\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\right)}{2di^3(c+dx)^2}-\frac{g^2(a+bx)^2\left(A+B\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\right)^2}{2di^3(c+dx)^2}-\frac{bg^2(a+bx)\left(A+B\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\right)^2}{d^2i^3(c+dx)}-\frac{b^2g^2\text{Log}\left[\frac{bc-ad}{b(c+dx)}\right]\left(A+B\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\right)^2}{d^3i^3}-\frac{2b^2Bg^2\left(A+B\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]\right)\text{PolyLog}\left[2,\frac{d(a+bx)}{b(c+dx)}\right]}{d^3i^3}+\frac{2b^2B^2g^2\text{PolyLog}\left[3,\frac{d(a+bx)}{b(c+dx)}\right]}{d^3i^3}$$

Result (type 4, 3591 leaves):

$$-\frac{A^2(b^2c^2-2abcd+a^2d^2)g^2}{2d^3i^3(c+dx)^2}-\frac{2(-A^2b^2cg^2+aA^2bdg^2)}{d^3i^3(c+dx)}+\frac{A^2b^2g^2\text{Log}[c+dx]}{d^3i^3}+$$

$$\Bigg(a^2B^2g^2\Bigg(-7b^2c^2+8abcd-a^2d^2-6b^2cdx+6abd^2x-6b^2(c+dx)^2\text{Log}[a+bx]+2(bc-ad)(3bc-ad+2bdx)\text{Log}\left[\frac{e(a+bx)}{c+dx}\right]-$$

$$2\,d\,(a+b\,x)\,(-2\,b\,c+a\,d-b\,d\,x)\,\mathrm{Log}\left[\frac{e\,(a+b\,x)}{c+d\,x}\right]^2+6\,b^2\,c^2\,\mathrm{Log}[c+d\,x]+12\,b^2\,c\,d\,x\,\mathrm{Log}[c+d\,x]+6\,b^2\,d^2\,x^2\,\mathrm{Log}[c+d\,x]\Big)\Big)\Big/$$

$$\left(4\,d\,(b\,c-a\,d)^2\,i^3\,(c+d\,x)^2\right)+\frac{1}{i^3}2\,a^2\,A\,B\,g^2\left(\frac{\left(\frac{c}{d}+x\right)\left(2\,\mathrm{Log}\left[\frac{c}{d}+x\right]+4\,\mathrm{Log}\left[\frac{c}{d}+x\right]^2\right)}{8\,(c+d\,x)^3\,\mathrm{Log}\left[\frac{c}{d}+x\right]}+\right.$$

$$\frac{\frac{d\left(\frac{a}{b}+x\right)}{\left(-c+\frac{a\,d}{b}\right)^3\left(1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right)}-\left(\frac{d^2\left(\frac{a}{b}+x\right)^2}{\left(-c+\frac{a\,d}{b}\right)^4\left(1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right)^2}+\frac{2\,d\left(\frac{a}{b}+x\right)}{\left(-c+\frac{a\,d}{b}\right)^3\left(1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right)}\right)\mathrm{Log}\left[\frac{a}{b}+x\right]-\frac{\mathrm{Log}\left[1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right]}{\left(-c+\frac{a\,d}{b}\right)^2}}{2\,d}-\left.\frac{-\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\right]}{2\,d\,(c+d\,x)^2}\right)+$$

$$\frac{1}{i^3}4\,a\,A\,b\,B\,g^2\left(\frac{1+\mathrm{Log}\left[\frac{c}{d}+x\right]}{d^2\,(c+d\,x)}-\frac{c\left(1+2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\right)}{4\,d^2\,(c+d\,x)^2}+\frac{-\frac{\mathrm{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\mathrm{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\mathrm{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}}{d}-\right.$$

$$\left.\frac{c\left(-\mathrm{Log}\left[\frac{a}{b}+x\right]+\frac{b\,(c+d\,x)\,(b\,c-a\,d+b\,(c+d\,x)\,\mathrm{Log}[a+b\,x]-b\,(c+d\,x)\,\mathrm{Log}[c+d\,x])}{(b\,c-a\,d)^2}\right)}{2\,d^2\,(c+d\,x)^2}-\frac{(c+2\,d\,x)\left(-\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\right]\right)}{2\,d^2\,(c+d\,x)^2}\right)+$$

$$\frac{1}{i^3}2\,A\,b^2\,B\,g^2\left(-\frac{\mathrm{Log}\left[\frac{c}{d}+x\right]^2}{2\,d^3}-\frac{2\,c\left(1+\mathrm{Log}\left[\frac{c}{d}+x\right]\right)}{d^3\,(c+d\,x)}+\frac{c^2\left(1+2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\right)}{4\,d^3\,(c+d\,x)^2}-\frac{2\,c\left(-\frac{\mathrm{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\mathrm{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\mathrm{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d^2}+\right.$$

$$\frac{c^2\left(-\mathrm{Log}\left[\frac{a}{b}+x\right]+\frac{b\,(c+d\,x)\,(b\,c-a\,d+b\,(c+d\,x)\,\mathrm{Log}[a+b\,x]-b\,(c+d\,x)\,\mathrm{Log}[c+d\,x])}{(b\,c-a\,d)^2}\right)}{2\,d^3\,(c+d\,x)^2}+$$

$$\left.\frac{\left(\frac{c\,(3\,c+4\,d\,x)}{(c+d\,x)^2}+2\,\mathrm{Log}[c+d\,x]\right)\left(-\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\right]\right)}{2\,d^3}+\frac{\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]}{d^3}\right)+$$

$$\frac{1}{i^3}\, 2\, a\, b\, B^2\, g^2 \Bigg(-\frac{2+2\,\text{Log}\big[\frac{c}{d}+x\big]+\text{Log}\big[\frac{c}{d}+x\big]^2}{d^2\,(c+d\,x)}+\frac{c\,\big(1+2\,\text{Log}\big[\frac{c}{d}+x\big]+2\,\text{Log}\big[\frac{c}{d}+x\big]^2\big)}{4\,d^2\,(c+d\,x)^2}+$$

$$2\left(\frac{1+\text{Log}\big[\frac{c}{d}+x\big]}{d^2\,(c+d\,x)}-\frac{c\,\big(1+2\,\text{Log}\big[\frac{c}{d}+x\big]\big)}{4\,d^2\,(c+d\,x)^2}+\frac{-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}}{d}-\frac{c\,\Big(-\text{Log}\big[\frac{a}{b}+x\big]+\frac{b\,(c+d\,x)\,(b\,c-a\,d+b\,(c+d\,x)\,\text{Log}[a+b\,x]-b\,(c+d\,x)\,\text{Log}[c+d\,x])}{(b\,c-a\,d)^2}\Big)}{2\,d^2\,(c+d\,x)^2}\right)$$

$$\Big(-\text{Log}\Big[\frac{a}{b}+x\Big]+\text{Log}\Big[\frac{c}{d}+x\Big]+\text{Log}\Big[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\Big]\Big)-\frac{(c+2\,d\,x)\,\Big(-\text{Log}\big[\frac{a}{b}+x\big]+\text{Log}\big[\frac{c}{d}+x\big]+\text{Log}\big[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\big]\Big)^2}{2\,d^2\,(c+d\,x)^2}+$$

$$\frac{-d\,(a+b\,x)\,\text{Log}\big[\frac{a}{b}+x\big]^2+2\,b\,(c+d\,x)\,\text{Log}\big[\frac{a}{b}+x\big]\,\text{Log}\big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\big]+2\,b\,(c+d\,x)\,\text{PolyLog}\big[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\big]}{d^2\,(-b\,c+a\,d)\,(c+d\,x)}+$$

$$\Bigg(c\,\Bigg(d\,(a+b\,x)\,(a\,d-b\,(2\,c+d\,x))\,\text{Log}\Big[\frac{a}{b}+x\Big]^2-2\,b^2\,(c+d\,x)^2\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]+2\,b\,(c+d\,x)\,\text{Log}\Big[\frac{a}{b}+x\Big]$$

$$\Big(d\,(a+b\,x)+b\,(c+d\,x)\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)+2\,b^2\,(c+d\,x)^2\,\text{PolyLog}\Big[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Bigg)\Bigg)\Big/\Big(2\,d^2\,(b\,c-a\,d)^2\,(c+d\,x)^2\Big)-$$

$$2\,\Bigg(\Bigg(2\,(b\,c-a\,d)\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\Big(1+\text{Log}\Big[\frac{c}{d}+x\Big]\Big)+b\,(c+d\,x)\,\Big(\text{Log}\Big[\frac{c}{d}+x\Big]^2-2\,\text{Log}[a+b\,x]-2\,\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+2\,\text{Log}[c+d\,x]\Big)-$$

$$2\,b\,(c+d\,x)\,\text{PolyLog}\Big[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Bigg)\Big/\Big(2\,d^2\,(-b\,c+a\,d)\,(c+d\,x)\Big)+\Bigg(c\,\Bigg(-b\,(b\,c-a\,d)\,(c+d\,x)+(b\,c-a\,d)^2\,\text{Log}\Big[\frac{a}{b}+x\Big]$$

$$\Big(1+2\,\text{Log}\Big[\frac{c}{d}+x\Big]\Big)-b^2\,(c+d\,x)^2\,\text{Log}[a+b\,x]+b^2\,(c+d\,x)^2\,\text{Log}[c+d\,x]+b\,(c+d\,x)\,\Bigg(b\,(c+d\,x)\,\text{Log}\Big[\frac{c}{d}+x\Big]^2-2\,(b\,c-a\,d)$$

$$\Big(1+\text{Log}\Big[\frac{c}{d}+x\Big]\Big)-2\,b\,(c+d\,x)\,\Big(\text{Log}\Big[\frac{c}{d}+x\Big]\,\text{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+\text{PolyLog}\Big[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)\Bigg)\Bigg)\Bigg)\Big/\Big(4\,d^2\,(b\,c-a\,d)^2\,(c+d\,x)^2\Big)\Bigg)\Bigg)+$$

$$\frac{1}{i^3}\, b^2\, B^2\, g^2 \Bigg(\frac{\text{Log}\big[\frac{c}{d}+x\big]^3}{3\,d^3}+\frac{2\,c\,\big(2+2\,\text{Log}\big[\frac{c}{d}+x\big]+\text{Log}\big[\frac{c}{d}+x\big]^2\big)}{d^3\,(c+d\,x)}-\frac{c^2\,\big(1+2\,\text{Log}\big[\frac{c}{d}+x\big]+2\,\text{Log}\big[\frac{c}{d}+x\big]^2\big)}{4\,d^3\,(c+d\,x)^2}+$$

$$\frac{\Big(\frac{c\,(3\,c+4\,d\,x)}{(c+d\,x)^2}+2\,\text{Log}[c+d\,x]\Big)\,\Big(-\text{Log}\big[\frac{a}{b}+x\big]+\text{Log}\big[\frac{c}{d}+x\big]+\text{Log}\big[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\big]\Big)^2}{2\,d^3}-\frac{1}{d^3\,(-b\,c+a\,d)\,(c+d\,x)}$$

$$2\,c\left(-d\,(a+b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\,b\,(c+d\,x)\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,b\,(c+d\,x)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-$$
$$\left(c^2\left(d\,(a+b\,x)\,(a\,d-b\,(2\,c+d\,x))\,\text{Log}\left[\frac{a}{b}+x\right]^2-2\,b^2\,(c+d\,x)^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\right.\right.$$
$$\left.\left.2\,b\,(c+d\,x)\,\text{Log}\left[\frac{a}{b}+x\right]\left(d\,(a+b\,x)+b\,(c+d\,x)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+2\,b^2\,(c+d\,x)^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\right)\Big/$$
$$\left(2\,d^3\,(b\,c-a\,d)^2\,(c+d\,x)^2\right)+2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a\,e}{c+d\,x}+\frac{b\,e\,x}{c+d\,x}\right]\right)$$
$$\left(-\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2\,d^3}-\frac{2\,c\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3\,(c+d\,x)}+\frac{c^2\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)}{4\,d^3\,(c+d\,x)^2}-\frac{2\,c\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d^2}+\right.$$
$$\left.\frac{c^2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b\,(c+d\,x)\,(b\,c-a\,d+b\,(c+d\,x)\,\text{Log}[a+b\,x]-b\,(c+d\,x)\,\text{Log}[c+d\,x])}{(b\,c-a\,d)^2}\right)}{2\,d^3\,(c+d\,x)^2}+\frac{\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]}{d^3}\right)+$$
$$\frac{\text{Log}\left[\frac{a}{b}+x\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]}{d^3}-2\left(-\frac{1}{d^3\,(-b\,c+a\,d)\,(c+d\,x)}\right.$$
$$c\left(2\,(b\,c-a\,d)\,\text{Log}\left[\frac{a}{b}+x\right]\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+b\,(c+d\,x)\left(\text{Log}\left[\frac{c}{d}+x\right]^2-2\,\text{Log}[a+b\,x]-2\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,\text{Log}[c+d\,x]-\right.\right.$$
$$\left.\left.2\,b\,(c+d\,x)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)-\left(c^2\left(-b\,(b\,c-a\,d)\,(c+d\,x)+(b\,c-a\,d)^2\,\text{Log}\left[\frac{a}{b}+x\right]\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)-\right.\right.$$
$$b^2\,(c+d\,x)^2\,\text{Log}[a+b\,x]+b^2\,(c+d\,x)^2\,\text{Log}[c+d\,x]+b\,(c+d\,x)\left(b\,(c+d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]^2-2\,(b\,c-a\,d)\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)-\right.$$
$$\left.\left.\left.2\,b\,(c+d\,x)\left(\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\right)\right)\Big/\left(4\,d^3\,(b\,c-a\,d)^2\,(c+d\,x)^2\right)+\frac{1}{2\,d^3}$$
$$\left.\left(\text{Log}\left[\frac{c}{d}+x\right]^2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-2\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)$$

Problem 113: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\,i + d\,i\,x)\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g + b\,g\,x)^2}\,dx$$

Optimal (type 4, 150 leaves, 5 steps):

$$-\frac{B\,i\,n\,(c+d\,x)}{b\,g^2\,(a+b\,x)} - \frac{i\,(c+d\,x)\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b\,g^2\,(a+b\,x)} - \frac{d\,i\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[1 - \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g^2} + \frac{B\,d\,i\,n\,\text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g^2}$$

Result (type 4, 403 leaves):

$$\frac{1}{2\,b^2\,g^2}\,i\left(-\frac{2\,(b\,c-a\,d)\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)}{a+b\,x} + 2\,d\,\text{Log}[a+b\,x]\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right) - \right.$$
$$\frac{2\,b\,B\,c\,n\left(-d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right] + d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] + (b\,c-a\,d)\left(1 + \text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)}{(b\,c-a\,d)\,(a+b\,x)} +$$
$$B\,d\,n\left(\text{Log}\left[\frac{a}{b}+x\right]^2 + \frac{2\,a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{a+b\,x} + 2\left(\frac{a}{a+b\,x} + \text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right] + \text{Log}\left[\frac{c}{d}+x\right] + \text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right) + \right.$$
$$\left.\left.\frac{2\,a\left((-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right] + d\,(a+b\,x)\,(\text{Log}[a+b\,x] - \text{Log}[c+d\,x])\right)}{(b\,c-a\,d)\,(a+b\,x)} - 2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] + \text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\right)$$

Problem 114: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\,i + d\,i\,x)\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g + b\,g\,x)^3}\,dx$$

Optimal (type 3, 89 leaves, 2 steps):

$$-\frac{B\,i\,n\,(c+d\,x)^2}{4\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2} - \frac{i\,(c+d\,x)^2\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2}$$

Result (type 3, 216 leaves):

$$\left(i\left(-2\,A\,b^2\,c^2 + 2\,a^2\,A\,d^2 - b^2\,B\,c^2\,n + a^2\,B\,d^2\,n - 4\,A\,b^2\,c\,d\,x + 4\,a\,A\,b\,d^2\,x - \right.\right.$$
$$2\,b^2\,B\,c\,d\,n\,x + 2\,a\,b\,B\,d^2\,n\,x - 2\,B\,d^2\,n\,(a+b\,x)^2\,\text{Log}[a+b\,x] - 2\,B\,(b\,c-a\,d)\,(b\,c+a\,d+2\,b\,d\,x)\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] +$$
$$\left.\left.2\,a^2\,B\,d^2\,n\,\text{Log}[c+d\,x] + 4\,a\,b\,B\,d^2\,n\,x\,\text{Log}[c+d\,x] + 2\,b^2\,B\,d^2\,n\,x^2\,\text{Log}[c+d\,x]\right)\right) \Big/ \left(4\,b^2\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2\right)$$

Problem 121: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 289 leaves, 10 steps):

$$-\frac{B\,d\,(b\,c-a\,d)\,i^2\,n\,x}{2\,b^2\,g}+\frac{d\,(b\,c-a\,d)\,i^2\,(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^3\,g}+\frac{i^2\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b\,g}-\frac{B\,(b\,c-a\,d)^2\,i^2\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{2\,b^3\,g}-\frac{3\,B\,(b\,c-a\,d)^2\,i^2\,n\,\text{Log}[c+d\,x]}{2\,b^3\,g}-\frac{(b\,c-a\,d)^2\,i^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}+\frac{B\,(b\,c-a\,d)^2\,i^2\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g}$$

Result (type 4, 651 leaves):

$$\frac{1}{2\,b^3\,g}i^2\left(4\,b^2\,B\,c^2\,n-6\,a\,b\,B\,c\,d\,n+2\,a^2\,B\,d^2\,n+4\,A\,b^2\,c\,d\,x-2\,a\,A\,b\,d^2\,x-b^2\,B\,c\,d\,n\,x+a\,b\,B\,d^2\,n\,x+A\,b^2\,d^2\,x^2+\right.$$
$$B\,(b\,c-a\,d)^2\,n\,\text{Log}\left[\frac{a}{b}+x\right]^2-4\,b^2\,B\,c^2\,n\,\text{Log}\left[\frac{c}{d}+x\right]+2\,a\,b\,B\,c\,d\,n\,\text{Log}\left[\frac{c}{d}+x\right]+2\,A\,b^2\,c^2\,\text{Log}[a+b\,x]-4\,a\,A\,b\,c\,d\,\text{Log}[a+b\,x]+$$
$$2\,a^2\,A\,d^2\,\text{Log}[a+b\,x]-a^2\,B\,d^2\,n\,\text{Log}[a+b\,x]+2\,b^2\,B\,c^2\,n\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]-4\,a\,b\,B\,c\,d\,n\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]+$$
$$2\,a^2\,B\,d^2\,n\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]-2\,B\,n\,\text{Log}\left[\frac{a}{b}+x\right]\left(a\,d\,(-2\,b\,c+a\,d)+(b\,c-a\,d)^2\,\text{Log}[a+b\,x]\right)-2\,b^2\,B\,c^2\,n\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$
$$4\,a\,b\,B\,c\,d\,n\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-2\,a^2\,B\,d^2\,n\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+4\,b^2\,B\,c\,d\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-$$
$$2\,a\,b\,B\,d^2\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+b^2\,B\,d^2\,x^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+2\,b^2\,B\,c^2\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-4\,a\,b\,B\,c\,d\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+$$
$$\left.2\,a^2\,B\,d^2\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+b^2\,B\,c^2\,n\,\text{Log}[c+d\,x]-2\,B\,(b\,c-a\,d)^2\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)$$

Problem 122: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 4, 259 leaves, 8 steps):

$$-\frac{B(bc-ad)i^2 n(c+dx)}{b^2 g^2(a+bx)}+\frac{d^2 i^2(a+bx)\left(A+B\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)}{b^3 g^2}-\frac{(bc-ad)i^2(c+dx)\left(A+B\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)}{b^2 g^2(a+bx)}-$$

$$\frac{B d(bc-ad)i^2 n\,\text{Log}[c+dx]}{b^3 g^2}-\frac{2d(bc-ad)i^2\left(A+B\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)\text{Log}\left[1-\frac{b(c+dx)}{d(a+bx)}\right]}{b^3 g^2}+\frac{2Bd(bc-ad)i^2 n\,\text{PolyLog}\left[2,\frac{b(c+dx)}{d(a+bx)}\right]}{b^3 g^2}$$

Result (type 4, 712 leaves):

$$\frac{1}{b^3 g^2}i^2\left(b d^2 x\left(A+B\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]-B n\,\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)-\frac{(bc-ad)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]-B n\,\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)}{a+bx}+2d(bc-ad)\,\text{Log}[a+bx]\right.$$

$$\left(A+B\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]-B n\,\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)-\frac{b^2 B c^2 n\left(-d(a+bx)\,\text{Log}\left[\frac{c}{d}+x\right]+d(a+bx)\,\text{Log}\left[\frac{d(a+bx)}{-bc+ad}\right]+(bc-ad)\left(1+\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)\right)}{(bc-ad)(a+bx)}+$$

$$b B c d n\left(\text{Log}\left[\frac{a}{b}+x\right]^2+\frac{2a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{a+bx}+2\left(\frac{a}{a+bx}+\text{Log}[a+bx]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)+\right.$$

$$\left.\frac{2a\left((-bc+ad)\,\text{Log}\left[\frac{c}{d}+x\right]+d(a+bx)\left(\text{Log}[a+bx]-\text{Log}[c+dx]\right)\right)}{(bc-ad)(a+bx)}-2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d(a+bx)}{-bc+ad}\right]+\text{PolyLog}\left[2,\frac{b(c+dx)}{bc-ad}\right]\right)\right)-$$

$$B d^2 n\left(-(a+bx)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)+a\,\text{Log}\left[\frac{a}{b}+x\right]^2+\frac{a^2\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{a+bx}+b\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)-\right.$$

$$\left(bx-\frac{a^2}{a+bx}-2a\,\text{Log}[a+bx]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)+$$

$$\left.\left.\frac{a^2\left((-bc+ad)\,\text{Log}\left[\frac{c}{d}+x\right]+d(a+bx)\left(\text{Log}[a+bx]-\text{Log}[c+dx]\right)\right)}{(bc-ad)(a+bx)}-2a\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d(a+bx)}{-bc+ad}\right]+\text{PolyLog}\left[2,\frac{b(c+dx)}{bc-ad}\right]\right)\right)\right)$$

Problem 123: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)}{(a g+b g x)^3}\,dx$$

Optimal (type 4, 242 leaves, 7 steps):

$$-\frac{B\,d\,i^2\,n\,(c+d\,x)}{b^2\,g^3\,(a+b\,x)}-\frac{B\,i^2\,n\,(c+d\,x)^2}{4\,b\,g^3\,(a+b\,x)^2}-\frac{d\,i^2\,(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,g^3\,(a+b\,x)}-\frac{i^2\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b\,g^3\,(a+b\,x)^2}-\frac{d^2\,i^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^3}+\frac{B\,d^2\,i^2\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^3}$$

Result (type 4, 903 leaves):

$$\frac{1}{4\,b^3\,g^3}\,i^2\left(-\frac{1}{(b\,c-a\,d)^2\,(a+b\,x)^2}b^2\,B\,c^2\,n\left(b^2\,c^2-4\,a\,b\,c\,d+a^2\,d^2-2\,b^2\,c\,d\,x-2\,a\,b\,d^2\,x-2\,b^2\,d^2\,x^2+2\,d^2\,(a+b\,x)^2\,\text{Log}\left[\frac{c}{d}+x\right]-2\,d^2\,(a+b\,x)^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,b^2\,c^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]-4\,a\,b\,c\,d\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+2\,a^2\,d^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-\frac{2\,(b\,c-a\,d)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)}{(a+b\,x)^2}+\frac{8\,d\,(-b\,c+a\,d)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)}{a+b\,x}+4\,d^2\,\text{Log}[a+b\,x]\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-\frac{1}{(b\,c-a\,d)^2\,(a+b\,x)^2}2\,b\,B\,c\,d\,n\left(3\,a\,b^2\,c^2-4\,a^2\,b\,c\,d+a^3\,d^2+4\,b^3\,c^2\,x-6\,a\,b^2\,c\,d\,x+2\,a^2\,b\,d^2\,x-2\,d\,(-2\,b\,c+a\,d)\,(a+b\,x)^2\,\text{Log}[a+b\,x]+2\,(b\,c-a\,d)^2\,(a+2\,b\,x)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]-4\,a^2\,b\,c\,d\,\text{Log}[c+d\,x]+2\,a^3\,d^2\,\text{Log}[c+d\,x]-8\,a\,b^2\,c\,d\,x\,\text{Log}[c+d\,x]+4\,a^2\,b\,d^2\,x\,\text{Log}[c+d\,x]-4\,b^3\,c\,d\,x^2\,\text{Log}[c+d\,x]+2\,a\,b^2\,d^2\,x^2\,\text{Log}[c+d\,x]\right)+B\,d^2\,n\left(2\,\text{Log}\left[\frac{a}{b}+x\right]^2+\frac{8\,a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{a+b\,x}-\frac{a^2\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{(a+b\,x)^2}+2\left(\frac{a\,(3\,a+4\,b\,x)}{(a+b\,x)^2}+2\,\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+\frac{8\,a\left((-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])\right)}{(b\,c-a\,d)\,(a+b\,x)}+\frac{2\,a^2\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d\,(a+b\,x)\,(b\,c-a\,d+d\,(a+b\,x)\,\text{Log}[a+b\,x]-d\,(a+b\,x)\,\text{Log}[c+d\,x])}{(b\,c-a\,d)^2}\right)}{(a+b\,x)^2}-4\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\right)$$

Problem 124: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 3, 93 leaves, 2 steps):

$$-\frac{B\,i^2\,n\,(c+d\,x)^3}{9\,(b\,c-a\,d)\,g^4\,(a+b\,x)^3}-\frac{i^2\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,(b\,c-a\,d)\,g^4\,(a+b\,x)^3}$$

Result (type 3, 329 leaves):

$$\frac{1}{9\,b^3\,(b\,c-a\,d)\,g^4\,(a+b\,x)^3}$$
$$i^2\,\Big(-3\,A\,b^3\,c^3+3\,a^3\,A\,d^3-b^3\,B\,c^3\,n+a^3\,B\,d^3\,n-9\,A\,b^3\,c^2\,d\,x+9\,a^2\,A\,b\,d^3\,x-3\,b^3\,B\,c^2\,d\,n\,x+3\,a^2\,b\,B\,d^3\,n\,x-9\,A\,b^3\,c\,d^2\,x^2+9\,a\,A\,b^2\,d^3\,x^2-3\,b^3\,B\,c\,d^2\,n\,x^2+$$
$$3\,a\,b^2\,B\,d^3\,n\,x^2-3\,B\,d^3\,n\,(a+b\,x)^3\,\mathrm{Log}[a+b\,x]-3\,B\,(b\,c-a\,d)\,\left(a^2\,d^2+a\,b\,d\,(c+3\,d\,x)+b^2\,(c^2+3\,c\,d\,x+3\,d^2\,x^2)\right)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+$$
$$3\,a^3\,B\,d^3\,n\,\mathrm{Log}[c+d\,x]+9\,a^2\,b\,B\,d^3\,n\,x\,\mathrm{Log}[c+d\,x]+9\,a\,b^2\,B\,d^3\,n\,x^2\,\mathrm{Log}[c+d\,x]+3\,b^3\,B\,d^3\,n\,x^3\,\mathrm{Log}[c+d\,x]\Big)$$

Problem 131: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 373 leaves, 14 steps):

$$-\frac{5\,B\,d\,(b\,c-a\,d)^2\,i^3\,n\,x}{6\,b^3\,g}-\frac{B\,(b\,c-a\,d)\,i^3\,n\,(c+d\,x)^2}{6\,b^2\,g}+\frac{d\,(b\,c-a\,d)^2\,i^3\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^4\,g}+$$
$$\frac{(b\,c-a\,d)\,i^3\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^2\,g}+\frac{i^3\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,g}-\frac{5\,B\,(b\,c-a\,d)^3\,i^3\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{6\,b^4\,g}-$$
$$\frac{11\,B\,(b\,c-a\,d)^3\,i^3\,n\,\mathrm{Log}[c+d\,x]}{6\,b^4\,g}-\frac{(b\,c-a\,d)^3\,i^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g}+\frac{B\,(b\,c-a\,d)^3\,i^3\,n\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g}$$

Result (type 4, 1061 leaves):

$$\frac{1}{6 b^4 g} i^3 \Big(18 b^3 B c^3 n - 36 a b^2 B c^2 d n + 24 a^2 b B c d^2 n - 6 a^3 B d^3 n + 18 A b^3 c^2 d x - 18 a A b^2 c d^2 x + 6 a^2 A b d^3 x - 7 b^3 B c^2 d n x + 12 a b^2 B c d^2 n x - 5 a^2 b B d^3 n x + 9 A b^3 c d^2 x^2 - 3 a A b^2 d^3 x^2 - b^3 B c d^2 n x^2 + a b^2 B d^3 n x^2 + 2 A b^3 d^3 x^3 + 3 B (b c - a d)^3 n \operatorname{Log}\left[\frac{a}{b} + x\right]^2 - 18 b^3 B c^3 n \operatorname{Log}\left[\frac{c}{d} + x\right] + 18 a b^2 B c^2 d n \operatorname{Log}\left[\frac{c}{d} + x\right] - 6 a^2 b B c d^2 n \operatorname{Log}\left[\frac{c}{d} + x\right] + 6 A b^3 c^3 \operatorname{Log}[a + b x] - 18 a A b^2 c^2 d \operatorname{Log}[a + b x] + 18 a^2 A b c d^2 \operatorname{Log}[a + b x] - 6 a^3 A d^3 \operatorname{Log}[a + b x] - 9 a^2 b B c d^2 n \operatorname{Log}[a + b x] + 5 a^3 B d^3 n \operatorname{Log}[a + b x] + 6 b^3 B c^3 n \operatorname{Log}\left[\frac{c}{d} + x\right] \operatorname{Log}[a + b x] - 18 a b^2 B c^2 d n \operatorname{Log}\left[\frac{c}{d} + x\right] \operatorname{Log}[a + b x] + 18 a^2 b B c d^2 n \operatorname{Log}\left[\frac{c}{d} + x\right] \operatorname{Log}[a + b x] - 6 a^3 B d^3 n \operatorname{Log}\left[\frac{c}{d} + x\right] \operatorname{Log}[a + b x] + 6 B n \operatorname{Log}\left[\frac{a}{b} + x\right] \left(a d \left(3 b^2 c^2 - 3 a b c d + a^2 d^2\right) - (b c - a d)^3 \operatorname{Log}[a + b x]\right) - 6 b^3 B c^3 n \operatorname{Log}\left[\frac{c}{d} + x\right] \operatorname{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + 18 a b^2 B c^2 d n \operatorname{Log}\left[\frac{c}{d} + x\right] \operatorname{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] - 18 a^2 b B c d^2 n \operatorname{Log}\left[\frac{c}{d} + x\right] \operatorname{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + 6 a^3 B d^3 n \operatorname{Log}\left[\frac{c}{d} + x\right] \operatorname{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + 18 b^3 B c^2 d x \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] - 18 a b^2 B c d^2 x \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] + 6 a^2 b B d^3 x \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] + 9 b^3 B c d^2 x^2 \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] - 3 a b^2 B d^3 x^2 \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] + 2 b^3 B d^3 x^3 \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] + 6 b^3 B c^3 \operatorname{Log}[a + b x] \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] - 18 a b^2 B c^2 d \operatorname{Log}[a + b x] \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] + 18 a^2 b B c d^2 \operatorname{Log}[a + b x] \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] - 6 a^3 B d^3 \operatorname{Log}[a + b x] \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] + 7 b^3 B c^3 n \operatorname{Log}[c + d x] - 3 a b^2 B c^2 d n \operatorname{Log}[c + d x] - 6 B (b c - a d)^3 n \operatorname{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\Big)$$

Problem 132: Result more than twice size of optimal antiderivative.

$$\int \frac{(c i + d i x)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(a g + b g x)^2} \, dx$$

Optimal (type 4, 390 leaves, 11 steps):

$$-\frac{B d^2 (b c - a d) i^3 n x}{2 b^3 g^2} - \frac{B (b c - a d)^2 i^3 n (c + d x)}{b^3 g^2 (a + b x)} + \frac{2 d^2 (b c - a d) i^3 (a + b x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^4 g^2} - \frac{(b c - a d)^2 i^3 (c + d x) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^2 (a + b x)} + \frac{d i^3 (c + d x)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^2 g^2} - \frac{B d (b c - a d)^2 i^3 n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]}{2 b^4 g^2} - \frac{5 B d (b c - a d)^2 i^3 n \operatorname{Log}[c + d x]}{2 b^4 g^2} - \frac{3 d (b c - a d)^2 i^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[1 - \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2} + \frac{3 B d (b c - a d)^2 i^3 n \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2}$$

Result (type 4, 1120 leaves):

$$\frac{1}{2 b^4 g^2} i^3 \left(2 b d^2 (3 b c - 2 a d) x \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) + b^2 d^3 x^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) - \right.$$

$$\frac{2 (b c - a d)^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)}{a + b x} + 6 d (b c - a d)^2 \text{Log}[a + b x] \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) -$$

$$\frac{2 b^3 B c^3 n \left(-d (a + b x) \text{Log}\left[\frac{c}{d} + x\right] + d (a + b x) \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + (b c - a d) \left(1 + \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)}{(b c - a d) (a + b x)} +$$

$$B d^3 n \left(4 a^2 - \frac{4 a b c}{d} + a b x - \frac{b^2 c x}{d} + \frac{2 a^3}{a + b x} + 3 a^2 \text{Log}\left[\frac{a}{b} + x\right]^2 + \frac{4 a b c \text{Log}\left[\frac{c}{d} + x\right]}{d} - a^2 \text{Log}[a + b x] + \frac{2 a^3 d \text{Log}[a + b x]}{b c - a d} + \right.$$

$$6 a^2 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a + b x] - 2 a^2 \text{Log}\left[\frac{a}{b} + x\right] (2 + 3 \text{Log}[a + b x]) - 6 a^2 \text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] - 4 a b x \text{Log}\left[\frac{a + b x}{c + d x}\right] +$$

$$\left. b^2 x^2 \text{Log}\left[\frac{a + b x}{c + d x}\right] + \frac{2 a^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{a + b x} + 6 a^2 \text{Log}[a + b x] \text{Log}\left[\frac{a + b x}{c + d x}\right] + \frac{b^2 c^2 \text{Log}[c + d x]}{d^2} + \frac{2 a^3 d \text{Log}[c + d x]}{-b c + a d} - 6 a^2 \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\right) +$$

$$3 b^2 B c^2 d n \left(\text{Log}\left[\frac{a}{b} + x\right]^2 + \frac{2 a \left(1 + \text{Log}\left[\frac{a}{b} + x\right]\right)}{a + b x} + 2 \left(\frac{a}{a + b x} + \text{Log}[a + b x]\right) \left(-\text{Log}\left[\frac{a}{b} + x\right] + \text{Log}\left[\frac{c}{d} + x\right] + \text{Log}\left[\frac{a + b x}{c + d x}\right]\right) + \right.$$

$$\left. \frac{2 a \left((-b c + a d) \text{Log}\left[\frac{c}{d} + x\right] + d (a + b x) (\text{Log}[a + b x] - \text{Log}[c + d x])\right)}{(b c - a d) (a + b x)} - 2 \left(\text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\right)\right) -$$

$$6 b B c d^2 n \left(-(a + b x) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) + a \text{Log}\left[\frac{a}{b} + x\right]^2 + \frac{a^2 \left(1 + \text{Log}\left[\frac{a}{b} + x\right]\right)}{a + b x} + b \left(\frac{c}{d} + x\right) \left(-1 + \text{Log}\left[\frac{c}{d} + x\right]\right) - \right.$$

$$\left(b x - \frac{a^2}{a + b x} - 2 a \text{Log}[a + b x]\right) \left(-\text{Log}\left[\frac{a}{b} + x\right] + \text{Log}\left[\frac{c}{d} + x\right] + \text{Log}\left[\frac{a + b x}{c + d x}\right]\right) +$$

$$\left.\left. \frac{a^2 \left((-b c + a d) \text{Log}\left[\frac{c}{d} + x\right] + d (a + b x) (\text{Log}[a + b x] - \text{Log}[c + d x])\right)}{(b c - a d) (a + b x)} - 2 a \left(\text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\right)\right)\right)$$

Problem 133: Result more than twice size of optimal antiderivative.

$$\int \frac{(c i + d i x)^3 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(a g + b g x)^3} \, dx$$

Optimal (type 4, 361 leaves, 9 steps):

$$-\frac{2 B d (b c-a d) i^3 n (c+d x)}{b^3 g^3 (a+b x)}-\frac{B (b c-a d) i^3 n (c+d x)^2}{4 b^2 g^3 (a+b x)^2}+\frac{d^3 i^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^4 g^3}-$$

$$\frac{2 d (b c-a d) i^3 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^3 (a+b x)}-\frac{(b c-a d) i^3 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^2 g^3 (a+b x)^2}-\frac{B d^2 (b c-a d) i^3 n \text{Log}[c+d x]}{b^4 g^3}-$$

$$\frac{3 d^2 (b c-a d) i^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^3}+\frac{3 B d^2 (b c-a d) i^3 n \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^3}$$

Result (type 4, 1324 leaves) :

$$\frac{1}{4\,b^4\,g^3}\,i^3\,\Bigg(-\frac{1}{(b\,c-a\,d)^2\,(a+b\,x)^2}b^3\,B\,c^3\,n\,\Big(b^2\,c^2-4\,a\,b\,c\,d+a^2\,d^2-2\,b^2\,c\,d\,x-2\,a\,b\,d^2\,x-2\,b^2\,d^2\,x^2+$$

$$2\,d^2\,(a+b\,x)^2\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]-2\,d^2\,(a+b\,x)^2\,\mathrm{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+2\,b^2\,c^2\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]-4\,a\,b\,c\,d\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]+2\,a^2\,d^2\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\Big)+$$

$$4\,b\,d^3\,x\,\Big(A+B\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]-B\,n\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\Big)-\frac{2\,(b\,c-a\,d)^3\,\Big(A+B\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]-B\,n\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\Big)}{(a+b\,x)^2}-$$

$$\frac{12\,d\,(b\,c-a\,d)^2\,\Big(A+B\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]-B\,n\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\Big)}{a+b\,x}+12\,d^2\,(b\,c-a\,d)\,\mathrm{Log}[a+b\,x]\,\Big(A+B\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^n\Big]-B\,n\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\Big)-$$

$$\frac{1}{(b\,c-a\,d)^2\,(a+b\,x)^2}3\,b^2\,B\,c^2\,d\,n\,\Big(3\,a\,b^2\,c^2-4\,a^2\,b\,c\,d+a^3\,d^2+4\,b^3\,c^2\,x-6\,a\,b^2\,c\,d\,x+2\,a^2\,b\,d^2\,x-$$

$$2\,d\,(-2\,b\,c+a\,d)\,(a+b\,x)^2\,\mathrm{Log}[a+b\,x]+2\,(b\,c-a\,d)^2\,(a+2\,b\,x)\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]-4\,a^2\,b\,c\,d\,\mathrm{Log}[c+d\,x]+$$

$$2\,a^3\,d^2\,\mathrm{Log}[c+d\,x]-8\,a\,b^2\,c\,d\,x\,\mathrm{Log}[c+d\,x]+4\,a^2\,b\,d^2\,x\,\mathrm{Log}[c+d\,x]-4\,b^3\,c\,d\,x^2\,\mathrm{Log}[c+d\,x]+2\,a\,b^2\,d^2\,x^2\,\mathrm{Log}[c+d\,x]\Big)+$$

$$3\,b\,B\,c\,d^2\,n\,\Big(2\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]^2+\frac{8\,a\,\big(1+\mathrm{Log}\big[\frac{a}{b}+x\big]\big)}{a+b\,x}-\frac{a^2\,\big(1+2\,\mathrm{Log}\big[\frac{a}{b}+x\big]\big)}{(a+b\,x)^2}+2\,\Big(\frac{a\,(3\,a+4\,b\,x)}{(a+b\,x)^2}+2\,\mathrm{Log}[a+b\,x]\Big)$$

$$\Big(-\mathrm{Log}\Big[\frac{a}{b}+x\Big]+\mathrm{Log}\Big[\frac{c}{d}+x\Big]+\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\Big)+\frac{8\,a\,\big(\big(-b\,c+a\,d\big)\,\mathrm{Log}\big[\frac{c}{d}+x\big]+d\,(a+b\,x)\,\big(\mathrm{Log}[a+b\,x]-\mathrm{Log}[c+d\,x]\big)\big)}{(b\,c-a\,d)\,(a+b\,x)}+$$

$$\frac{2\,a^2\,\Big(\mathrm{Log}\big[\frac{c}{d}+x\big]+\frac{d\,(a+b\,x)\,(b\,c-a\,d+d\,(a+b\,x)\,\mathrm{Log}[a+b\,x]-d\,(a+b\,x)\,\mathrm{Log}[c+d\,x])}{(b\,c-a\,d)^2}\Big)}{(a+b\,x)^2}-4\,\Big(\mathrm{Log}\Big[\frac{c}{d}+x\Big]\,\mathrm{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+\mathrm{PolyLog}\Big[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)\Big)-$$

$$B\,d^3\,n\,\Big(-4\,(a+b\,x)\,\Big(-1+\mathrm{Log}\Big[\frac{a}{b}+x\Big]\Big)+6\,a\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]^2+\frac{12\,a^2\,\big(1+\mathrm{Log}\big[\frac{a}{b}+x\big]\big)}{a+b\,x}-\frac{a^3\,\big(1+2\,\mathrm{Log}\big[\frac{a}{b}+x\big]\big)}{(a+b\,x)^2}+$$

$$4\,b\,\Big(\frac{c}{d}+x\Big)\,\Big(-1+\mathrm{Log}\Big[\frac{c}{d}+x\Big]\Big)+2\,\Big(-2\,b\,x+\frac{a^2\,(5\,a+6\,b\,x)}{(a+b\,x)^2}+6\,a\,\mathrm{Log}[a+b\,x]\Big)\,\Big(-\mathrm{Log}\Big[\frac{a}{b}+x\Big]+\mathrm{Log}\Big[\frac{c}{d}+x\Big]+\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\Big)+$$

$$\frac{12\,a^2\,\big(\big(-b\,c+a\,d\big)\,\mathrm{Log}\big[\frac{c}{d}+x\big]+d\,(a+b\,x)\,\big(\mathrm{Log}[a+b\,x]-\mathrm{Log}[c+d\,x]\big)\big)}{(b\,c-a\,d)\,(a+b\,x)}+$$

$$\frac{2\,a^3\,\Big(\mathrm{Log}\big[\frac{c}{d}+x\big]+\frac{d\,(a+b\,x)\,(b\,c-a\,d+d\,(a+b\,x)\,\mathrm{Log}[a+b\,x]-d\,(a+b\,x)\,\mathrm{Log}[c+d\,x])}{(b\,c-a\,d)^2}\Big)}{(a+b\,x)^2}-12\,a\,\Big(\mathrm{Log}\Big[\frac{c}{d}+x\Big]\,\mathrm{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+\mathrm{PolyLog}\Big[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)\Big)\Bigg)$$

Problem 134: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^3 \left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 4, 326 leaves, 9 steps):

$$-\frac{B\,d^2\,i^3\,n\,(c+d\,x)}{b^3\,g^4\,(a+b\,x)}-\frac{B\,d\,i^3\,n\,(c+d\,x)^2}{4\,b^2\,g^4\,(a+b\,x)^2}-\frac{B\,i^3\,n\,(c+d\,x)^3}{9\,b\,g^4\,(a+b\,x)^3}-\frac{d^2\,i^3\,(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^3\,g^4\,(a+b\,x)}-\frac{d\,i^3\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^2\,g^4\,(a+b\,x)^2}-$$
$$\frac{i^3\,(c+d\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{3\,b\,g^4\,(a+b\,x)^3}-\frac{d^3\,i^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^4}+\frac{B\,d^3\,i^3\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^4\,g^4}$$

Result (type 4, 2243 leaves):

$$\frac{d^3\,i^3\,\text{Log}[a+b\,x]\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)}{b^4\,g^4}+\frac{1}{b^4\,g^4\,(a+b\,x)}$$
$$3\left(-A\,b\,c\,d^2\,i^3+a\,A\,d^3\,i^3-b\,B\,c\,d^2\,i^3\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+a\,B\,d^3\,i^3\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)-$$
$$\frac{1}{2\,b^4\,g^4\,(a+b\,x)^2}3\left(A\,b^2\,c^2\,d\,i^3-2\,a\,A\,b\,c\,d^2\,i^3+a^2\,A\,d^3\,i^3+b^2\,B\,c^2\,d\,i^3\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-\right.$$
$$\left.2\,a\,b\,B\,c\,d^2\,i^3\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+a^2\,B\,d^3\,i^3\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)+$$
$$\frac{1}{3\,b^4\,g^4\,(a+b\,x)^3}\left(-A\,b^3\,c^3\,i^3+3\,a\,A\,b^2\,c^2\,d\,i^3-3\,a^2\,A\,b\,c\,d^2\,i^3+a^3\,A\,d^3\,i^3-b^3\,B\,c^3\,i^3\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+\right.$$
$$3\,a\,b^2\,B\,c^2\,d\,i^3\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-3\,a^2\,b\,B\,c\,d^2\,i^3\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+$$
$$\left.a^3\,B\,d^3\,i^3\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)+\frac{1}{g^4}B\,c^3\,i^3\,n\left(-\frac{\left(\frac{a}{b}+x\right)\left(3\,\text{Log}\left[\frac{a}{b}+x\right]+9\,\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{27\,(a+b\,x)^4\,\text{Log}\left[\frac{a}{b}+x\right]}-\frac{1}{6\,b}\right.$$
$$\left(-\frac{b^2\left(\frac{c}{d}+x\right)^2}{\left(-a+\frac{b\,c}{d}\right)^5\left(1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right)^2}-\frac{4\,b\left(\frac{c}{d}+x\right)}{\left(-a+\frac{b\,c}{d}\right)^4\left(1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right)}+\left(\frac{2\,b^3\left(\frac{c}{d}+x\right)^3}{\left(-a+\frac{b\,c}{d}\right)^6\left(1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right)^3}+\frac{6\,b^2\left(\frac{c}{d}+x\right)^2}{\left(-a+\frac{b\,c}{d}\right)^5\left(1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right)^2}+\frac{6\,b\left(\frac{c}{d}+x\right)}{\left(-a+\frac{b\,c}{d}\right)^4\left(1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right)}\right)\right.$$

$$\text{Log}\left[\frac{c}{d}+x\right]+\frac{2\,\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]}{\left(-a+\frac{b c}{d}\right)^{3}}\Bigg)-\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]}{3 b\,(a+b x)^{3}}\Bigg)+\frac{1}{g^{4}}$$

$$3\,B\,c^{2}\,d\,i^{3}\,n\Bigg(-\frac{1+2\,\text{Log}\left[\frac{a}{b}+x\right]}{4 b^{2}\,(a+b x)^{2}}+\frac{a\left(1+3\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{9 b^{2}\,(a+b x)^{3}}+\frac{a\left(-\frac{2\,\text{Log}\left[\frac{c}{d}+x\right]}{(a+b x)^{3}}+\frac{d\left(\frac{(b c-a d)\,(-b c+3 a d+2 b d x)}{(a+b x)^{2}}+2 d^{2}\,\text{Log}[a+b x]-2 d^{2}\,\text{Log}[c+d x]\right)}{(b c-a d)^{3}}\right)}{6 b^{2}}+$$

$$\frac{\text{Log}\left[\frac{c}{d}+x\right]+\frac{d\,(a+b x)\,(b c-a d+d\,(a+b x)\,\text{Log}[a+b x]-d\,(a+b x)\,\text{Log}[c+d x])}{(b c-a d)^{2}}}{2 b^{2}\,(a+b x)^{2}}-\frac{(a+3 b x)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)}{6 b^{2}\,(a+b x)^{3}}\Bigg)+\frac{1}{g^{4}}$$

$$3\,B\,c\,d^{2}\,i^{3}\,n\Bigg(-\frac{1+\text{Log}\left[\frac{a}{b}+x\right]}{b^{3}\,(a+b x)}+\frac{a\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{2 b^{3}\,(a+b x)^{2}}-\frac{a^{2}\left(1+3\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{9 b^{3}\,(a+b x)^{3}}-\frac{(-b c+a d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b x)\,(\text{Log}[a+b x]-\text{Log}[c+d x])}{b^{3}\,(b c-a d)\,(a+b x)}-$$

$$\frac{a^{2}\left(-\frac{2\,\text{Log}\left[\frac{c}{d}+x\right]}{(a+b x)^{3}}+\frac{d\left(\frac{(b c-a d)\,(-b c+3 a d+2 b d x)}{(a+b x)^{2}}+2 d^{2}\,\text{Log}[a+b x]-2 d^{2}\,\text{Log}[c+d x]\right)}{(b c-a d)^{3}}\right)}{6 b^{3}}-\frac{a\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d\,(a+b x)\,(b c-a d+d\,(a+b x)\,\text{Log}[a+b x]-d\,(a+b x)\,\text{Log}[c+d x])}{(b c-a d)^{2}}\right)}{b^{3}\,(a+b x)^{2}}-$$

$$\frac{\left(a^{2}+3 a b x+3 b^{2} x^{2}\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)}{3 b^{3}\,(a+b x)^{3}}\Bigg)+$$

$$\frac{1}{g^{4}}\,B\,d^{3}\,i^{3}\,n\Bigg(\frac{\text{Log}\left[\frac{a}{b}+x\right]^{2}}{2 b^{4}}+\frac{3 a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^{4}\,(a+b x)}-\frac{3 a^{2}\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^{4}\,(a+b x)^{2}}+\frac{a^{3}\left(1+3\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{9 b^{4}\,(a+b x)^{3}}+$$

$$\frac{3 a \left(\left(-b c+a d\right) \text{Log}\left[\frac{c}{d}+x\right]+d \left(a+b x\right) \left(\text{Log}[a+b x]-\text{Log}[c+d x]\right)\right)}{b^4 \left(b c-a d\right) \left(a+b x\right)}+$$

$$\frac{a^3 \left(-\frac{2 \text{Log}\left[\frac{c}{d}+x\right]}{(a+b x)^3}+\frac{d \left(\frac{(b c-a d) (-b c+3 a d+2 b d x)}{(a+b x)^2}+2 d^2 \text{Log}[a+b x]-2 d^2 \text{Log}[c+d x]\right)}{(b c-a d)^3}\right)}{6 b^4}+\frac{3 a^2 \left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d (a+b x) (b c-a d+d (a+b x) \text{Log}[a+b x]-d (a+b x) \text{Log}[c+d x])}{(b c-a d)^2}\right)}{2 b^4 (a+b x)^2}+$$

$$\frac{\left(\frac{a \left(11 a^2+27 a b x+18 b^2 x^2\right)}{(a+b x)^3}+6 \text{Log}[a+b x]\right) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)}{6 b^4}-\frac{\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^4}\Bigg)$$

Problem 135: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{c i+d i x} \, dx$$

Optimal (type 4, 269 leaves, 6 steps):

$$\frac{g^3 (a+b x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 d i}-\frac{(b c-a d) g^3 (a+b x)^2 \left(3 A+B n+3 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 d^2 i}+$$

$$\frac{(b c-a d)^2 g^3 (a+b x) \left(6 A+5 B n+6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{6 d^3 i}+$$

$$\frac{(b c-a d)^3 g^3 \left(6 A+11 B n+6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{6 d^4 i}+\frac{B (b c-a d)^3 g^3 n \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i}$$

Result (type 4, 1003 leaves):

$$\frac{1}{6\,d^4\,i}g^3\Big(6\,b^3\,B\,c^3\,n-24\,a\,b^2\,B\,c^2\,d\,n+36\,a^2\,b\,B\,c\,d^2\,n-18\,a^3\,B\,d^3\,n+6\,A\,b^3\,c^2\,d\,x-18\,a\,A\,b^2\,c\,d^2\,x+18\,a^2\,A\,b\,d^3\,x+5\,b^3\,B\,c^2\,d\,n\,x-12\,a\,b^2\,B\,c\,d^2\,n\,x+7\,a^2\,b\,B\,d^3\,n\,x-3\,A\,b^3\,c\,d^2\,x^2+9\,a\,A\,b^2\,d^3\,x^2-b^3\,B\,c\,d^2\,n\,x^2+a\,b^2\,B\,d^3\,n\,x^2+2\,A\,b^3\,d^3\,x^3-6\,b^3\,B\,c^3\,n\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]+18\,a\,b^2\,B\,c^2\,d\,n\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]-18\,a^2\,b\,B\,c\,d^2\,n\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]+3\,b^3\,B\,c^3\,n\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]^2-9\,a\,b^2\,B\,c^2\,d\,n\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]^2+9\,a^2\,b\,B\,c\,d^2\,n\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]^2-3\,a^3\,B\,d^3\,n\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]^2+3\,a^2\,b\,B\,c\,d^2\,n\,\mathrm{Log}[a+b\,x]-7\,a^3\,B\,d^3\,n\,\mathrm{Log}[a+b\,x]+6\,b^3\,B\,c^2\,d\,x\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]-18\,a\,b^2\,B\,c\,d^2\,x\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]+18\,a^2\,b\,B\,d^3\,x\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]-3\,b^3\,B\,c\,d^2\,x^2\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]+9\,a\,b^2\,B\,d^3\,x^2\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]+2\,b^3\,B\,d^3\,x^3\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]-6\,A\,b^3\,c^3\,\mathrm{Log}[c+d\,x]+18\,a\,A\,b^2\,c^2\,d\,\mathrm{Log}[c+d\,x]-18\,a^2\,A\,b\,c\,d^2\,\mathrm{Log}[c+d\,x]+6\,a^3\,A\,d^3\,\mathrm{Log}[c+d\,x]-5\,b^3\,B\,c^3\,n\,\mathrm{Log}[c+d\,x]+9\,a\,b^2\,B\,c^2\,d\,n\,\mathrm{Log}[c+d\,x]-6\,b^3\,B\,c^3\,n\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]\,\mathrm{Log}[c+d\,x]+18\,a\,b^2\,B\,c^2\,d\,n\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]\,\mathrm{Log}[c+d\,x]-18\,a^2\,b\,B\,c\,d^2\,n\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]\,\mathrm{Log}[c+d\,x]+6\,a^3\,B\,d^3\,n\,\mathrm{Log}\Big[\frac{c}{d}+x\Big]\,\mathrm{Log}[c+d\,x]-6\,b^3\,B\,c^3\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]\,\mathrm{Log}[c+d\,x]+18\,a\,b^2\,B\,c^2\,d\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]\,\mathrm{Log}[c+d\,x]-18\,a^2\,b\,B\,c\,d^2\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]\,\mathrm{Log}[c+d\,x]+6\,a^3\,B\,d^3\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]\,\mathrm{Log}[c+d\,x]-6\,B\,n\,\mathrm{Log}\Big[\frac{a}{b}+x\Big]\Big(-a\,d\,(b^2\,c^2-3\,a\,b\,c\,d+3\,a^2\,d^2)-(b\,c-a\,d)^3\,\mathrm{Log}[c+d\,x]+(b\,c-a\,d)^3\,\mathrm{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)-6\,B\,(b\,c-a\,d)^3\,n\,\mathrm{PolyLog}\Big[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Big)$$

Problem 136: Result more than twice size of optimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)^2\left(A+B\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]\right)}{c\,i+d\,i\,x}\,dx$$

Optimal (type 4, 211 leaves, 5 steps):

$$\frac{g^2\,(a+b\,x)^2\left(A+B\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]\right)}{2\,d\,i}-\frac{(b\,c-a\,d)\,g^2\,(a+b\,x)\left(2\,A+B\,n+2\,B\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]\right)}{2\,d^2\,i}-\frac{(b\,c-a\,d)^2\,g^2\left(2\,A+3\,B\,n+2\,B\,\mathrm{Log}\Big[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\Big]\right)\mathrm{Log}\Big[\frac{b\,c-a\,d}{b\,(c+d\,x)}\Big]}{2\,d^3\,i}-\frac{B\,(b\,c-a\,d)^2\,g^2\,n\,\mathrm{PolyLog}\Big[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\Big]}{d^3\,i}$$

Result (type 4, 610 leaves):

$$\frac{1}{2 d^3 i} g^2 \Big(-2 b^2 B c^2 n+6 a b B c d n-4 a^2 B d^2 n-2 A b^2 c d x+4 a A b d^2 x-b^2 B c d n x+a b B d^2 n x+A b^2 d^2 x^2+2 b^2 B c^2 n \text{Log}\left[\frac{c}{d}+x\right]-4 a b B c d n \text{Log}\left[\frac{c}{d}+x\right]-b^2 B c^2 n \text{Log}\left[\frac{c}{d}+x\right]^2+2 a b B c d n \text{Log}\left[\frac{c}{d}+x\right]^2-a^2 B d^2 n \text{Log}\left[\frac{c}{d}+x\right]^2-a^2 B d^2 n \text{Log}[a+b x]-2 b^2 B c d x \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+4 a b B d^2 x \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+b^2 B d^2 x^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+2 A b^2 c^2 \text{Log}[c+d x]-4 a A b c d \text{Log}[c+d x]+2 a^2 A d^2 \text{Log}[c+d x]+b^2 B c^2 n \text{Log}[c+d x]+2 b^2 B c^2 n \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]-4 a b B c d n \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+2 a^2 B d^2 n \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+2 b^2 B c^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]-4 a b B c d \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]+2 a^2 B d^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]-2 B n \text{Log}\left[\frac{a}{b}+x\right]\left(a d (b c-2 a d)+(b c-a d)^2 \text{Log}[c+d x]-(b c-a d)^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+2 B (b c-a d)^2 n \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Big)$$

Problem 137: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x)\left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{c i+d i x} \, dx$$

Optimal (type 4, 134 leaves, 4 steps):

$$\frac{g (a+b x)\left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d i}+\frac{(b c-a d) g\left(A+B n+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^2 i}+\frac{B (b c-a d) g n \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i}$$

Result (type 4, 308 leaves):

$$\frac{1}{2 d^2 i} g \Big(2 b B c n-2 a B d n+2 A b d x-2 b B c n \text{Log}\left[\frac{c}{d}+x\right]+b B c n \text{Log}\left[\frac{c}{d}+x\right]^2-a B d n \text{Log}\left[\frac{c}{d}+x\right]^2+2 b B d x \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-2 A b c \text{Log}[c+d x]+2 a A d \text{Log}[c+d x]-2 b B c n \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+2 a B d n \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]-2 b B c \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]+2 a B d \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]+2 B n \text{Log}\left[\frac{a}{b}+x\right]\left(a d+(b c-a d) \text{Log}[c+d x]+(-b c+a d) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+2 B (-b c+a d) n \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Big)$$

Problem 143: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(c i+d i x)^2}\,dx$$

Optimal (type 4, 359 leaves, 9 steps):

$$\frac{3 B (b c-a d)^2 g^3 n (a+b x)}{d^3 i^2 (c+d x)}-\frac{(b c-a d)^2 g^3 (6 A+5 B n) (a+b x)}{2 d^3 i^2 (c+d x)}-\frac{3 B (b c-a d)^2 g^3 (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^3 i^2 (c+d x)}+$$
$$\frac{g^3 (a+b x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d i^2 (c+d x)}-\frac{(b c-a d) g^3 (a+b x)^2 \left(3 A+B n+3 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d^2 i^2 (c+d x)}-$$
$$\frac{b (b c-a d)^2 g^3 \left(6 A+5 B n+6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{2 d^4 i^2}-\frac{3 b B (b c-a d)^2 g^3 n \text{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^2}$$

Result (type 4, 1109 leaves):

$$\frac{1}{2 d^4 i^2} g^3 \left(-2 b^2 d (2 b c-3 a d) x \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+b^3 d^2 x^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+\right.$$

$$\frac{2 (b c-a d)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)}{c+d x}+6 b (b c-a d)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \text{Log}[c+d x]+$$

$$\frac{1}{(b c-a d) (c+d x)} 2 a^3 B d^3 n \left(b c-a d+b (c+d x) \text{Log}\left[\frac{a}{b}+x\right]+(-b c+a d) \text{Log}\left[\frac{a+b x}{c+d x}\right]-b c \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-b d x \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+$$

$$3 a^2 b B d^2 n \left(-\text{Log}\left[\frac{c}{d}+x\right]^2+2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+2 \left(-\frac{c}{c+d x}+\frac{b c \text{Log}[a+b x]}{-b c+a d}+\frac{b c \text{Log}[c+d x]}{b c-a d}-\right.\right.$$

$$\left.\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+\text{Log}\left[\frac{a+b x}{c+d x}\right] \left(\frac{c}{c+d x}+\text{Log}[c+d x]\right)+\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Bigg)+$$

$$b^3 B n \left(-4 c^2+\frac{4 a c d}{b}-c d x+\frac{a d^2 x}{b}-\frac{2 c^3}{c+d x}+4 c^2 \text{Log}\left[\frac{c}{d}+x\right]-3 c^2 \text{Log}\left[\frac{c}{d}+x\right]^2-\frac{a^2 d^2 \text{Log}[a+b x]}{b^2}+\frac{2 b c^3 \text{Log}[a+b x]}{-b c+a d}-\right.$$

$$4 c d x \text{Log}\left[\frac{a+b x}{c+d x}\right]+d^2 x^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]+\frac{2 c^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{c+d x}+c^2 \text{Log}[c+d x]+\frac{2 b c^3 \text{Log}[c+d x]}{b c-a d}+6 c^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+$$

$$\left.6 c^2 \text{Log}\left[\frac{a+b x}{c+d x}\right] \text{Log}[c+d x]-\frac{2 c \text{Log}\left[\frac{a}{b}+x\right] \left(2 a d+3 b c \text{Log}[c+d x]-3 b c \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)}{b}+6 c^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)+$$

$$6 a b^2 B d n \left(d \left(\frac{a}{b}+x\right) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)-(c+d x) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)+c \text{Log}\left[\frac{c}{d}+x\right]^2+\frac{c^2 \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{c+d x}+\right.$$

$$c^2 \left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{c+d x}+\frac{b (\text{Log}[a+b x]-\text{Log}[c+d x])}{b c-a d}\right)+\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(d x-\frac{c^2}{c+d x}-2 c \text{Log}[c+d x]\right)-$$

$$\left.\left.2 c \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)\right)$$

Problem 144: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(c i+d i x)^2} \, dx$$

Optimal (type 4, 275 leaves, 8 steps):

$$-\frac{2 B (b c-a d) g^2 n (a+b x)}{d^2 i^2 (c+d x)}+\frac{(b c-a d) g^2 (2 A+B n) (a+b x)}{d^2 i^2 (c+d x)}+\frac{2 B (b c-a d) g^2 (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^2 i^2 (c+d x)}+\frac{g^2 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d i^2 (c+d x)}+\frac{b (b c-a d) g^2 \left(2 A+B n+2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^3 i^2}+\frac{2 b B (b c-a d) g^2 n \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^2}$$

Result (type 4, 705 leaves) :

$$\frac{1}{d^3 i^2} g^2 \left(b^2 d x \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-\frac{(b c-a d)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)}{c+d x}-\right.$$
$$2 b (b c-a d) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \text{Log}[c+d x]+\frac{1}{(b c-a d) (c+d x)}$$
$$a^2 B d^2 n \left(b c-a d+b (c+d x) \text{Log}\left[\frac{a}{b}+x\right]+(-b c+a d) \text{Log}\left[\frac{a+b x}{c+d x}\right]-b c \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-b d x \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+$$
$$a b B d n \left(-\text{Log}\left[\frac{c}{d}+x\right]^2+2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+2 \left(-\frac{c}{c+d x}+\frac{b c \text{Log}[a+b x]}{-b c+a d}+\frac{b c \text{Log}[c+d x]}{b c-a d}-\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+\right.\right.$$
$$\left.\left.\text{Log}\left[\frac{a+b x}{c+d x}\right] \left(\frac{c}{c+d x}+\text{Log}[c+d x]\right)+\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)+$$
$$b^2 B n \left(d \left(\frac{a}{b}+x\right) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)-(c+d x) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)+c \text{Log}\left[\frac{c}{d}+x\right]^2+\frac{c^2 \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{c+d x}+\right.$$
$$c^2 \left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{c+d x}+\frac{b (\text{Log}[a+b x]-\text{Log}[c+d x])}{b c-a d}\right)+\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(d x-\frac{c^2}{c+d x}-2 c \text{Log}[c+d x]\right)-$$
$$\left.\left.2 c \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)\right)$$

Problem 145: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(c i+d i x)^2} \, dx$$

Optimal (type 4, 168 leaves, 7 steps) :

$$-\frac{A g (a+b x)}{d i^2 (c+d x)}+\frac{B g n (a+b x)}{d i^2 (c+d x)}-\frac{B g (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d i^2 (c+d x)}-\frac{b g \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^2 i^2}-\frac{b B g n \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^2 i^2}$$

Result (type 4, 411 leaves):

$$\frac{1}{2 d^2 i^2} g \left(\frac{2 (b c - a d) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)}{c + d x} + 2 b \left(A + B \operatorname{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] - B n \operatorname{Log}\left[\frac{a + b x}{c + d x}\right]\right) \operatorname{Log}[c + d x] + \frac{1}{(b c - a d) (c + d x)} \right.$$
$$2 a B d n \left(b c - a d + b (c + d x) \operatorname{Log}\left[\frac{a}{b} + x\right] + (-b c + a d) \operatorname{Log}\left[\frac{a + b x}{c + d x}\right] - b c \operatorname{Log}\left[\frac{b (c + d x)}{b c - a d}\right] - b d x \operatorname{Log}\left[\frac{b (c + d x)}{b c - a d}\right]\right) +$$
$$b B n \left(-\operatorname{Log}\left[\frac{c}{d} + x\right]^2 + 2 \operatorname{Log}\left[\frac{c}{d} + x\right] \operatorname{Log}[c + d x] + 2 \left(-\frac{c}{c + d x} + \frac{b c \operatorname{Log}[a + b x]}{-b c + a d} + \frac{b c \operatorname{Log}[c + d x]}{b c - a d} - \operatorname{Log}\left[\frac{a}{b} + x\right] \operatorname{Log}[c + d x] + \right.\right.$$
$$\left.\left.\left. \operatorname{Log}\left[\frac{a + b x}{c + d x}\right] \left(\frac{c}{c + d x} + \operatorname{Log}[c + d x]\right) + \operatorname{Log}\left[\frac{a}{b} + x\right] \operatorname{Log}\left[\frac{b (c + d x)}{b c - a d}\right]\right) + 2 \operatorname{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\right)\right)$$

Problem 151: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g + b g x)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(c i + d i x)^3} \, dx$$

Optimal (type 4, 382 leaves, 9 steps):

$$-\frac{3 B (b c - a d) g^3 n (a + b x)^2}{4 d^2 i^3 (c + d x)^2} - \frac{3 b B (b c - a d) g^3 n (a + b x)}{d^3 i^3 (c + d x)} + \frac{b (b c - a d) g^3 (3 A + B n) (a + b x)}{d^3 i^3 (c + d x)} +$$
$$\frac{3 b B (b c - a d) g^3 (a + b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^3 i^3 (c + d x)} + \frac{g^3 (a + b x)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{d i^3 (c + d x)^2} + \frac{(b c - a d) g^3 (a + b x)^2 \left(3 A + B n + 3 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d^2 i^3 (c + d x)^2} +$$
$$\frac{b^2 (b c - a d) g^3 \left(3 A + B n + 3 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c - a d}{b (c+d x)}\right]}{d^4 i^3} + \frac{3 b^2 B (b c - a d) g^3 n \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}$$

Result (type 4, 1317 leaves):

$$\frac{1}{4 d^4 i^3} g^3 \left(4 b^3 d x \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right) + \frac{2 (b c - a d)^3 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)}{(c+d x)^2} - \right.$$

$$\frac{12 b (b c - a d)^2 \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)}{c+d x} - 12 b^2 (b c - a d) \left(A + B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right) \operatorname{Log}[c + d x] -$$

$$\frac{1}{(b c - a d)^2 (c + d x)^2} 3 a^2 b B d^2 n \left(-b^2 c^3 + 4 a b c^2 d - 3 a^2 c d^2 - 2 b^2 c^2 d x + 6 a b c d^2 x - 4 a^2 d^3 x - \right.$$

$$2 b (b c - 2 a d) (c + d x)^2 \operatorname{Log}[a + b x] + 2 (b c - a d)^2 (c + 2 d x) \operatorname{Log}\left[\frac{a+b x}{c+d x}\right] + 2 b^2 c^3 \operatorname{Log}[c + d x] - 4 a b c^2 d \operatorname{Log}[c + d x] +$$

$$\left. 4 b^2 c^2 d x \operatorname{Log}[c + d x] - 8 a b c d^2 x \operatorname{Log}[c + d x] + 2 b^2 c d^2 x^2 \operatorname{Log}[c + d x] - 4 a b d^3 x^2 \operatorname{Log}[c + d x]\right) -$$

$$\frac{1}{(b c - a d)^2 (c + d x)^2} a^3 B d^3 n \left(-b^2 c^2 + 4 a b c d - a^2 d^2 + 2 b^2 c d x + 2 a b d^2 x + 2 b^2 d^2 x^2 - 2 b^2 (c + d x)^2 \operatorname{Log}\left[\frac{a}{b} + x\right] + \right.$$

$$\left. 2 (b c - a d)^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right] + 2 b^2 c^2 \operatorname{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + 4 b^2 c d x \operatorname{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + 2 b^2 d^2 x^2 \operatorname{Log}\left[\frac{b (c + d x)}{b c - a d}\right]\right) +$$

$$3 a b^2 B d n \left(-2 \operatorname{Log}\left[\frac{c}{d} + x\right]^2 - \frac{8 c \left(1 + \operatorname{Log}\left[\frac{c}{d} + x\right]\right)}{c + d x} + \frac{c^2 \left(1 + 2 \operatorname{Log}\left[\frac{c}{d} + x\right]\right)}{(c + d x)^2} + 8 c \left(\frac{\operatorname{Log}\left[\frac{a}{b} + x\right]}{c + d x} + \frac{b (\operatorname{Log}[a + b x] - \operatorname{Log}[c + d x])}{-b c + a d}\right) + \right.$$

$$2 \left(-\operatorname{Log}\left[\frac{a}{b} + x\right] + \operatorname{Log}\left[\frac{c}{d} + x\right] + \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(\frac{c (3 c + 4 d x)}{(c + d x)^2} + 2 \operatorname{Log}[c + d x]\right) +$$

$$\left. \frac{2 c^2 \left(-\operatorname{Log}\left[\frac{a}{b} + x\right] + \frac{b (c+d x) (b c - a d + b (c+d x) \operatorname{Log}[a+b x] - b (c+d x) \operatorname{Log}[c+d x])}{(b c - a d)^2}\right)}{(c + d x)^2} + 4 \left(\operatorname{Log}\left[\frac{a}{b} + x\right] \operatorname{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + \operatorname{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\right)\right) -$$

$$b^3 B n \left(-4 d \left(\frac{a}{b} + x\right) \left(-1 + \operatorname{Log}\left[\frac{a}{b} + x\right]\right) + 4 (c + d x) \left(-1 + \operatorname{Log}\left[\frac{c}{d} + x\right]\right) - 6 c \operatorname{Log}\left[\frac{c}{d} + x\right]^2 - \frac{12 c^2 \left(1 + \operatorname{Log}\left[\frac{c}{d} + x\right]\right)}{c + d x} + \frac{c^3 \left(1 + 2 \operatorname{Log}\left[\frac{c}{d} + x\right]\right)}{(c + d x)^2} - 12 c^2 \right.$$

$$\left(-\frac{\operatorname{Log}\left[\frac{a}{b} + x\right]}{c + d x} + \frac{b (\operatorname{Log}[a + b x] - \operatorname{Log}[c + d x])}{b c - a d}\right) + 2 \left(-\operatorname{Log}\left[\frac{a}{b} + x\right] + \operatorname{Log}\left[\frac{c}{d} + x\right] + \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(-2 d x + \frac{c^2 (5 c + 6 d x)}{(c + d x)^2} + 6 c \operatorname{Log}[c + d x]\right) +$$

$$\left.\left. \frac{2 c^3 \left(-\operatorname{Log}\left[\frac{a}{b} + x\right] + \frac{b (c+d x) (b c - a d + b (c+d x) \operatorname{Log}[a+b x] - b (c+d x) \operatorname{Log}[c+d x])}{(b c - a d)^2}\right)}{(c + d x)^2} + 12 c \left(\operatorname{Log}\left[\frac{a}{b} + x\right] \operatorname{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + \operatorname{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\right)\right)\right)$$

Problem 152: Result more than twice size of optimal antiderivative.

$$\int \frac{(a\,g+b\,g\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(c\,i+d\,i\,x)^3}\,dx$$

Optimal (type 4, 263 leaves, 8 steps):

$$\frac{B\,g^2\,n\,(a+b\,x)^2}{4\,d\,i^3\,(c+d\,x)^2}-\frac{A\,b\,g^2\,(a+b\,x)}{d^2\,i^3\,(c+d\,x)}+\frac{b\,B\,g^2\,n\,(a+b\,x)}{d^2\,i^3\,(c+d\,x)}-\frac{b\,B\,g^2\,(a+b\,x)\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d^2\,i^3\,(c+d\,x)}-$$
$$\frac{g^2\,(a+b\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,d\,i^3\,(c+d\,x)^2}-\frac{b^2\,g^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{d^3\,i^3}-\frac{b^2\,B\,g^2\,n\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^3\,i^3}$$

Result (type 4, 907 leaves):

$$\frac{1}{4 d^3 i^3} g^2 \left(-\frac{2 (b c-a d)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)}{(c+d x)^2}+\right.$$

$$\frac{8 b (b c-a d) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)}{c+d x}+4 b^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \text{Log}[c+d x]-$$

$$\frac{1}{(b c-a d)^2 (c+d x)^2} 2 a b B d n \left(-b^2 c^3+4 a b c^2 d-3 a^2 c d^2-2 b^2 c^2 d x+6 a b c d^2 x-4 a^2 d^3 x-\right.$$

$$2 b (b c-2 a d) (c+d x)^2 \text{Log}[a+b x]+2 (b c-a d)^2 (c+2 d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]+2 b^2 c^3 \text{Log}[c+d x]-4 a b c^2 d \text{Log}[c+d x]+$$

$$\left.4 b^2 c^2 d x \text{Log}[c+d x]-8 a b c d^2 x \text{Log}[c+d x]+2 b^2 c d^2 x^2 \text{Log}[c+d x]-4 a b d^3 x^2 \text{Log}[c+d x]\right)-$$

$$\frac{1}{(b c-a d)^2 (c+d x)^2} a^2 B d^2 n \left(-b^2 c^2+4 a b c d-a^2 d^2+2 b^2 c d x+2 a b d^2 x+2 b^2 d^2 x^2-2 b^2 (c+d x)^2 \text{Log}\left[\frac{a}{b}+x\right]+\right.$$

$$\left.2 (b c-a d)^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]+2 b^2 c^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+4 b^2 c d x \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 b^2 d^2 x^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+$$

$$b^2 B n \left(-2 \text{Log}\left[\frac{c}{d}+x\right]^2-\frac{8 c \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{c+d x}+\frac{c^2 \left(1+2 \text{Log}\left[\frac{c}{d}+x\right]\right)}{(c+d x)^2}+8 c \left(\frac{\text{Log}\left[\frac{a}{b}+x\right]}{c+d x}+\frac{b (\text{Log}[a+b x]-\text{Log}[c+d x])}{-b c+a d}\right)+\right.$$

$$2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(\frac{c (3 c+4 d x)}{(c+d x)^2}+2 \text{Log}[c+d x]\right)+$$

$$\left.\left.\frac{2 c^2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b (c+d x) (b c-a d+b (c+d x) \text{Log}[a+b x]-b (c+d x) \text{Log}[c+d x])}{(b c-a d)^2}\right)}{(c+d x)^2}+4 \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)\right)$$

Problem 153: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(c i+d i x)^3} \, dx$$

Optimal (type 3, 89 leaves, 2 steps):

$$-\frac{B g n (a+b x)^2}{4 (b c-a d) i^3 (c+d x)^2}+\frac{g (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d) i^3 (c+d x)^2}$$

Result (type 3, 216 leaves):

$$\left(g\left(2 A b^2 c^2-2 a^2 A d^2-b^2 B c^2 n+a^2 B d^2 n+4 A b^2 c d x-4 a A b d^2 x-2 b^2 B c d n x+2 a b B d^2 n x-2 b^2 B n (c+d x)^2 \text{Log}[a+b x]+2 B (b c-a d) (b c+a d+2 b d x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+2 b^2 B c^2 n \text{Log}[c+d x]+4 b^2 B c d n x \text{Log}[c+d x]+2 b^2 B d^2 n x^2 \text{Log}[c+d x]\right)\right)\Big/\left(4 d^2 (-b c+a d) i^3 (c+d x)^2\right)$$

Problem 159: Result more than twice size of optimal antiderivative.

$$\int (a g+b g x)^3 (c i+d i x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 584 leaves, 11 steps):

$$\frac{3 B^2 (b c-a d)^4 g^3 i n^2 x}{10 b d^3}-\frac{3 B^2 (b c-a d)^3 g^3 i n^2 (c+d x)^2}{20 d^4}+\frac{b B^2 (b c-a d)^2 g^3 i n^2 (c+d x)^3}{30 d^4}-\frac{B (b c-a d)^2 g^3 i n (a+b x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{30 b^2 d}-\frac{B (b c-a d) g^3 i n (a+b x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 b^2}+\frac{(b c-a d) g^3 i (a+b x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{20 b^2}+\frac{g^3 i (a+b x)^4 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{5 b}+\frac{B (b c-a d)^3 g^3 i n (a+b x)^2 \left(3 A+B n+3 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{60 b^2 d^2}-\frac{B (b c-a d)^4 g^3 i n (a+b x) \left(6 A+5 B n+6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{60 b^2 d^3}-\frac{B (b c-a d)^5 g^3 i n \left(6 A+11 B n+6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{60 b^2 d^4}-\frac{B^2 (b c-a d)^5 g^3 i n^2 \text{Log}[c+d x]}{10 b^2 d^4}-\frac{B^2 (b c-a d)^5 g^3 i n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{10 b^2 d^4}$$

Result (type 4, 3427 leaves):

$$\frac{1}{60 b^2 d^4} g^3 i \left(-6 b^5 B^2 c^5 n^2+36 a b^4 B^2 c^4 d n^2-90 a^2 b^3 B^2 c^3 d^2 n^2+90 a^3 b^2 B^2 c^2 d^3 n^2-24 a^4 b B^2 c d^4 n^2-6 a^5 B^2 d^5 n^2+60 a^3 A^2 b^2 c d^4 x-6 A b^5 B c^4 d n x+30 a A b^4 B c^3 d^2 n x-60 a^2 A b^3 B c^2 d^3 n x+30 a^3 A b^2 B c d^4 n x+6 a^4 A b B d^5 n x+b^5 B^2 c^4 d n^2 x-8 a b^4 B^2 c^3 d^2 n^2 x+24 a^2 b^3 B^2 c^2 d^3 n^2 x-28 a^3 b^2 B^2 c d^4 n^2 x+11 a^4 b B^2 d^5 n^2 x+90 a^2 A^2 b^3 c d^4 x^2+30 a^3 A^2 b^2 d^5 x^2+3 A b^5 B c^3 d^2 n x^2-15 a A b^4 B c^2 d^3 n x^2-15 a^2 A b^3 B c d^4 n x^2+27 a^3 A b^2 B d^5 n x^2-2 b^5 B^2 c^3 d^2 n^2 x^2+12 a b^4 B^2 c^2 d^3 n^2 x^2-18 a^2 b^3 B^2 c d^4 n^2 x^2+8 a^3 b^2 B^2 d^5 n^2 x^2+60 a A^2 b^4 c d^4 x^3+60 a^2 A^2 b^3 d^5 x^3-2 A b^5 B c^2 d^3 n x^3-20 a A b^4 B c d^4 n x^3+22 a^2 A b^3 B d^5 n x^3+2 b^5 B^2 c^2 d^3 n^2 x^3-4 a b^4 B^2 c d^4 n^2 x^3+2 a^2 b^3 B^2 d^5 n^2 x^3+15 A^2 b^5 c d^4 x^4+45 a A^2 b^4 d^5 x^4-6 A b^5 B c d^4 n x^4+6 a A b^4 B d^5 n x^4+12 A^2 b^5 d^5 x^5-6 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{a}{b}+x\right]+30 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right]-60 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right]+30 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right]+6 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right]+15 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2-3 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2+\right.$$

$$6 b^5 B^2 c^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] - 30 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{c}{d}+x\right] + 60 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] - 30 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] - 6 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] -$$

$$3 b^5 B^2 c^5 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 + 15 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 - 30 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 + 30 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 +$$

$$30 a^4 A b B c d^4 n \text{Log}[a+b x] - 6 a^5 A B d^5 n \text{Log}[a+b x] - 3 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}[a+b x] + 13 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}[a+b x] +$$

$$a^4 b B^2 c d^4 n^2 \text{Log}[a+b x] - 11 a^5 B^2 d^5 n^2 \text{Log}[a+b x] - 30 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 6 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] +$$

$$30 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 6 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 30 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] +$$

$$6 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + 120 a^3 A b^2 B c d^4 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 6 b^5 B^2 c^4 d n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$$

$$30 a b^4 B^2 c^3 d^2 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 60 a^2 b^3 B^2 c^2 d^3 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 30 a^3 b^2 B^2 c d^4 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$$

$$6 a^4 b B^2 d^5 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 180 a^2 A b^3 B c d^4 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 60 a^3 A b^2 B d^5 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 3 b^5 B^2 c^3 d^2 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] -$$

$$15 a b^4 B^2 c^2 d^3 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 15 a^2 b^3 B^2 c d^4 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 27 a^3 b^2 B^2 d^5 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$$

$$120 a A b^4 B c d^4 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 120 a^2 A b^3 B d^5 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 2 b^5 B^2 c^2 d^3 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] -$$

$$20 a b^4 B^2 c d^4 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 22 a^2 b^3 B^2 d^5 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 30 A b^5 B c d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$$

$$90 a A b^4 B d^5 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 6 b^5 B^2 c d^4 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 6 a b^4 B^2 d^5 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 24 A b^5 B d^5 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$$

$$30 a^4 b B^2 c d^4 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 6 a^5 B^2 d^5 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 60 a^3 b^2 B^2 c d^4 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 +$$

$$90 a^2 b^3 B^2 c d^4 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 30 a^3 b^2 B^2 d^5 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 60 a b^4 B^2 c d^4 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 +$$

$$60 a^2 b^3 B^2 d^5 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 15 b^5 B^2 c d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 45 a b^4 B^2 d^5 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 12 b^5 B^2 d^5 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 +$$

$$6 A b^5 B c^5 n \text{Log}[c+d x] - 30 a A b^4 B c^4 d n \text{Log}[c+d x] + 60 a^2 A b^3 B c^3 d^2 n \text{Log}[c+d x] - 60 a^3 A b^2 B c^2 d^3 n \text{Log}[c+d x] - b^5 B^2 c^5 n^2 \text{Log}[c+d x] +$$

$$11 a b^4 B^2 c^4 d n^2 \text{Log}[c+d x] - 37 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}[c+d x] + 27 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}[c+d x] - 6 b^5 B^2 c^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] +$$

$$30 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] - 60 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] + 60 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] +$$

$$6 b^5 B^2 c^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] - 30 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] + 60 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] -$$

$$60 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] + 6 b^5 B^2 c^5 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x] - 30 a b^4 B^2 c^4 d n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x] +$$

$$60 a^2 b^3 B^2 c^3 d^2 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x] - 60 a^3 b^2 B^2 c^2 d^3 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x] + 6 b^5 B^2 c^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] -$$

$$30\,a\,b^4 B^2 c^4 d\,n^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] + 60\,a^2 b^3 B^2 c^3 d^2 n^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] - 60\,a^3 b^2 B^2 c^2 d^3 n^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] + 6\,b^2 B^2 c^2 \left(b^3 c^3 - 5\,a\,b^2 c^2 d + 10\,a^2 b\,c\,d^2 - 10\,a^3 d^3\right) n^2 \,\text{PolyLog}\left[2, \frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] + 6\,a^4 B^2 d^4 \left(-5\,b\,c+a\,d\right) n^2 \,\text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)$$

Problem 160: Result more than twice size of optimal antiderivative.

$$\int (a\,g+b\,g\,x)^2 \,(c\,i+d\,i\,x) \left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 487 leaves, 10 steps):

$$-\frac{B^2 (b\,c-a\,d)^3 g^2 i\,n^2 x}{3\,b\,d^2} + \frac{B^2 (b\,c-a\,d)^2 g^2 i\,n^2 (c+d\,x)^2}{12\,d^3} - \frac{B\,(b\,c-a\,d)^2 g^2 i\,n\,(a+b\,x)^2 \left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{12\,b^2 d} - \frac{B\,(b\,c-a\,d)\,g^2 i\,n\,(a+b\,x)^3 \left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,b^2} + \frac{(b\,c-a\,d)\,g^2 i\,(a+b\,x)^3 \left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{12\,b^2} + \frac{g^2 i\,(a+b\,x)^3 (c+d\,x) \left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{4\,b} + \frac{B\,(b\,c-a\,d)^3 g^2 i\,n\,(a+b\,x) \left(2\,A+B\,n+2\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{12\,b^2 d^2} + \frac{B\,(b\,c-a\,d)^4 g^2 i\,n \left(2\,A+3\,B\,n+2\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right) \text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{12\,b^2 d^3} + \frac{B^2 (b\,c-a\,d)^4 g^2 i\,n^2 \,\text{Log}[c+d\,x]}{6\,b^2 d^3} + \frac{B^2 (b\,c-a\,d)^4 g^2 i\,n^2 \,\text{PolyLog}\left[2, \frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{6\,b^2 d^3}$$

Result (type 4, 2520 leaves):

$$\frac{1}{12\,b^2 d^3} g^2 i \Bigg(2\,b^4 B^2 c^4 n^2 - 10\,a\,b^3 B^2 c^3 d\,n^2 + 12\,a^2 b^2 B^2 c^2 d^2 n^2 - 2\,a^3 b\,B^2 c\,d^3 n^2 - 2\,a^4 B^2 d^4 n^2 + 12\,a^2 A^2 b^2 c\,d^3 x + 2\,A\,b^4 B\,c^3 d\,n\,x - 8\,a\,A\,b^3 B\,c^2 d^2 n\,x + 4\,a^2 A\,b^2 B\,c\,d^3 n\,x + 2\,a^3 A\,b\,B\,d^4 n\,x - b^4 B^2 c^3 d\,n^2 x + 5\,a\,b^3 B^2 c^2 d^2 n^2 x - 7\,a^2 b^2 B^2 c\,d^3 n^2 x + 3\,a^3 b\,B^2 d^4 n^2 x + 12\,a\,A^2 b^3 c\,d^3 x^2 + 6\,a^2 A^2 b^2 d^4 x^2 - A\,b^4 B\,c^2 d^2 n\,x^2 - 4\,a\,A\,b^3 B\,c\,d^3 n\,x^2 + 5\,a^2 A\,b^2 B\,d^4 n\,x^2 + b^4 B^2 c^2 d^2 n^2 x^2 - 2\,a\,b^3 B^2 c\,d^3 n^2 x^2 + a^2 b^2 B^2 d^4 n^2 x^2 + 4\,A^2 b^4 c\,d^3 x^3 + 8\,a\,A^2 b^3 d^4 x^3 - 2\,A\,b^4 B\,c\,d^3 n\,x^3 + 2\,a\,A\,b^3 B\,d^4 n\,x^3 + 3\,A^2 b^4 d^4 x^4 + 2\,a\,b^3 B^2 c^3 d\,n^2 \,\text{Log}\left[\frac{a}{b}+x\right] - 8\,a^2 b^2 B^2 c^2 d^2 n^2 \,\text{Log}\left[\frac{a}{b}+x\right] + 4\,a^3 b\,B^2 c\,d^3 n^2 \,\text{Log}\left[\frac{a}{b}+x\right] + 2\,a^4 B^2 d^4 n^2 \,\text{Log}\left[\frac{a}{b}+x\right] + 4\,a^3 b\,B^2 c\,d^3 n^2 \,\text{Log}\left[\frac{a}{b}+x\right]^2 - a^4 B^2 d^4 n^2 \,\text{Log}\left[\frac{a}{b}+x\right]^2 - 2\,b^4 B^2 c^4 n^2 \,\text{Log}\left[\frac{c}{d}+x\right] + 8\,a\,b^3 B^2 c^3 d\,n^2 \,\text{Log}\left[\frac{c}{d}+x\right] - 4\,a^2 b^2 B^2 c^2 d^2 n^2 \,\text{Log}\left[\frac{c}{d}+x\right] - 2\,a^3 b\,B^2 c\,d^3 n^2 \,\text{Log}\left[\frac{c}{d}+x\right] + b^4 B^2 c^4 n^2 \,\text{Log}\left[\frac{c}{d}+x\right]^2 - 4\,a\,b^3 B^2 c^3 d\,n^2 \,\text{Log}\left[\frac{c}{d}+x\right]^2 + 6\,a^2 b^2 B^2 c^2 d^2 n^2 \,\text{Log}\left[\frac{c}{d}+x\right]^2 + 8\,a^3 A\,b\,B\,c\,d^3 n\,\text{Log}[a+b\,x] - 2\,a^4 A\,B\,d^4 n\,\text{Log}[a+b\,x] + a^2 b^2 B^2 c^2 d^2 n^2 \,\text{Log}[a+b\,x] + 2\,a^3 b\,B^2 c\,d^3 n^2 \,\text{Log}[a+b\,x] - 3\,a^4 B^2 d^4 n^2 \,\text{Log}[a+b\,x] - 8\,a^3 b\,B^2 c\,d^3 n^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\,x] + 2\,a^4 B^2 d^4 n^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b\,x] + 8\,a^3 b\,B^2 c\,d^3 n^2 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\,x] - 2\,a^4 B^2 d^4 n^2 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b\,x] - 8\,a^3 b\,B^2 c\,d^3 n^2 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] +$$

$$2 a^4 B^2 d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+24 a^2 A b^2 B c d^3 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+2 b^4 B^2 c^3 d n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-$$
$$8 a b^3 B^2 c^2 d^2 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+4 a^2 b^2 B^2 c d^3 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+2 a^3 b B^2 d^4 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+24 a A b^3 B c d^3 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$12 a^2 A b^2 B d^4 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-b^4 B^2 c^2 d^2 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-4 a b^3 B^2 c d^3 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+5 a^2 b^2 B^2 d^4 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$8 A b^4 B c d^3 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+16 a A b^3 B d^4 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-2 b^4 B^2 c d^3 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+2 a b^3 B^2 d^4 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$6 A b^4 B d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+8 a^3 b B^2 c d^3 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-2 a^4 B^2 d^4 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$12 a^2 b^2 B^2 c d^3 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+12 a b^3 B^2 c d^3 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+6 a^2 b^2 B^2 d^4 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+4 b^4 B^2 c d^3 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+$$
$$8 a b^3 B^2 d^4 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+3 b^4 B^2 d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-2 A b^4 B c^4 n \text{Log}[c+d x]+8 a A b^3 B c^3 d n \text{Log}[c+d x]-$$
$$12 a^2 A b^2 B c^2 d^2 n \text{Log}[c+d x]+b^4 B^2 c^4 n^2 \text{Log}[c+d x]-6 a b^3 B^2 c^3 d n^2 \text{Log}[c+d x]+5 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}[c+d x]+$$
$$2 b^4 B^2 c^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]-8 a b^3 B^2 c^3 d n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+12 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]-$$
$$2 b^4 B^2 c^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+8 a b^3 B^2 c^3 d n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]-12 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]-$$
$$2 b^4 B^2 c^4 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]+8 a b^3 B^2 c^3 d n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]-12 a^2 b^2 B^2 c^2 d^2 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]-$$
$$2 b^4 B^2 c^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+8 a b^3 B^2 c^3 d n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-12 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-$$
$$2 b^2 B^2 c^2 \left(b^2 c^2-4 a b c d+6 a^2 d^2\right) n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]+2 a^3 B^2 d^3 (-4 b c+a d) n^2 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\Bigg)$$

Problem 161: Result more than twice size of optimal antiderivative.

$$\int (a g+b g x) (c i+d i x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 372 leaves, 9 steps) :

$$\frac{B^2 (b c-a d)^2 g i n^2 x}{3 b d}-\frac{B (b c-a d)^2 g i n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^2 d}-\frac{B (b c-a d) g i n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^2}+\frac{(b c-a d) g i (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{6 b^2}+\frac{g i (a+b x)^2 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b}-\frac{B (b c-a d)^3 g i n \left(A+B n+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{3 b^2 d^2}-\frac{B^2 (b c-a d)^3 g i n^2 \text{Log}[c+d x]}{3 b^2 d^2}-\frac{B^2 (b c-a d)^3 g i n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{3 b^2 d^2}$$

Result (type 4, 1606 leaves) :

$$\frac{1}{6 b^2 d^2} g i \Big(-2 b^3 B^2 c^3 n^2+2 a b^2 B^2 c^2 d n^2+2 a^2 b B^2 c d^2 n^2-2 a^3 B^2 d^3 n^2+6 a A^2 b^2 c d^2 x-2 A b^3 B c^2 d n x+2 a^2 A b B d^3 n x+$$
$$2 b^3 B^2 c^2 d n^2 x-4 a b^2 B^2 c d^2 n^2 x+2 a^2 b B^2 d^3 n^2 x+3 A^2 b^3 c d^2 x^2+3 a A^2 b^2 d^3 x^2-2 A b^3 B c d^2 n x^2+2 a A b^2 B d^3 n x^2+2 A^2 b^3 d^3 x^3-$$
$$2 a b^2 B^2 c^2 d n^2 \text{Log}\left[\frac{a}{b}+x\right]+2 a^3 B^2 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right]+3 a^2 b B^2 c d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2-a^3 B^2 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2+2 b^3 B^2 c^3 n^2 \text{Log}\left[\frac{c}{d}+x\right]-$$
$$2 a^2 b B^2 c d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right]-b^3 B^2 c^3 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2+3 a b^2 B^2 c^2 d n^2 \text{Log}\left[\frac{c}{d}+x\right]^2+6 a^2 A b B c d^2 n \text{Log}[a+b x]-2 a^3 A B d^3 n \text{Log}[a+b x]+$$
$$2 a^2 b B^2 c d^2 n^2 \text{Log}[a+b x]-2 a^3 B^2 d^3 n^2 \text{Log}[a+b x]-6 a^2 b B^2 c d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+2 a^3 B^2 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+$$
$$6 a^2 b B^2 c d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-2 a^3 B^2 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-6 a^2 b B^2 c d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+$$
$$2 a^3 B^2 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+12 a A b^2 B c d^2 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-2 b^3 B^2 c^2 d n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$2 a^2 b B^2 d^3 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+6 A b^3 B c d^2 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+6 a A b^2 B d^3 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-2 b^3 B^2 c d^2 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$2 a b^2 B^2 d^3 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+4 A b^3 B d^3 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+6 a^2 b B^2 c d^2 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-$$
$$2 a^3 B^2 d^3 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+6 a b^2 B^2 c d^2 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+3 b^3 B^2 c d^2 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+$$
$$3 a b^2 B^2 d^3 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+2 b^3 B^2 d^3 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+2 A b^3 B c^3 n \text{Log}[c+d x]-6 a A b^2 B c^2 d n \text{Log}[c+d x]-$$
$$2 b^3 B^2 c^3 n^2 \text{Log}[c+d x]+2 a b^2 B^2 c^2 d n^2 \text{Log}[c+d x]-2 b^3 B^2 c^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+6 a b^2 B^2 c^2 d n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+$$
$$2 b^3 B^2 c^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]-6 a b^2 B^2 c^2 d n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+2 b^3 B^2 c^3 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]-$$
$$6 a b^2 B^2 c^2 d n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]+2 b^3 B^2 c^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-6 a b^2 B^2 c^2 d n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+$$
$$2 b^2 B^2 c^2 (b c-3 a d) n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+2 a^2 B^2 d^2 (-3 b c+a d) n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\Big)$$

Problem 162: Result more than twice size of optimal antiderivative.

$$\int (c\,i+d\,i\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 220 leaves, 7 steps):

$$-\frac{B\,(b\,c-a\,d)\,i\,n\,(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2}+\frac{i\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,d}+$$
$$\frac{B^2\,(b\,c-a\,d)^2\,i\,n^2\,\text{Log}[c+d\,x]}{b^2\,d}+\frac{B\,(b\,c-a\,d)^2\,i\,n\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,d}-\frac{B^2\,(b\,c-a\,d)^2\,i\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,d}$$

Result (type 4, 941 leaves):

$$\frac{1}{2\,b^2\,d}\,i\,\Bigg(-2\,b^2\,B^2\,c^2\,n^2+4\,a\,b\,B^2\,c\,d\,n^2-2\,a^2\,B^2\,d^2\,n^2+2\,A^2\,b^2\,c\,d\,x-2\,A\,b^2\,B\,c\,d\,n\,x+2\,a\,A\,b\,B\,d^2\,n\,x+A^2\,b^2\,d^2\,x^2-2\,a\,b\,B^2\,c\,d\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]+$$
$$2\,a^2\,B^2\,d^2\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]+2\,a\,b\,B^2\,c\,d\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]^2-a^2\,B^2\,d^2\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\,b^2\,B^2\,c^2\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]-2\,a\,b\,B^2\,c\,d\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]+$$
$$b^2\,B^2\,c^2\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]^2+4\,a\,A\,b\,B\,c\,d\,n\,\text{Log}[a+b\,x]-2\,a^2\,A\,B\,d^2\,n\,\text{Log}[a+b\,x]-4\,a\,b\,B^2\,c\,d\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b\,x]+$$
$$2\,a^2\,B^2\,d^2\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b\,x]+4\,a\,b\,B^2\,c\,d\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]-2\,a^2\,B^2\,d^2\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]-$$
$$4\,a\,b\,B^2\,c\,d\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,a^2\,B^2\,d^2\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+4\,A\,b^2\,B\,c\,d\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-$$
$$2\,b^2\,B^2\,c\,d\,n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+2\,a\,b\,B^2\,d^2\,n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+2\,A\,b^2\,B\,d^2\,x^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+4\,a\,b\,B^2\,c\,d\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-$$
$$2\,a^2\,B^2\,d^2\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+2\,b^2\,B^2\,c\,d\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+b^2\,B^2\,d^2\,x^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-2\,A\,b^2\,B\,c^2\,n\,\text{Log}[c+d\,x]+$$
$$2\,b^2\,B^2\,c^2\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-2\,b^2\,B^2\,c^2\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-2\,b^2\,B^2\,c^2\,n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\text{Log}[c+d\,x]-$$
$$2\,b^2\,B^2\,c^2\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-2\,b^2\,B^2\,c^2\,n^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,a\,B^2\,d\,(-2\,b\,c+a\,d)\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)$$

Problem 163: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 306 leaves, 8 steps):

$$\frac{d\,i\,(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{b^2\,g}+\frac{2\,B\,(b\,c-a\,d)\,i\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{b^2\,g}-\frac{(b\,c-a\,d)\,i\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g}+$$

$$\frac{2\,B^2\,(b\,c-a\,d)\,i\,n^2\,\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b^2\,g}+\frac{2\,B\,(b\,c-a\,d)\,i\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g}+\frac{2\,B^2\,(b\,c-a\,d)\,i\,n^2\,\text{PolyLog}\left[3,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g}$$

Result (type 4, 1354 leaves) :

$$\frac{1}{3 b^2 g} i \Bigg(3 b d x \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 + 3 (b c - a d) \text{Log}[a+b x] \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 -$$

$$3 B n \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \Bigg(a d \text{Log}\left[\frac{a}{b}+x\right]^2 - 2 a d \text{Log}\left[\frac{a}{b}+x\right] (1 + \text{Log}[a+b x]) +$$

$$2 \Bigg(-b c + a d + \text{Log}\left[\frac{c}{d}+x\right] \left(b c + a d \text{Log}[a+b x] - a d \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right)\Bigg) + (-b d x + a d \text{Log}[a+b x]) \text{Log}\left[\frac{a+b x}{c+d x}\right]\Bigg) -$$

$$2 a d \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\Bigg) + 3 b B c n \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)$$

$$\Bigg(\text{Log}\left[\frac{a}{b}+x\right]^2 - 2 \text{Log}[a+b x] \left(\text{Log}\left[\frac{a}{b}+x\right] - \text{Log}\left[\frac{c}{d}+x\right] - \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) - 2 \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right)\Bigg)\Bigg) -$$

$$B^2 n^2 \Bigg(a d \text{Log}\left[\frac{a}{b}+x\right]^3 - 3 d (a+b x) \left(2 - 2 \text{Log}\left[\frac{a}{b}+x\right] + \text{Log}\left[\frac{a}{b}+x\right]^2\right) - 3 b (c+d x) \left(2 - 2 \text{Log}\left[\frac{c}{d}+x\right] + \text{Log}\left[\frac{c}{d}+x\right]^2\right) -$$

$$3 d (b x - a \text{Log}[a+b x]) \left(-\text{Log}\left[\frac{a}{b}+x\right] + \text{Log}\left[\frac{c}{d}+x\right] + \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 + 6 \Bigg(a d + 2 b d x - b d x \text{Log}\left[\frac{c}{d}+x\right] - b c \text{Log}[c+d x] +$$

$$\text{Log}\left[\frac{a}{b}+x\right] \left(-d (a+b x) + d (a+b x) \text{Log}\left[\frac{c}{d}+x\right] + (b c - a d) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right) + (b c - a d) \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]\Bigg) -$$

$$3 \left(\text{Log}\left[\frac{a}{b}+x\right] - \text{Log}\left[\frac{c}{d}+x\right] - \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \Bigg(-2 b c + 2 a d - 2 d (a+b x) \text{Log}\left[\frac{a}{b}+x\right] + a d \text{Log}\left[\frac{a}{b}+x\right]^2 +$$

$$2 \text{Log}\left[\frac{c}{d}+x\right] \left(b (c+d x) - a d \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right) - 2 a d \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\Bigg) -$$

$$3 a d \left(\text{Log}\left[\frac{a}{b}+x\right]^2 \left(\text{Log}\left[\frac{c}{d}+x\right] - \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right) - 2 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right] + 2 \text{PolyLog}\left[3, \frac{d (a+b x)}{-b c+a d}\right]\right) +$$

$$3 a d \left(\text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + 2 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right] - 2 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]\right)\Bigg) +$$

$$b B^2 c n^2 \Bigg(\text{Log}\left[\frac{a}{b}+x\right]^3 + 3 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + 3 \text{Log}[a+b x] \left(-\text{Log}\left[\frac{a}{b}+x\right] + \text{Log}\left[\frac{c}{d}+x\right] + \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 +$$

$$3 \text{Log}\left[\frac{a}{b}+x\right]^2 \left(-\text{Log}\left[\frac{c}{d}+x\right] + \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right) + 6 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right] + 6 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right] -$$

$$3 \left(\text{Log}\left[\frac{a}{b}+x\right] - \text{Log}\left[\frac{c}{d}+x\right] - \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(\text{Log}\left[\frac{a}{b}+x\right]^2 - 2 \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right)\right) -$$

$$6 \text{PolyLog}\left[3, \frac{d (a+b x)}{-b c+a d}\right] - 6 \text{PolyLog}\left[3, \frac{b (c+d x)}{b c-a d}\right]\Bigg)\Bigg)$$

Problem 164: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\,i + d\,i\,x)\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g + b\,g\,x)^2}\,dx$$

Optimal (type 4, 261 leaves, 7 steps):

$$-\frac{2\,B^2\,i\,n^2\,(c+d\,x)}{b\,g^2\,(a+b\,x)} - \frac{2\,B\,i\,n\,(c+d\,x)\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b\,g^2\,(a+b\,x)} - \frac{i\,(c+d\,x)\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{b\,g^2\,(a+b\,x)} -$$
$$\frac{d\,i\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2 \text{Log}\left[1 - \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g^2} + \frac{2\,B\,d\,i\,n\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right) \text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g^2} + \frac{2\,B^2\,d\,i\,n^2\,\text{PolyLog}\left[3, \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^2\,g^2}$$

Result (type 4, 1315 leaves):

$$\frac{1}{3\,b^2\,g^2}\,i\left(-\frac{3\,(b\,c-a\,d)\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2}{a+b\,x} + \right.$$
$$3\,d\,\text{Log}[a+b\,x]\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2 + \frac{1}{(b\,c-a\,d)\,(a+b\,x)}6\,b\,B\,c\,n\left(-A - B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] + B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)$$
$$\left(-d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right] + d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] + (b\,c-a\,d)\left(1 + \text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right) - \frac{1}{(b\,c-a\,d)\,(a+b\,x)}$$
$$3\,b\,B^2\,c\,n^2\left(2\,b\,c - 2\,a\,d + 2\,d\,(a+b\,x)\,\text{Log}[a+b\,x] + 2\,(b\,c-a\,d)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right] + b\,(c+d\,x)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2 - 2\,d\,(a+b\,x)\,\text{Log}[c+d\,x]\right) +$$
$$3\,B\,d\,n\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)$$
$$\left(\text{Log}\left[\frac{a}{b}+x\right]^2 + \frac{2\,a\left(1 + \text{Log}\left[\frac{a}{b}+x\right]\right)}{a+b\,x} + 2\left(\frac{a}{a+b\,x} + \text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right] + \text{Log}\left[\frac{c}{d}+x\right] + \text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right) + \right.$$
$$\left.\frac{2\,a\left((-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right] + d\,(a+b\,x)\left(\text{Log}[a+b\,x] - \text{Log}[c+d\,x]\right)\right)}{(b\,c-a\,d)\,(a+b\,x)} - 2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] + \text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right) +$$
$$B^2\,d\,n^2\left(\text{Log}\left[\frac{a}{b}+x\right]^3 + \frac{3\,a\left(2 + 2\,\text{Log}\left[\frac{a}{b}+x\right] + \text{Log}\left[\frac{a}{b}+x\right]^2\right)}{a+b\,x} + 3\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] + \right.$$
$$\frac{3\left(a + (a+b\,x)\,\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right] + \text{Log}\left[\frac{c}{d}+x\right] + \text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2}{a+b\,x} -$$

$$3\,\text{Log}\left[\frac{a}{b}+x\right]^2\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\frac{1}{(b\,c-a\,d)\,(a+b\,x)}$$

$$3\,a\left(d\,(a+b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\left((-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])\right)-2\,\text{Log}\left[\frac{a}{b}+x\right]\right.$$

$$\left.\left((b\,c-a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)-2\,d\,(a+b\,x)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+6\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$\frac{1}{(b\,c-a\,d)\,(a+b\,x)}3\,a\left(\text{Log}\left[\frac{c}{d}+x\right]\left(b\,(c+d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]-2\,d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-2\,d\,(a+b\,x)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+$$

$$3\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)$$

$$\left(\text{Log}\left[\frac{a}{b}+x\right]^2+\frac{2\,a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{a+b\,x}+\frac{2\,a\left((-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])\right)}{(b\,c-a\,d)\,(a+b\,x)}-\right.$$

$$\left.\left.2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)-6\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)$$

Problem 165: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^3}\,dx$$

Optimal (type 3, 151 leaves, 3 steps):

$$-\frac{B^2\,i\,n^2\,(c+d\,x)^2}{4\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2}-\frac{B\,i\,n\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2}-\frac{i\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,(b\,c-a\,d)\,g^3\,(a+b\,x)^2}$$

Result (type 3, 582 leaves):

$$-\frac{1}{4 b^2 (b c-a d) g^3 (a+b x)^2} i \left(2 b^2 B^2 n^2 (c+d x)^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+2 B d^2 n (a+b x)^2 \text{Log}[a+b x] \left(2 A+B n+2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-2 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+\right.$$
$$2 B (b c-a d) n (a d+b (c+2 d x)) \text{Log}\left[\frac{a+b x}{c+d x}\right] \left(2 A+B n+2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-2 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+(b c-a d)^2 \left(2 A^2+2 A B n+B^2 n^2+\right.$$
$$\left.2 B^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-2 B n (2 A+B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+2 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(2 A+B n-2 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)+$$
$$2 d (b c-a d) (a+b x) \left(2 A^2+2 A B n+B^2 n^2+2 B^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-2 B n (2 A+B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+2 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+\right.$$
$$\left.\left.2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(2 A+B n-2 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)-2 B d^2 n (a+b x)^2 \left(2 A+B n+2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-2 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \text{Log}[c+d x]\right)$$

Problem 166: Result more than twice size of optimal antiderivative.

$$\int \frac{(c i+d i x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^4} \, dx$$

Optimal (type 3, 307 leaves, 7 steps):

$$\frac{B^2 d i n^2 (c+d x)^2}{4 (b c-a d)^2 g^4 (a+b x)^2}-\frac{2 b B^2 i n^2 (c+d x)^3}{27 (b c-a d)^2 g^4 (a+b x)^3}+\frac{B d i n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^2 g^4 (a+b x)^2}-$$
$$\frac{2 b B i n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d)^2 g^4 (a+b x)^3}+\frac{d i (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^2 g^4 (a+b x)^2}-\frac{b i (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 (b c-a d)^2 g^4 (a+b x)^3}$$

Result (type 3, 1015 leaves):

$$\frac{1}{g^4} i \left(\frac{B^2 n^2 \left(-2 b c^3+3 a c^2 d-3 b c^2 d x+6 a c d^2 x+3 a d^3 x^2+b d^3 x^3\right) \text{Log}\left[\frac{a+b x}{c+d x}\right]^2}{6 (-b c+a d)^2 (a+b x)^3}+\right.$$

$$\frac{B d^2 n \left(6 A+5 B n+6 B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)}{18 b^2 (b c-a d) (a+b x)}+\frac{B d^3 n \text{Log}[a+b x] \left(6 A+5 B n+6 B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)}{18 b^2 (b c-a d)^2}+$$

$$\frac{1}{18 b^2 (b c-a d) (a+b x)^3} B n \text{Log}\left[\frac{a+b x}{c+d x}\right] \left(-12 A b^2 c^2+6 a A b c d+6 a^2 A d^2-4 b^2 B c^2 n+5 a b B c d n+5 a^2 B d^2 n-\right.$$

$$18 A b^2 c d x+18 a A b d^2 x-3 b^2 B c d n x+15 a b B d^2 n x+6 b^2 B d^2 n x^2-12 b^2 B c^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+$$

$$6 a b B c d \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+6 a^2 B d^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-$$

$$\left.18 b^2 B c d x \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+18 a b B d^2 x \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)-\frac{1}{27 b^2 (a+b x)^3}$$

$$(b c-a d) \left(9 A^2+6 A B n+2 B^2 n^2+18 A B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+6 B^2 n \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+\right.$$

$$\left.9 B^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)-\frac{1}{36 b^2 (a+b x)^2}$$

$$d \left(18 A^2+6 A B n-B^2 n^2+36 A B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+6 B^2 n \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+\right.$$

$$\left.\left.18 B^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)-\frac{B d^3 n \left(6 A+5 B n+6 B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right) \text{Log}[c+d x]}{18 b^2 (b c-a d)^2}\right)$$

Problem 168: Result more than twice size of optimal antiderivative.

$$\int (a g+b g x)^3 (c i+d i x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 766 leaves, 17 steps):

$$\frac{3 B^2 (b c-a d)^5 g^3 i^2 n^2 x}{20 b^2 d^3}+\frac{B^2 (b c-a d)^2 g^3 i^2 n^2 (a+b x)^4}{60 b^3}-\frac{3 B^2 (b c-a d)^4 g^3 i^2 n^2 (c+d x)^2}{40 b d^4}+$$
$$\frac{B^2 (b c-a d)^3 g^3 i^2 n^2 (c+d x)^3}{60 d^4}-\frac{B (b c-a d)^3 g^3 i^2 n (a+b x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{90 b^3 d}-$$
$$\frac{B (b c-a d)^2 g^3 i^2 n (a+b x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{20 b^3}-\frac{B (b c-a d) g^3 i^2 n (a+b x)^4 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{15 b^2}+$$
$$\frac{(b c-a d)^2 g^3 i^2 (a+b x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{60 b^3}+\frac{(b c-a d) g^3 i^2 (a+b x)^4 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{15 b^2}+$$
$$\frac{g^3 i^2 (a+b x)^4 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{6 b}+\frac{B (b c-a d)^4 g^3 i^2 n (a+b x)^2 \left(3 A+B n+3 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{180 b^3 d^2}-$$
$$\frac{B (b c-a d)^5 g^3 i^2 n (a+b x) \left(6 A+5 B n+6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{180 b^3 d^3}-\frac{B (b c-a d)^6 g^3 i^2 n \left(6 A+11 B n+6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{180 b^3 d^4}-$$
$$\frac{B^2 (b c-a d)^6 g^3 i^2 n^2 \text{Log}[c+d x]}{20 b^3 d^4}-\frac{B^2 (b c-a d)^6 g^3 i^2 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{30 b^3 d^4}$$

Result (type 4, 4611 leaves) :

$$\frac{1}{360 b^3 d^4} g^3 i^2$$
$$\Big(-12 b^6 B^2 c^6 n^2+84 a b^5 B^2 c^5 d n^2-252 a^2 b^4 B^2 c^4 d^2 n^2+240 a^3 b^3 B^2 c^3 d^3 n^2+12 a^4 b^2 B^2 c^2 d^4 n^2-84 a^5 b B^2 c d^5 n^2+12 a^6 B^2 d^6 n^2+360 a^3 A^2 b^3 c^2 d^4 x-$$
$$12 A b^6 B c^5 d n x+72 a A b^5 B c^4 d^2 n x-180 a^2 A b^4 B c^3 d^3 n x+60 a^3 A b^3 B c^2 d^4 n x+72 a^4 A b^2 B c d^5 n x-12 a^5 A b B d^6 n x+8 b^6 B^2 c^5 d n^2 x-$$
$$54 a b^5 B^2 c^4 d^2 n^2 x+154 a^2 b^4 B^2 c^3 d^3 n^2 x-194 a^3 b^3 B^2 c^2 d^4 n^2 x+102 a^4 b^2 B^2 c d^5 n^2 x-16 a^5 b B^2 d^6 n^2 x+540 a^2 A^2 b^4 c^2 d^4 x^2+$$
$$360 a^3 A^2 b^3 c d^5 x^2+6 A b^6 B c^4 d^2 n x^2-36 a A b^5 B c^3 d^3 n x^2-180 a^2 A b^4 B c^2 d^4 n x^2+204 a^3 A b^3 B c d^5 n x^2+6 a^4 A b^2 B d^6 n x^2-7 b^6 B^2 c^4 d^2 n^2 x^2+$$
$$46 a b^5 B^2 c^3 d^3 n^2 x^2-60 a^2 b^4 B^2 c^2 d^4 n^2 x^2+10 a^3 b^3 B^2 c d^5 n^2 x^2+11 a^4 b^2 B^2 d^6 n^2 x^2+360 a A^2 b^5 c^2 d^4 x^3+720 a^2 A^2 b^4 c d^5 x^3+120 a^3 A^2 b^3 d^6 x^3-$$
$$4 A b^6 B c^3 d^3 n x^3-156 a A b^5 B c^2 d^4 n x^3+84 a^2 A b^4 B c d^5 n x^3+76 a^3 A b^3 B d^6 n x^3+6 b^6 B^2 c^3 d^3 n^2 x^3+6 a b^5 B^2 c^2 d^4 n^2 x^3-30 a^2 b^4 B^2 c d^5 n^2 x^3+$$
$$18 a^3 b^3 B^2 d^6 n^2 x^3+90 A^2 b^6 c^2 d^4 x^4+540 a A^2 b^5 c d^5 x^4+270 a^2 A^2 b^4 d^6 x^4-42 A b^6 B c^2 d^4 n x^4-36 a A b^5 B c d^5 n x^4+78 a^2 A b^4 B d^6 n x^4+$$
$$6 b^6 B^2 c^2 d^4 n^2 x^4-12 a b^5 B^2 c d^5 n^2 x^4+6 a^2 b^4 B^2 d^6 n^2 x^4+144 A^2 b^6 c d^5 x^5+216 a A^2 b^5 d^6 x^5-24 A b^6 B c d^5 n x^5+24 a A b^5 B d^6 n x^5+$$
$$60 A^2 b^6 d^6 x^6-12 a b^5 B^2 c^5 d n^2 \text{Log}\left[\frac{a}{b}+x\right]+72 a^2 b^4 B^2 c^4 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right]-180 a^3 b^3 B^2 c^3 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right]+60 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right]+$$
$$72 a^5 b B^2 c d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right]-12 a^6 B^2 d^6 n^2 \text{Log}\left[\frac{a}{b}+x\right]+90 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2-36 a^5 b B^2 c d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2+6 a^6 B^2 d^6 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2+$$
$$12 b^6 B^2 c^6 n^2 \text{Log}\left[\frac{c}{d}+x\right]-72 a b^5 B^2 c^5 d n^2 \text{Log}\left[\frac{c}{d}+x\right]+180 a^2 b^4 B^2 c^4 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right]-60 a^3 b^3 B^2 c^3 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right]-$$
$$72 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right]+12 a^5 b B^2 c d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right]-6 b^6 B^2 c^6 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2+36 a b^5 B^2 c^5 d n^2 \text{Log}\left[\frac{c}{d}+x\right]^2-$$
$$90 a^2 b^4 B^2 c^4 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2+120 a^3 b^3 B^2 c^3 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2+180 a^4 A b^2 B c^2 d^4 n \text{Log}[a+b x]-72 a^5 A b B c d^5 n \text{Log}[a+b x]+$$

$$12 a^6 A B d^6 n \text{Log}[a+b x]-6 a^2 b^4 B^2 c^4 d^2 n^2 \text{Log}[a+b x]+32 a^3 b^3 B^2 c^3 d^3 n^2 \text{Log}[a+b x]+66 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}[a+b x]-$$
$$108 a^5 b B^2 c d^5 n^2 \text{Log}[a+b x]+16 a^6 B^2 d^6 n^2 \text{Log}[a+b x]-180 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+72 a^5 b B^2 c d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]-$$
$$12 a^6 B^2 d^6 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+180 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-72 a^5 b B^2 c d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]+$$
$$12 a^6 B^2 d^6 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-180 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+72 a^5 b B^2 c d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]-$$
$$12 a^6 B^2 d^6 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+720 a^3 A b^3 B c^2 d^4 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-12 b^6 B^2 c^5 d n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$72 a b^5 B^2 c^4 d^2 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-180 a^2 b^4 B^2 c^3 d^3 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+60 a^3 b^3 B^2 c^2 d^4 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$72 a^4 b^2 B^2 c d^5 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-12 a^5 b B^2 d^6 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+1080 a^2 A b^4 B c^2 d^4 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$720 a^3 A b^3 B c d^5 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+6 b^6 B^2 c^4 d^2 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-36 a b^5 B^2 c^3 d^3 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-$$
$$180 a^2 b^4 B^2 c^2 d^4 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+204 a^3 b^3 B^2 c d^5 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+6 a^4 b^2 B^2 d^6 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$720 a A b^5 B c^2 d^4 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+1440 a^2 A b^4 B c d^5 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+240 a^3 A b^3 B d^6 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-$$
$$4 b^6 B^2 c^3 d^3 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-156 a b^5 B^2 c^2 d^4 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+84 a^2 b^4 B^2 c d^5 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$76 a^3 b^3 B^2 d^6 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+180 A b^6 B c^2 d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+1080 a A b^5 B c d^5 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$540 a^2 A b^4 B d^6 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-42 b^6 B^2 c^2 d^4 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-36 a b^5 B^2 c d^5 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$78 a^2 b^4 B^2 d^6 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+288 A b^6 B c d^5 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+432 a A b^5 B d^6 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-24 b^6 B^2 c d^5 n x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$24 a b^5 B^2 d^6 n x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+120 A b^6 B d^6 x^6 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+180 a^4 b^2 B^2 c^2 d^4 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-$$
$$72 a^5 b B^2 c d^5 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+12 a^6 B^2 d^6 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+360 a^3 b^3 B^2 c^2 d^4 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+$$
$$540 a^2 b^4 B^2 c^2 d^4 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+360 a^3 b^3 B^2 c d^5 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+360 a b^5 B^2 c^2 d^4 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+$$
$$720 a^2 b^4 B^2 c d^5 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+120 a^3 b^3 B^2 d^6 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+90 b^6 B^2 c^2 d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+$$
$$540 a b^5 B^2 c d^5 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+270 a^2 b^4 B^2 d^6 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+144 b^6 B^2 c d^5 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+$$
$$216 a b^5 B^2 d^6 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+60 b^6 B^2 d^6 x^6 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+12 A b^6 B c^6 n \text{Log}[c+d x]-72 a A b^5 B c^5 d n \text{Log}[c+d x]+$$
$$180 a^2 A b^4 B c^4 d^2 n \text{Log}[c+d x]-240 a^3 A b^3 B c^3 d^3 n \text{Log}[c+d x]-8 b^6 B^2 c^6 n^2 \text{Log}[c+d x]+60 a b^5 B^2 c^5 d n^2 \text{Log}[c+d x]-$$

$$186\,a^2 b^4 B^2 c^4 d^2 n^2 \,\text{Log}[c+d\,x] + 128\,a^3 b^3 B^2 c^3 d^3 n^2 \,\text{Log}[c+d\,x] + 6\,a^4 b^2 B^2 c^2 d^4 n^2 \,\text{Log}[c+d\,x] - 12\,b^6 B^2 c^6 n^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d\,x] +$$

$$72\,a\,b^5 B^2 c^5 d\,n^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d\,x] - 180\,a^2 b^4 B^2 c^4 d^2 n^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d\,x] + 240\,a^3 b^3 B^2 c^3 d^3 n^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d\,x] +$$

$$12\,b^6 B^2 c^6 n^2 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d\,x] - 72\,a\,b^5 B^2 c^5 d\,n^2 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d\,x] + 180\,a^2 b^4 B^2 c^4 d^2 n^2 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d\,x] -$$

$$240\,a^3 b^3 B^2 c^3 d^3 n^2 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d\,x] + 12\,b^6 B^2 c^6 n \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] \text{Log}[c+d\,x] - 72\,a\,b^5 B^2 c^5 d\,n \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] \text{Log}[c+d\,x] +$$

$$180\,a^2 b^4 B^2 c^4 d^2 n \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] \text{Log}[c+d\,x] - 240\,a^3 b^3 B^2 c^3 d^3 n \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] \text{Log}[c+d\,x] +$$

$$12\,b^6 B^2 c^6 n^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] - 72\,a\,b^5 B^2 c^5 d\,n^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] + 180\,a^2 b^4 B^2 c^4 d^2 n^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] -$$

$$240\,a^3 b^3 B^2 c^3 d^3 n^2 \,\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right] + 12\,b^3 B^2 c^3 \left(b^3 c^3 - 6\,a\,b^2 c^2 d + 15\,a^2 b\,c\,d^2 - 20\,a^3 d^3\right) n^2 \,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right] -$$

$$12\,a^4 B^2 d^4 \left(15\,b^2 c^2 - 6\,a\,b\,c\,d + a^2 d^2\right) n^2 \,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)$$

Problem 169: Result more than twice size of optimal antiderivative.

$$\int (a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)^2 \left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 819 leaves, 15 steps):

$$-\frac{B^2 (b c-a d)^4 g^2 i^2 n^2 x}{10 b^2 d^2}-\frac{B^2 (b c-a d)^3 g^2 i^2 n^2 (c+d x)^2}{20 b d^3}+\frac{B^2 (b c-a d)^2 g^2 i^2 n^2 (c+d x)^3}{30 d^3}-$$
$$\frac{B (b c-a d)^3 g^2 i^2 n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{30 b^3 d}-\frac{B (b c-a d)^2 g^2 i^2 n (a+b x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{15 b^3}-$$
$$\frac{B (b c-a d)^3 g^2 i^2 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{5 b d^3}+\frac{4 B (b c-a d)^2 g^2 i^2 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{15 d^3}-$$
$$\frac{b B (b c-a d) g^2 i^2 n (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 d^3}+\frac{(b c-a d)^2 g^2 i^2 (a+b x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{30 b^3}+$$
$$\frac{(b c-a d) g^2 i^2 (a+b x)^3 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{10 b^2}+\frac{g^2 i^2 (a+b x)^3 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{5 b}+$$
$$\frac{B (b c-a d)^4 g^2 i^2 n (a+b x) \left(2 A+B n+2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{30 b^3 d^2}+\frac{B (b c-a d)^5 g^2 i^2 n \left(2 A+3 B n+2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{30 b^3 d^3}+$$
$$\frac{B^2 (b c-a d)^5 g^2 i^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{30 b^3 d^3}+\frac{B^2 (b c-a d)^5 g^2 i^2 n^2 \text{Log}[c+d x]}{10 b^3 d^3}+\frac{B^2 (b c-a d)^5 g^2 i^2 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{15 b^3 d^3}$$

Result (type 4, 3366 leaves) :

$$\frac{1}{60 b^3 d^3}$$
$$g^2 i^2 \Big(4 b^5 B^2 c^5 n^2-24 a b^4 B^2 c^4 d n^2+20 a^2 b^3 B^2 c^3 d^2 n^2+20 a^3 b^2 B^2 c^2 d^3 n^2-24 a^4 b B^2 c d^4 n^2+4 a^5 B^2 d^5 n^2+60 a^2 A^2 b^3 c^2 d^3 x+4 A b^5 B c^4 d n x-$$
$$20 a A b^4 B c^3 d^2 n x+20 a^3 A b^2 B c d^4 n x-4 a^4 A b B d^5 n x-4 b^5 B^2 c^4 d n^2 x+22 a b^4 B^2 c^3 d^2 n^2 x-36 a^2 b^3 B^2 c^2 d^3 n^2 x+22 a^3 b^2 B^2 c d^4 n^2 x-$$
$$4 a^4 b B^2 d^5 n^2 x+60 a A^2 b^4 c^2 d^3 x^2+60 a^2 A^2 b^3 c d^4 x^2-2 A b^5 B c^3 d^2 n x^2-30 a A b^4 B c^2 d^3 n x^2+30 a^2 A b^3 B c d^4 n x^2+2 a^3 A b^2 B d^5 n x^2+$$
$$3 b^5 B^2 c^3 d^2 n^2 x^2-3 a b^4 B^2 c^2 d^3 n^2 x^2-3 a^2 b^3 B^2 c d^4 n^2 x^2+3 a^3 b^2 B^2 d^5 n^2 x^2+20 A^2 b^5 c^2 d^3 x^3+80 a A^2 b^4 c d^4 x^3+20 a^2 A^2 b^3 d^5 x^3-$$
$$12 A b^5 B c^2 d^3 n x^3+12 a^2 A b^3 B d^5 n x^3+2 b^5 B^2 c^2 d^3 n^2 x^3-4 a b^4 B^2 c d^4 n^2 x^3+2 a^2 b^3 B^2 d^5 n^2 x^3+30 A^2 b^5 c d^4 x^4+30 a A^2 b^4 d^5 x^4-$$
$$6 A b^5 B c d^4 n x^4+6 a A b^4 B d^5 n x^4+12 A^2 b^5 d^5 x^5+4 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{a}{b}+x\right]-20 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right]+20 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right]-$$
$$4 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right]+20 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2-10 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2+2 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2-4 b^5 B^2 c^5 n^2 \text{Log}\left[\frac{c}{d}+x\right]+$$
$$20 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{c}{d}+x\right]-20 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right]+4 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right]+2 b^5 B^2 c^5 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2-10 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{c}{d}+x\right]^2+$$
$$20 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2+40 a^3 A b^2 B c^2 d^3 n \text{Log}[a+b x]-20 a^4 A b B c d^4 n \text{Log}[a+b x]+4 a^5 A B d^5 n \text{Log}[a+b x]+$$
$$2 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}[a+b x]+18 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}[a+b x]-24 a^4 b B^2 c d^4 n^2 \text{Log}[a+b x]+4 a^5 B^2 d^5 n^2 \text{Log}[a+b x]-$$
$$40 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+20 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]-4 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+$$
$$40 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-20 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]+4 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-$$

$$40\,a^3 b^2 B^2 c^2 d^3 n^2 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+20\,a^4 b\,B^2 c\,d^4 n^2 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-4\,a^5 B^2 d^5 n^2 \,\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$

$$120\,a^2 A\,b^3 B\,c^2 d^3 x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+4\,b^5 B^2 c^4 d\,n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-20\,a\,b^4 B^2 c^3 d^2 n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+$$

$$20\,a^3 b^2 B^2 c\,d^4 n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-4\,a^4 b\,B^2 d^5 n\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+120\,a\,A\,b^4 B\,c^2 d^3 x^2 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+$$

$$120\,a^2 A\,b^3 B\,c\,d^4 x^2 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-2\,b^5 B^2 c^3 d^2 n\,x^2 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-30\,a\,b^4 B^2 c^2 d^3 n\,x^2 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+$$

$$30\,a^2 b^3 B^2 c\,d^4 n\,x^2 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+2\,a^3 b^2 B^2 d^5 n\,x^2 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+40\,A\,b^5 B\,c^2 d^3 x^3 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+$$

$$160\,a\,A\,b^4 B\,c\,d^4 x^3 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+40\,a^2 A\,b^3 B\,d^5 x^3 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-12\,b^5 B^2 c^2 d^3 n\,x^3 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+$$

$$12\,a^2 b^3 B^2 d^5 n\,x^3 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+60\,A\,b^5 B\,c\,d^4 x^4 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+60\,a\,A\,b^4 B\,d^5 x^4 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-6\,b^5 B^2 c\,d^4 n\,x^4 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+$$

$$6\,a\,b^4 B^2 d^5 n\,x^4 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+24\,A\,b^5 B\,d^5 x^5 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+40\,a^3 b^2 B^2 c^2 d^3 n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-$$

$$20\,a^4 b\,B^2 c\,d^4 n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+4\,a^5 B^2 d^5 n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+60\,a^2 b^3 B^2 c^2 d^3 x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+$$

$$60\,a\,b^4 B^2 c^2 d^3 x^2 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+60\,a^2 b^3 B^2 c\,d^4 x^2 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+20\,b^5 B^2 c^2 d^3 x^3 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+$$

$$80\,a\,b^4 B^2 c\,d^4 x^3 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+20\,a^2 b^3 B^2 d^5 x^3 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+30\,b^5 B^2 c\,d^4 x^4 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+30\,a\,b^4 B^2 d^5 x^4 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+$$

$$12\,b^5 B^2 d^5 x^5 \,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-4\,A\,b^5 B\,c^5 n\,\text{Log}[c+d\,x]+20\,a\,A\,b^4 B\,c^4 d\,n\,\text{Log}[c+d\,x]-40\,a^2 A\,b^3 B\,c^3 d^2 n\,\text{Log}[c+d\,x]+$$

$$4\,b^5 B^2 c^5 n^2 \,\text{Log}[c+d\,x]-24\,a\,b^4 B^2 c^4 d\,n^2 \,\text{Log}[c+d\,x]+18\,a^2 b^3 B^2 c^3 d^2 n^2 \,\text{Log}[c+d\,x]+2\,a^3 b^2 B^2 c^2 d^3 n^2 \,\text{Log}[c+d\,x]+$$

$$4\,b^5 B^2 c^5 n^2 \,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-20\,a\,b^4 B^2 c^4 d\,n^2 \,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]+40\,a^2 b^3 B^2 c^3 d^2 n^2 \,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]-$$

$$4\,b^5 B^2 c^5 n^2 \,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]+20\,a\,b^4 B^2 c^4 d\,n^2 \,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-40\,a^2 b^3 B^2 c^3 d^2 n^2 \,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]-$$

$$4\,b^5 B^2 c^5 n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\text{Log}[c+d\,x]+20\,a\,b^4 B^2 c^4 d\,n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\text{Log}[c+d\,x]-40\,a^2 b^3 B^2 c^3 d^2 n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\text{Log}[c+d\,x]-$$

$$4\,b^5 B^2 c^5 n^2 \,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+20\,a\,b^4 B^2 c^4 d\,n^2 \,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-40\,a^2 b^3 B^2 c^3 d^2 n^2 \,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$4\,b^3 B^2 c^3 \left(b^2 c^2-5\,a\,b\,c\,d+10\,a^2 d^2\right) n^2 \,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-4\,a^3 B^2 d^3 \left(10\,b^2 c^2-5\,a\,b\,c\,d+a^2 d^2\right) n^2 \,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)$$

Problem 170: Result more than twice size of optimal antiderivative.

$$\int (a\,g+b\,g\,x)\,(c\,i+d\,i\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 635 leaves, 14 steps):

$$\frac{B^2(b\,c-a\,d)^3 g\,i^2 n^2 x}{12\,b^2 d}+\frac{B^2(b\,c-a\,d)^2 g\,i^2 n^2 (c+d\,x)^2}{12\,b\,d^2}-\frac{B(b\,c-a\,d)^3 g\,i^2 n\,(a+b\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,b^3 d}-\frac{B(b\,c-a\,d)^2 g\,i^2 n\,(a+b\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,b^3}+\frac{B(b\,c-a\,d)^2 g\,i^2 n\,(c+d\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\,b\,d^2}-\frac{B(b\,c-a\,d)\,g\,i^2 n\,(c+d\,x)^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,d^2}+\frac{(b\,c-a\,d)^2 g\,i^2 (a+b\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{12\,b^3}+\frac{(b\,c-a\,d)\,g\,i^2 (a+b\,x)^2 (c+d\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{6\,b^2}+\frac{g\,i^2 (a+b\,x)^2 (c+d\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{4\,b}-\frac{B(b\,c-a\,d)^4 g\,i^2 n\left(A+B\,n+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{6\,b^3 d^2}-\frac{B^2(b\,c-a\,d)^4 g\,i^2 n^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{12\,b^3 d^2}-\frac{B^2(b\,c-a\,d)^4 g\,i^2 n^2\,\mathrm{Log}[c+d\,x]}{4\,b^3 d^2}-\frac{B^2(b\,c-a\,d)^4 g\,i^2 n^2\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{6\,b^3 d^2}$$

Result (type 4, 2518 leaves):

$$\frac{1}{12\,b^3 d^2}g\,i^2\Big(-2\,b^4 B^2 c^4 n^2-2\,a\,b^3 B^2 c^3 d\,n^2+12\,a^2 b^2 B^2 c^2 d^2 n^2-10\,a^3 b\,B^2 c\,d^3 n^2+2\,a^4 B^2 d^4 n^2+12\,a\,A^2 b^3 c^2 d^2 x-2\,A\,b^4 B\,c^3 d\,n\,x-4\,a\,A\,b^3 B\,c^2 d^2 n\,x+$$
$$8\,a^2 A\,b^2 B\,c\,d^3 n\,x-2\,a^3 A\,b\,B\,d^4 n\,x+3\,b^4 B^2 c^3 d\,n^2 x-7\,a\,b^3 B^2 c^2 d^2 n^2 x+5\,a^2 b^2 B^2 c\,d^3 n^2 x-a^3 b\,B^2 d^4 n^2 x+6\,A^2 b^4 c^2 d^2 x^2+$$
$$12\,a\,A^2 b^3 c\,d^3 x^2-5\,A\,b^4 B\,c^2 d^2 n\,x^2+4\,a\,A\,b^3 B\,c\,d^3 n\,x^2+a^2 A\,b^2 B\,d^4 n\,x^2+b^4 B^2 c^2 d^2 n^2 x^2-2\,a\,b^3 B^2 c\,d^3 n^2 x^2+a^2 b^2 B^2 d^4 n^2 x^2+$$
$$8\,A^2 b^4 c\,d^3 x^3+4\,a\,A^2 b^3 d^4 x^3-2\,A\,b^4 B\,c\,d^3 n\,x^3+2\,a\,A\,b^3 B\,d^4 n\,x^3+3\,A^2 b^4 d^4 x^4-2\,a\,b^3 B^2 c^3 d\,n^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]-4\,a^2 b^2 B^2 c^2 d^2 n^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]+$$
$$8\,a^3 b\,B^2 c\,d^3 n^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]-2\,a^4 B^2 d^4 n^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]+6\,a^2 b^2 B^2 c^2 d^2 n^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]^2-4\,a^3 b\,B^2 c\,d^3 n^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]^2+a^4 B^2 d^4 n^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]^2+$$
$$2\,b^4 B^2 c^4 n^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]+4\,a\,b^3 B^2 c^3 d\,n^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]-8\,a^2 b^2 B^2 c^2 d^2 n^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]+2\,a^3 b\,B^2 c\,d^3 n^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]-b^4 B^2 c^4 n^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]^2+$$
$$4\,a\,b^3 B^2 c^3 d\,n^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]^2+12\,a^2 A\,b^2 B\,c^2 d^2 n\,\mathrm{Log}[a+b\,x]-8\,a^3 A\,b\,B\,c\,d^3 n\,\mathrm{Log}[a+b\,x]+2\,a^4 A\,B\,d^4 n\,\mathrm{Log}[a+b\,x]+$$
$$5\,a^2 b^2 B^2 c^2 d^2 n^2\,\mathrm{Log}[a+b\,x]-6\,a^3 b\,B^2 c\,d^3 n^2\,\mathrm{Log}[a+b\,x]+a^4 B^2 d^4 n^2\,\mathrm{Log}[a+b\,x]-12\,a^2 b^2 B^2 c^2 d^2 n^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}[a+b\,x]+$$
$$8\,a^3 b\,B^2 c\,d^3 n^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}[a+b\,x]-2\,a^4 B^2 d^4 n^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}[a+b\,x]+12\,a^2 b^2 B^2 c^2 d^2 n^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}[a+b\,x]-$$
$$8\,a^3 b\,B^2 c\,d^3 n^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}[a+b\,x]+2\,a^4 B^2 d^4 n^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}[a+b\,x]-12\,a^2 b^2 B^2 c^2 d^2 n^2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$

$$8 a^3 b B^2 c d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]-2 a^4 B^2 d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+24 a A b^3 B c^2 d^2 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-$$

$$2 b^4 B^2 c^3 d n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-4 a b^3 B^2 c^2 d^2 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+8 a^2 b^2 B^2 c d^3 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-2 a^3 b B^2 d^4 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$

$$12 A b^4 B c^2 d^2 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+24 a A b^3 B c d^3 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-5 b^4 B^2 c^2 d^2 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+4 a b^3 B^2 c d^3 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$

$$a^2 b^2 B^2 d^4 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+16 A b^4 B c d^3 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+8 a A b^3 B d^4 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-2 b^4 B^2 c d^3 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$

$$2 a b^3 B^2 d^4 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+6 A b^4 B d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+12 a^2 b^2 B^2 c^2 d^2 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-$$

$$8 a^3 b B^2 c d^3 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+2 a^4 B^2 d^4 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+12 a b^3 B^2 c^2 d^2 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+$$

$$6 b^4 B^2 c^2 d^2 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+12 a b^3 B^2 c d^3 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+8 b^4 B^2 c d^3 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+4 a b^3 B^2 d^4 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+$$

$$3 b^4 B^2 d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+2 A b^4 B c^4 n \text{Log}[c+d x]-8 a A b^3 B c^3 d n \text{Log}[c+d x]-3 b^4 B^2 c^4 n^2 \text{Log}[c+d x]+$$

$$2 a b^3 B^2 c^3 d n^2 \text{Log}[c+d x]+a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}[c+d x]-2 b^4 B^2 c^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+8 a b^3 B^2 c^3 d n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+$$

$$2 b^4 B^2 c^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]-8 a b^3 B^2 c^3 d n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+2 b^4 B^2 c^4 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]-$$

$$8 a b^3 B^2 c^3 d n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]+2 b^4 B^2 c^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-8 a b^3 B^2 c^3 d n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+$$

$$\left.2 b^3 B^2 c^3 (b c-4 a d) n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-2 a^2 B^2 d^2 \left(6 b^2 c^2-4 a b c d+a^2 d^2\right) n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)$$

Problem 171: Result more than twice size of optimal antiderivative.

$$\int (c\,i+d\,i\,x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 361 leaves, 11 steps):

$$\frac{B^2 (b c-a d)^2 i^2 n^2 x}{3 b^2}-\frac{2 B (b c-a d)^2 i^2 n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^3}-\frac{B (b c-a d) i^2 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b d}+$$

$$\frac{i^2 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 d}+\frac{B^2 (b c-a d)^3 i^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 b^3 d}+\frac{B^2 (b c-a d)^3 i^2 n^2 \text{Log}[c+d x]}{b^3 d}+$$

$$\frac{2 B (b c-a d)^3 i^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{3 b^3 d}-\frac{2 B^2 (b c-a d)^3 i^2 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{3 b^3 d}$$

Result (type 4, 1589 leaves):

$$i^2 \left(c^2 x \left(A + B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2 + c d x^2 \left(A + B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2 + \right.$$

$$\frac{1}{3} d^2 x^3 \left(A + B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2 + 2 B c^2 n \left(A + B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$

$$\left(x \text{Log}\left[\frac{a+b x}{c+d x}\right] + \frac{(b c - a d) (a d \text{Log}[a+b x] - b c \text{Log}[c+d x])}{b^2 c d - a b d^2}\right) + 2 B d^2 n \left(A + B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$

$$\left(\frac{1}{3} x^3 \text{Log}\left[\frac{a+b x}{c+d x}\right] - \frac{b d (b c - a d) x (-2 b c - 2 a d + b d x) - 2 a^3 d^3 \text{Log}[a+b x] + 2 b^3 c^3 \text{Log}[c+d x]}{6 b^3 d^3}\right) +$$

$$4 B c d n \left(A + B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right) \left(\frac{1}{2} x^2 \text{Log}\left[\frac{a+b x}{c+d x}\right] - \frac{1}{2} (b c - a d) \left(\frac{x}{b d} + \frac{a^2 \text{Log}[a+b x]}{b^2 (b c - a d)} - \frac{c^2 \text{Log}[c+d x]}{d^2 (b c - a d)}\right)\right) +$$

$$B^2 c^2 n^2 \left(x \text{Log}\left[\frac{a+b x}{c+d x}\right]^2 - \frac{1}{b d} \left(-a d \text{Log}\left[\frac{a}{b} + x\right]^2 - b c \text{Log}\left[\frac{c}{d} + x\right]^2 + 2 a d \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[a+b x] - 2 a d \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[a+b x] + \right.\right.$$

$$2 a d \text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a+b x)}{-b c + a d}\right] - 2 a d \text{Log}[a+b x] \text{Log}\left[\frac{a+b x}{c+d x}\right] - 2 b c \text{Log}\left[\frac{a}{b} + x\right] \text{Log}[c+d x] + 2 b c \text{Log}\left[\frac{c}{d} + x\right] \text{Log}[c+d x] +$$

$$\left.\left. 2 b c \text{Log}\left[\frac{a+b x}{c+d x}\right] \text{Log}[c+d x] + 2 b c \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c+d x)}{b c - a d}\right] + 2 b c \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c + a d}\right] + 2 a d \text{PolyLog}\left[2, \frac{b (c+d x)}{b c - a d}\right]\right)\right) + 2 B^2 c$$

$$d n^2 \left(\frac{1}{2} x^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2 - \frac{1}{2 b^2 d^2} \left(-2 d (-b c + a d) (a+b x) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) + a^2 d^2 \text{Log}\left[\frac{a}{b} + x\right]^2 - 2 b (b c - a d) (c+d x) \left(-1 + \text{Log}\left[\frac{c}{d} + x\right]\right) + \right.\right.$$

$$b^2 c^2 \text{Log}\left[\frac{c}{d} + x\right]^2 - 2 \left(\text{Log}\left[\frac{a}{b} + x\right] - \text{Log}\left[\frac{c}{d} + x\right] - \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(a^2 d^2 \text{Log}[a+b x] - b \left(d (-b c + a d) x + b c^2 \text{Log}[c+d x]\right)\right) -$$

$$\left.\left. 2 b^2 c^2 \left(\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c+d x)}{b c - a d}\right] + \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c + a d}\right]\right) - 2 a^2 d^2 \left(\text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a+b x)}{-b c + a d}\right] + \text{PolyLog}\left[2, \frac{b (c+d x)}{b c - a d}\right]\right)\right)\right) +$$

$$B^2 d^2 n^2 \left(\frac{1}{3} x^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2 - \frac{1}{6 b^3 d^3} \left(4 d (-b c + a d) (b c + a d) (a+b x) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) - 2 a^3 d^3 \text{Log}\left[\frac{a}{b} + x\right]^2 + \right.\right.$$

$$4 b (b c - a d) (b c + a d) (c+d x) \left(-1 + \text{Log}\left[\frac{c}{d} + x\right]\right) - 2 b^3 c^3 \text{Log}\left[\frac{c}{d} + x\right]^2 + d^2 (b c - a d)$$

$$\left(b x (2 a - b x) + 2 b^2 x^2 \text{Log}\left[\frac{a}{b} + x\right] - 2 a^2 \text{Log}[a+b x]\right) + b^2 (b c - a d) \left(d x (-2 c + d x) - 2 d^2 x^2 \text{Log}\left[\frac{c}{d} + x\right] + 2 c^2 \text{Log}[c+d x]\right) -$$

$$2 \left(\text{Log}\left[\frac{a}{b} + x\right] - \text{Log}\left[\frac{c}{d} + x\right] - \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(b d (b c - a d) x (-2 b c - 2 a d + b d x) - 2 a^3 d^3 \text{Log}[a+b x] + 2 b^3 c^3 \text{Log}[c+d x]\right) +$$

$$\left.\left.\left. 4 b^3 c^3 \left(\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c+d x)}{b c - a d}\right] + \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c + a d}\right]\right) + 4 a^3 d^3 \left(\text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a+b x)}{-b c + a d}\right] + \text{PolyLog}\left[2, \frac{b (c+d x)}{b c - a d}\right]\right)\right)\right)\right)$$

Problem 172: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\, i+d\, i\, x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{a g+b g x}\, dx$$

Optimal (type 4, 572 leaves, 15 steps):

$$-\frac{B d (b c-a d) i^2 n (a+b x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g}+\frac{d (b c-a d) i^2 (a+b x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g}+$$
$$\frac{i^2 (c+d x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b g}+\frac{2 B (b c-a d)^2 i^2 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b^3 g}+\frac{B^2 (b c-a d)^2 i^2 n^2 \operatorname{Log}[c+d x]}{b^3 g}+$$
$$\frac{B (b c-a d)^2 i^2 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g}-\frac{(b c-a d)^2 i^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \operatorname{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g}+$$
$$\frac{2 B^2 (b c-a d)^2 i^2 n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{b^3 g}-\frac{B^2 (b c-a d)^2 i^2 n^2 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g}+$$
$$\frac{2 B (b c-a d)^2 i^2 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g}+\frac{2 B^2 (b c-a d)^2 i^2 n^2 \operatorname{PolyLog}\left[3, \frac{b (c+d x)}{d (a+b x)}\right]}{b^3 g}$$

Result (type 4, 2784 leaves):

$$\frac{1}{12 b^3 g} i^2 \left(12 b d (2 b c-a d) x \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+\right.$$
$$6 b^2 d^2 x^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+12 (b c-a d)^2 \operatorname{Log}[a+b x] \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-$$
$$24 b B c n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(a d \operatorname{Log}\left[\frac{a}{b}+x\right]^2-2 a d \operatorname{Log}\left[\frac{a}{b}+x\right] (1+\operatorname{Log}[a+b x])+\right.$$
$$2 \left(-b c+a d+\operatorname{Log}\left[\frac{c}{d}+x\right] \left(b c+a d \operatorname{Log}[a+b x]-a d \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right)+(-b d x+a d \operatorname{Log}[a+b x]) \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]-\right.$$
$$\left.\left.2 a d \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right)\right)+12 b^2 B c^2 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)$$
$$\left(\operatorname{Log}\left[\frac{a}{b}+x\right]^2-2 \operatorname{Log}[a+b x] \left(\operatorname{Log}\left[\frac{a}{b}+x\right]-\operatorname{Log}\left[\frac{c}{d}+x\right]-\operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)-2 \left(\operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right)\right)+6$$
$$B n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(-4 a d^2 (a+b x) \left(-1+\operatorname{Log}\left[\frac{a}{b}+x\right]\right)+2 a^2 d^2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2+4 a b d (c+d x) \left(-1+\operatorname{Log}\left[\frac{c}{d}+x\right]\right)+d^2\right.$$

$$\left(b x (2 a-b x)+2 b^2 x^2 \text{Log}\left[\frac{a}{b}+x\right]-2 a^2 \text{Log}[a+b x]\right)-2 d^2 \left(b x (-2 a+b x)+2 a^2 \text{Log}[a+b x]\right) \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+$$

$$b^2 \left(d x (-2 c+d x)-2 d^2 x^2 \text{Log}\left[\frac{c}{d}+x\right]+2 c^2 \text{Log}[c+d x]\right)-4 a^2 d^2 \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\Big)\Big)-$$

$$8 b B^2 c n^2 \Big(a d \text{Log}\left[\frac{a}{b}+x\right]^3-3 d (a+b x) \left(2-2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)-3 b (c+d x) \left(2-2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)-$$

$$3 d (b x-a \text{Log}[a+b x]) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+6 \Big(a d+2 b d x-b d x \text{Log}\left[\frac{c}{d}+x\right]-b c \text{Log}[c+d x]+$$

$$\text{Log}\left[\frac{a}{b}+x\right] \left(-d (a+b x)+d (a+b x) \text{Log}\left[\frac{c}{d}+x\right]+(b c-a d) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+(b c-a d) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Big)-$$

$$3 \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \Big(-2 b c+2 a d-2 d (a+b x) \text{Log}\left[\frac{a}{b}+x\right]+a d \text{Log}\left[\frac{a}{b}+x\right]^2+$$

$$2 \text{Log}\left[\frac{c}{d}+x\right] \left(b (c+d x)-a d \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right)-2 a d \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\Big)-$$

$$3 a d \left(\text{Log}\left[\frac{a}{b}+x\right]^2 \left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)-2 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+2 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]\right)+$$

$$3 a d \left(\text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\right)\Big)\Big)+$$

$$B^2 n^2 \Big(4 a^2 d^2 \text{Log}\left[\frac{a}{b}+x\right]^3-12 a d^2 (a+b x) \left(2-2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)-$$

$$3 d^2 (a+b x) \left(7 a-b x+(-6 a+2 b x) \text{Log}\left[\frac{a}{b}+x\right]+2 (a-b x) \text{Log}\left[\frac{a}{b}+x\right]^2\right)-12 a b d (c+d x) \left(2-2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)-$$

$$3 b^2 (c+d x) \left(7 c-d x+(-6 c+2 d x) \text{Log}\left[\frac{c}{d}+x\right]+2 (c-d x) \text{Log}\left[\frac{c}{d}+x\right]^2\right)+6 d^2 \left(b x (-2 a+b x)+2 a^2 \text{Log}[a+b x]\right)$$

$$\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-6 \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \Big(-4 a d^2 (a+b x) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)+$$

$$2 a^2 d^2 \text{Log}\left[\frac{a}{b}+x\right]^2+4 a b d (c+d x) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)+d^2 \left(b x (2 a-b x)+2 b^2 x^2 \text{Log}\left[\frac{a}{b}+x\right]-2 a^2 \text{Log}[a+b x]\right)+$$

$$b^2 \left(d x (-2 c+d x)-2 d^2 x^2 \text{Log}\left[\frac{c}{d}+x\right]+2 c^2 \text{Log}[c+d x]\right)-4 a^2 d^2 \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\Big)+$$

$$6 \Big(2 a b c d+3 b^2 c d x+3 a b d^2 x-b^2 d^2 x^2-2 a b d^2 x \text{Log}\left[\frac{c}{d}+x\right]+b^2 d^2 x^2 \text{Log}\left[\frac{c}{d}+x\right]-a^2 d^2 \text{Log}[a+b x]-b^2 c^2 \text{Log}[c+d x]-$$

$$2 a b c d \text{Log}[c+d x]-\text{Log}\left[\frac{a}{b}+x\right] \left(b d (2 a c+b x (2 c-d x))-2 d^2 \left(a^2-b^2 x^2\right) \text{Log}\left[\frac{c}{d}+x\right]+\left(-2 b^2 c^2+2 a^2 d^2\right) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+$$

$$2 \left(b^2 c^2-a^2 d^2\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+4 a d \Big(a d+2 b d x-b d x \text{Log}\left[\frac{c}{d}+x\right]-b c \text{Log}[c+d x]+$$

$$\mathrm{Log}\left[\frac{a}{b}+x\right]\left(-d\,(a+b\,x)+d\,(a+b\,x)\,\mathrm{Log}\left[\frac{c}{d}+x\right]+(b\,c-a\,d)\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+(b\,c-a\,d)\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\Bigg)-$$

$$2\,a^2\,d^2\left(\mathrm{Log}\left[\frac{a}{b}+x\right]^2\left(\mathrm{Log}\left[\frac{c}{d}+x\right]-\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)-2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,\mathrm{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\Bigg)+$$

$$12\,a^2\,d^2\left(\mathrm{Log}\left[\frac{c}{d}+x\right]^2\mathrm{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-2\,\mathrm{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\Bigg)+$$

$$4\,b^2\,B^2\,c^2\,n^2\Bigg(\mathrm{Log}\left[\frac{a}{b}+x\right]^3+3\,\mathrm{Log}\left[\frac{c}{d}+x\right]^2\mathrm{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+3\,\mathrm{Log}[a+b\,x]\left(-\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2+$$

$$3\,\mathrm{Log}\left[\frac{a}{b}+x\right]^2\left(-\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+6\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+6\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$3\left(\mathrm{Log}\left[\frac{a}{b}+x\right]-\mathrm{Log}\left[\frac{c}{d}+x\right]-\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\left(\mathrm{Log}\left[\frac{a}{b}+x\right]^2-2\left(\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)-$$

$$6\,\mathrm{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,\mathrm{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)\Bigg)$$

Problem 173: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^2}\,dx$$

Optimal (type 4, 472 leaves, 11 steps):

$$-\frac{2\,B^2\,(b\,c-a\,d)\,i^2\,n^2\,(c+d\,x)}{b^2\,g^2\,(a+b\,x)}-\frac{2\,B\,(b\,c-a\,d)\,i^2\,n\,(c+d\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{b^2\,g^2\,(a+b\,x)}+\frac{d^2\,i^2\,(a+b\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{b^3\,g^2}-$$

$$\frac{(b\,c-a\,d)\,i^2\,(c+d\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{b^2\,g^2\,(a+b\,x)}+\frac{2\,B\,d\,(b\,c-a\,d)\,i^2\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{b^3\,g^2}-$$

$$\frac{2\,d\,(b\,c-a\,d)\,i^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^2}+\frac{2\,B^2\,d\,(b\,c-a\,d)\,i^2\,n^2\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b^3\,g^2}+$$

$$\frac{4\,B\,d\,(b\,c-a\,d)\,i^2\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^2}+\frac{4\,B^2\,d\,(b\,c-a\,d)\,i^2\,n^2\,\mathrm{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b^3\,g^2}$$

Result (type 4, 3257 leaves):

$$\frac{d^2\, i^2\, x \left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)^2}{b^2\, g^2}+\frac{2\,d\,(b\,c-a\,d)\, i^2\, \text{Log}[a+b\,x]\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)^2}{b^3\, g^2}+\frac{1}{b^3\, g^2\,(a+b\,x)}$$

$$\left(-A^2\, b^2\, c^2\, i^2+2\,a\,A^2\, b\,c\,d\,i^2-a^2\, A^2\, d^2\, i^2-2\,A\,b^2\, B\,c^2\, i^2\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+4\,a\,A\,b\,B\,c\,d\,i^2\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-\right.$$

$$2\,a^2\, A\,B\,d^2\, i^2\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-b^2\, B^2\, c^2\, i^2\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2+$$

$$\left.2\,a\,b\,B^2\, c\,d\,i^2\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2-a^2\, B^2\, d^2\, i^2\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2\right)+\frac{1}{b\,(b\,c-a\,d)\, g^2\,(a+b\,x)}$$

$$B^2\, c^2\, i^2\, n^2\left(-2\,b\,c+2\,a\,d-2\,d\,(a+b\,x)\,\text{Log}[a+b\,x]+(-2\,b\,c+2\,a\,d)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]-b\,(c+d\,x)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+2\,d\,(a+b\,x)\,\text{Log}[c+d\,x]\right)+$$

$$\frac{1}{g^2}2\,B\,c^2\, i^2\, n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)$$

$$\left(-\frac{\left(\frac{a}{b}+x\right)\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{(a+b\,x)^2\,\text{Log}\left[\frac{a}{b}+x\right]}-\frac{\frac{b\left(\frac{c}{d}+x\right)\text{Log}\left[\frac{c}{d}+x\right]}{\left(-a+\frac{b\,c}{d}\right)^2\left(1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right)}+\frac{\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]}{-a+\frac{b\,c}{d}}}{b}-\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]}{b\,(a+b\,x)}\right)+$$

$$\frac{1}{g^2}2\,B\,d^2\, i^2\, n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\left(\frac{\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^2}-\frac{a\,\text{Log}\left[\frac{a}{b}+x\right]^2}{b^3}-\frac{a^2\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3\,(a+b\,x)}-\right.$$

$$\frac{\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^2}-\frac{a^2\left((-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])\right)}{b^3\,(b\,c-a\,d)\,(a+b\,x)}+$$

$$\left.\frac{\left(b\,x-\frac{a^2}{a+b\,x}-2\,a\,\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{b^3}+\frac{2\,a\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)}{b^3}\right)+$$

$$\frac{1}{g^2}4\,B\,c\,d\,i^2\, n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)$$

$$\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2\,b^2}+\frac{a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^2\,(a+b\,x)}+\frac{a\left((-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])\right)}{b^2\,(b\,c-a\,d)\,(a+b\,x)}+\right.$$

$$\left.\frac{\left(\frac{a}{a+b\,x}+\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{b^2}-\frac{\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2}\right)+$$

$$\frac{1}{g^2} B^2 d^2 i^2 n^2 \left(-\frac{2 a \,\mathrm{Log}\left[\frac{a}{b}+x\right]^3}{3 b^3}+\frac{(a+b x) \left(2-2 \,\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^3}-\frac{a^2 \left(2+2 \,\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^3 (a+b x)}+\right.$$

$$\frac{(c+d x) \left(2-2 \,\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{c}{d}+x\right]^2\right)}{b^2 d}+\frac{\left(b x-\frac{a^2}{a+b x}-2 a \,\mathrm{Log}[a+b x]\right) \left(-\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)^2}{b^3}+$$

$$\frac{1}{b^3 (b c-a d) (a+b x)} a^2 \left(-b (c+d x) \,\mathrm{Log}\left[\frac{c}{d}+x\right]^2+2 d (a+b x) \,\mathrm{Log}\left[\frac{c}{d}+x\right] \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 d (a+b x) \,\mathrm{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)+$$

$$2 \left(-\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right) \left(\frac{\left(\frac{a}{b}+x\right) \left(-1+\mathrm{Log}\left[\frac{a}{b}+x\right]\right)}{b^2}-\frac{a \,\mathrm{Log}\left[\frac{a}{b}+x\right]^2}{b^3}-\frac{a^2 \left(1+\mathrm{Log}\left[\frac{a}{b}+x\right]\right)}{b^3 (a+b x)}-\right.$$

$$\frac{\left(\frac{c}{d}+x\right) \left(-1+\mathrm{Log}\left[\frac{c}{d}+x\right]\right)}{b^2}-\frac{a^2 \left((-b c+a d) \,\mathrm{Log}\left[\frac{c}{d}+x\right]+d (a+b x) (\mathrm{Log}[a+b x]-\mathrm{Log}[c+d x])\right)}{b^3 (b c-a d) (a+b x)}+$$

$$\left.\frac{2 a \left(\mathrm{Log}\left[\frac{c}{d}+x\right] \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\mathrm{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)}{b^3}\right)-2 \left(\frac{1}{b^3 d}\left(a d+2 b d x-b d x \,\mathrm{Log}\left[\frac{c}{d}+x\right]-b c \,\mathrm{Log}[c+d x]+\right.\right.$$

$$\left.\mathrm{Log}\left[\frac{a}{b}+x\right] \left(-d (a+b x)+d (a+b x) \,\mathrm{Log}\left[\frac{c}{d}+x\right]+(b c-a d) \,\mathrm{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+(b c-a d) \,\mathrm{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)+$$

$$\frac{1}{2 b^3 (b c-a d) (a+b x)} a^2 \left(d (a+b x) \,\mathrm{Log}\left[\frac{a}{b}+x\right]^2+2 \left((-b c+a d) \,\mathrm{Log}\left[\frac{c}{d}+x\right]+d (a+b x) (\mathrm{Log}[a+b x]-\mathrm{Log}[c+d x])\right)-\right.$$

$$\left.2 \,\mathrm{Log}\left[\frac{a}{b}+x\right] \left((b c-a d) \,\mathrm{Log}\left[\frac{c}{d}+x\right]+d (a+b x) \,\mathrm{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)-2 d (a+b x) \,\mathrm{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)-\frac{1}{b^3}$$

$$\left.a \left(\mathrm{Log}\left[\frac{a}{b}+x\right]^2 \left(\mathrm{Log}\left[\frac{c}{d}+x\right]-\mathrm{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)-2 \,\mathrm{Log}\left[\frac{a}{b}+x\right] \mathrm{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+2 \,\mathrm{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)-$$

$$\left.\frac{2 a \left(\mathrm{Log}\left[\frac{c}{d}+x\right]^2 \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 \,\mathrm{Log}\left[\frac{c}{d}+x\right] \mathrm{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-2 \,\mathrm{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\right)}{b^3}\right)+$$

$$\frac{1}{g^2} 2 B^2 c d i^2 n^2 \left(\frac{\mathrm{Log}\left[\frac{a}{b}+x\right]^3}{3 b^2}+\frac{a \left(2+2 \,\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^2 (a+b x)}+\frac{\left(\frac{a}{a+b x}+\mathrm{Log}[a+b x]\right) \left(-\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)^2}{b^2}-\right.$$

$$\frac{1}{b^2 (b c-a d) (a+b x)} a \left(-b (c+d x) \,\mathrm{Log}\left[\frac{c}{d}+x\right]^2+2 d (a+b x) \,\mathrm{Log}\left[\frac{c}{d}+x\right] \mathrm{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 d (a+b x) \,\mathrm{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)+$$

$$2 \left(-\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right) \left(\frac{\mathrm{Log}\left[\frac{a}{b}+x\right]^2}{2 b^2}+\frac{a \left(1+\mathrm{Log}\left[\frac{a}{b}+x\right]\right)}{b^2 (a+b x)}+\right.$$

$$\frac{a\left(\left(-b c+a d\right)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b x)\,\left(\text{Log}[a+b x]-\text{Log}[c+d x]\right)\right)}{b^2\,(b c-a d)\,(a+b x)}-\frac{\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d x)}{b c-a d}\right]}{b^2}\Bigg)-$$

$$2\left(-\frac{1}{2 b^2\,(b c-a d)\,(a+b x)}a\left(d\,(a+b x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\left(\left(-b c+a d\right)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b x)\,\left(\text{Log}[a+b x]-\text{Log}[c+d x]\right)\right)-\right.\right.$$

$$\left.2\,\text{Log}\left[\frac{a}{b}+x\right]\left(\left(b c-a d\right)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b x)\,\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]\right)-2 d\,(a+b x)\,\text{PolyLog}\left[2,\frac{d\,(a+b x)}{-b c+a d}\right]\right)+\frac{1}{2 b^2}$$

$$\left(\text{Log}\left[\frac{a}{b}+x\right]^2\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]\right)-2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{PolyLog}\left[2,\frac{d\,(a+b x)}{-b c+a d}\right]+2\,\text{PolyLog}\left[3,\frac{d\,(a+b x)}{-b c+a d}\right]\right)\right)+$$

$$\left.\frac{\text{Log}\left[\frac{c}{d}+x\right]^2\,\text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]+2\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d x)}{b c-a d}\right]-2\,\text{PolyLog}\left[3,\frac{b\,(c+d x)}{b c-a d}\right]}{b^2}\right)$$

Problem 174: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^3}\,dx$$

Optimal (type 4, 417 leaves, 10 steps):

$$-\frac{2 B^2 d\,i^2 n^2\,(c+d x)}{b^2 g^3\,(a+b x)}-\frac{B^2 i^2 n^2\,(c+d x)^2}{4 b g^3\,(a+b x)^2}-\frac{2 B d\,i^2 n\,(c+d x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^2 g^3\,(a+b x)}-$$

$$\frac{B\,i^2 n\,(c+d x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b g^3\,(a+b x)^2}-\frac{d\,i^2\,(c+d x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^2 g^3\,(a+b x)}-\frac{i^2\,(c+d x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b g^3\,(a+b x)^2}-$$

$$\frac{d^2 i^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2\,\text{Log}\left[1-\frac{b\,(c+d x)}{d\,(a+b x)}\right]}{b^3 g^3}+\frac{2 B d^2 i^2 n\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)\,\text{PolyLog}\left[2,\frac{b\,(c+d x)}{d\,(a+b x)}\right]}{b^3 g^3}+\frac{2 B^2 d^2 i^2 n^2\,\text{PolyLog}\left[3,\frac{b\,(c+d x)}{d\,(a+b x)}\right]}{b^3 g^3}$$

Result (type 4, 4257 leaves):

$$\frac{d^2 i^2\,\text{Log}[a+b x]\left(A+B\left(\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2}{b^3 g^3}+\frac{1}{b^3 g^3\,(a+b x)}$$

$$2\left(-A^2 b c d\,i^2+a A^2 d^2 i^2-2 A b B c d\,i^2\left(\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+2 a A B d^2 i^2\left(\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-\right.$$

$$\left.b B^2 c d\,i^2\left(\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+a B^2 d^2 i^2\left(\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)+\frac{1}{2 b^3 g^3\,(a+b x)^2}$$

$$\left(-A^2 b^2 c^2 i^2+2 a A^2 b c d i^2-a^2 A^2 d^2 i^2-2 A b^2 B c^2 i^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+4 a A b B c d i^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-\right.$$

$$2 a^2 A B d^2 i^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-b^2 B^2 c^2 i^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+$$

$$\left.2 a b B^2 c d i^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-a^2 B^2 d^2 i^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)-$$

$$\left(B^2 c^2 i^2 n^2 \left(b^2 c^2-8 a b c d+7 a^2 d^2-6 b^2 c d x+6 a b d^2 x-6 d^2 (a+b x)^2 \text{Log}[a+b x]+2 (b c-a d) (b c-3 a d-2 b d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]+\right.\right.$$

$$\left.\left.2 b (c+d x) (b c-2 a d-b d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+6 a^2 d^2 \text{Log}[c+d x]+12 a b d^2 x \text{Log}[c+d x]+6 b^2 d^2 x^2 \text{Log}[c+d x]\right)\right)\Big/$$

$$\left(4 b (b c-a d)^2 g^3 (a+b x)^2\right)+\frac{1}{g^3}2 B c^2 i^2 n \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$

$$\left(-\frac{\left(\frac{a}{b}+x\right) \left(2 \text{Log}\left[\frac{a}{b}+x\right]+4 \text{Log}\left[\frac{a}{b}+x\right]^2\right)}{8 (a+b x)^3 \text{Log}\left[\frac{a}{b}+x\right]}-\frac{\frac{b \left(\frac{c}{d}+x\right)}{\left(-a+\frac{b c}{d}\right)^3 \left(1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right)}-\left(\frac{b^2 \left(\frac{c}{d}+x\right)^2}{\left(-a+\frac{b c}{d}\right)^4 \left(1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right)^2}+\frac{2 b \left(\frac{c}{d}+x\right)}{\left(-a+\frac{b c}{d}\right)^3 \left(1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right)}\right) \text{Log}\left[\frac{c}{d}+x\right]-\frac{\text{Log}\left[1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]}{\left(-a+\frac{b c}{d}\right)^2}}{2 b}-\right.$$

$$\left.\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]}{2 b (a+b x)^2}\right)+\frac{1}{g^3}4 B c d i^2 n \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$

$$\left(-\frac{1+\text{Log}\left[\frac{a}{b}+x\right]}{b^2 (a+b x)}+\frac{a \left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^2 (a+b x)^2}-\frac{(-b c+a d) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x) (\text{Log}[a+b x]-\text{Log}[c+d x])}{b^2 (b c-a d) (a+b x)}-\right.$$

$$\left.\frac{a \left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d (a+b x) (b c-a d+d (a+b x) \text{Log}[a+b x]-d (a+b x) \text{Log}[c+d x])}{(b c-a d)^2}\right)}{2 b^2 (a+b x)^2}-\frac{(a+2 b x) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)}{2 b^2 (a+b x)^2}\right)+$$

$$\frac{1}{g^3}2 B d^2 i^2 n \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right) \left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^3}+\frac{2 a \left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3 (a+b x)}-\frac{a^2 \left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^3 (a+b x)^2}+\right.$$

$$\frac{2 a \left(\left(-b c+a d\right) \text{Log}\left[\frac{c}{d}+x\right]+d \left(a+b x\right) \left(\text{Log}[a+b x]-\text{Log}[c+d x]\right)\right)}{b^3 \left(b c-a d\right) \left(a+b x\right)}+\frac{a^2 \left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d (a+b x) (b c-a d+d (a+b x) \text{Log}[a+b x]-d (a+b x) \text{Log}[c+d x])}{(b c-a d)^2}\right)}{2 b^3 \left(a+b x\right)^2}+$$

$$\left.\frac{\left(\frac{a (3 a+4 b x)}{(a+b x)^2}+2 \text{Log}[a+b x]\right) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)}{2 b^3}-\frac{\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^3}\right)+$$

$$\frac{1}{g^3} 2 B^2 c d i^2 n^2 \left(-\frac{2+2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2}{b^2 \left(a+b x\right)}+\frac{a \left(1+2 \text{Log}\left[\frac{a}{b}+x\right]+2 \text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4 b^2 \left(a+b x\right)^2}+2 \left(-\frac{1+\text{Log}\left[\frac{a}{b}+x\right]}{b^2 \left(a+b x\right)}+\frac{a \left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^2 \left(a+b x\right)^2}-\right.\right.$$

$$\left.\frac{\left(-b c+a d\right) \text{Log}\left[\frac{c}{d}+x\right]+d \left(a+b x\right) \left(\text{Log}[a+b x]-\text{Log}[c+d x]\right)}{b^2 \left(b c-a d\right) \left(a+b x\right)}-\frac{a \left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d (a+b x) (b c-a d+d (a+b x) \text{Log}[a+b x]-d (a+b x) \text{Log}[c+d x])}{(b c-a d)^2}\right)}{2 b^2 \left(a+b x\right)^2}\right)$$

$$\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)-\frac{\left(a+2 b x\right) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)^2}{2 b^2 \left(a+b x\right)^2}-$$

$$2 \left(\frac{1}{2 b^2 \left(b c-a d\right) \left(a+b x\right)}\left(d \left(a+b x\right) \text{Log}\left[\frac{a}{b}+x\right]^2+2 \left(\left(-b c+a d\right) \text{Log}\left[\frac{c}{d}+x\right]+d \left(a+b x\right) \left(\text{Log}[a+b x]-\text{Log}[c+d x]\right)\right)-\right.\right.$$

$$\left.2 \text{Log}\left[\frac{a}{b}+x\right] \left(\left(b c-a d\right) \text{Log}\left[\frac{c}{d}+x\right]+d \left(a+b x\right) \text{Log}\left[\frac{b \left(c+d x\right)}{b c-a d}\right]\right)-2 d \left(a+b x\right) \text{PolyLog}\left[2,\frac{d \left(a+b x\right)}{-b c+a d}\right]\right)+$$

$$\left(a \left(-d \left(-b c+a d\right) \left(a+b x\right)+\left(b c-a d\right)^2 \left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right) \text{Log}\left[\frac{c}{d}+x\right]+d^2 \left(a+b x\right)^2 \text{Log}[a+b x]-d^2 \left(a+b x\right)^2 \text{Log}[c+d x]+d \left(a+b x\right)\right.\right.$$

$$\left.\left.\left(d \left(a+b x\right) \text{Log}\left[\frac{a}{b}+x\right]^2+2 \left(b c-a d\right) \left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)-2 d \left(a+b x\right) \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b \left(c+d x\right)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d \left(a+b x\right)}{-b c+a d}\right]\right)\right)\right)\right)\Big/$$

$$\left.\left(4 b^2 \left(b c-a d\right)^2 \left(a+b x\right)^2\right)\right)+\frac{-b \left(c+d x\right) \text{Log}\left[\frac{c}{d}+x\right]^2+2 d \left(a+b x\right) \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 d \left(a+b x\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^2 \left(b c-a d\right) \left(a+b x\right)}+$$

$$\left(a \left(b \left(c+d x\right) \left(-2 a d+b \left(c-d x\right)\right) \text{Log}\left[\frac{c}{d}+x\right]^2-2 d^2 \left(a+b x\right)^2 \text{Log}\left[\frac{d \left(a+b x\right)}{-b c+a d}\right]+2 d \left(a+b x\right) \text{Log}\left[\frac{c}{d}+x\right]\right.\right.$$

$$\left.\left.\left.\left(b \left(c+d x\right)+d \left(a+b x\right) \text{Log}\left[\frac{d \left(a+b x\right)}{-b c+a d}\right]\right)+2 d^2 \left(a+b x\right)^2 \text{PolyLog}\left[2,\frac{b \left(c+d x\right)}{b c-a d}\right]\right)\right)\Big/\left(2 b^2 \left(b c-a d\right)^2 \left(a+b x\right)^2\right)\right)+$$

$$\frac{1}{g^3} B^2 d^2 i^2 n^2 \left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^3}{3 b^3}+\frac{2 a \left(2+2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^3 \left(a+b x\right)}-\frac{a^2 \left(1+2 \text{Log}\left[\frac{a}{b}+x\right]+2 \text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4 b^3 \left(a+b x\right)^2}+\right.$$

$$\frac{\left(\frac{a\,(3a+4bx)}{(a+bx)^2}+2\,\text{Log}[a+bx]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+dx}+\frac{bx}{c+dx}\right]\right)^2}{2b^3}-\frac{1}{b^3\,(bc-ad)\,(a+bx)}$$

$$2a\left(-b\,(c+dx)\,\text{Log}\left[\frac{c}{d}+x\right]^2+2d\,(a+bx)\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+bx)}{-bc+ad}\right]+2d\,(a+bx)\,\text{PolyLog}\left[2,\frac{b\,(c+dx)}{bc-ad}\right]\right)-$$

$$\left(a^2\left(b\,(c+dx)\,(-2ad+b\,(c-dx))\,\text{Log}\left[\frac{c}{d}+x\right]^2-2d^2\,(a+bx)^2\,\text{Log}\left[\frac{d\,(a+bx)}{-bc+ad}\right]+\right.\right.$$

$$\left.\left.2d\,(a+bx)\,\text{Log}\left[\frac{c}{d}+x\right]\left(b\,(c+dx)+d\,(a+bx)\,\text{Log}\left[\frac{d\,(a+bx)}{-bc+ad}\right]\right)+2d^2\,(a+bx)^2\,\text{PolyLog}\left[2,\frac{b\,(c+dx)}{bc-ad}\right]\right)\right)\Big/$$

$$\left(2b^3\,(bc-ad)^2\,(a+bx)^2\right)+2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+dx}+\frac{bx}{c+dx}\right]\right)$$

$$\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2b^3}+\frac{2a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3\,(a+bx)}-\frac{a^2\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{4b^3\,(a+bx)^2}+\frac{2a\left((-bc+ad)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+bx)\,(\text{Log}[a+bx]-\text{Log}[c+dx])\right)}{b^3\,(bc-ad)\,(a+bx)}+\right.$$

$$\left.\frac{a^2\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d\,(a+bx)\,(bc-ad+d\,(a+bx)\,\text{Log}[a+bx]-d\,(a+bx)\,\text{Log}[c+dx])}{(bc-ad)^2}\right)}{2b^3\,(a+bx)^2}-\frac{\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+bx)}{-bc+ad}\right]+\text{PolyLog}\left[2,\frac{b\,(c+dx)}{bc-ad}\right]}{b^3}\right)-$$

$$2\left(-\frac{1}{b^3\,(bc-ad)\,(a+bx)}a\left(d\,(a+bx)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\left((-bc+ad)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+bx)\,(\text{Log}[a+bx]-\text{Log}[c+dx])\right)-\right.\right.$$

$$\left.2\,\text{Log}\left[\frac{a}{b}+x\right]\left((bc-ad)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+bx)\,\text{Log}\left[\frac{b\,(c+dx)}{bc-ad}\right]\right)-2d\,(a+bx)\,\text{PolyLog}\left[2,\frac{d\,(a+bx)}{-bc+ad}\right]\right)-$$

$$\left(a^2\left(-d\,(-bc+ad)\,(a+bx)+(bc-ad)^2\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)\text{Log}\left[\frac{c}{d}+x\right]+d^2\,(a+bx)^2\,\text{Log}[a+bx]-d^2\,(a+bx)^2\,\text{Log}[c+dx]+d\,(a+bx)\right.\right.$$

$$\left.\left.\left(d\,(a+bx)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\,(bc-ad)\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)-2d\,(a+bx)\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+dx)}{bc-ad}\right]+\text{PolyLog}\left[2,\frac{d\,(a+bx)}{-bc+ad}\right]\right)\right)\right)\right)\Big/$$

$$\left(4b^3\,(bc-ad)^2\,(a+bx)^2\right)+\frac{1}{2b^3}\left(\text{Log}\left[\frac{a}{b}+x\right]^2\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{b\,(c+dx)}{bc-ad}\right]\right)-2\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\,(a+bx)}{-bc+ad}\right]+\right.$$

$$\left.\left.2\,\text{PolyLog}\left[3,\frac{d\,(a+bx)}{-bc+ad}\right]\right)\right)+\frac{\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[\frac{d\,(a+bx)}{-bc+ad}\right]+2\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+dx)}{bc-ad}\right]-2\,\text{PolyLog}\left[3,\frac{b\,(c+dx)}{bc-ad}\right]}{b^3}\right)$$

Problem 175: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 3, 157 leaves, 3 steps):

$$-\frac{2 B^2 i^2 n^2 (c+d x)^3}{27 (b c-a d) g^4 (a+b x)^3}-\frac{2 B i^2 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d) g^4 (a+b x)^3}-\frac{i^2 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 (b c-a d) g^4 (a+b x)^3}$$

Result (type 3, 774 leaves):

$$-\frac{1}{27 b^3 (b c-a d) g^4 (a+b x)^3} i^2 \left(9 b^3 B^2 n^2 (c+d x)^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+6 B d^3 n (a+b x)^3 \text{Log}[a+b x] \left(3 A+B n+3 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-3 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+\right.$$
$$6 B (b c-a d) n \left(a^2 d^2+a b d (c+3 d x)+b^2 \left(c^2+3 c d x+3 d^2 x^2\right)\right) \text{Log}\left[\frac{a+b x}{c+d x}\right] \left(3 A+B n+3 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-3 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+$$
$$(b c-a d)^3 \left(9 A^2+6 A B n+2 B^2 n^2+9 B^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-6 B n (3 A+B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+9 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+\right.$$
$$\left.6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(3 A+B n-3 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)+3 d (b c-a d)^2 (a+b x) \left(9 A^2+6 A B n+2 B^2 n^2+9 B^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-\right.$$
$$\left.6 B n (3 A+B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+9 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(3 A+B n-3 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)+$$
$$3 d^2 (b c-a d) (a+b x)^2 \left(9 A^2+6 A B n+2 B^2 n^2+9 B^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-6 B n (3 A+B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+9 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+\right.$$
$$\left.\left.6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(3 A+B n-3 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)-6 B d^3 n (a+b x)^3 \left(3 A+B n+3 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-3 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \text{Log}[c+d x]\right)$$

Problem 176: Result more than twice size of optimal antiderivative.

$$\int \frac{(c i+d i x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^5} \, dx$$

Optimal (type 3, 319 leaves, 7 steps):

$$\frac{2 B^2 d i^2 n^2 (c+d x)^3}{27 (b c-a d)^2 g^5 (a+b x)^3}-\frac{b B^2 i^2 n^2 (c+d x)^4}{32 (b c-a d)^2 g^5 (a+b x)^4}+\frac{2 B d i^2 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d)^2 g^5 (a+b x)^3}-$$
$$\frac{b B i^2 n (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{8 (b c-a d)^2 g^5 (a+b x)^4}+\frac{d i^2 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 (b c-a d)^2 g^5 (a+b x)^3}-\frac{b i^2 (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{4 (b c-a d)^2 g^5 (a+b x)^4}$$

Result (type 3, 982 leaves):

$$\frac{1}{864\,b^3\,(b\,c-a\,d)^2\,g^5\,(a+b\,x)^4}$$

$$i^2\left(-72\,b^3\,B^2\,n^2\,(c+d\,x)^3\,(3\,b\,c-4\,a\,d-b\,d\,x)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+12\,B\,d^3\,(b\,c-a\,d)\,n\,(a+b\,x)^3\left(12\,A+7\,B\,n+12\,B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)+\right.$$
$$12\,B\,d^4\,n\,(a+b\,x)^4\,\text{Log}[a+b\,x]\left(12\,A+7\,B\,n+12\,B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)-$$
$$4\,d\,(b\,c-a\,d)^3\,(a+b\,x)\left(144\,A^2+60\,A\,B\,n+11\,B^2\,n^2+144\,B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-12\,B\,n\,(24\,A+5\,B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+\right.$$
$$\left.144\,B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+12\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(24\,A+5\,B\,n-24\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)-$$
$$6\,d^2\,(b\,c-a\,d)^2\,(a+b\,x)^2\left(72\,A^2+12\,A\,B\,n-5\,B^2\,n^2+72\,B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-12\,B\,n\,(12\,A+B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+72\,B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+\right.$$
$$\left.12\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(12\,A+B\,n-12\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)-27\,(b\,c-a\,d)^4\left(8\,A^2+4\,A\,B\,n+B^2\,n^2+8\,B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-\right.$$
$$\left.4\,B\,n\,(4\,A+B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+8\,B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+4\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(4\,A+B\,n-4\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)+12\,B\,(b\,c-a\,d)\,n$$
$$\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\left(12\,B\,d^3\,n\,(a+b\,x)^3+6\,d^2\,(-b\,c+a\,d)\,(a+b\,x)^2\left(12\,A+B\,n+12\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-12\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-9\,(b\,c-a\,d)^3\right.$$
$$\left.\left(4\,A+B\,n+4\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-4\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-4\,d\,(b\,c-a\,d)^2\,(a+b\,x)\left(24\,A+5\,B\,n+24\,B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\right)-$$
$$\left.12\,B\,d^4\,n\,(a+b\,x)^4\left(12\,A+7\,B\,n+12\,B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\text{Log}[c+d\,x]\right)$$

Problem 177: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^6}\,dx$$

Optimal (type 3, 493 leaves, 9 steps):

$$-\frac{2\,B^2\,d^2\,i^2\,n^2\,(c+d\,x)^3}{27\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^3}+\frac{b\,B^2\,d\,i^2\,n^2\,(c+d\,x)^4}{16\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^4}-\frac{2\,b^2\,B^2\,i^2\,n^2\,(c+d\,x)^5}{125\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^5}-$$
$$\frac{2\,B\,d^2\,i^2\,n\,(c+d\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{9\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^3}+\frac{b\,B\,d\,i^2\,n\,(c+d\,x)^4\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^4}-\frac{2\,b^2\,B\,i^2\,n\,(c+d\,x)^5\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{25\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^5}-$$
$$\frac{d^2\,i^2\,(c+d\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^3}+\frac{b\,d\,i^2\,(c+d\,x)^4\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^4}-\frac{b^2\,i^2\,(c+d\,x)^5\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{5\,(b\,c-a\,d)^3\,g^6\,(a+b\,x)^5}$$

Result (type 3, 1107 leaves):

$$\frac{1}{54000\, b^3\, (b c - a d)^3\, g^6\, (a + b x)^5}\, i^2 \left(-1800\, b^3\, B^2\, n^2\, (c + d x)^3\, \left(10\, a^2\, d^2 + 5\, a\, b\, d\, (-3\, c + d\, x) + b^2\, \left(6\, c^2 - 3\, c\, d\, x + d^2\, x^2\right)\right)\, \text{Log}\left[\frac{a + b x}{c + d x}\right]^2 + 30\, B\, d^3\, (b c - a d)^2\, n\, (a + b x)^3\, \left(60\, A - 13\, B\, n + 60\, B\, \left(\text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right] - n\, \text{Log}\left[\frac{a + b x}{c + d x}\right]\right)\right) - 60\, B\, d^4\, (b c - a d)\, n\, (a + b x)^4\, \left(60\, A + 47\, B\, n + 60\, B\, \left(\text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right] - n\, \text{Log}\left[\frac{a + b x}{c + d x}\right]\right)\right) - 60\, B\, d^5\, n\, (a + b x)^5\, \text{Log}[a + b x]\, \left(60\, A + 47\, B\, n + 60\, B\, \left(\text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right] - n\, \text{Log}\left[\frac{a + b x}{c + d x}\right]\right)\right) - 20\, d^2\, (b c - a d)^3\, (a + b x)^2\, \left(900\, A^2 + 60\, A\, B\, n - 43\, B^2\, n^2 + 900\, B^2\, \text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right]^2 - 60\, B\, n\, (30\, A + B\, n)\, \text{Log}\left[\frac{a + b x}{c + d x}\right] + 900\, B^2\, n^2\, \text{Log}\left[\frac{a + b x}{c + d x}\right]^2 + 60\, B\, \text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right]\, \left(30\, A + B\, n - 30\, B\, n\, \text{Log}\left[\frac{a + b x}{c + d x}\right]\right)\right) - 135\, d\, (b c - a d)^4\, (a + b x)\, \left(200\, A^2 + 60\, A\, B\, n + 7\, B^2\, n^2 + 200\, B^2\, \text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right]^2 - 20\, B\, n\, (20\, A + 3\, B\, n)\, \text{Log}\left[\frac{a + b x}{c + d x}\right] + 200\, B^2\, n^2\, \text{Log}\left[\frac{a + b x}{c + d x}\right]^2 + 20\, B\, \text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right]\, \left(20\, A + 3\, B\, n - 20\, B\, n\, \text{Log}\left[\frac{a + b x}{c + d x}\right]\right)\right) - 432\, (b c - a d)^5\, \left(25\, A^2 + 10\, A\, B\, n + 2\, B^2\, n^2 + 25\, B^2\, \text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right]^2 - 10\, B\, n\, (5\, A + B\, n)\, \text{Log}\left[\frac{a + b x}{c + d x}\right] + 25\, B^2\, n^2\, \text{Log}\left[\frac{a + b x}{c + d x}\right]^2 + 10\, B\, \text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right]\, \left(5\, A + B\, n - 5\, B\, n\, \text{Log}\left[\frac{a + b x}{c + d x}\right]\right)\right) + 60\, B\, (b c - a d)\, n\, \text{Log}\left[\frac{a + b x}{c + d x}\right]\, \left(30\, B\, d^3\, (b c - a d)\, n\, (a + b x)^3 - 60\, B\, d^4\, n\, (a + b x)^4 + 45\, d\, (-b c + a d)^3\, (a + b x)\, \left(20\, A + 3\, B\, n + 20\, B\, \text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right] - 20\, B\, n\, \text{Log}\left[\frac{a + b x}{c + d x}\right]\right) - 72\, (b c - a d)^4\, \left(5\, A + B\, n + 5\, B\, \text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right] - 5\, B\, n\, \text{Log}\left[\frac{a + b x}{c + d x}\right]\right) - 20\, d^2\, (b c - a d)^2\, (a + b x)^2\, \left(30\, A + B\, n + 30\, B\, \left(\text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right] - n\, \text{Log}\left[\frac{a + b x}{c + d x}\right]\right)\right)\right) + 60\, B\, d^5\, n\, (a + b x)^5\, \left(60\, A + 47\, B\, n + 60\, B\, \left(\text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right] - n\, \text{Log}\left[\frac{a + b x}{c + d x}\right]\right)\right)\, \text{Log}[c + d x]\right)$$

Problem 178: Result more than twice size of optimal antiderivative.

$$\int (a\, g + b\, g\, x)^3\, (c\, i + d\, i\, x)^3\, \left(A + B\, \text{Log}\left[e\, \left(\frac{a + b x}{c + d x}\right)^n\right]\right)^2\, dx$$

Optimal (type 4, 1172 leaves, 22 steps):

$$\frac{5 B^2 (b c-a d)^6 g^3 i^3 n^2 x}{84 b^3 d^3}+\frac{B^2 (b c-a d)^3 g^3 i^3 n^2 (a+b x)^4}{140 b^4}-\frac{29 B^2 (b c-a d)^5 g^3 i^3 n^2 (c+d x)^2}{840 b^2 d^4}+$$

$$\frac{47 B^2 (b c-a d)^4 g^3 i^3 n^2 (c+d x)^3}{1260 b d^4}-\frac{13 B^2 (b c-a d)^3 g^3 i^3 n^2 (c+d x)^4}{420 d^4}+\frac{b B^2 (b c-a d)^2 g^3 i^3 n^2 (c+d x)^5}{105 d^4}-$$

$$\frac{B (b c-a d)^4 g^3 i^3 n (a+b x)^3 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{210 b^4 d}-\frac{3 B (b c-a d)^3 g^3 i^3 n (a+b x)^4 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{140 b^4}-$$

$$\frac{B (b c-a d)^2 g^3 i^3 n (a+b x)^4 (c+d x) \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{35 b^3}+\frac{2 B (b c-a d)^4 g^3 i^3 n (c+d x)^3 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{21 b d^4}-$$

$$\frac{3 B (b c-a d)^3 g^3 i^3 n (c+d x)^4 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{14 d^4}+\frac{6 b B (b c-a d)^2 g^3 i^3 n (c+d x)^5 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{35 d^4}-$$

$$\frac{b^2 B (b c-a d) g^3 i^3 n (c+d x)^6 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{21 d^4}+\frac{(b c-a d)^3 g^3 i^3 (a+b x)^4 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{140 b^4}+$$

$$\frac{(b c-a d)^2 g^3 i^3 (a+b x)^4 (c+d x) \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{35 b^3}+\frac{(b c-a d) g^3 i^3 (a+b x)^4 (c+d x)^2 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{14 b^2}+$$

$$\frac{g^3 i^3 (a+b x)^4 (c+d x)^3 \left(A+B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{7 b}+\frac{B (b c-a d)^5 g^3 i^3 n (a+b x)^2 \left(3 A+B n+3 B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{420 b^4 d^2}-$$

$$\frac{B (b c-a d)^6 g^3 i^3 n (a+b x) \left(6 A+5 B n+6 B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{420 b^4 d^3}-\frac{B (b c-a d)^7 g^3 i^3 n \left(6 A+11 B n+6 B \mathrm{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \mathrm{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{420 b^4 d^4}-$$

$$\frac{B^2 (b c-a d)^7 g^3 i^3 n^2 \mathrm{Log}\left[\frac{a+b x}{c+d x}\right]}{210 b^4 d^4}-\frac{11 B^2 (b c-a d)^7 g^3 i^3 n^2 \mathrm{Log}[c+d x]}{420 b^4 d^4}-\frac{B^2 (b c-a d)^7 g^3 i^3 n^2 \mathrm{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{70 b^4 d^4}$$

Result (type 4, 5652 leaves) :

$$\frac{1}{2520 b^4 d^4}$$

$$g^3 i^3 \Big(-36 b^7 B^2 c^7 n^2+288 a b^6 B^2 c^6 d n^2-1008 a^2 b^5 B^2 c^5 d^2 n^2+756 a^3 b^4 B^2 c^4 d^3 n^2+756 a^4 b^3 B^2 c^3 d^4 n^2-1008 a^5 b^2 B^2 c^2 d^5 n^2+288 a^6 b B^2 c d^6 n^2-$$

$$36 a^7 B^2 d^7 n^2+2520 a^3 A^2 b^4 c^3 d^4 x-36 A b^7 B c^6 d n x+252 a A b^6 B c^5 d^2 n x-756 a^2 A b^5 B c^4 d^3 n x+756 a^4 A b^3 B c^2 d^5 n x-252 a^5 A b^2 B c d^6 n x+$$

$$36 a^6 A b B d^7 n x+36 b^7 B^2 c^6 d n^2 x-270 a b^6 B^2 c^5 d^2 n^2 x+876 a^2 b^5 B^2 c^4 d^3 n^2 x-1284 a^3 b^4 B^2 c^3 d^4 n^2 x+876 a^4 b^3 B^2 c^2 d^5 n^2 x-$$

$$270 a^5 b^2 B^2 c d^6 n^2 x+36 a^6 b B^2 d^7 n^2 x+3780 a^2 A^2 b^5 c^3 d^4 x^2+3780 a^3 A^2 b^4 c^2 d^5 x^2+18 A b^7 B c^5 d^2 n x^2-126 a A b^6 B c^4 d^3 n x^2-$$

$$1512 a^2 A b^5 B c^3 d^4 n x^2+1512 a^3 A b^4 B c^2 d^5 n x^2+126 a^4 A b^3 B c d^6 n x^2-18 a^5 A b^2 B d^7 n x^2-27 b^7 B^2 c^5 d^2 n^2 x^2+201 a b^6 B^2 c^4 d^3 n^2 x^2-$$

$$174 a^2 b^5 B^2 c^3 d^4 n^2 x^2-174 a^3 b^4 B^2 c^2 d^5 n^2 x^2+201 a^4 b^3 B^2 c d^6 n^2 x^2-27 a^5 b^2 B^2 d^7 n^2 x^2+2520 a A^2 b^6 c^3 d^4 x^3+7560 a^2 A^2 b^5 c^2 d^5 x^3+$$

$$2520 a^3 A^2 b^4 c d^6 x^3-12 A b^7 B c^4 d^3 n x^3-1176 a A b^6 B c^3 d^4 n x^3+1176 a^3 A b^4 B c d^6 n x^3+12 a^4 A b^3 B d^7 n x^3+22 b^7 B^2 c^4 d^3 n^2 x^3+$$

$$152 a b^6 B^2 c^3 d^4 n^2 x^3-348 a^2 b^5 B^2 c^2 d^5 n^2 x^3+152 a^3 b^4 B^2 c d^6 n^2 x^3+22 a^4 b^3 B^2 d^7 n^2 x^3+630 A^2 b^7 c^3 d^4 x^4+5670 a A^2 b^6 c^2 d^5 x^4+$$

$$5670 a^2 A^2 b^5 c d^6 x^4+630 a^3 A^2 b^4 d^7 x^4-306 A b^7 B c^3 d^4 n x^4-882 a A b^6 B c^2 d^5 n x^4+882 a^2 A b^5 B c d^6 n x^4+306 a^3 A b^4 B d^7 n x^4+$$

$$60 b^7 B^2 c^3 d^4 n^2 x^4-60 a b^6 B^2 c^2 d^5 n^2 x^4-60 a^2 b^5 B^2 c d^6 n^2 x^4+60 a^3 b^4 B^2 d^7 n^2 x^4+1512 A^2 b^7 c^2 d^5 x^5+4536 a A^2 b^6 c d^6 x^5+$$

$$1512\,a^2 A^2 b^5 d^7 x^5 - 360\,A b^7 B c^2 d^5 n x^5 + 360\,a^2 A b^5 B d^7 n x^5 + 24\,b^7 B^2 c^2 d^5 n^2 x^5 - 48\,a b^6 B^2 c d^6 n^2 x^5 + 24\,a^2 b^5 B^2 d^7 n^2 x^5 + 1260\,A^2 b^7 c d^6 x^6 +$$

$$1260\,a A^2 b^6 d^7 x^6 - 120\,A b^7 B c d^6 n x^6 + 120\,a A b^6 B d^7 n x^6 + 360\,A^2 b^7 d^7 x^7 - 36\,a b^6 B^2 c^6 d n^2 \text{Log}\left[\frac{a}{b}+x\right] + 252\,a^2 b^5 B^2 c^5 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] -$$

$$756\,a^3 b^4 B^2 c^4 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] + 756\,a^5 b^2 B^2 c^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] - 252\,a^6 b B^2 c d^6 n^2 \text{Log}\left[\frac{a}{b}+x\right] + 36\,a^7 B^2 d^7 n^2 \text{Log}\left[\frac{a}{b}+x\right] +$$

$$630\,a^4 b^3 B^2 c^3 d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 - 378\,a^5 b^2 B^2 c^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 + 126\,a^6 b B^2 c d^6 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 - 18\,a^7 B^2 d^7 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 +$$

$$36\,b^7 B^2 c^7 n^2 \text{Log}\left[\frac{c}{d}+x\right] - 252\,a b^6 B^2 c^6 d n^2 \text{Log}\left[\frac{c}{d}+x\right] + 756\,a^2 b^5 B^2 c^5 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] - 756\,a^4 b^3 B^2 c^3 d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] +$$

$$252\,a^5 b^2 B^2 c^2 d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] - 36\,a^6 b B^2 c d^6 n^2 \text{Log}\left[\frac{c}{d}+x\right] - 18\,b^7 B^2 c^7 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 + 126\,a b^6 B^2 c^6 d n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 -$$

$$378\,a^2 b^5 B^2 c^5 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 + 630\,a^3 b^4 B^2 c^4 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 + 1260\,a^4 A b^3 B c^3 d^4 n \text{Log}[a+b x] - 756\,a^5 A b^2 B c^2 d^5 n \text{Log}[a+b x] +$$

$$252\,a^6 A b B c d^6 n \text{Log}[a+b x] - 36\,a^7 A B d^7 n \text{Log}[a+b x] - 18\,a^2 b^5 B^2 c^5 d^2 n^2 \text{Log}[a+b x] + 114\,a^3 b^4 B^2 c^4 d^3 n^2 \text{Log}[a+b x] +$$

$$642\,a^4 b^3 B^2 c^3 d^4 n^2 \text{Log}[a+b x] - 990\,a^5 b^2 B^2 c^2 d^5 n^2 \text{Log}[a+b x] + 288\,a^6 b B^2 c d^6 n^2 \text{Log}[a+b x] - 36\,a^7 B^2 d^7 n^2 \text{Log}[a+b x] -$$

$$1260\,a^4 b^3 B^2 c^3 d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 756\,a^5 b^2 B^2 c^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] - 252\,a^6 b B^2 c d^6 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] +$$

$$36\,a^7 B^2 d^7 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 1260\,a^4 b^3 B^2 c^3 d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 756\,a^5 b^2 B^2 c^2 d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] +$$

$$252\,a^6 b B^2 c d^6 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 36\,a^7 B^2 d^7 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 1260\,a^4 b^3 B^2 c^3 d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right] +$$

$$756\,a^5 b^2 B^2 c^2 d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right] - 252\,a^6 b B^2 c d^6 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right] + 36\,a^7 B^2 d^7 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right] +$$

$$5040\,a^3 A b^4 B c^3 d^4 x \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] - 36\,b^7 B^2 c^6 d n x \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] + 252\,a b^6 B^2 c^5 d^2 n x \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] -$$

$$756\,a^2 b^5 B^2 c^4 d^3 n x \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] + 756\,a^4 b^3 B^2 c^2 d^5 n x \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] - 252\,a^5 b^2 B^2 c d^6 n x \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] +$$

$$36\,a^6 b B^2 d^7 n x \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] + 7560\,a^2 A b^5 B c^3 d^4 x^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] + 7560\,a^3 A b^4 B c^2 d^5 x^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] +$$

$$18\,b^7 B^2 c^5 d^2 n x^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] - 126\,a b^6 B^2 c^4 d^3 n x^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] - 1512\,a^2 b^5 B^2 c^3 d^4 n x^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] +$$

$$1512\,a^3 b^4 B^2 c^2 d^5 n x^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] + 126\,a^4 b^3 B^2 c d^6 n x^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] - 18\,a^5 b^2 B^2 d^7 n x^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] +$$

$$5040\,a A b^6 B c^3 d^4 x^3 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] + 15\,120\,a^2 A b^5 B c^2 d^5 x^3 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] + 5040\,a^3 A b^4 B c d^6 x^3 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] -$$

$$12\,b^7 B^2 c^4 d^3 n x^3 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] - 1176\,a b^6 B^2 c^3 d^4 n x^3 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] + 1176\,a^3 b^4 B^2 c d^6 n x^3 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] +$$

$$12\,a^4 b^3 B^2 d^7 n x^3 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] + 1260\,A b^7 B c^3 d^4 x^4 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] + 11\,340\,a A b^6 B c^2 d^5 x^4 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] +$$

$$11\,340\,a^2 A b^5 B c d^6 x^4 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] + 1260\,a^3 A b^4 B d^7 x^4 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] - 306\,b^7 B^2 c^3 d^4 n x^4 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] -$$

$$882 a b^6 B^2 c^2 d^5 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 882 a^2 b^5 B^2 c d^6 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 306 a^3 b^4 B^2 d^7 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$$
$$3024 A b^7 B c^2 d^5 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 9072 a A b^6 B c d^6 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 3024 a^2 A b^5 B d^7 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] -$$
$$360 b^7 B^2 c^2 d^5 n x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 360 a^2 b^5 B^2 d^7 n x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 2520 A b^7 B c d^6 x^6 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$$
$$2520 a A b^6 B d^7 x^6 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 120 b^7 B^2 c d^6 n x^6 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 120 a b^6 B^2 d^7 n x^6 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$$
$$720 A b^7 B d^7 x^7 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 1260 a^4 b^3 B^2 c^3 d^4 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 756 a^5 b^2 B^2 c^2 d^5 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$$
$$252 a^6 b B^2 c d^6 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 36 a^7 B^2 d^7 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 2520 a^3 b^4 B^2 c^3 d^4 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 +$$
$$3780 a^2 b^5 B^2 c^3 d^4 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 3780 a^3 b^4 B^2 c^2 d^5 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 2520 a b^6 B^2 c^3 d^4 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 +$$
$$7560 a^2 b^5 B^2 c^2 d^5 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 2520 a^3 b^4 B^2 c d^6 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 630 b^7 B^2 c^3 d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 +$$
$$5670 a b^6 B^2 c^2 d^5 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 5670 a^2 b^5 B^2 c d^6 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 630 a^3 b^4 B^2 d^7 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 +$$
$$1512 b^7 B^2 c^2 d^5 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 4536 a b^6 B^2 c d^6 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 1512 a^2 b^5 B^2 d^7 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 +$$
$$1260 b^7 B^2 c d^6 x^6 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 1260 a b^6 B^2 d^7 x^6 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 360 b^7 B^2 d^7 x^7 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 +$$
$$36 A b^7 B c^7 n \text{Log}[c+d x] - 252 a A b^6 B c^6 d n \text{Log}[c+d x] + 756 a^2 A b^5 B c^5 d^2 n \text{Log}[c+d x] - 1260 a^3 A b^4 B c^4 d^3 n \text{Log}[c+d x] -$$
$$36 b^7 B^2 c^7 n^2 \text{Log}[c+d x] + 288 a b^6 B^2 c^6 d n^2 \text{Log}[c+d x] - 990 a^2 b^5 B^2 c^5 d^2 n^2 \text{Log}[c+d x] + 642 a^3 b^4 B^2 c^4 d^3 n^2 \text{Log}[c+d x] +$$
$$114 a^4 b^3 B^2 c^3 d^4 n^2 \text{Log}[c+d x] - 18 a^5 b^2 B^2 c^2 d^5 n^2 \text{Log}[c+d x] - 36 b^7 B^2 c^7 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] +$$
$$252 a b^6 B^2 c^6 d n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] - 756 a^2 b^5 B^2 c^5 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] + 1260 a^3 b^4 B^2 c^4 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] +$$
$$36 b^7 B^2 c^7 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] - 252 a b^6 B^2 c^6 d n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] + 756 a^2 b^5 B^2 c^5 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] -$$
$$1260 a^3 b^4 B^2 c^4 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] + 36 b^7 B^2 c^7 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x] - 252 a b^6 B^2 c^6 d n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x] +$$
$$756 a^2 b^5 B^2 c^5 d^2 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x] - 1260 a^3 b^4 B^2 c^4 d^3 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x] +$$
$$36 b^7 B^2 c^7 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] - 252 a b^6 B^2 c^6 d n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] + 756 a^2 b^5 B^2 c^5 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] -$$
$$1260 a^3 b^4 B^2 c^4 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] + 36 b^4 B^2 c^4 \left(b^3 c^3 - 7 a b^2 c^2 d + 21 a^2 b c d^2 - 35 a^3 d^3\right) n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right] +$$
$$36 a^4 B^2 d^4 \left(-35 b^3 c^3 + 21 a b^2 c^2 d - 7 a^2 b c d^2 + a^3 d^3\right) n^2 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\Big)$$

Problem 179: Result more than twice size of optimal antiderivative.

$$\int (a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,dx$$

Optimal (type 4, 976 leaves, 20 steps):

$$-\frac{7\,B^2\,(b\,c-a\,d)^5\,g^2\,i^3\,n^2\,x}{180\,b^3\,d^2}-\frac{7\,B^2\,(b\,c-a\,d)^4\,g^2\,i^3\,n^2\,(c+d\,x)^2}{360\,b^2\,d^3}-\frac{B^2\,(b\,c-a\,d)^3\,g^2\,i^3\,n^2\,(c+d\,x)^3}{60\,b\,d^3}+\frac{B^2\,(b\,c-a\,d)^2\,g^2\,i^3\,n^2\,(c+d\,x)^4}{60\,d^3}-$$
$$\frac{B\,(b\,c-a\,d)^4\,g^2\,i^3\,n\,(a+b\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{60\,b^4\,d}-\frac{B\,(b\,c-a\,d)^3\,g^2\,i^3\,n\,(a+b\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{30\,b^4}-$$
$$\frac{B\,(b\,c-a\,d)^4\,g^2\,i^3\,n\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{10\,b^2\,d^3}+\frac{B\,(b\,c-a\,d)^3\,g^2\,i^3\,n\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{45\,b\,d^3}+$$
$$\frac{7\,B\,(b\,c-a\,d)^2\,g^2\,i^3\,n\,(c+d\,x)^4\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{60\,d^3}-\frac{b\,B\,(b\,c-a\,d)\,g^2\,i^3\,n\,(c+d\,x)^5\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{15\,d^3}+$$
$$\frac{(b\,c-a\,d)^3\,g^2\,i^3\,(a+b\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{60\,b^4}+\frac{(b\,c-a\,d)^2\,g^2\,i^3\,(a+b\,x)^3\,(c+d\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{20\,b^3}+$$
$$\frac{(b\,c-a\,d)\,g^2\,i^3\,(a+b\,x)^3\,(c+d\,x)^2\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{10\,b^2}+\frac{g^2\,i^3\,(a+b\,x)^3\,(c+d\,x)^3\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{6\,b}+$$
$$\frac{B\,(b\,c-a\,d)^5\,g^2\,i^3\,n\,(a+b\,x)\,\left(2\,A+B\,n+2\,B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{60\,b^4\,d^2}+\frac{B\,(b\,c-a\,d)^6\,g^2\,i^3\,n\,\left(2\,A+3\,B\,n+2\,B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{60\,b^4\,d^3}+$$
$$\frac{B^2\,(b\,c-a\,d)^6\,g^2\,i^3\,n^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{36\,b^4\,d^3}+\frac{11\,B^2\,(b\,c-a\,d)^6\,g^2\,i^3\,n^2\,\mathrm{Log}[c+d\,x]}{180\,b^4\,d^3}+\frac{B^2\,(b\,c-a\,d)^6\,g^2\,i^3\,n^2\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{30\,b^4\,d^3}$$

Result (type 4, 4611 leaves):

$$\frac{1}{360\,b^4\,d^3}\,g^2\,i^3$$
$$\Big(12\,b^6\,B^2\,c^6\,n^2-84\,a\,b^5\,B^2\,c^5\,d\,n^2+12\,a^2\,b^4\,B^2\,c^4\,d^2\,n^2+240\,a^3\,b^3\,B^2\,c^3\,d^3\,n^2-252\,a^4\,b^2\,B^2\,c^2\,d^4\,n^2+84\,a^5\,b\,B^2\,c\,d^5\,n^2-12\,a^6\,B^2\,d^6\,n^2+360\,a^2\,A^2\,b^4\,c^3\,d^3\,x+$$
$$12\,A\,b^6\,B\,c^5\,d\,n\,x-72\,a\,A\,b^5\,B\,c^4\,d^2\,n\,x-60\,a^2\,A\,b^4\,B\,c^3\,d^3\,n\,x+180\,a^3\,A\,b^3\,B\,c^2\,d^4\,n\,x-72\,a^4\,A\,b^2\,B\,c\,d^5\,n\,x+12\,a^5\,A\,b\,B\,d^6\,n\,x-16\,b^6\,B^2\,c^5\,d\,n^2\,x+$$
$$102\,a\,b^5\,B^2\,c^4\,d^2\,n^2\,x-194\,a^2\,b^4\,B^2\,c^3\,d^3\,n^2\,x+154\,a^3\,b^3\,B^2\,c^2\,d^4\,n^2\,x-54\,a^4\,b^2\,B^2\,c\,d^5\,n^2\,x+8\,a^5\,b\,B^2\,d^6\,n^2\,x+360\,a\,A^2\,b^5\,c^3\,d^3\,x^2+$$
$$540\,a^2\,A^2\,b^4\,c^2\,d^4\,x^2-6\,A\,b^6\,B\,c^4\,d^2\,n\,x^2-204\,a\,A\,b^5\,B\,c^3\,d^3\,n\,x^2+180\,a^2\,A\,b^4\,B\,c^2\,d^4\,n\,x^2+36\,a^3\,A\,b^3\,B\,c\,d^5\,n\,x^2-6\,a^4\,A\,b^2\,B\,d^6\,n\,x^2+$$
$$11\,b^6\,B^2\,c^4\,d^2\,n^2\,x^2+10\,a\,b^5\,B^2\,c^3\,d^3\,n^2\,x^2-60\,a^2\,b^4\,B^2\,c^2\,d^4\,n^2\,x^2+46\,a^3\,b^3\,B^2\,c\,d^5\,n^2\,x^2-7\,a^4\,b^2\,B^2\,d^6\,n^2\,x^2+120\,A^2\,b^6\,c^3\,d^3\,x^3+720\,a\,A^2\,b^5\,c^2\,d^4\,x^3+$$
$$360\,a^2\,A^2\,b^4\,c\,d^5\,x^3-76\,A\,b^6\,B\,c^3\,d^3\,n\,x^3-84\,a\,A\,b^5\,B\,c^2\,d^4\,n\,x^3+156\,a^2\,A\,b^4\,B\,c\,d^5\,n\,x^3+4\,a^3\,A\,b^3\,B\,d^6\,n\,x^3+18\,b^6\,B^2\,c^3\,d^3\,n^2\,x^3-30\,a\,b^5\,B^2\,c^2\,d^4\,n^2\,x^3+$$
$$6\,a^2\,b^4\,B^2\,c\,d^5\,n^2\,x^3+6\,a^3\,b^3\,B^2\,d^6\,n^2\,x^3+270\,A^2\,b^6\,c^2\,d^4\,x^4+540\,a\,A^2\,b^5\,c\,d^5\,x^4+90\,a^2\,A^2\,b^4\,d^6\,x^4-78\,A\,b^6\,B\,c^2\,d^4\,n\,x^4+36\,a\,A\,b^5\,B\,c\,d^5\,n\,x^4+$$
$$42\,a^2\,A\,b^4\,B\,d^6\,n\,x^4+6\,b^6\,B^2\,c^2\,d^4\,n^2\,x^4-12\,a\,b^5\,B^2\,c\,d^5\,n^2\,x^4+6\,a^2\,b^4\,B^2\,d^6\,n^2\,x^4+216\,A^2\,b^6\,c\,d^5\,x^5+144\,a\,A^2\,b^5\,d^6\,x^5-24\,A\,b^6\,B\,c\,d^5\,n\,x^5+$$

$24 a A b^5 B d^6 n x^5 + 60 A^2 b^6 d^6 x^6 + 12 a b^5 B^2 c^5 d n^2 \text{Log}\left[\frac{a}{b}+x\right] - 72 a^2 b^4 B^2 c^4 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] - 60 a^3 b^3 B^2 c^3 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] +$

$180 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] - 72 a^5 b B^2 c d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] + 12 a^6 B^2 d^6 n^2 \text{Log}\left[\frac{a}{b}+x\right] + 120 a^3 b^3 B^2 c^3 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 -$

$90 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 + 36 a^5 b B^2 c d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 - 6 a^6 B^2 d^6 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 - 12 b^6 B^2 c^6 n^2 \text{Log}\left[\frac{c}{d}+x\right] + 72 a b^5 B^2 c^5 d n^2 \text{Log}\left[\frac{c}{d}+x\right] +$

$60 a^2 b^4 B^2 c^4 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] - 180 a^3 b^3 B^2 c^3 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] + 72 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] - 12 a^5 b B^2 c d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] +$

$6 b^6 B^2 c^6 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 - 36 a b^5 B^2 c^5 d n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 + 90 a^2 b^4 B^2 c^4 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 + 240 a^3 A b^3 B c^3 d^3 n \text{Log}[a+b x] -$

$180 a^4 A b^2 B c^2 d^4 n \text{Log}[a+b x] + 72 a^5 A b B c d^5 n \text{Log}[a+b x] - 12 a^6 A B d^6 n \text{Log}[a+b x] + 6 a^2 b^4 B^2 c^4 d^2 n^2 \text{Log}[a+b x] +$

$128 a^3 b^3 B^2 c^3 d^3 n^2 \text{Log}[a+b x] - 186 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}[a+b x] + 60 a^5 b B^2 c d^5 n^2 \text{Log}[a+b x] - 8 a^6 B^2 d^6 n^2 \text{Log}[a+b x] -$

$240 a^3 b^3 B^2 c^3 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 180 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] - 72 a^5 b B^2 c d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] +$

$12 a^6 B^2 d^6 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 240 a^3 b^3 B^2 c^3 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 180 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] +$

$72 a^5 b B^2 c d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 12 a^6 B^2 d^6 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 240 a^3 b^3 B^2 c^3 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] +$

$180 a^4 b^2 B^2 c^2 d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] - 72 a^5 b B^2 c d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + 12 a^6 B^2 d^6 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] +$

$720 a^2 A b^4 B c^3 d^3 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 12 b^6 B^2 c^5 d n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 72 a b^5 B^2 c^4 d^2 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] -$

$60 a^2 b^4 B^2 c^3 d^3 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 180 a^3 b^3 B^2 c^2 d^4 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 72 a^4 b^2 B^2 c d^5 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$

$12 a^5 b B^2 d^6 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 720 a A b^5 B c^3 d^3 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 1080 a^2 A b^4 B c^2 d^4 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] -$

$6 b^6 B^2 c^4 d^2 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 204 a b^5 B^2 c^3 d^3 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 180 a^2 b^4 B^2 c^2 d^4 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$

$36 a^3 b^3 B^2 c d^5 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 6 a^4 b^2 B^2 d^6 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 240 A b^6 B c^3 d^3 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$

$1440 a A b^5 B c^2 d^4 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 720 a^2 A b^4 B c d^5 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 76 b^6 B^2 c^3 d^3 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] -$

$84 a b^5 B^2 c^2 d^4 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 156 a^2 b^4 B^2 c d^5 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 4 a^3 b^3 B^2 d^6 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$

$540 A b^6 B c^2 d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 1080 a A b^5 B c d^5 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 180 a^2 A b^4 B d^6 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] -$

$78 b^6 B^2 c^2 d^4 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 36 a b^5 B^2 c d^5 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 42 a^2 b^4 B^2 d^6 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$

$432 A b^6 B c d^5 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 288 a A b^5 B d^6 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 24 b^6 B^2 c d^5 n x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 24 a b^5 B^2 d^6 n x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$

$$120\,A\,b^6\,B\,d^6\,x^6\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+240\,a^3\,b^3\,B^2\,c^3\,d^3\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-180\,a^4\,b^2\,B^2\,c^2\,d^4\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+$$

$$72\,a^5\,b\,B^2\,c\,d^5\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-12\,a^6\,B^2\,d^6\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+360\,a^2\,b^4\,B^2\,c^3\,d^3\,x\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+$$

$$360\,a\,b^5\,B^2\,c^3\,d^3\,x^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+540\,a^2\,b^4\,B^2\,c^2\,d^4\,x^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+120\,b^6\,B^2\,c^3\,d^3\,x^3\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+$$

$$720\,a\,b^5\,B^2\,c^2\,d^4\,x^3\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+360\,a^2\,b^4\,B^2\,c\,d^5\,x^3\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+270\,b^6\,B^2\,c^2\,d^4\,x^4\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+$$

$$540\,a\,b^5\,B^2\,c\,d^5\,x^4\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+90\,a^2\,b^4\,B^2\,d^6\,x^4\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+216\,b^6\,B^2\,c\,d^5\,x^5\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+$$

$$144\,a\,b^5\,B^2\,d^6\,x^5\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+60\,b^6\,B^2\,d^6\,x^6\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-12\,A\,b^6\,B\,c^6\,n\,\text{Log}[c+d\,x]+72\,a\,A\,b^5\,B\,c^5\,d\,n\,\text{Log}[c+d\,x]-$$

$$180\,a^2\,A\,b^4\,B\,c^4\,d^2\,n\,\text{Log}[c+d\,x]+16\,b^6\,B^2\,c^6\,n^2\,\text{Log}[c+d\,x]-108\,a\,b^5\,B^2\,c^5\,d\,n^2\,\text{Log}[c+d\,x]+66\,a^2\,b^4\,B^2\,c^4\,d^2\,n^2\,\text{Log}[c+d\,x]+$$

$$32\,a^3\,b^3\,B^2\,c^3\,d^3\,n^2\,\text{Log}[c+d\,x]-6\,a^4\,b^2\,B^2\,c^2\,d^4\,n^2\,\text{Log}[c+d\,x]+12\,b^6\,B^2\,c^6\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[c+d\,x]-72\,a\,b^5\,B^2\,c^5\,d\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[c+d\,x]+$$

$$180\,a^2\,b^4\,B^2\,c^4\,d^2\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}[c+d\,x]-12\,b^6\,B^2\,c^6\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[c+d\,x]+72\,a\,b^5\,B^2\,c^5\,d\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[c+d\,x]-$$

$$180\,a^2\,b^4\,B^2\,c^4\,d^2\,n^2\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}[c+d\,x]-12\,b^6\,B^2\,c^6\,n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}[c+d\,x]+72\,a\,b^5\,B^2\,c^5\,d\,n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}[c+d\,x]-$$

$$180\,a^2\,b^4\,B^2\,c^4\,d^2\,n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{Log}[c+d\,x]-12\,b^6\,B^2\,c^6\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+72\,a\,b^5\,B^2\,c^5\,d\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$180\,a^2\,b^4\,B^2\,c^4\,d^2\,n^2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-12\,b^4\,B^2\,c^4\,\left(b^2\,c^2-6\,a\,b\,c\,d+15\,a^2\,d^2\right)\,n^2\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$

$$12\,a^3\,B^2\,d^3\,\left(-20\,b^3\,c^3+15\,a\,b^2\,c^2\,d-6\,a^2\,b\,c\,d^2+a^3\,d^3\right)\,n^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)$$

Problem 180: Result more than twice size of optimal antiderivative.

$$\int(a\,g+b\,g\,x)\,(c\,i+d\,i\,x)^3\,\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,dx$$

Optimal (type 4, 786 leaves, 19 steps):

$$\frac{B^2 (b c-a d)^4 g i^3 n^2 x}{60 b^3 d}+\frac{B^2 (b c-a d)^3 g i^3 n^2 (c+d x)^2}{30 b^2 d^2}+\frac{B^2 (b c-a d)^2 g i^3 n^2 (c+d x)^3}{30 b d^2}-$$

$$\frac{B (b c-a d)^4 g i^3 n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 b^4 d}-\frac{B (b c-a d)^3 g i^3 n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 b^4}+$$

$$\frac{3 B (b c-a d)^3 g i^3 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{20 b^2 d^2}+\frac{B (b c-a d)^2 g i^3 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{30 b d^2}-$$

$$\frac{B (b c-a d) g i^3 n (c+d x)^4 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{10 d^2}+\frac{(b c-a d)^3 g i^3 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{20 b^4}+$$

$$\frac{(b c-a d)^2 g i^3 (a+b x)^2 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{10 b^3}+\frac{3 (b c-a d) g i^3 (a+b x)^2 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{20 b^2}+$$

$$\frac{g i^3 (a+b x)^2 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{5 b}-\frac{B (b c-a d)^5 g i^3 n \left(A+B n+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{10 b^4 d^2}-$$

$$\frac{B^2 (b c-a d)^5 g i^3 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{12 b^4 d^2}-\frac{11 B^2 (b c-a d)^5 g i^3 n^2 \text{Log}[c+d x]}{60 b^4 d^2}-\frac{B^2 (b c-a d)^5 g i^3 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{10 b^4 d^2}$$

Result (type 4, 3427 leaves):

$$\frac{1}{60 b^4 d^2}$$

$$g i^3 \Big(-6 b^5 B^2 c^5 n^2-24 a b^4 B^2 c^4 d n^2+90 a^2 b^3 B^2 c^3 d^2 n^2-90 a^3 b^2 B^2 c^2 d^3 n^2+36 a^4 b B^2 c d^4 n^2-6 a^5 B^2 d^5 n^2+60 a A^2 b^4 c^3 d^2 x-6 A b^5 B c^4 d n x-$$

$$30 a A b^4 B c^3 d^2 n x+60 a^2 A b^3 B c^2 d^3 n x-30 a^3 A b^2 B c d^4 n x+6 a^4 A b B d^5 n x+11 b^5 B^2 c^4 d n^2 x-28 a b^4 B^2 c^3 d^2 n^2 x+24 a^2 b^3 B^2 c^2 d^3 n^2 x-$$

$$8 a^3 b^2 B^2 c d^4 n^2 x+a^4 b B^2 d^5 n^2 x+30 A^2 b^5 c^3 d^2 x^2+90 a A^2 b^4 c^2 d^3 x^2-27 A b^5 B c^3 d^2 n x^2+15 a A b^4 B c^2 d^3 n x^2+15 a^2 A b^3 B c d^4 n x^2-$$

$$3 a^3 A b^2 B d^5 n x^2+8 b^5 B^2 c^3 d^2 n^2 x^2-18 a b^4 B^2 c^2 d^3 n^2 x^2+12 a^2 b^3 B^2 c d^4 n^2 x^2-2 a^3 b^2 B^2 d^5 n^2 x^2+60 A^2 b^5 c^2 d^3 x^3+60 a A^2 b^4 c d^4 x^3-$$

$$22 A b^5 B c^2 d^3 n x^3+20 a A b^4 B c d^4 n x^3+2 a^2 A b^3 B d^5 n x^3+2 b^5 B^2 c^2 d^3 n^2 x^3-4 a b^4 B^2 c d^4 n^2 x^3+2 a^2 b^3 B^2 d^5 n^2 x^3+45 A^2 b^5 c d^4 x^4+$$

$$15 a A^2 b^4 d^5 x^4-6 A b^5 B c d^4 n x^4+6 a A b^4 B d^5 n x^4+12 A^2 b^5 d^5 x^5-6 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{a}{b}+x\right]-30 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right]+$$

$$60 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right]-30 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right]+6 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right]+30 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2-$$

$$30 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2+15 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2-3 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2+6 b^5 B^2 c^5 n^2 \text{Log}\left[\frac{c}{d}+x\right]+30 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{c}{d}+x\right]-$$

$$60 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right]+30 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right]-6 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right]-3 b^5 B^2 c^5 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2+$$

$$15 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{c}{d}+x\right]^2+60 a^2 A b^3 B c^3 d^2 n \text{Log}[a+b x]-60 a^3 A b^2 B c^2 d^3 n \text{Log}[a+b x]+30 a^4 A b B c d^4 n \text{Log}[a+b x]-$$

$$6 a^5 A B d^5 n \text{Log}[a+b x]+27 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}[a+b x]-37 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}[a+b x]+11 a^4 b B^2 c d^4 n^2 \text{Log}[a+b x]-a^5 B^2 d^5 n^2 \text{Log}[a+b x]-$$

$$60 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+60 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]-30 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+$$

$$6 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+60 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-60 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]+$$
$$30 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-6 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-60 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+$$
$$60 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]-30 a^4 b B^2 c d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+6 a^5 B^2 d^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+$$
$$120 a A b^4 B c^3 d^2 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-6 b^5 B^2 c^4 d n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-30 a b^4 B^2 c^3 d^2 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$60 a^2 b^3 B^2 c^2 d^3 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-30 a^3 b^2 B^2 c d^4 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+6 a^4 b B^2 d^5 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+60 A b^5 B c^3 d^2 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$180 a A b^4 B c^2 d^3 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-27 b^5 B^2 c^3 d^2 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+15 a b^4 B^2 c^2 d^3 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$15 a^2 b^3 B^2 c d^4 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-3 a^3 b^2 B^2 d^5 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+120 A b^5 B c^2 d^3 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$120 a A b^4 B c d^4 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-22 b^5 B^2 c^2 d^3 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+20 a b^4 B^2 c d^4 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$2 a^2 b^3 B^2 d^5 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+90 A b^5 B c d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+30 a A b^4 B d^5 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-6 b^5 B^2 c d^4 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$6 a b^4 B^2 d^5 n x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+24 A b^5 B d^5 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+60 a^2 b^3 B^2 c^3 d^2 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-$$
$$60 a^3 b^2 B^2 c^2 d^3 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+30 a^4 b B^2 c d^4 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-6 a^5 B^2 d^5 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]+$$
$$60 a b^4 B^2 c^3 d^2 x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+30 b^5 B^2 c^3 d^2 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+90 a b^4 B^2 c^2 d^3 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+$$
$$60 b^5 B^2 c^2 d^3 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+60 a b^4 B^2 c d^4 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+45 b^5 B^2 c d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+15 a b^4 B^2 d^5 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+$$
$$12 b^5 B^2 d^5 x^5 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+6 A b^5 B c^5 n \text{Log}[c+d x]-30 a A b^4 B c^4 d n \text{Log}[c+d x]-11 b^5 B^2 c^5 n^2 \text{Log}[c+d x]+a b^4 B^2 c^4 d n^2 \text{Log}[c+d x]+$$
$$13 a^2 b^3 B^2 c^3 d^2 n^2 \text{Log}[c+d x]-3 a^3 b^2 B^2 c^2 d^3 n^2 \text{Log}[c+d x]-6 b^5 B^2 c^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+30 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+$$
$$6 b^5 B^2 c^5 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]-30 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+6 b^5 B^2 c^5 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]-$$
$$30 a b^4 B^2 c^4 d n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x]+6 b^5 B^2 c^5 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-30 a b^4 B^2 c^4 d n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+$$
$$6 b^4 B^2 c^4 (b c-5 a d) n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]+6 a^2 B^2 d^2 \left(-10 b^3 c^3+10 a b^2 c^2 d-5 a^2 b c d^2+a^3 d^3\right) n^2 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\Bigg)$$

Problem 181: Result more than twice size of optimal antiderivative.

$$\int (c\,i + d\,i\,x)^3 \left(A + B \,\text{Log}\left[e \left(\frac{a + b\,x}{c + d\,x}\right)^n\right]\right)^2 dx$$

Optimal (type 4, 454 leaves, 15 steps):

$$\frac{5\,B^2\,(b\,c - a\,d)^3\,i^3\,n^2\,x}{12\,b^3} + \frac{B^2\,(b\,c - a\,d)^2\,i^3\,n^2\,(c + d\,x)^2}{12\,b^2\,d} - \frac{B\,(b\,c - a\,d)^3\,i^3\,n\,(a + b\,x)\,\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{2\,b^4} - \frac{B\,(b\,c - a\,d)^2\,i^3\,n\,(c + d\,x)^2\,\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{4\,b^2\,d} - \frac{B\,(b\,c - a\,d)\,i^3\,n\,(c + d\,x)^3\,\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{6\,b\,d} + \frac{i^3\,(c + d\,x)^4\,\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{4\,d} + \frac{5\,B^2\,(b\,c - a\,d)^4\,i^3\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]}{12\,b^4\,d} + \frac{11\,B^2\,(b\,c - a\,d)^4\,i^3\,n^2\,\text{Log}[c + d\,x]}{12\,b^4\,d} + \frac{B\,(b\,c - a\,d)^4\,i^3\,n\,\left(A + B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{Log}\left[1 - \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{2\,b^4\,d} - \frac{B^2\,(b\,c - a\,d)^4\,i^3\,n^2\,\text{PolyLog}\left[2, \frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{2\,b^4\,d}$$

Result (type 4, 2348 leaves):

$$\frac{1}{12 b^4 d} i^3 \Big(-18 b^4 B^2 c^4 n^2 + 54 a b^3 B^2 c^3 d n^2 - 60 a^2 b^2 B^2 c^2 d^2 n^2 + 30 a^3 b B^2 c d^3 n^2 - 6 a^4 B^2 d^4 n^2 + 12 A^2 b^4 c^3 d x - 18 A b^4 B c^3 d n x + 36 a A b^3 B c^2 d^2 n x -$$
$$24 a^2 A b^2 B c d^3 n x + 6 a^3 A b B d^4 n x + 7 b^4 B^2 c^3 d n^2 x - 19 a b^3 B^2 c^2 d^2 n^2 x + 17 a^2 b^2 B^2 c d^3 n^2 x - 5 a^3 b B^2 d^4 n^2 x + 18 A^2 b^4 c^2 d^2 x^2 -$$
$$9 A b^4 B c^2 d^2 n x^2 + 12 a A b^3 B c d^3 n x^2 - 3 a^2 A b^2 B d^4 n x^2 + b^4 B^2 c^2 d^2 n^2 x^2 - 2 a b^3 B^2 c d^3 n^2 x^2 + a^2 b^2 B^2 d^4 n^2 x^2 + 12 A^2 b^4 c d^3 x^3 -$$
$$2 A b^4 B c d^3 n x^3 + 2 a A b^3 B d^4 n x^3 + 3 A^2 b^4 d^4 x^4 - 18 a b^3 B^2 c^3 d n^2 \text{Log}\left[\frac{a}{b}+x\right] + 36 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] - 24 a^3 b B^2 c d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] +$$
$$6 a^4 B^2 d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] + 12 a b^3 B^2 c^3 d n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 - 18 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 + 12 a^3 b B^2 c d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 - 3 a^4 B^2 d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right]^2 +$$
$$18 b^4 B^2 c^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] - 36 a b^3 B^2 c^3 d n^2 \text{Log}\left[\frac{c}{d}+x\right] + 24 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] - 6 a^3 b B^2 c d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] + 3 b^4 B^2 c^4 n^2 \text{Log}\left[\frac{c}{d}+x\right]^2 +$$
$$24 a A b^3 B c^3 d n \text{Log}[a+b x] - 36 a^2 A b^2 B c^2 d^2 n \text{Log}[a+b x] + 24 a^3 A b B c d^3 n \text{Log}[a+b x] - 6 a^4 A B d^4 n \text{Log}[a+b x] +$$
$$9 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}[a+b x] - 14 a^3 b B^2 c d^3 n^2 \text{Log}[a+b x] + 5 a^4 B^2 d^4 n^2 \text{Log}[a+b x] - 24 a b^3 B^2 c^3 d n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] +$$
$$36 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] - 24 a^3 b B^2 c d^3 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] + 6 a^4 B^2 d^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x] +$$
$$24 a b^3 B^2 c^3 d n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 36 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] + 24 a^3 b B^2 c d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] -$$
$$6 a^4 B^2 d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x] - 24 a b^3 B^2 c^3 d n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + 36 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] -$$
$$24 a^3 b B^2 c d^3 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + 6 a^4 B^2 d^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right] + 24 A b^4 B c^3 d x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] -$$
$$18 b^4 B^2 c^3 d n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 36 a b^3 B^2 c^2 d^2 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 24 a^2 b^2 B^2 c d^3 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$$
$$6 a^3 b B^2 d^4 n x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 36 A b^4 B c^2 d^2 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 9 b^4 B^2 c^2 d^2 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 12 a b^3 B^2 c d^3 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] -$$
$$3 a^2 b^2 B^2 d^4 n x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 24 A b^4 B c d^3 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 2 b^4 B^2 c d^3 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 2 a b^3 B^2 d^4 n x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$$
$$6 A b^4 B d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 24 a b^3 B^2 c^3 d n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 36 a^2 b^2 B^2 c^2 d^2 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] +$$
$$24 a^3 b B^2 c d^3 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - 6 a^4 B^2 d^4 n \text{Log}[a+b x] \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] + 12 b^4 B^2 c^3 d x \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 +$$
$$18 b^4 B^2 c^2 d^2 x^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 12 b^4 B^2 c d^3 x^3 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 + 3 b^4 B^2 d^4 x^4 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 - 6 A b^4 B c^4 n \text{Log}[c+d x] -$$
$$7 b^4 B^2 c^4 n^2 \text{Log}[c+d x] + 10 a b^3 B^2 c^3 d n^2 \text{Log}[c+d x] - 3 a^2 b^2 B^2 c^2 d^2 n^2 \text{Log}[c+d x] + 6 b^4 B^2 c^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x] -$$
$$6 b^4 B^2 c^4 n^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x] - 6 b^4 B^2 c^4 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{Log}[c+d x] - 6 b^4 B^2 c^4 n^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right] -$$
$$6 b^4 B^2 c^4 n^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right] + 6 a B^2 d \left(-4 b^3 c^3 + 6 a b^2 c^2 d - 4 a^2 b c d^2 + a^3 d^3\right) n^2 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\Big)$$

Problem 182: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\,i+d\,i\,x)^3 \left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{a\,g+b\,g\,x}\,dx$$

Optimal (type 4, 762 leaves, 26 steps):

$$\frac{B^2 d (b c-a d)^2 i^3 n^2 x}{3 b^3 g}-\frac{5 B d (b c-a d)^2 i^3 n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^4 g}-\frac{B (b c-a d) i^3 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 b^2 g}+$$
$$\frac{d (b c-a d)^2 i^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^4 g}+\frac{(b c-a d) i^3 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^2 g}+\frac{i^3 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b g}+$$
$$\frac{2 B (b c-a d)^3 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b^4 g}+\frac{B^2 (b c-a d)^3 i^3 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 b^4 g}+\frac{2 B^2 (b c-a d)^3 i^3 n^2 \text{Log}[c+d x]}{b^4 g}+$$
$$\frac{5 B (b c-a d)^3 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{3 b^4 g}-\frac{(b c-a d)^3 i^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g}+$$
$$\frac{2 B^2 (b c-a d)^3 i^3 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b^4 g}-\frac{5 B^2 (b c-a d)^3 i^3 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{3 b^4 g}+$$
$$\frac{2 B (b c-a d)^3 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g}+\frac{2 B^2 (b c-a d)^3 i^3 n^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g}$$

Result (type 4, 5616 leaves):

$$\frac{d \left(3 b^2 c^2-3 a b c d+a^2 d^2\right) i^3 x \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2}{b^3 g}+$$
$$\frac{d^2 (3 b c-a d) i^3 x^2 \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2}{2 b^2 g}+\frac{d^3 i^3 x^3 \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2}{3 b g}+$$
$$\frac{(b c-a d)^3 i^3 \text{Log}[a+b x] \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2}{b^4 g}+\frac{1}{g}2 B c^3 i^3 n \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$
$$\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2 b}+\frac{\text{Log}[a+b x] \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)}{b}-\frac{\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]+\text{PolyLog}\left[2,\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]}{b}\right)+$$

$$\frac{1}{g}\, 2\, B\, d^3\, i^3\, n \left(A + B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right) \Bigg(\frac{a^2\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3} - \frac{a^3\,\text{Log}\left[\frac{a}{b}+x\right]^2}{2\,b^4} - \frac{a^2\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^3} -$$

$$\frac{a\left(-\frac{1}{2}\,b\left(-\frac{a\,x}{b^2}+\frac{x^2}{2\,b}+\frac{a^2\,\text{Log}[a+b\,x]}{b^3}\right)+\frac{1}{2}\,x^2\,\text{Log}\left[\frac{a+b\,x}{b}\right]\right)}{b^2} + \frac{-\frac{1}{3}\,b\left(\frac{a^2\,x}{b^3}-\frac{a\,x^2}{2\,b^2}+\frac{x^3}{3\,b}-\frac{a^3\,\text{Log}[a+b\,x]}{b^4}\right)+\frac{1}{3}\,x^3\,\text{Log}\left[\frac{a+b\,x}{b}\right]}{b} +$$

$$\frac{a\left(-\frac{1}{2}\,d\left(-\frac{c\,x}{d^2}+\frac{x^2}{2\,d}+\frac{c^2\,\text{Log}[c+d\,x]}{d^3}\right)+\frac{1}{2}\,x^2\,\text{Log}\left[\frac{c+d\,x}{d}\right]\right)}{b^2} - \frac{-\frac{1}{3}\,d\left(\frac{c^2\,x}{d^3}-\frac{c\,x^2}{2\,d^2}+\frac{x^3}{3\,d}-\frac{c^3\,\text{Log}[c+d\,x]}{d^4}\right)+\frac{1}{3}\,x^3\,\text{Log}\left[\frac{c+d\,x}{d}\right]}{b} + \left(\frac{a^2\,x}{b^3}-\frac{a\,x^2}{2\,b^2}+\frac{x^3}{3\,b}-\frac{a^3\,\text{Log}[a+b\,x]}{b^4}\right)$$

$$\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right) + \frac{a^3\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)}{b^4}\Bigg) +$$

$$\frac{1}{g}\, 6\, B\, c\, d^2\, i^3\, n \left(A + B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right) \Bigg(-\frac{a\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^2} + \frac{a^2\,\text{Log}\left[\frac{a}{b}+x\right]^2}{2\,b^3} + \frac{a\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^2} +$$

$$\frac{-\frac{1}{2}\,b\left(-\frac{a\,x}{b^2}+\frac{x^2}{2\,b}+\frac{a^2\,\text{Log}[a+b\,x]}{b^3}\right)+\frac{1}{2}\,x^2\,\text{Log}\left[\frac{a+b\,x}{b}\right]}{b} - \frac{-\frac{1}{2}\,d\left(-\frac{c\,x}{d^2}+\frac{x^2}{2\,d}+\frac{c^2\,\text{Log}[c+d\,x]}{d^3}\right)+\frac{1}{2}\,x^2\,\text{Log}\left[\frac{c+d\,x}{d}\right]}{b} +$$

$$\left(-\frac{a\,x}{b^2}+\frac{x^2}{2\,b}+\frac{a^2\,\text{Log}[a+b\,x]}{b^3}\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right) - \frac{a^2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)}{b^3}\Bigg) +$$

$$\frac{1}{g}\, 6\, B\, c^2\, d\, i^3\, n \left(A + B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right] - n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right) \Bigg(\frac{\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b} - \frac{a\,\text{Log}\left[\frac{a}{b}+x\right]^2}{2\,b^2} - \frac{\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b} +$$

$$\left(\frac{x}{b}-\frac{a\,\text{Log}[a+b\,x]}{b^2}\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right) + \frac{a\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)}{b^2}\Bigg) +$$

$$\frac{1}{g}\, B^2\, c^3\, i^3\, n^2 \Bigg(\frac{\text{Log}\left[\frac{a}{b}+x\right]^3}{3\,b} + \frac{\text{Log}[a+b\,x]\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)^2}{b} +$$

$$2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2\,b} - \frac{\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]+\text{PolyLog}\left[2,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]}{b}\right) +$$

$$\frac{2\left(\frac{1}{2}\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]+\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]-\text{PolyLog}\left[3,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]\right)}{b}-\frac{1}{b}$$

$$2\left(\frac{1}{2}\,\text{Log}\left[\frac{a}{b}+x\right]^2\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{b\,d\left(\frac{c}{d}+x\right)}{b\,c-a\,d}\right]\right)-\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[3,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\right)\Bigg)+\frac{1}{g}B^2 d^3 i^3 n^2$$

$$\Bigg(-\frac{a^3\,\text{Log}\left[\frac{a}{b}+x\right]^3}{3\,b^4}+\frac{a^2\,(a+b\,x)\left(2-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^4}-\frac{a\,(a+b\,x)\left(-7\,a+b\,x+(6\,a-2\,b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]-2\,(a-b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4\,b^4}+$$

$$\frac{a^2\,(c+d\,x)\left(2-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{b^3\,d}-\frac{a\,(c+d\,x)\left(-7\,c+d\,x+(6\,c-2\,d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]-2\,(c-d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{4\,b^2\,d^2}+\frac{1}{54\,b^4}$$

$$\left(b\,x\,(66\,a^2-15\,a\,b\,x+4\,b^2 x^2)-6\,b\,x\,(6\,a^2-3\,a\,b\,x+2\,b^2 x^2)\,\text{Log}\left[\frac{a}{b}+x\right]+18\,(a^3+b^3 x^3)\,\text{Log}\left[\frac{a}{b}+x\right]^2-66\,a^3\,\text{Log}[a+b\,x]\right)+$$

$$\frac{1}{54\,b\,d^3}\left(d\,x\,(66\,c^2-15\,c\,d\,x+4\,d^2 x^2)-6\,d\,x\,(6\,c^2-3\,c\,d\,x+2\,d^2 x^2)\,\text{Log}\left[\frac{c}{d}+x\right]+18\,(c^3+d^3 x^3)\,\text{Log}\left[\frac{c}{d}+x\right]^2-66\,c^3\,\text{Log}[c+d\,x]\right)+$$

$$\left(\frac{a^2 x}{b^3}-\frac{a\,x^2}{2\,b^2}+\frac{x^3}{3\,b}-\frac{a^3\,\text{Log}[a+b\,x]}{b^4}\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)^2+$$

$$2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)$$

$$\Bigg(\frac{a^2\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3}-\frac{a^3\,\text{Log}\left[\frac{a}{b}+x\right]^2}{2\,b^4}-\frac{a^2\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^3}-\frac{a\left(-\frac{1}{2}\,b\left(-\frac{a\,x}{b^2}+\frac{x^2}{2\,b}+\frac{a^2\,\text{Log}[a+b\,x]}{b^3}\right)+\frac{1}{2}\,x^2\,\text{Log}\left[\frac{a+b\,x}{b}\right]\right)}{b^2}+$$

$$\frac{-\frac{1}{3}\,b\left(\frac{a^2 x}{b^3}-\frac{a\,x^2}{2\,b^2}+\frac{x^3}{3\,b}-\frac{a^3\,\text{Log}[a+b\,x]}{b^4}\right)+\frac{1}{3}\,x^3\,\text{Log}\left[\frac{a+b\,x}{b}\right]}{b}+\frac{a\left(-\frac{1}{2}\,d\left(-\frac{c\,x}{d^2}+\frac{x^2}{2\,d}+\frac{c^2\,\text{Log}[c+d\,x]}{d^3}\right)+\frac{1}{2}\,x^2\,\text{Log}\left[\frac{c+d\,x}{d}\right]\right)}{b^2}-$$

$$\frac{-\frac{1}{3}\,d\left(\frac{c^2 x}{d^3}-\frac{c\,x^2}{2\,d^2}+\frac{x^3}{3\,d}-\frac{c^3\,\text{Log}[c+d\,x]}{d^4}\right)+\frac{1}{3}\,x^3\,\text{Log}\left[\frac{c+d\,x}{d}\right]}{b}+\frac{a^3\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)}{b^4}\Bigg)-$$

$$2\left(\frac{1}{b^4\,d}a^2\left(a\,d+2\,b\,d\,x-b\,d\,x\,\text{Log}\left[\frac{c}{d}+x\right]-b\,c\,\text{Log}[c+d\,x]+\text{Log}\left[\frac{a}{b}+x\right]\left(-d\,(a+b\,x)+d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]+(b\,c-a\,d)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+\right.\right.$$

$$\left.(b\,c-a\,d)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-\frac{1}{4\,b^4\,d^2}\,a\left(-2\,a\,b\,c\,d-3\,b^2 c\,d\,x-3\,a\,b\,d^2 x+b^2 d^2 x^2+2\,a\,b\,d^2 x\,\text{Log}\left[\frac{c}{d}+x\right]-\right.$$

$$b^2 d^2 x^2\,\text{Log}\left[\frac{c}{d}+x\right]+a^2 d^2\,\text{Log}[a+b\,x]+b^2 c^2\,\text{Log}[c+d\,x]+2\,a\,b\,c\,d\,\text{Log}[c+d\,x]+\text{Log}\left[\frac{a}{b}+x\right]\left(b\,d\,(2\,a\,c+b\,x\,(2\,c-d\,x))-2\right.$$

$$d^2\left(a^2-b^2x^2\right)\text{Log}\left[\frac{c}{d}+x\right]+\left(-2b^2c^2+2a^2d^2\right)\text{Log}\left[\frac{b\left(c+dx\right)}{bc-ad}\right]\Bigg)+\left(-2b^2c^2+2a^2d^2\right)\text{PolyLog}\left[2,\frac{d\left(a+bx\right)}{-bc+ad}\right]\Bigg)+$$

$$\frac{1}{108b^4d^3}\Bigg(36ab^2c^2d+48b^3c^2dx+36ab^2cd^2x+48a^2bd^3x-15b^3cd^2x^2-15ab^2d^3x^2+8b^3d^3x^3-36a^2bd^3x\,\text{Log}\left[\frac{c}{d}+x\right]+$$

$$18ab^2d^3x^2\,\text{Log}\left[\frac{c}{d}+x\right]-12b^3d^3x^3\,\text{Log}\left[\frac{c}{d}+x\right]-18a^2bcd^2\,\text{Log}[a+bx]-12a^3d^3\,\text{Log}[a+bx]-12b^3c^3\,\text{Log}[c+dx]-$$

$$18ab^2c^2d\,\text{Log}[c+dx]-36a^2bcd^2\,\text{Log}[c+dx]+6\,\text{Log}\left[\frac{a}{b}+x\right]\Bigg(-b^2d\left(6ac^2+bx\left(6c^2-3cdx+2d^2x^2\right)\right)+$$

$$6d^3\left(a^3+b^3x^3\right)\text{Log}\left[\frac{c}{d}+x\right]+6\left(b^3c^3-a^3d^3\right)\text{Log}\left[\frac{b\left(c+dx\right)}{bc-ad}\right]\Bigg)+36\left(b^3c^3-a^3d^3\right)\text{PolyLog}\left[2,\frac{d\left(a+bx\right)}{-bc+ad}\right]\Bigg)-\frac{1}{2b^4}$$

$$a^3\left(\text{Log}\left[\frac{a}{b}+x\right]^2\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{b\left(c+dx\right)}{bc-ad}\right]\right)-2\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\left(a+bx\right)}{-bc+ad}\right]+2\,\text{PolyLog}\left[3,\frac{d\left(a+bx\right)}{-bc+ad}\right]\right)\Bigg)-$$

$$\frac{a^3\left(\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[\frac{d\,(a+bx)}{-bc+ad}\right]+2\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+dx)}{bc-ad}\right]-2\,\text{PolyLog}\left[3,\frac{b\,(c+dx)}{bc-ad}\right]\right)}{b^4}\Bigg)+$$

$$\frac{1}{g}3B^2cd^2i^3n^2\Bigg(\frac{a^2\,\text{Log}\left[\frac{a}{b}+x\right]^3}{3b^3}-\frac{a\left(a+bx\right)\left(2-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^3}+$$

$$\frac{\left(a+bx\right)\left(-7a+bx+\left(6a-2bx\right)\text{Log}\left[\frac{a}{b}+x\right]-2\left(a-bx\right)\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4b^3}-$$

$$\frac{a\left(c+dx\right)\left(2-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{b^2d}+\frac{\left(c+dx\right)\left(-7c+dx+\left(6c-2dx\right)\text{Log}\left[\frac{c}{d}+x\right]-2\left(c-dx\right)\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{4bd^2}+$$

$$\left(-\frac{ax}{b^2}+\frac{x^2}{2b}+\frac{a^2\,\text{Log}[a+bx]}{b^3}\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+dx}+\frac{bx}{c+dx}\right]\right)^2+2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+dx}+\frac{bx}{c+dx}\right]\right)$$

$$\Bigg(-\frac{a\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^2}+\frac{a^2\,\text{Log}\left[\frac{a}{b}+x\right]^2}{2b^3}+\frac{a\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^2}+\frac{-\frac{1}{2}b\left(-\frac{ax}{b^2}+\frac{x^2}{2b}+\frac{a^2\,\text{Log}[a+bx]}{b^3}\right)+\frac{1}{2}x^2\,\text{Log}\left[\frac{a+bx}{b}\right]}{b}-$$

$$\frac{-\frac{1}{2}d\left(-\frac{cx}{d^2}+\frac{x^2}{2d}+\frac{c^2\,\text{Log}[c+dx]}{d^3}\right)+\frac{1}{2}x^2\,\text{Log}\left[\frac{c+dx}{d}\right]}{b}-\frac{a^2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+bx)}{-bc+ad}\right]+\text{PolyLog}\left[2,\frac{b\,(c+dx)}{bc-ad}\right]\right)}{b^3}\Bigg)-$$

$$2\Bigg(-\frac{1}{b^3d}a\Bigg(ad+2bdx-bdx\,\text{Log}\left[\frac{c}{d}+x\right]-bc\,\text{Log}[c+dx]+\text{Log}\left[\frac{a}{b}+x\right]\left(-d\left(a+bx\right)+d\left(a+bx\right)\text{Log}\left[\frac{c}{d}+x\right]+\left(bc-ad\right)\text{Log}\left[\frac{b\left(c+dx\right)}{bc-ad}\right]\right)+$$

$$\left(bc-ad\right)\text{PolyLog}\left[2,\frac{d\left(a+bx\right)}{-bc+ad}\right]\Bigg)+\frac{1}{4b^3d^2}\Bigg(-2abcd-3b^2cdx-3abd^2x+b^2d^2x^2+2abd^2x\,\text{Log}\left[\frac{c}{d}+x\right]-$$

$$b^2 d^2 x^2 \,\text{Log}\left[\frac{c}{d}+x\right] + a^2 d^2 \,\text{Log}[a+b x] + b^2 c^2 \,\text{Log}[c+d x] + 2 a b c d \,\text{Log}[c+d x] + \text{Log}\left[\frac{a}{b}+x\right] \Big(b d \,(2 a c + b x\,(2 c - d x)) -$$

$$2 d^2 \,(a^2 - b^2 x^2)\, \text{Log}\left[\frac{c}{d}+x\right] + (-2 b^2 c^2 + 2 a^2 d^2)\, \text{Log}\left[\frac{b\,(c+d x)}{b c - a d}\right]\Big) + (-2 b^2 c^2 + 2 a^2 d^2)\, \text{PolyLog}\left[2, \frac{d\,(a+b x)}{-b c + a d}\right]\Big) + \frac{1}{2 b^3}$$

$$a^2 \Big(\text{Log}\left[\frac{a}{b}+x\right]^2 \Big(\text{Log}\left[\frac{c}{d}+x\right] - \text{Log}\left[\frac{b\,(c+d x)}{b c - a d}\right]\Big) - 2\,\text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2, \frac{d\,(a+b x)}{-b c + a d}\right] + 2\,\text{PolyLog}\left[3, \frac{d\,(a+b x)}{-b c + a d}\right]\Big)\Big) +$$

$$\frac{a^2 \Big(\text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right] + 2\,\text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2, \frac{b\,(c+d x)}{b c-a d}\right] - 2\,\text{PolyLog}\left[3, \frac{b\,(c+d x)}{b c-a d}\right]\Big)}{b^3}\Bigg) +$$

$$\frac{1}{g} 3 B^2 c^2 d\, i^3 n^2 \Bigg(-\frac{a\,\text{Log}\left[\frac{a}{b}+x\right]^3}{3 b^2} + \frac{(a+b x)\,\Big(2 - 2\,\text{Log}\left[\frac{a}{b}+x\right] + \text{Log}\left[\frac{a}{b}+x\right]^2\Big)}{b^2} + \frac{(c+d x)\,\Big(2 - 2\,\text{Log}\left[\frac{c}{d}+x\right] + \text{Log}\left[\frac{c}{d}+x\right]^2\Big)}{b d} +$$

$$\Big(\frac{x}{b} - \frac{a\,\text{Log}[a+b x]}{b^2}\Big) \Big(-\text{Log}\left[\frac{a}{b}+x\right] + \text{Log}\left[\frac{c}{d}+x\right] + \text{Log}\left[\frac{a}{c+d x} + \frac{b x}{c+d x}\right]\Big)^2 + 2 \Big(-\text{Log}\left[\frac{a}{b}+x\right] + \text{Log}\left[\frac{c}{d}+x\right] + \text{Log}\left[\frac{a}{c+d x} + \frac{b x}{c+d x}\right]\Big)$$

$$\Bigg(\frac{\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b} - \frac{a\,\text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^2} - \frac{\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b} + \frac{a\,\Big(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right] + \text{PolyLog}\left[2, \frac{b\,(c+d x)}{b c-a d}\right]\Big)}{b^2}\Bigg) -$$

$$2 \Bigg(\frac{1}{b^2 d}\Big(a d + 2 b d x - b d x\,\text{Log}\left[\frac{c}{d}+x\right] - b c\,\text{Log}[c+d x] + \text{Log}\left[\frac{a}{b}+x\right] \Big(-d\,(a+b x) + d\,(a+b x)\,\text{Log}\left[\frac{c}{d}+x\right] + (b c - a d)\,\text{Log}\left[\frac{b\,(c+d x)}{b c - a d}\right]\Big) +$$

$$(b c - a d)\,\text{PolyLog}\left[2, \frac{d\,(a+b x)}{-b c + a d}\right]\Big) - \frac{1}{2 b^2}$$

$$a \Big(\text{Log}\left[\frac{a}{b}+x\right]^2 \Big(\text{Log}\left[\frac{c}{d}+x\right] - \text{Log}\left[\frac{b\,(c+d x)}{b c - a d}\right]\Big) - 2\,\text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2, \frac{d\,(a+b x)}{-b c + a d}\right] + 2\,\text{PolyLog}\left[3, \frac{d\,(a+b x)}{-b c + a d}\right]\Big)\Big) -$$

$$\frac{a \Big(\text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right] + 2\,\text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2, \frac{b\,(c+d x)}{b c-a d}\right] - 2\,\text{PolyLog}\left[3, \frac{b\,(c+d x)}{b c-a d}\right]\Big)}{b^2}\Bigg)$$

Problem 183: Result more than twice size of optimal antiderivative.

$$\int \frac{(c\, i + d\, i\, x)^3 \left(A + B\,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g + b g x)^2}\, dx$$

Optimal (type 4, 739 leaves, 17 steps):

$$-\frac{2 B^2 (b c-a d)^2 i^3 n^2 (c+d x)}{b^3 g^2 (a+b x)}-\frac{B d^2 (b c-a d) i^3 n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^4 g^2}-\frac{2 B (b c-a d)^2 i^3 n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^2 (a+b x)}+$$
$$\frac{2 d^2 (b c-a d) i^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^4 g^2}-\frac{(b c-a d)^2 i^3 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^2 (a+b x)}+$$
$$\frac{d i^3 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^2 g^2}+\frac{4 B d (b c-a d)^2 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{b^4 g^2}+\frac{B^2 d (b c-a d)^2 i^3 n^2 \text{Log}[c+d x]}{b^4 g^2}+$$
$$\frac{B d (b c-a d)^2 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2}-\frac{3 d (b c-a d)^2 i^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2}+$$
$$\frac{4 B^2 d (b c-a d)^2 i^3 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{b^4 g^2}-\frac{B^2 d (b c-a d)^2 i^3 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2}+$$
$$\frac{6 B d (b c-a d)^2 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2}+\frac{6 B^2 d (b c-a d)^2 i^3 n^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^2}$$

Result (type 4, 5470 leaves):

$$\frac{d^2 (3 b c-2 a d) i^3 x \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2}{b^3 g^2}+$$
$$\frac{d^3 i^3 x^2 \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2}{2 b^2 g^2}+\frac{3 d (b c-a d)^2 i^3 \text{Log}[a+b x] \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2}{b^4 g^2}+$$
$$\frac{1}{b^4 g^2 (a+b x)} \left(-A^2 b^3 c^3 i^3+3 a A^2 b^2 c^2 d i^3-3 a^2 A^2 b c d^2 i^3+a^3 A^2 d^3 i^3-2 A b^3 B c^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+\right.$$
$$6 a A b^2 B c^2 d i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-6 a^2 A b B c d^2 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+2 a^3 A B d^3 i^3$$
$$\left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-b^3 B^2 c^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+3 a b^2 B^2 c^2 d i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-$$
$$\left.3 a^2 b B^2 c d^2 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+a^3 B^2 d^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)+\frac{1}{b (b c-a d) g^2 (a+b x)}$$
$$B^2 c^3 i^3 n^2 \left(-2 b c+2 a d-2 d (a+b x) \text{Log}[a+b x]+(-2 b c+2 a d) \text{Log}\left[\frac{a+b x}{c+d x}\right]-b (c+d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+2 d (a+b x) \text{Log}[c+d x]\right)+$$
$$\frac{1}{g^2} 2 B c^3 i^3 n \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$

$$\left(-\frac{\left(\frac{a}{b}+x\right)\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{(a+b\,x)^2\,\text{Log}\left[\frac{a}{b}+x\right]}-\frac{\frac{b\left(\frac{c}{d}+x\right)\text{Log}\left[\frac{c}{d}+x\right]}{\left(-a+\frac{b\,c}{d}\right)^2\left(1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right)}+\frac{\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]}{-a+\frac{b\,c}{d}}}{b}-\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]}{b\,(a+b\,x)}\right)+$$

$$\frac{1}{g^2}\,2\,B\,d^3\,i^3\,n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)$$

$$\left(-\frac{2\,a\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3}+\frac{3\,a^2\,\text{Log}\left[\frac{a}{b}+x\right]^2}{2\,b^4}+\frac{a^3\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^4\,(a+b\,x)}+\frac{2\,a\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^3}+\right.$$

$$\frac{-\frac{1}{2}\,b\left(-\frac{a\,x}{b^2}+\frac{x^2}{2\,b}+\frac{a^2\,\text{Log}[a+b\,x]}{b^3}\right)+\frac{1}{2}\,x^2\,\text{Log}\left[\frac{a+b\,x}{b}\right]}{b^2}+\frac{a^3\left(\left(-b\,c+a\,d\right)\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\left(\text{Log}[a+b\,x]-\text{Log}[c+d\,x]\right)\right)}{b^4\,(b\,c-a\,d)\,(a+b\,x)}-$$

$$\frac{-\frac{1}{2}\,d\left(-\frac{c\,x}{d^2}+\frac{x^2}{2\,d}+\frac{c^2\,\text{Log}[c+d\,x]}{d^3}\right)+\frac{1}{2}\,x^2\,\text{Log}\left[\frac{c+d\,x}{d}\right]}{b^2}+\frac{\left(-4\,a\,b\,x+b^2\,x^2+\frac{2\,a^3}{a+b\,x}+6\,a^2\,\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{2\,b^4}-$$

$$\left.\frac{3\,a^2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)}{b^4}\right)+\frac{1}{g^2}$$

$$6\,B\,c\,d^2\,i^3\,n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\left(\frac{\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^2}-\frac{a\,\text{Log}\left[\frac{a}{b}+x\right]^2}{b^3}-\frac{a^2\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3\,(a+b\,x)}-\right.$$

$$\frac{\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^2}-\frac{a^2\left(\left(-b\,c+a\,d\right)\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\left(\text{Log}[a+b\,x]-\text{Log}[c+d\,x]\right)\right)}{b^3\,(b\,c-a\,d)\,(a+b\,x)}+$$

$$\left.\frac{\left(b\,x-\frac{a^2}{a+b\,x}-2\,a\,\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{b^3}+\frac{2\,a\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)}{b^3}\right)+$$

$$\frac{1}{g^2}\,6\,B\,c^2\,d\,i^3\,n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)$$

$$\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2\,b^2}+\frac{a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^2\,(a+b\,x)}+\frac{a\left(\left(-b\,c+a\,d\right)\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\left(\text{Log}[a+b\,x]-\text{Log}[c+d\,x]\right)\right)}{b^2\,(b\,c-a\,d)\,(a+b\,x)}+\right.$$

$$\left.\frac{\left(\frac{a}{a+b\,x}+\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{b^2}-\frac{\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^2}\right)+$$

$$\frac{1}{g^2} B^2 d^3 i^3 n^2 \Bigg(\frac{a^2 \text{Log}\left[\frac{a}{b}+x\right]^3}{b^4} - \frac{2 a (a+b x) \left(2-2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^4} + \frac{a^3 \left(2+2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^4 (a+b x)} +$$

$$\frac{(a+b x) \left(-7 a+b x+(6 a-2 b x) \text{Log}\left[\frac{a}{b}+x\right]-2 (a-b x) \text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4 b^4} -$$

$$\frac{2 a (c+d x) \left(2-2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{b^3 d} + \frac{(c+d x) \left(-7 c+d x+(6 c-2 d x) \text{Log}\left[\frac{c}{d}+x\right]-2 (c-d x) \text{Log}\left[\frac{c}{d}+x\right]^2\right)}{4 b^2 d^2} +$$

$$\frac{\left(-4 a b x+b^2 x^2+\frac{2 a^3}{a+b x}+6 a^2 \text{Log}[a+b x]\right) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)^2}{2 b^4} - \frac{1}{b^4 (b c-a d) (a+b x)}$$

$$a^3 \left(-b (c+d x) \text{Log}\left[\frac{c}{d}+x\right]^2+2 d (a+b x) \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 d (a+b x) \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right) + 2 \Bigg(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+$$

$$\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\Bigg) \Bigg(-\frac{2 a \left(\frac{a}{b}+x\right) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3}+\frac{3 a^2 \text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^4}+\frac{a^3 \left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^4 (a+b x)}+\frac{2 a \left(\frac{c}{d}+x\right) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^3}+$$

$$\frac{-\frac{1}{2} b \left(-\frac{a x}{b^2}+\frac{x^2}{2 b}+\frac{a^2 \text{Log}[a+b x]}{b^3}\right)+\frac{1}{2} x^2 \text{Log}\left[\frac{a+b x}{b}\right]}{b^2} + \frac{a^3 \left((-b c+a d) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x) (\text{Log}[a+b x]-\text{Log}[c+d x])\right)}{b^4 (b c-a d) (a+b x)} -$$

$$\frac{-\frac{1}{2} d \left(-\frac{c x}{d^2}+\frac{x^2}{2 d}+\frac{c^2 \text{Log}[c+d x]}{d^3}\right)+\frac{1}{2} x^2 \text{Log}\left[\frac{c+d x}{d}\right]}{b^2} - \frac{3 a^2 \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right)}{b^4}\Bigg) -$$

$$2 \Bigg(-\frac{1}{b^4 d} 2 a \Bigg(a d+2 b d x-b d x \text{Log}\left[\frac{c}{d}+x\right]-b c \text{Log}[c+d x]+\text{Log}\left[\frac{a}{b}+x\right] \left(-d (a+b x)+d (a+b x) \text{Log}\left[\frac{c}{d}+x\right]+(b c-a d) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+$$

$$(b c-a d) \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]\Bigg) + \frac{1}{4 b^4 d^2} \Bigg(-2 a b c d-3 b^2 c d x-3 a b d^2 x+b^2 d^2 x^2+2 a b d^2 x \text{Log}\left[\frac{c}{d}+x\right]-$$

$$b^2 d^2 x^2 \text{Log}\left[\frac{c}{d}+x\right]+a^2 d^2 \text{Log}[a+b x]+b^2 c^2 \text{Log}[c+d x]+2 a b c d \text{Log}[c+d x]+\text{Log}\left[\frac{a}{b}+x\right] \Bigg(b d (2 a c+b x (2 c-d x))-$$

$$2 d^2 \left(a^2-b^2 x^2\right) \text{Log}\left[\frac{c}{d}+x\right]+\left(-2 b^2 c^2+2 a^2 d^2\right) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\Bigg)+\left(-2 b^2 c^2+2 a^2 d^2\right) \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]\Bigg) -$$

$$\frac{1}{2 b^4 (b c-a d) (a+b x)} a^3 \Bigg(d (a+b x) \text{Log}\left[\frac{a}{b}+x\right]^2+2 \left((-b c+a d) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x) (\text{Log}[a+b x]-\text{Log}[c+d x])\right)-$$

$$2 \text{Log}\left[\frac{a}{b}+x\right] \left((b c-a d) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)-2 d (a+b x) \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]\Bigg) + \frac{1}{2 b^4}$$

$$3 a^2 \left(\text{Log}\left[\frac{a}{b}+x\right]^2 \left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)-2 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]+2 \text{PolyLog}\left[3, \frac{d (a+b x)}{-b c+a d}\right]\right)\Bigg) +$$

$$\frac{3 a^2 \left(\text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\right)}{b^4}\Bigg)+$$

$$\frac{1}{g^2} 3 B^2 c d^2 i^3 n^2 \left(-\frac{2 a \text{Log}\left[\frac{a}{b}+x\right]^3}{3 b^3}+\frac{(a+b x) \left(2-2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^3}-\frac{a^2 \left(2+2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^3 (a+b x)}+\right.$$

$$\frac{(c+d x) \left(2-2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{b^2 d}+\frac{\left(b x-\frac{a^2}{a+b x}-2 a \text{Log}[a+b x]\right) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)^2}{b^3}+$$

$$\frac{1}{b^3 (b c-a d) (a+b x)} a^2 \left(-b (c+d x) \text{Log}\left[\frac{c}{d}+x\right]^2+2 d (a+b x) \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 d (a+b x) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)+$$

$$2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right) \left(\frac{\left(\frac{a}{b}+x\right) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^2}-\frac{a \text{Log}\left[\frac{a}{b}+x\right]^2}{b^3}-\frac{a^2 \left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3 (a+b x)}-\right.$$

$$\frac{\left(\frac{c}{d}+x\right) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^2}-\frac{a^2 \left((-b c+a d) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x) (\text{Log}[a+b x]-\text{Log}[c+d x])\right)}{b^3 (b c-a d) (a+b x)}+$$

$$\left.\frac{2 a \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)}{b^3}\right)-2 \left(\frac{1}{b^3 d}\left(a d+2 b d x-b d x \text{Log}\left[\frac{c}{d}+x\right]-b c \text{Log}[c+d x]+\right.\right.$$

$$\left.\text{Log}\left[\frac{a}{b}+x\right] \left(-d (a+b x)+d (a+b x) \text{Log}\left[\frac{c}{d}+x\right]+(b c-a d) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+(b c-a d) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)+$$

$$\frac{1}{2 b^3 (b c-a d) (a+b x)} a^2 \left(d (a+b x) \text{Log}\left[\frac{a}{b}+x\right]^2+2 \left((-b c+a d) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x) (\text{Log}[a+b x]-\text{Log}[c+d x])\right)-\right.$$

$$\left.2 \text{Log}\left[\frac{a}{b}+x\right] \left((b c-a d) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)-2 d (a+b x) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)-\frac{1}{b^3}$$

$$\left.a \left(\text{Log}\left[\frac{a}{b}+x\right]^2 \left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)-2 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+2 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)-$$

$$\left.\frac{2 a \left(\text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\right)}{b^3}\right)+$$

$$\frac{1}{g^2} 3 B^2 c^2 d i^3 n^2 \left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^3}{3 b^2}+\frac{a \left(2+2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^2 (a+b x)}+\frac{\left(\frac{a}{a+b x}+\text{Log}[a+b x]\right) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)^2}{b^2}-\right.$$

$$\frac{1}{b^2 (b c-a d) (a+b x)} a \left(-b (c+d x) \text{Log}\left[\frac{c}{d}+x\right]^2+2 d (a+b x) \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 d (a+b x) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)+$$

$$2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^2}+\frac{a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^2(a+b x)}+\frac{a\left((-b c+a d)\,\text{Log}\left[\frac{c}{d}+x\right]+d(a+b x)\left(\text{Log}[a+b x]-\text{Log}[c+d x]\right)\right)}{b^2(b c-a d)(a+b x)}-\frac{\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d(a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b(c+d x)}{b c-a d}\right]}{b^2}\right)-$$

$$2\left(-\frac{1}{2 b^2(b c-a d)(a+b x)}a\left(d(a+b x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\left((-b c+a d)\,\text{Log}\left[\frac{c}{d}+x\right]+d(a+b x)\left(\text{Log}[a+b x]-\text{Log}[c+d x]\right)\right)-2\,\text{Log}\left[\frac{a}{b}+x\right]\left((b c-a d)\,\text{Log}\left[\frac{c}{d}+x\right]+d(a+b x)\,\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]\right)-2 d(a+b x)\,\text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]\right)+\frac{1}{2 b^2}\left(\text{Log}\left[\frac{a}{b}+x\right]^2\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]\right)-2\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]+2\,\text{PolyLog}\left[3,\frac{d(a+b x)}{-b c+a d}\right]\right)+\frac{\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[\frac{d(a+b x)}{-b c+a d}\right]+2\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b(c+d x)}{b c-a d}\right]-2\,\text{PolyLog}\left[3,\frac{b(c+d x)}{b c-a d}\right]}{b^2}\right)$$

Problem 184: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^3}\,dx$$

Optimal (type 4, 644 leaves, 13 steps) :

$$-\frac{4 B^2 d(b c-a d)\,i^3 n^2(c+d x)}{b^3 g^3(a+b x)}-\frac{B^2(b c-a d)\,i^3 n^2(c+d x)^2}{4 b^2 g^3(a+b x)^2}-\frac{4 B d(b c-a d)\,i^3 n(c+d x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^3(a+b x)}-\frac{B(b c-a d)\,i^3 n(c+d x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^2 g^3(a+b x)^2}+\frac{d^3 i^3(a+b x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^4 g^3}-\frac{2 d(b c-a d)\,i^3(c+d x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^3(a+b x)}-\frac{(b c-a d)\,i^3(c+d x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^2 g^3(a+b x)^2}+\frac{2 B d^2(b c-a d)\,i^3 n\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)\text{Log}\left[\frac{b c-a d}{b(c+d x)}\right]}{b^4 g^3}-\frac{3 d^2(b c-a d)\,i^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2\text{Log}\left[1-\frac{b(c+d x)}{d(a+b x)}\right]}{b^4 g^3}+\frac{2 B^2 d^2(b c-a d)\,i^3 n^2\,\text{PolyLog}\left[2,\frac{d(a+b x)}{b(c+d x)}\right]}{b^4 g^3}+\frac{6 B d^2(b c-a d)\,i^3 n\left(A+B\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)\text{PolyLog}\left[2,\frac{b(c+d x)}{d(a+b x)}\right]}{b^4 g^3}+\frac{6 B^2 d^2(b c-a d)\,i^3 n^2\,\text{PolyLog}\left[3,\frac{b(c+d x)}{d(a+b x)}\right]}{b^4 g^3}$$

Result (type 4, 6613 leaves) :

$$\frac{d^3 i^3 x \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2}{b^3 g^3}+\frac{3 d^2 (b c-a d) i^3 \text{Log}[a+b x] \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2}{b^4 g^3}-$$

$$\frac{1}{b^4 g^3 (a+b x)} 3 \left(A^2 b^2 c^2 d i^3-2 a A^2 b c d^2 i^3+a^2 A^2 d^3 i^3+2 A b^2 B c^2 d i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-4 a A b B c d^2 i^3\right.$$

$$\left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+2 a^2 A B d^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+b^2 B^2 c^2 d i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-$$

$$\left.2 a b B^2 c d^2 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+a^2 B^2 d^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)+$$

$$\frac{1}{2 b^4 g^3 (a+b x)^2} \left(-A^2 b^3 c^3 i^3+3 a A^2 b^2 c^2 d i^3-3 a^2 A^2 b c d^2 i^3+a^3 A^2 d^3 i^3-2 A b^3 B c^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+\right.$$

$$6 a A b^2 B c^2 d i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-6 a^2 A b B c d^2 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+2 a^3 A B d^3 i^3$$

$$\left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-b^3 B^2 c^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+3 a b^2 B^2 c^2 d i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-$$

$$\left.3 a^2 b B^2 c d^2 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+a^3 B^2 d^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)-$$

$$\left(B^2 c^3 i^3 n^2 \left(b^2 c^2-8 a b c d+7 a^2 d^2-6 b^2 c d x+6 a b d^2 x-6 d^2 (a+b x)^2 \text{Log}[a+b x]+2 (b c-a d) (b c-3 a d-2 b d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]+\right.\right.$$

$$\left.\left.2 b (c+d x) (b c-2 a d-b d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+6 a^2 d^2 \text{Log}[c+d x]+12 a b d^2 x \text{Log}[c+d x]+6 b^2 d^2 x^2 \text{Log}[c+d x]\right)\right)\Big/$$

$$\left(4 b (b c-a d)^2 g^3 (a+b x)^2\right)+\frac{1}{g^3} 2 B c^3 i^3 n \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$

$$\left(-\frac{\left(\frac{a}{b}+x\right) \left(2 \text{Log}\left[\frac{a}{b}+x\right]+4 \text{Log}\left[\frac{a}{b}+x\right]^2\right)}{8 (a+b x)^3 \text{Log}\left[\frac{a}{b}+x\right]}-\frac{\frac{b \left(\frac{c}{d}+x\right)}{\left(-a+\frac{b c}{d}\right)^3 \left(1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right)}-\left(\frac{b^2 \left(\frac{c}{d}+x\right)^2}{\left(-a+\frac{b c}{d}\right)^4 \left(1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right)^2}+\frac{2 b \left(\frac{c}{d}+x\right)}{\left(-a+\frac{b c}{d}\right)^3 \left(1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right)}\right) \text{Log}\left[\frac{c}{d}+x\right]-\frac{\text{Log}\left[1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]}{\left(-a+\frac{b c}{d}\right)^2}}{2 b}-\right.$$

$$\left.\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]}{2 b (a+b x)^2}\right)+\frac{1}{g^3}6 B c^2 d i^3 n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$

$$\left(-\frac{1+\text{Log}\left[\frac{a}{b}+x\right]}{b^2 (a+b x)}+\frac{a\left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^2 (a+b x)^2}-\frac{(-b c+a d) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x)(\text{Log}[a+b x]-\text{Log}[c+d x])}{b^2 (b c-a d)(a+b x)}-\right.$$

$$\left.\frac{a\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d (a+b x)(b c-a d+d (a+b x) \text{Log}[a+b x]-d (a+b x) \text{Log}[c+d x])}{(b c-a d)^2}\right)}{2 b^2 (a+b x)^2}-\frac{(a+2 b x)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)}{2 b^2 (a+b x)^2}\right)+$$

$$\frac{1}{g^3} 2 B d^3 i^3 n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$

$$\left(\frac{\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3}-\frac{3 a \text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^4}-\frac{3 a^2\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^4 (a+b x)}+\frac{a^3\left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^4 (a+b x)^2}-\frac{\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^3}-\right.$$

$$\frac{3 a^2\left((-b c+a d) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x)(\text{Log}[a+b x]-\text{Log}[c+d x])\right)}{b^4 (b c-a d)(a+b x)}-\frac{a^3\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d (a+b x)(b c-a d+d (a+b x) \text{Log}[a+b x]-d (a+b x) \text{Log}[c+d x])}{(b c-a d)^2}\right)}{2 b^4 (a+b x)^2}-$$

$$\left.\frac{\left(-2 b x+\frac{a^2 (5 a+6 b x)}{(a+b x)^2}+6 a \text{Log}[a+b x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)}{2 b^4}+\frac{3 a\left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right)}{b^4}\right)+$$

$$\frac{1}{g^3} 6 B c d^2 i^3 n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^3}+\frac{2 a\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3 (a+b x)}-\frac{a^2\left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^3 (a+b x)^2}+\right.$$

$$\frac{2 a\left((-b c+a d) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x)(\text{Log}[a+b x]-\text{Log}[c+d x])\right)}{b^3 (b c-a d)(a+b x)}+\frac{a^2\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d (a+b x)(b c-a d+d (a+b x) \text{Log}[a+b x]-d (a+b x) \text{Log}[c+d x])}{(b c-a d)^2}\right)}{2 b^3 (a+b x)^2}+$$

$$\left.\frac{\left(\frac{a (3 a+4 b x)}{(a+b x)^2}+2 \text{Log}[a+b x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)}{2 b^3}-\frac{\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{b^3}\right)+$$

$$\frac{1}{g^3} 3 B^2 c^2 d i^3 n^2\left(-\frac{2+2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2}{b^2 (a+b x)}+\frac{a\left(1+2 \text{Log}\left[\frac{a}{b}+x\right]+2 \text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4 b^2 (a+b x)^2}+2\left(-\frac{1+\text{Log}\left[\frac{a}{b}+x\right]}{b^2 (a+b x)}+\frac{a\left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^2 (a+b x)^2}-\right.\right.$$

$$\frac{(-b c+a d) \operatorname{Log}\left[\frac{c}{d}+x\right]+d (a+b x) (\operatorname{Log}[a+b x]-\operatorname{Log}[c+d x])}{b^2 (b c-a d) (a+b x)}-\frac{a\left(\operatorname{Log}\left[\frac{c}{d}+x\right]+\frac{d (a+b x) (b c-a d+d (a+b x) \operatorname{Log}[a+b x]-d (a+b x) \operatorname{Log}[c+d x])}{(b c-a d)^2}\right)}{2 b^2 (a+b x)^2}\Bigg)$$

$$\left(-\operatorname{Log}\left[\frac{a}{b}+x\right]+\operatorname{Log}\left[\frac{c}{d}+x\right]+\operatorname{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)-\frac{(a+2 b x)\left(-\operatorname{Log}\left[\frac{a}{b}+x\right]+\operatorname{Log}\left[\frac{c}{d}+x\right]+\operatorname{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)^2}{2 b^2 (a+b x)^2}-$$

$$2\Bigg(\frac{1}{2 b^2 (b c-a d) (a+b x)}\Bigg(d (a+b x) \operatorname{Log}\left[\frac{a}{b}+x\right]^2+2\left((-b c+a d) \operatorname{Log}\left[\frac{c}{d}+x\right]+d (a+b x) (\operatorname{Log}[a+b x]-\operatorname{Log}[c+d x])\right)-$$

$$2 \operatorname{Log}\left[\frac{a}{b}+x\right]\left((b c-a d) \operatorname{Log}\left[\frac{c}{d}+x\right]+d (a+b x) \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)-2 d (a+b x) \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]\Bigg)+$$

$$\Bigg(a\Bigg(-d (-b c+a d) (a+b x)+(b c-a d)^2\left(1+2 \operatorname{Log}\left[\frac{a}{b}+x\right]\right) \operatorname{Log}\left[\frac{c}{d}+x\right]+d^2 (a+b x)^2 \operatorname{Log}[a+b x]-d^2 (a+b x)^2 \operatorname{Log}[c+d x]+d (a+b x)$$

$$\left(d (a+b x) \operatorname{Log}\left[\frac{a}{b}+x\right]^2+2 (b c-a d)\left(1+\operatorname{Log}\left[\frac{a}{b}+x\right]\right)-2 d (a+b x)\left(\operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\operatorname{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\left(4 b^2 (b c-a d)^2 (a+b x)^2\right)\Bigg)+\frac{-b (c+d x) \operatorname{Log}\left[\frac{c}{d}+x\right]^2+2 d (a+b x) \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 d (a+b x) \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]}{b^2 (b c-a d) (a+b x)}+$$

$$\Bigg(a\Bigg(b (c+d x) (-2 a d+b (c-d x)) \operatorname{Log}\left[\frac{c}{d}+x\right]^2-2 d^2 (a+b x)^2 \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 d (a+b x) \operatorname{Log}\left[\frac{c}{d}+x\right]$$

$$\left(b (c+d x)+d (a+b x) \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right)+2 d^2 (a+b x)^2 \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\Bigg)\Bigg)\Bigg/\left(2 b^2 (b c-a d)^2 (a+b x)^2\right)\Bigg)+$$

$$\frac{1}{g^3} B^2 d^3 i^3 n^2\Bigg(-\frac{a \operatorname{Log}\left[\frac{a}{b}+x\right]^3}{b^4}+\frac{(a+b x)\left(2-2 \operatorname{Log}\left[\frac{a}{b}+x\right]+\operatorname{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^4}-\frac{3 a^2\left(2+2 \operatorname{Log}\left[\frac{a}{b}+x\right]+\operatorname{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^4 (a+b x)}+$$

$$\frac{a^3\left(1+2 \operatorname{Log}\left[\frac{a}{b}+x\right]+2 \operatorname{Log}\left[\frac{a}{b}+x\right]^2\right)}{4 b^4 (a+b x)^2}+\frac{(c+d x)\left(2-2 \operatorname{Log}\left[\frac{c}{d}+x\right]+\operatorname{Log}\left[\frac{c}{d}+x\right]^2\right)}{b^3 d}-$$

$$\frac{\left(-2 b x+\frac{a^2 (5 a+6 b x)}{(a+b x)^2}+6 a \operatorname{Log}[a+b x]\right)\left(-\operatorname{Log}\left[\frac{a}{b}+x\right]+\operatorname{Log}\left[\frac{c}{d}+x\right]+\operatorname{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)^2}{2 b^4}+\frac{1}{b^4 (b c-a d) (a+b x)}$$

$$3 a^2\left(-b (c+d x) \operatorname{Log}\left[\frac{c}{d}+x\right]^2+2 d (a+b x) \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 d (a+b x) \operatorname{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]\right)+$$

$$\Bigg(a^3\Bigg(b (c+d x) (-2 a d+b (c-d x)) \operatorname{Log}\left[\frac{c}{d}+x\right]^2-2 d^2 (a+b x)^2 \operatorname{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 d (a+b x) \operatorname{Log}\left[\frac{c}{d}+x\right]$$

$$\Big(b\,(c+d\,x)+d\,(a+b\,x)\,\text{Log}\Big[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Big)+2\,d^2\,(a+b\,x)^2\,\text{PolyLog}\Big[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big]\Big)\Big)\Big/\Big(2\,b^4\,(b\,c-a\,d)^2\,(a+b\,x)^2\Big)+$$

$$2\,\Big(-\text{Log}\Big[\frac{a}{b}+x\Big]+\text{Log}\Big[\frac{c}{d}+x\Big]+\text{Log}\Big[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\Big]\Big)\,\Big(\frac{\left(\frac{a}{b}+x\right)\,\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3}-\frac{3\,a\,\text{Log}\left[\frac{a}{b}+x\right]^2}{2\,b^4}-\frac{3\,a^2\,\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^4\,(a+b\,x)}+$$

$$\frac{a^3\,\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{4\,b^4\,(a+b\,x)^2}-\frac{\left(\frac{c}{d}+x\right)\,\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{b^3}-\frac{3\,a^2\,\left(\left(-b\,c+a\,d\right)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,\left(\text{Log}[a+b\,x]-\text{Log}[c+d\,x]\right)\right)}{b^4\,(b\,c-a\,d)\,(a+b\,x)}-$$

$$\frac{a^3\,\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d\,(a+b\,x)\,(b\,c-a\,d+d\,(a+b\,x)\,\text{Log}[a+b\,x]-d\,(a+b\,x)\,\text{Log}[c+d\,x])}{(b\,c-a\,d)^2}\right)}{2\,b^4\,(a+b\,x)^2}+\frac{3\,a\,\left(\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)}{b^4}\Big)-$$

$$2\,\Big(\frac{1}{b^4\,d}\Big(a\,d+2\,b\,d\,x-b\,d\,x\,\text{Log}\Big[\frac{c}{d}+x\Big]-b\,c\,\text{Log}[c+d\,x]+\text{Log}\Big[\frac{a}{b}+x\Big]\,\Big(-d\,(a+b\,x)+d\,(a+b\,x)\,\text{Log}\Big[\frac{c}{d}+x\Big]+(b\,c-a\,d)\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)+$$

$$(b\,c-a\,d)\,\text{PolyLog}\Big[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Big)+\frac{1}{2\,b^4\,(b\,c-a\,d)\,(a+b\,x)}$$

$$3\,a^2\,\Big(d\,(a+b\,x)\,\text{Log}\Big[\frac{a}{b}+x\Big]^2+2\,\Big(\left(-b\,c+a\,d\right)\,\text{Log}\Big[\frac{c}{d}+x\Big]+d\,(a+b\,x)\,\left(\text{Log}[a+b\,x]-\text{Log}[c+d\,x]\right)\Big)-$$

$$2\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\Big((b\,c-a\,d)\,\text{Log}\Big[\frac{c}{d}+x\Big]+d\,(a+b\,x)\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)-2\,d\,(a+b\,x)\,\text{PolyLog}\Big[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Big)+$$

$$\Big(a^3\,\Big(-d\,(-b\,c+a\,d)\,(a+b\,x)+(b\,c-a\,d)^2\,\Big(1+2\,\text{Log}\Big[\frac{a}{b}+x\Big]\Big)\,\text{Log}\Big[\frac{c}{d}+x\Big]+d^2\,(a+b\,x)^2\,\text{Log}[a+b\,x]-d^2\,(a+b\,x)^2\,\text{Log}[c+d\,x]+d\,(a+b\,x)$$

$$\Big(d\,(a+b\,x)\,\text{Log}\Big[\frac{a}{b}+x\Big]^2+2\,(b\,c-a\,d)\,\Big(1+\text{Log}\Big[\frac{a}{b}+x\Big]\Big)-2\,d\,(a+b\,x)\,\Big(\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]+\text{PolyLog}\Big[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(4\,b^4\,(b\,c-a\,d)^2\,(a+b\,x)^2\Big)-\frac{1}{2\,b^4}3\,a\,\Big(\text{Log}\Big[\frac{a}{b}+x\Big]^2\,\Big(\text{Log}\Big[\frac{c}{d}+x\Big]-\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]\Big)-2\,\text{Log}\Big[\frac{a}{b}+x\Big]\,\text{PolyLog}\Big[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]+$$

$$2\,\text{PolyLog}\Big[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Big)\Big)-\frac{3\,a\,\left(\text{Log}\left[\frac{c}{d}+x\right]^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)}{b^4}\Big)+$$

$$\frac{1}{g^3}\,3\,B^2\,c\,d^2\,i^3\,n^2\,\Big(\frac{\text{Log}\left[\frac{a}{b}+x\right]^3}{3\,b^3}+\frac{2\,a\,\left(2+2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^3\,(a+b\,x)}-\frac{a^2\,\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4\,b^3\,(a+b\,x)^2}+$$

$$\frac{\left(\frac{a\,(3\,a+4\,b\,x)}{(a+b\,x)^2}+2\,\text{Log}[a+b\,x]\right)\,\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)^2}{2\,b^3}-\frac{1}{b^3\,(b\,c-a\,d)\,(a+b\,x)}$$

$$2\,a\,\left(-b\,(c+d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]^2+2\,d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,d\,(a+b\,x)\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)-$$

$$\Bigg(a^2\,\Bigg(b\,(c+d\,x)\,(-2\,a\,d+b\,(c-d\,x))\,\text{Log}\left[\frac{c}{d}+x\right]^2-2\,d^2\,(a+b\,x)^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$

$$2\,d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]\,\left(b\,(c+d\,x)+d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+2\,d^2\,(a+b\,x)^2\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)\Bigg)\Big/$$

$$\left(2\,b^3\,(b\,c-a\,d)^2\,(a+b\,x)^2\right)+2\,\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)$$

$$\Bigg(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2\,b^3}+\frac{2\,a\,\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^3\,(a+b\,x)}-\frac{a^2\,\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{4\,b^3\,(a+b\,x)^2}+\frac{2\,a\,\left((-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])\right)}{b^3\,(b\,c-a\,d)\,(a+b\,x)}+$$

$$\frac{a^2\,\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d\,(a+b\,x)\,(b\,c-a\,d+d\,(a+b\,x)\,\text{Log}[a+b\,x]-d\,(a+b\,x)\,\text{Log}[c+d\,x])}{(b\,c-a\,d)^2}\right)}{2\,b^3\,(a+b\,x)^2}-\frac{\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^3}\Bigg)-$$

$$2\,\Bigg(-\frac{1}{b^3\,(b\,c-a\,d)\,(a+b\,x)}a\,\Bigg(d\,(a+b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\,\left((-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])\right)-$$

$$2\,\text{Log}\left[\frac{a}{b}+x\right]\,\left((b\,c-a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)-2\,d\,(a+b\,x)\,\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\Bigg)-$$

$$\Bigg(a^2\,\Bigg(-d\,(-b\,c+a\,d)\,(a+b\,x)+(b\,c-a\,d)^2\,\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)\,\text{Log}\left[\frac{c}{d}+x\right]+d^2\,(a+b\,x)^2\,\text{Log}[a+b\,x]-d^2\,(a+b\,x)^2\,\text{Log}[c+d\,x]+d\,(a+b\,x)$$

$$\Bigg(d\,(a+b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\,(b\,c-a\,d)\,\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)-2\,d\,(a+b\,x)\,\left(\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\Bigg)\Bigg)\Bigg)\Big/$$

$$\left(4\,b^3\,(b\,c-a\,d)^2\,(a+b\,x)^2\right)+\frac{1}{2\,b^3}\Bigg(\text{Log}\left[\frac{a}{b}+x\right]^2\,\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)-2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$

$$2\,\text{PolyLog}\left[3,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\Bigg)\Bigg)+\frac{\text{Log}\left[\frac{c}{d}+x\right]^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-2\,\text{PolyLog}\left[3,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^3}\Bigg)$$

Problem 185: Result more than twice size of optimal antiderivative.

$$\int\frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^4}\,dx$$

Optimal (type 4, 561 leaves, 13 steps):

$$-\frac{2 B^2 d^2 i^3 n^2 (c+d x)}{b^3 g^4 (a+b x)}-\frac{B^2 d i^3 n^2 (c+d x)^2}{4 b^2 g^4 (a+b x)^2}-\frac{2 B^2 i^3 n^2 (c+d x)^3}{27 b g^4 (a+b x)^3}-\frac{2 B d^2 i^3 n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{b^3 g^4 (a+b x)}-$$

$$\frac{B d i^3 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 b^2 g^4 (a+b x)^2}-\frac{2 B i^3 n (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 b g^4 (a+b x)^3}-\frac{d^2 i^3 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{b^3 g^4 (a+b x)}-$$

$$\frac{d i^3 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 b^2 g^4 (a+b x)^2}-\frac{i^3 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 b g^4 (a+b x)^3}-\frac{d^3 i^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^4}+$$

$$\frac{2 B d^3 i^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^4}+\frac{2 B^2 d^3 i^3 n^2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b^4 g^4}$$

Result (type 4, 8160 leaves) :

$$\frac{d^3 i^3 \text{Log}[a+b x] \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2}{b^4 g^4}+\frac{1}{b^4 g^4 (a+b x)}$$

$$3 \left(-A^2 b c d^2 i^3+a A^2 d^3 i^3-2 A b B c d^2 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+2 a A B d^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-\right.$$

$$\left.b B^2 c d^2 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+a B^2 d^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)-$$

$$\frac{1}{2 b^4 g^4 (a+b x)^2} 3 \left(A^2 b^2 c^2 d i^3-2 a A^2 b c d^2 i^3+a^2 A^2 d^3 i^3+2 A b^2 B c^2 d i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-4 a A b B c d^2 i^3\right.$$

$$\left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+2 a^2 A B d^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+b^2 B^2 c^2 d i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-$$

$$\left.2 a b B^2 c d^2 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+a^2 B^2 d^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)+$$

$$\frac{1}{3 b^4 g^4 (a+b x)^3} \left(-A^2 b^3 c^3 i^3+3 a A^2 b^2 c^2 d i^3-3 a^2 A^2 b c d^2 i^3+a^3 A^2 d^3 i^3-2 A b^3 B c^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+\right.$$

$$6 a A b^2 B c^2 d i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-6 a^2 A b B c d^2 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+2 a^3 A B d^3 i^3$$

$$\left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-b^3 B^2 c^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+3 a b^2 B^2 c^2 d i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-$$

$$\left.3 a^2 b B^2 c d^2 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+a^3 B^2 d^3 i^3 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)+$$

$$\frac{1}{54 b (b c-a d)^3 g^4 (a+b x)^3} B^2 c^3 i^3 n^2 \left(-4 (b c-a d)^3+15 d (b c-a d)^2 (a+b x)+66 d^2 (-b c+a d) (a+b x)^2-\right.$$

$$66 d^3 (a+b x)^3 \text{Log}[a+b x]-6 (b c-a d) \left(2 (b c-a d)^2+3 d (-b c+a d) (a+b x)+6 d^2 (a+b x)^2\right) \text{Log}\left[\frac{a+b x}{c+d x}\right]-$$

$$18 b \left(3 a^2 d^2 (c+d x)+3 a b d \left(-c^2+d^2 x^2\right)+b^2 \left(c^3+d^3 x^3\right)\right) \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+66 d^3 (a+b x)^3 \text{Log}[c+d x]\Bigg)+\frac{1}{g^4}$$

$$2 B c^3 i^3 n \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right) \left(-\frac{\left(\frac{a}{b}+x\right) \left(3 \text{Log}\left[\frac{a}{b}+x\right]+9 \text{Log}\left[\frac{a}{b}+x\right]^2\right)}{27 (a+b x)^4 \text{Log}\left[\frac{a}{b}+x\right]}-\frac{1}{6 b}\left(-\frac{b^2 \left(\frac{c}{d}+x\right)^2}{\left(-a+\frac{b c}{d}\right)^5 \left(1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right)^2}-\right.\right.$$

$$\frac{4 b \left(\frac{c}{d}+x\right)}{\left(-a+\frac{b c}{d}\right)^4 \left(1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right)}+\left(\frac{2 b^3 \left(\frac{c}{d}+x\right)^3}{\left(-a+\frac{b c}{d}\right)^6 \left(1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right)^3}+\frac{6 b^2 \left(\frac{c}{d}+x\right)^2}{\left(-a+\frac{b c}{d}\right)^5 \left(1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right)^2}+\frac{6 b \left(\frac{c}{d}+x\right)}{\left(-a+\frac{b c}{d}\right)^4 \left(1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right)}\right) \text{Log}\left[\frac{c}{d}+x\right]+\frac{2 \text{Log}\left[1-\frac{b \left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]}{\left(-a+\frac{b c}{d}\right)^3}\Bigg)-$$

$$\left.\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]}{3 b (a+b x)^3}\right)+\frac{1}{g^4}6 B c^2 d i^3 n \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$

$$\left(-\frac{1+2 \text{Log}\left[\frac{a}{b}+x\right]}{4 b^2 (a+b x)^2}+\frac{a \left(1+3 \text{Log}\left[\frac{a}{b}+x\right]\right)}{9 b^2 (a+b x)^3}+\frac{a \left(-\frac{2 \text{Log}\left[\frac{c}{d}+x\right]}{(a+b x)^3}+\frac{d \left(\frac{(b c-a d) (-b c+3 a d+2 b d x)}{(a+b x)^2}+2 d^2 \text{Log}[a+b x]-2 d^2 \text{Log}[c+d x]\right)}{(b c-a d)^3}\right)}{6 b^2}+\right.$$

$$\left.\frac{\text{Log}\left[\frac{c}{d}+x\right]+\frac{d (a+b x) (b c-a d+d (a+b x) \text{Log}[a+b x]-d (a+b x) \text{Log}[c+d x])}{(b c-a d)^2}}{2 b^2 (a+b x)^2}-\frac{(a+3 b x) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)}{6 b^2 (a+b x)^3}\right)+$$

$$\frac{1}{g^4}6 B c d^2 i^3 n \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right) \left(-\frac{1+\text{Log}\left[\frac{a}{b}+x\right]}{b^3 (a+b x)}+\frac{a \left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right)}{2 b^3 (a+b x)^2}-\frac{a^2 \left(1+3 \text{Log}\left[\frac{a}{b}+x\right]\right)}{9 b^3 (a+b x)^3}-\right.$$

$$\frac{\left(-b\,c+a\,d\right)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,\left(a+b\,x\right)\,\left(\text{Log}[a+b\,x]-\text{Log}[c+d\,x]\right)}{b^3\,\left(b\,c-a\,d\right)\,\left(a+b\,x\right)}-\frac{a^2\,\left(-\frac{2\,\text{Log}\left[\frac{c}{d}+x\right]}{(a+b\,x)^3}+\frac{d\,\left(\frac{(b\,c-a\,d)\,(-b\,c+3\,a\,d+2\,b\,d\,x)}{(a+b\,x)^2}+2\,d^2\,\text{Log}[a+b\,x]-2\,d^2\,\text{Log}[c+d\,x]\right)}{(b\,c-a\,d)^3}\right)}{6\,b^3}-$$

$$\left.\frac{a\,\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d\,(a+b\,x)\,\left(b\,c-a\,d+d\,(a+b\,x)\,\text{Log}[a+b\,x]-d\,(a+b\,x)\,\text{Log}[c+d\,x]\right)}{(b\,c-a\,d)^2}\right)}{b^3\,\left(a+b\,x\right)^2}-\frac{\left(a^2+3\,a\,b\,x+3\,b^2\,x^2\right)\,\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{3\,b^3\,\left(a+b\,x\right)^3}\right)+$$

$$\frac{1}{g^4}\,2\,B\,d^3\,i^3\,n\,\left(A+B\,\left(\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\,\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2\,b^4}+\frac{3\,a\,\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^4\,\left(a+b\,x\right)}-\frac{3\,a^2\,\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{4\,b^4\,\left(a+b\,x\right)^2}+\right.$$

$$\frac{a^3\,\left(1+3\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{9\,b^4\,\left(a+b\,x\right)^3}+\frac{3\,a\,\left(\left(-b\,c+a\,d\right)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,\left(a+b\,x\right)\,\left(\text{Log}[a+b\,x]-\text{Log}[c+d\,x]\right)\right)}{b^4\,\left(b\,c-a\,d\right)\,\left(a+b\,x\right)}+$$

$$\frac{a^3\,\left(-\frac{2\,\text{Log}\left[\frac{c}{d}+x\right]}{(a+b\,x)^3}+\frac{d\,\left(\frac{(b\,c-a\,d)\,(-b\,c+3\,a\,d+2\,b\,d\,x)}{(a+b\,x)^2}+2\,d^2\,\text{Log}[a+b\,x]-2\,d^2\,\text{Log}[c+d\,x]\right)}{(b\,c-a\,d)^3}\right)}{6\,b^4}+\frac{3\,a^2\,\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d\,(a+b\,x)\,\left(b\,c-a\,d+d\,(a+b\,x)\,\text{Log}[a+b\,x]-d\,(a+b\,x)\,\text{Log}[c+d\,x]\right)}{(b\,c-a\,d)^2}\right)}{2\,b^4\,\left(a+b\,x\right)^2}+$$

$$\left.\frac{\left(\frac{a\,\left(11\,a^2+27\,a\,b\,x+18\,b^2\,x^2\right)}{(a+b\,x)^3}+6\,\text{Log}[a+b\,x]\right)\,\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{6\,b^4}-\frac{\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^4}\right)+$$

$$\frac{1}{g^4}\,3\,B^2\,c\,d^2\,i^3\,n^2\,\left(-\frac{2+2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2}{b^3\,\left(a+b\,x\right)}+\frac{a\,\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{2\,b^3\,\left(a+b\,x\right)^2}-\frac{a^2\,\left(2+6\,\text{Log}\left[\frac{a}{b}+x\right]+9\,\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{27\,b^3\,\left(a+b\,x\right)^3}+\right.$$

$$2\left(-\frac{1+\text{Log}\left[\frac{a}{b}+x\right]}{b^3\,(a+b\,x)}+\frac{a\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{2\,b^3\,(a+b\,x)^2}-\frac{a^2\left(1+3\,\text{Log}\left[\frac{a}{b}+x\right]\right)}{9\,b^3\,(a+b\,x)^3}-\frac{(-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])}{b^3\,(b\,c-a\,d)\,(a+b\,x)}-\right.$$

$$\left.\frac{a^2\left(-\frac{2\,\text{Log}\left[\frac{c}{d}+x\right]}{(a+b\,x)^3}+\frac{d\left(\frac{(b\,c-a\,d)\,(-b\,c+3\,a\,d+2\,b\,d\,x)}{(a+b\,x)^2}+2\,d^2\,\text{Log}[a+b\,x]-2\,d^2\,\text{Log}[c+d\,x]\right)}{(b\,c-a\,d)^3}\right)}{6\,b^3}-\frac{a\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d\,(a+b\,x)\,(b\,c-a\,d+d\,(a+b\,x)\,\text{Log}[a+b\,x]-d\,(a+b\,x)\,\text{Log}[c+d\,x])}{(b\,c-a\,d)^2}\right)}{b^3\,(a+b\,x)^2}\right)$$

$$\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)-\frac{(a^2+3\,a\,b\,x+3\,b^2\,x^2)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)^2}{3\,b^3\,(a+b\,x)^3}-$$

$$2\left(\frac{1}{2\,b^3\,(b\,c-a\,d)\,(a+b\,x)}\left(d\,(a+b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\left((-b\,c+a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,(\text{Log}[a+b\,x]-\text{Log}[c+d\,x])\right)-\right.\right.$$

$$\left.2\,\text{Log}\left[\frac{a}{b}+x\right]\left((b\,c-a\,d)\,\text{Log}\left[\frac{c}{d}+x\right]+d\,(a+b\,x)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)-2\,d\,(a+b\,x)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+$$

$$\left(a\left(-d\,(-b\,c+a\,d)\,(a+b\,x)+(b\,c-a\,d)^2\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)\text{Log}\left[\frac{c}{d}+x\right]+d^2\,(a+b\,x)^2\,\text{Log}[a+b\,x]-d^2\,(a+b\,x)^2\,\text{Log}[c+d\,x]+d\,(a+b\,x)\right.\right.$$

$$\left.\left.\left(d\,(a+b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\,(b\,c-a\,d)\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)-2\,d\,(a+b\,x)\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\right)\right)\right)\Big/$$

$$\left(2\,b^3\,(b\,c-a\,d)^2\,(a+b\,x)^2\right)+\frac{1}{36\,b^3\,(b\,c-a\,d)^3\,(a+b\,x)^3}\,a^2\left(-2\,d\,(b\,c-a\,d)^2\,(a+b\,x)+4\,d^2\,(b\,c-a\,d)\,(a+b\,x)^2-\right.$$

$$4\,(b\,c-a\,d)^3\left(1+3\,\text{Log}\left[\frac{a}{b}+x\right]\right)\text{Log}\left[\frac{c}{d}+x\right]+4\,d^3\,(a+b\,x)^3\,\text{Log}[a+b\,x]-4\,d^3\,(a+b\,x)^3\,\text{Log}[c+d\,x]+$$

$$3\,d\,(a+b\,x)\left(2\,d^2\,(a+b\,x)^2\,\text{Log}\left[\frac{a}{b}+x\right]^2+4\,d\,(b\,c-a\,d)\,(a+b\,x)\left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)-(b\,c-a\,d)^2\right.$$

$$\left.\left.\left.\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\right)-4\,d^2\,(a+b\,x)^2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\right)\right)\right)+$$

$$\frac{-b\,(c+d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]^2+2\,d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,d\,(a+b\,x)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{b^3\,(b\,c-a\,d)\,(a+b\,x)}+\frac{1}{b^3\,(b\,c-a\,d)^2\,(a+b\,x)^2}$$

$$a\left(b\,(c+d\,x)\,(-2\,a\,d+b\,(c-d\,x))\,\text{Log}\left[\frac{c}{d}+x\right]^2-2\,d^2\,(a+b\,x)^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\right.$$

$$2 d (a + b x) \text{Log}\left[\frac{c}{d} + x\right] \left(b (c + d x) + d (a + b x) \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right]\right) + 2 d^2 (a + b x)^2 \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\Big) +$$

$$\Big(a^2 \Big(-b \left(3 a^2 d^2 (c + d x) + 3 a b d \left(-c^2 + d^2 x^2\right) + b^2 \left(c^3 + d^3 x^3\right)\right) \text{Log}\left[\frac{c}{d} + x\right]^2 - d^2 (a + b x)^2 \left(b (c + d x) + 3 d (a + b x) \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right]\right) +$$

$$d (a + b x) \text{Log}\left[\frac{c}{d} + x\right] \left(-b (c + d x) (-4 a d + b (c - 3 d x)) + 2 d^2 (a + b x)^2 \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right]\right) + 2 d^3 (a + b x)^3 \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\Big)\Big) \Big/$$

$$\left(3 b^3 (b c - a d)^3 (a + b x)^3\right)\Big) + \frac{1}{g^4} 3 B^2 c^2 d i^3 n^2 \Big(-\frac{1 + 2 \text{Log}\left[\frac{a}{b} + x\right] + 2 \text{Log}\left[\frac{a}{b} + x\right]^2}{4 b^2 (a + b x)^2} + \frac{a \left(2 + 6 \text{Log}\left[\frac{a}{b} + x\right] + 9 \text{Log}\left[\frac{a}{b} + x\right]^2\right)}{27 b^2 (a + b x)^3} +$$

$$2 \Bigg(-\frac{1 + 2 \text{Log}\left[\frac{a}{b} + x\right]}{4 b^2 (a + b x)^2} + \frac{a \left(1 + 3 \text{Log}\left[\frac{a}{b} + x\right]\right)}{9 b^2 (a + b x)^3} + \frac{a \left(-\frac{2 \text{Log}\left[\frac{c}{d} + x\right]}{(a + b x)^3} + \frac{d \left(\frac{(b c - a d) (-b c + 3 a d + 2 b d x)}{(a + b x)^2} + 2 d^2 \text{Log}[a + b x] - 2 d^2 \text{Log}[c + d x]\right)}{(b c - a d)^3}\right)}{6 b^2} +$$

$$\frac{\text{Log}\left[\frac{c}{d} + x\right] + \frac{d (a + b x) (b c - a d + d (a + b x) \text{Log}[a + b x] - d (a + b x) \text{Log}[c + d x])}{(b c - a d)^2}}{2 b^2 (a + b x)^2}\Bigg) \left(-\text{Log}\left[\frac{a}{b} + x\right] + \text{Log}\left[\frac{c}{d} + x\right] + \text{Log}\left[\frac{a}{c + d x} + \frac{b x}{c + d x}\right]\right) -$$

$$\frac{(a + 3 b x) \left(-\text{Log}\left[\frac{a}{b} + x\right] + \text{Log}\left[\frac{c}{d} + x\right] + \text{Log}\left[\frac{a}{c + d x} + \frac{b x}{c + d x}\right]\right)^2}{6 b^2 (a + b x)^3} - 2 \Big(-\Big(\Big(\Big(-d (-b c + a d) (a + b x) + (b c - a d)^2 \left(1 + 2 \text{Log}\left[\frac{a}{b} + x\right]\right)\Big) \text{Log}\left[\frac{c}{d} + x\right] +$$

$$d^2 (a + b x)^2 \text{Log}[a + b x] - d^2 (a + b x)^2 \text{Log}[c + d x] + d (a + b x) \Big(d (a + b x) \text{Log}\left[\frac{a}{b} + x\right]^2 + 2 (b c - a d) \left(1 + \text{Log}\left[\frac{a}{b} + x\right]\right) -$$

$$2 d (a + b x) \left(\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\right)\Big)\Big)\Big) \Big/ \left(4 b^2 (b c - a d)^2 (a + b x)^2\right)\Big) -$$

$$\frac{1}{36 b^2 (b c - a d)^3 (a + b x)^3} a \Big(-2 d (b c - a d)^2 (a + b x) + 4 d^2 (b c - a d) (a + b x)^2 - 4 (b c - a d)^3 \left(1 + 3 \text{Log}\left[\frac{a}{b} + x\right]\right) \text{Log}\left[\frac{c}{d} + x\right] +$$

$$4 d^3 (a + b x)^3 \text{Log}[a + b x] - 4 d^3 (a + b x)^3 \text{Log}[c + d x] + 3 d (a + b x) \Big(2 d^2 (a + b x)^2 \text{Log}\left[\frac{a}{b} + x\right]^2 + 4 d (b c - a d) (a + b x)$$

$$\left(1 + \text{Log}\left[\frac{a}{b} + x\right]\right) - (b c - a d)^2 \left(1 + 2 \text{Log}\left[\frac{a}{b} + x\right]\right) - 4 d^2 (a + b x)^2 \left(\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\right)\Big)\Big)\Big)\Big) -$$

$$\left(b\,(c+d\,x)\,(-2\,a\,d+b\,(c-d\,x))\,\text{Log}\left[\frac{c}{d}+x\right]^2-2\,d^2\,(a+b\,x)^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]\right.$$

$$\left.\left(b\,(c+d\,x)+d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+2\,d^2\,(a+b\,x)^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\Big/\left(2\,b^2\,(b\,c-a\,d)^2\,(a+b\,x)^2\right)-$$

$$\left(a\left(-b\left(3\,a^2\,d^2\,(c+d\,x)+3\,a\,b\,d\,(-c^2+d^2\,x^2)+b^2\,(c^3+d^3\,x^3)\right)\text{Log}\left[\frac{c}{d}+x\right]^2-d^2\,(a+b\,x)^2\left(b\,(c+d\,x)+3\,d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+\right.\right.$$

$$d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]\left(-b\,(c+d\,x)\,(-4\,a\,d+b\,(c-3\,d\,x))+2\,d^2\,(a+b\,x)^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+$$

$$\left.\left.2\,d^3\,(a+b\,x)^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\Big/\left(3\,b^2\,(b\,c-a\,d)^3\,(a+b\,x)^3\right)\Bigg)+$$

$$\frac{1}{g^4}\,B^2\,d^3\,i^3\,n^2\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^3}{3\,b^4}+\frac{3\,a\left(2+2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b^4\,(a+b\,x)}-\frac{3\,a^2\left(1+2\,\text{Log}\left[\frac{a}{b}+x\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4\,b^4\,(a+b\,x)^2}+\frac{a^3\left(2+6\,\text{Log}\left[\frac{a}{b}+x\right]+9\,\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{27\,b^4\,(a+b\,x)^3}+\right.$$

$$\frac{\left(\frac{a\,(11\,a^2+27\,a\,b\,x+18\,b^2\,x^2)}{(a+b\,x)^3}+6\,\text{Log}[a+b\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)^2}{6\,b^4}-\frac{1}{b^4\,(b\,c-a\,d)\,(a+b\,x)}$$

$$3\,a\left(-b\,(c+d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]^2+2\,d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,d\,(a+b\,x)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)-$$

$$\left(3\,a^2\left(b\,(c+d\,x)\,(-2\,a\,d+b\,(c-d\,x))\,\text{Log}\left[\frac{c}{d}+x\right]^2-2\,d^2\,(a+b\,x)^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]\right.\right.$$

$$\left.\left.\left(b\,(c+d\,x)+d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+2\,d^2\,(a+b\,x)^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\Big/\left(2\,b^4\,(b\,c-a\,d)^2\,(a+b\,x)^2\right)-$$

$$\left(a^3\left(-b\left(3\,a^2\,d^2\,(c+d\,x)+3\,a\,b\,d\,(-c^2+d^2\,x^2)+b^2\,(c^3+d^3\,x^3)\right)\text{Log}\left[\frac{c}{d}+x\right]^2-d^2\,(a+b\,x)^2\left(b\,(c+d\,x)+3\,d\,(a+b\,x)\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+\right.\right.$$

$$\left.\left.d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]\left(-b\,(c+d\,x)\,(-4\,a\,d+b\,(c-3\,d\,x))+2\,d^2\,(a+b\,x)^2\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+2\,d^3\,(a+b\,x)^3\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\Big/$$

$$\left(3\,b^4\,(b\,c-a\,d)^3\,(a+b\,x)^3\right)+2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)$$

$$\Bigg(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^4}+\frac{3 a \left(1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{b^4 (a+b x)}-\frac{3 a^2 \left(1+2 \text{Log}\left[\frac{a}{b}+x\right]\right)}{4 b^4 (a+b x)^2}+\frac{a^3 \left(1+3 \text{Log}\left[\frac{a}{b}+x\right]\right)}{9 b^4 (a+b x)^3}+$$

$$\frac{3 a \left(\left(-b c+a d\right) \text{Log}\left[\frac{c}{d}+x\right]+d (a+b x) \left(\text{Log}[a+b x]-\text{Log}[c+d x]\right)\right)}{b^4 (b c-a d) (a+b x)}+\frac{a^3\left(-\frac{2\,\text{Log}\left[\frac{c}{d}+x\right]}{(a+b x)^3}+\frac{d\left(\frac{(b c-a d)(-b c+3 a d+2 b d x)}{(a+b x)^2}+2 d^2\,\text{Log}[a+b x]-2 d^2\,\text{Log}[c+d x]\right)}{(b c-a d)^3}\right)}{6 b^4}+$$

$$\frac{3 a^2\left(\text{Log}\left[\frac{c}{d}+x\right]+\frac{d (a+b x)\left(b c-a d+d (a+b x)\,\text{Log}[a+b x]-d (a+b x)\,\text{Log}[c+d x]\right)}{(b c-a d)^2}\right)}{2 b^4 (a+b x)^2}-\frac{\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{b^4}\Bigg)-$$

$$2\Bigg(-\frac{1}{2 b^4 (b c-a d) (a+b x)}3 a\Big(d (a+b x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\Big(\left(-b c+a d\right)\text{Log}\left[\frac{c}{d}+x\right]+d (a+b x)\left(\text{Log}[a+b x]-\text{Log}[c+d x]\right)\Big)-$$

$$2\,\text{Log}\left[\frac{a}{b}+x\right]\Big((b c-a d)\,\text{Log}\left[\frac{c}{d}+x\right]+d (a+b x)\,\text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\Big)-2 d (a+b x)\,\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Big)-$$

$$\Big(3 a^2\Big(-d (-b c+a d) (a+b x)+(b c-a d)^2\Big(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\Big)\text{Log}\left[\frac{c}{d}+x\right]+d^2 (a+b x)^2\,\text{Log}[a+b x]-d^2 (a+b x)^2\,\text{Log}[c+d x]+d (a+b x)$$

$$\Big(d (a+b x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2 (b c-a d)\Big(1+\text{Log}\left[\frac{a}{b}+x\right]\Big)-2 d (a+b x)\Big(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(4 b^4 (b c-a d)^2 (a+b x)^2\Big)-\frac{1}{36 b^4 (b c-a d)^3 (a+b x)^3}a^3\Big(-2 d (b c-a d)^2 (a+b x)+4 d^2 (b c-a d) (a+b x)^2-$$

$$4 (b c-a d)^3\Big(1+3\,\text{Log}\left[\frac{a}{b}+x\right]\Big)\text{Log}\left[\frac{c}{d}+x\right]+4 d^3 (a+b x)^3\,\text{Log}[a+b x]-4 d^3 (a+b x)^3\,\text{Log}[c+d x]+$$

$$3 d (a+b x)\Big(2 d^2 (a+b x)^2\,\text{Log}\left[\frac{a}{b}+x\right]^2+4 d (b c-a d) (a+b x)\Big(1+\text{Log}\left[\frac{a}{b}+x\right]\Big)-(b c-a d)^2$$

$$\Big(1+2\,\text{Log}\left[\frac{a}{b}+x\right]\Big)-4 d^2 (a+b x)^2\Big(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Big)\Big)\Big)\Big)+\frac{1}{2 b^4}$$

$$\Big(\text{Log}\left[\frac{a}{b}+x\right]^2\Big(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\Big)-2\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+2\,\text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]\Big)\Big)+$$

$$\left.\frac{\text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]}{b^4}\right)$$

Problem 186: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{c i+d i x} \, dx$$

Optimal (type 4, 768 leaves, 25 steps):

$$\frac{b B^2 (b c-a d)^2 g^3 n^2 x}{3 d^3 i}+\frac{7 B (b c-a d)^2 g^3 n (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 d^3 i}-\frac{b^2 B (b c-a d) g^3 n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{3 d^4 i}+$$
$$\frac{3 (b c-a d)^2 g^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^3 i}-\frac{3 b^2 (b c-a d) g^3 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d^4 i}+\frac{b^3 g^3 (c+d x)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 d^4 i}+$$
$$\frac{6 B (b c-a d)^3 g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^4 i}+\frac{(b c-a d)^3 g^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^4 i}+$$
$$\frac{B^2 (b c-a d)^3 g^3 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]}{3 d^4 i}-\frac{2 B^2 (b c-a d)^3 g^3 n^2 \text{Log}[c+d x]}{d^4 i}-\frac{7 B (b c-a d)^3 g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[1-\frac{b (c+d x)}{d (a+b x)}\right]}{3 d^4 i}+$$
$$\frac{6 B^2 (b c-a d)^3 g^3 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i}+\frac{2 B (b c-a d)^3 g^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i}+$$
$$\frac{7 B^2 (b c-a d)^3 g^3 n^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{3 d^4 i}-\frac{2 B^2 (b c-a d)^3 g^3 n^2 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i}$$

Result (type 4, 4914 leaves):

$$\frac{1}{12 d^4 i} g^3$$
$$\left(12 b d \left(b^2 c^2-3 a b c d+3 a^2 d^2\right) x \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-6 b^2 d^2 (b c-3 a d) x^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+\right.$$
$$4 b^3 d^3 x^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-12 (b c-a d)^3 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 \text{Log}[c+d x]+$$
$$36 a B d n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(-2 b^2 c^2+2 a b c d-b^2 c d x+a b d^2 x+2 b^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]-b^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]^2-\right.$$

$$a^2 d^2 \text{Log}[a+b x]-2 b^2 c d x \text{Log}\left[\frac{a+b x}{c+d x}\right]+b^2 d^2 x^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]+b^2 c^2 \text{Log}[c+d x]+2 b^2 c^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+$$

$$2 b^2 c^2 \text{Log}\left[\frac{a+b x}{c+d x}\right] \text{Log}[c+d x]-2 b c \text{Log}\left[\frac{a}{b}+x\right] \left(a d+b c \text{Log}[c+d x]-b c \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+2 b^2 c^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Bigg)+$$

$$4 B n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \Bigg(6 b^3 c^3-6 a b^2 c^2 d+5 b^3 c^2 d x-3 a b^2 c d^2 x-2 a^2 b d^3 x-b^3 c d^2 x^2+a b^2 d^3 x^2-$$

$$6 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right]+3 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right]^2+3 a^2 b c d^2 \text{Log}[a+b x]+2 a^3 d^3 \text{Log}[a+b x]+6 b^3 c^2 d x \text{Log}\left[\frac{a+b x}{c+d x}\right]-3 b^3 c d^2 x^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]+$$

$$2 b^3 d^3 x^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]-5 b^3 c^3 \text{Log}[c+d x]-6 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]-6 b^3 c^3 \text{Log}\left[\frac{a+b x}{c+d x}\right] \text{Log}[c+d x]+6 b^2 c^2 \text{Log}\left[\frac{a}{b}+x\right]$$

$$\left(a d+b c \text{Log}[c+d x]-b c \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)-6 b^3 c^3 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Bigg)-12 a^3 B d^3 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)$$

$$\left(\text{Log}\left[\frac{c}{d}+x\right]^2+2 \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \text{Log}[c+d x]-2 \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)-$$

$$36 a^2 B d^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \Bigg(-2 d (a+b x) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)+2 b (c+d x) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)-b c \text{Log}\left[\frac{c}{d}+x\right]^2+$$

$$2 b \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) (d x-c \text{Log}[c+d x])+2 b c \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\Bigg)+$$

$$4 a^3 B^2 d^3 n^2 \Bigg(\text{Log}\left[\frac{c}{d}+x\right]^3+3 \text{Log}\left[\frac{c}{d}+x\right]^2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right)+3 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 \text{Log}[c+d x]+$$

$$3 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+6 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+$$

$$3 \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(\text{Log}\left[\frac{c}{d}+x\right]^2-2 \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)+$$

$$6 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]-6 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]-6 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\Bigg)+$$

$$B^2 n^2 \Bigg(45 b^3 c^3-20 a b^2 c^2 d+21 a^2 b c d^2+4 b^3 c^2 d x-8 a b^2 c d^2 x+4 a^2 b d^3 x-24 b^3 c^3 \text{Log}\left[\frac{a}{b}+x\right]+44 a b^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right]-$$

$$18 a^2 b c d^2 \text{Log}\left[\frac{a}{b}+x\right]-12 a b^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right]^2+6 a^2 b c d^2 \text{Log}\left[\frac{a}{b}+x\right]^2+4 a^3 d^3 \text{Log}\left[\frac{a}{b}+x\right]^2-18 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right]-24 a b^2 c^2 d \text{Log}\left[\frac{c}{d}+x\right]+$$

$$24 b^3 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right]-12 a^2 b c d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right]-8 a^3 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right]-2 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right]^2+$$

$$8 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right]^3+10 a^2 b c d^2 \text{Log}[a+b x]-12 a^3 d^3 \text{Log}[a+b x]-12 a^2 b c d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]-8 a^3 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+$$

$$12 a^2 b c d^2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]+8 a^3 d^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-12 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+24 b^3 c^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]-$$

$$24 a b^2 c^2 d \text{Log}\left[\frac{a+b x}{c+d x}\right]+20 b^3 c^2 d x \text{Log}\left[\frac{a+b x}{c+d x}\right]-12 a b^2 c d^2 x \text{Log}\left[\frac{a+b x}{c+d x}\right]-8 a^2 b d^3 x \text{Log}\left[\frac{a+b x}{c+d x}\right]-4 b^3 c d^2 x^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]+$$

$$4 a b^2 d^3 x^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]+24 a b^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{a+b x}{c+d x}\right]-24 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{a+b x}{c+d x}\right]+12 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]+$$

$$12 a^2 b c d^2 \text{Log}[a+b x] \text{Log}\left[\frac{a+b x}{c+d x}\right]+8 a^3 d^3 \text{Log}[a+b x] \text{Log}\left[\frac{a+b x}{c+d x}\right]+12 b^3 c^2 d x \text{Log}\left[\frac{a+b x}{c+d x}\right]^2-6 b^3 c d^2 x^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+$$

$$4 b^3 d^3 x^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+18 b^3 c^3 \text{Log}[c+d x]+16 a b^2 c^2 d \text{Log}[c+d x]+8 a^2 b c d^2 \text{Log}[c+d x]+20 b^3 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]-$$

$$12 b^3 c^3 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}[c+d x]-20 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]+24 b^3 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[c+d x]-$$

$$12 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}[c+d x]-20 b^3 c^3 \text{Log}\left[\frac{a+b x}{c+d x}\right] \text{Log}[c+d x]+24 b^3 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{a+b x}{c+d x}\right] \text{Log}[c+d x]-$$

$$24 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{a+b x}{c+d x}\right] \text{Log}[c+d x]-12 b^3 c^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2 \text{Log}[c+d x]-44 b^3 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+$$

$$24 a b^2 c^2 d \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+12 a^2 b c d^2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+8 a^3 d^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+$$

$$12 b^3 c^3 \text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-24 b^3 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-24 b^3 c^3 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{a+b x}{c+d x}\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-$$

$$4 \left(11 b^3 c^3-6 a b^2 c^2 d-3 a^2 b c d^2-2 a^3 d^3+6 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right]+6 b^3 c^3 \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-$$

$$24 b^3 c^3 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+24 b^3 c^3 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]+24 b^3 c^3 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\Bigg)+$$

$$12 a^2 B^2 d^2 n^2 \Bigg(3 d (a+b x) \left(2-2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)-b c \text{Log}\left[\frac{c}{d}+x\right]^3+3 b (c+d x) \left(2-2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)+$$

$$3 b \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 (d x-c \text{Log}[c+d x])-6 \Bigg(a d+2 b d x-b d x \text{Log}\left[\frac{c}{d}+x\right]-b c \text{Log}[c+d x]+$$

$$\text{Log}\left[\frac{a}{b}+x\right] \left(-d (a+b x)+d (a+b x) \text{Log}\left[\frac{c}{d}+x\right]+(b c-a d) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+(b c-a d) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Bigg)+$$

$$3 \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \Bigg(-2 d (a+b x) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)+2 b (c+d x) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)-$$

$$b c \text{Log}\left[\frac{c}{d}+x\right]^2+2 b c \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\Bigg)-$$

$$3 b c \left(\text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-2 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]\right)+$$

$$3 b c \left(\text{Log}\left[\frac{c}{d}+x\right]^2 \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right)-2 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\right)\Bigg)-$$

$$3 a B^2 d n^2 \left(12 b c d (a+b x) \left(2-2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)+3 d^2 (a+b x) \left(7 a-b x+(-6 a+2 b x) \text{Log}\left[\frac{a}{b}+x\right]+2 (a-b x) \text{Log}\left[\frac{a}{b}+x\right]^2\right)-\right.$$
$$4 b^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]^3+12 b^2 c (c+d x) \left(2-2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)+$$
$$3 b^2 (c+d x) \left(7 c-d x+(-6 c+2 d x) \text{Log}\left[\frac{c}{d}+x\right]+2 (c-d x) \text{Log}\left[\frac{c}{d}+x\right]^2\right)-6 b^2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2$$
$$\left(d x (-2 c+d x)+2 c^2 \text{Log}[c+d x]\right)+6 \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(-4 b c d (a+b x) \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)+\right.$$
$$4 b^2 c (c+d x) \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)-2 b^2 c^2 \text{Log}\left[\frac{c}{d}+x\right]^2+d^2 \left(b x (2 a-b x)+2 b^2 x^2 \text{Log}\left[\frac{a}{b}+x\right]-2 a^2 \text{Log}[a+b x]\right)+$$
$$\left.b^2 \left(d x (-2 c+d x)-2 d^2 x^2 \text{Log}\left[\frac{c}{d}+x\right]+2 c^2 \text{Log}[c+d x]\right)+4 b^2 c^2 \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)-$$
$$12 b^2 c^2 \left(\text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-2 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]\right)-$$
$$6 \left(2 a b c d+3 b^2 c d x+3 a b d^2 x-b^2 d^2 x^2-2 a b d^2 x \text{Log}\left[\frac{c}{d}+x\right]+b^2 d^2 x^2 \text{Log}\left[\frac{c}{d}+x\right]-a^2 d^2 \text{Log}[a+b x]-b^2 c^2 \text{Log}[c+d x]-\right.$$
$$2 a b c d \text{Log}[c+d x]-\text{Log}\left[\frac{a}{b}+x\right] \left(b d (2 a c+b x (2 c-d x))-2 d^2 \left(a^2-b^2 x^2\right) \text{Log}\left[\frac{c}{d}+x\right]+\left(-2 b^2 c^2+2 a^2 d^2\right) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+$$
$$2 \left(b^2 c^2-a^2 d^2\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+4 b c \left(a d+2 b d x-b d x \text{Log}\left[\frac{c}{d}+x\right]-b c \text{Log}[c+d x]+\right.$$
$$\text{Log}\left[\frac{a}{b}+x\right] \left(-d (a+b x)+d (a+b x) \text{Log}\left[\frac{c}{d}+x\right]+(b c-a d) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+(b c-a d) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)-$$
$$\left.\left.2 b^2 c^2 \left(\text{Log}\left[\frac{c}{d}+x\right]^2 \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right)-2 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\right)\right)$$

Problem 187: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{c i+d i x} \, dx$$

Optimal (type 4, 573 leaves, 15 steps):

$$-\frac{B(bc-ad)g^2n(a+bx)\left(A+B\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)}{d^2 i}-\frac{2(bc-ad)g^2(a+bx)\left(A+B\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)^2}{d^2 i}+\frac{b^2g^2(c+dx)^2\left(A+B\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)^2}{2d^3 i}-$$

$$\frac{4B(bc-ad)^2g^2n\left(A+B\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)\text{Log}\left[\frac{bc-ad}{b(c+dx)}\right]}{d^3 i}-\frac{(bc-ad)^2g^2\left(A+B\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)^2\text{Log}\left[\frac{bc-ad}{b(c+dx)}\right]}{d^3 i}+$$

$$\frac{B^2(bc-ad)^2g^2n^2\text{Log}[c+dx]}{d^3 i}+\frac{B(bc-ad)^2g^2n\left(A+B\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)\text{Log}\left[1-\frac{b(c+dx)}{d(a+bx)}\right]}{d^3 i}-$$

$$\frac{4B^2(bc-ad)^2g^2n^2\text{PolyLog}\left[2,\frac{d(a+bx)}{b(c+dx)}\right]}{d^3 i}-\frac{2B(bc-ad)^2g^2n\left(A+B\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)\text{PolyLog}\left[2,\frac{d(a+bx)}{b(c+dx)}\right]}{d^3 i}-$$

$$\frac{B^2(bc-ad)^2g^2n^2\text{PolyLog}\left[2,\frac{b(c+dx)}{d(a+bx)}\right]}{d^3 i}+\frac{2B^2(bc-ad)^2g^2n^2\text{PolyLog}\left[3,\frac{d(a+bx)}{b(c+dx)}\right]}{d^3 i}$$

Result (type 4, 2797 leaves) :

$$\frac{1}{12d^3 i}g^2\left(-12bd(bc-2ad)x\left(A+B\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]-Bn\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)^2+\right.$$

$$6b^2d^2x^2\left(A+B\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]-Bn\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)^2+12(bc-ad)^2\left(A+B\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]-Bn\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)^2\text{Log}[c+dx]+$$

$$12Bn\left(A+B\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]-Bn\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)\left(-2b^2c^2+2abcd-b^2cdx+abd^2x+2b^2c^2\text{Log}\left[\frac{c}{d}+x\right]-b^2c^2\text{Log}\left[\frac{c}{d}+x\right]^2-\right.$$

$$a^2d^2\text{Log}[a+bx]-2b^2cdx\text{Log}\left[\frac{a+bx}{c+dx}\right]+b^2d^2x^2\text{Log}\left[\frac{a+bx}{c+dx}\right]+b^2c^2\text{Log}[c+dx]+2b^2c^2\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+dx]+$$

$$\left.2b^2c^2\text{Log}\left[\frac{a+bx}{c+dx}\right]\text{Log}[c+dx]-2bc\text{Log}\left[\frac{a}{b}+x\right]\left(ad+bc\text{Log}[c+dx]-bc\text{Log}\left[\frac{b(c+dx)}{bc-ad}\right]\right)+2b^2c^2\text{PolyLog}\left[2,\frac{d(a+bx)}{-bc+ad}\right]\right)-$$

$$12a^2Bd^2n\left(A+B\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]-Bn\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)\left(\text{Log}\left[\frac{c}{d}+x\right]^2+2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)\text{Log}[c+dx]-\right.$$

$$\left.2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b(c+dx)}{bc-ad}\right]+\text{PolyLog}\left[2,\frac{d(a+bx)}{-bc+ad}\right]\right)\right)-$$

$$24aBdn\left(A+B\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]-Bn\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)\left(-2d(a+bx)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)+2b(c+dx)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)-bc\text{Log}\left[\frac{c}{d}+x\right]^2+\right.$$

$$\left.2b\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)(dx-c\text{Log}[c+dx])+2bc\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b(c+dx)}{bc-ad}\right]+\text{PolyLog}\left[2,\frac{d(a+bx)}{-bc+ad}\right]\right)\right)+$$

$$4a^2B^2d^2n^2\left(\text{Log}\left[\frac{c}{d}+x\right]^3+3\text{Log}\left[\frac{c}{d}+x\right]^2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d(a+bx)}{-bc+ad}\right]\right)+3\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)^2\text{Log}[c+dx]+\right.$$

$$3\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b(c+dx)}{bc-ad}\right]+6\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d(a+bx)}{-bc+ad}\right]+$$

$$3\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\left(\text{Log}\left[\frac{c}{d}+x\right]^2-2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\right)+$$

$$6\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)+$$

$$8\,a\,B^2\,d\,n^2\Bigg(3\,d\,(a+b\,x)\left(2-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)-b\,c\,\text{Log}\left[\frac{c}{d}+x\right]^3+3\,b\,(c+d\,x)\left(2-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)+$$

$$3\,b\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2(d\,x-c\,\text{Log}[c+d\,x])-6\Bigg(a\,d+2\,b\,d\,x-b\,d\,x\,\text{Log}\left[\frac{c}{d}+x\right]-b\,c\,\text{Log}[c+d\,x]+$$

$$\text{Log}\left[\frac{a}{b}+x\right]\left(-d\,(a+b\,x)+d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]+(b\,c-a\,d)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+(b\,c-a\,d)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\Bigg)+$$

$$3\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Bigg(-2\,d\,(a+b\,x)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)+2\,b\,(c+d\,x)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)-$$

$$b\,c\,\text{Log}\left[\frac{c}{d}+x\right]^2+2\,b\,c\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\Bigg)-$$

$$3\,b\,c\left(\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+$$

$$3\,b\,c\left(\text{Log}\left[\frac{c}{d}+x\right]^2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-2\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\Bigg)-$$

$$B^2\,n^2\Bigg(12\,b\,c\,d\,(a+b\,x)\left(2-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)+3\,d^2\,(a+b\,x)\left(7\,a-b\,x+(-6\,a+2\,b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]+2\,(a-b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2\right)-$$

$$4\,b^2\,c^2\,\text{Log}\left[\frac{c}{d}+x\right]^3+12\,b^2\,c\,(c+d\,x)\left(2-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)+$$

$$3\,b^2\,(c+d\,x)\left(7\,c-d\,x+(-6\,c+2\,d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]+2\,(c-d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]^2\right)-6\,b^2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2$$

$$\left(d\,x\,(-2\,c+d\,x)+2\,c^2\,\text{Log}[c+d\,x]\right)+6\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Bigg(-4\,b\,c\,d\,(a+b\,x)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)+$$

$$4\,b^2\,c\,(c+d\,x)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)-2\,b^2\,c^2\,\text{Log}\left[\frac{c}{d}+x\right]^2+d^2\left(b\,x\,(2\,a-b\,x)+2\,b^2\,x^2\,\text{Log}\left[\frac{a}{b}+x\right]-2\,a^2\,\text{Log}[a+b\,x]\right)+$$

$$b^2\left(d\,x\,(-2\,c+d\,x)-2\,d^2\,x^2\,\text{Log}\left[\frac{c}{d}+x\right]+2\,c^2\,\text{Log}[c+d\,x]\right)+4\,b^2\,c^2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\Bigg)-$$

$$12\,b^2\,c^2\left(\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-$$

$$6\Bigg(2\,a\,b\,c\,d+3\,b^2\,c\,d\,x+3\,a\,b\,d^2\,x-b^2\,d^2\,x^2-2\,a\,b\,d^2\,x\,\text{Log}\left[\frac{c}{d}+x\right]+b^2\,d^2\,x^2\,\text{Log}\left[\frac{c}{d}+x\right]-a^2\,d^2\,\text{Log}[a+b\,x]-b^2\,c^2\,\text{Log}[c+d\,x]-$$

$$2abcd\,\text{Log}[c+dx]-\text{Log}\left[\frac{a}{b}+x\right]\left(bd\,(2ac+bx\,(2c-dx))-2d^2\,(a^2-b^2x^2)\,\text{Log}\left[\frac{c}{d}+x\right]+(-2b^2c^2+2a^2d^2)\,\text{Log}\left[\frac{b\,(c+dx)}{bc-ad}\right]\right)+$$

$$2\,(b^2c^2-a^2d^2)\,\text{PolyLog}\left[2,\frac{d\,(a+bx)}{-bc+ad}\right]+4bc\left(ad+2bdx-bdx\,\text{Log}\left[\frac{c}{d}+x\right]-bc\,\text{Log}[c+dx]+\right.$$

$$\text{Log}\left[\frac{a}{b}+x\right]\left(-d\,(a+bx)+d\,(a+bx)\,\text{Log}\left[\frac{c}{d}+x\right]+(bc-ad)\,\text{Log}\left[\frac{b\,(c+dx)}{bc-ad}\right]\right)+(bc-ad)\,\text{PolyLog}\left[2,\frac{d\,(a+bx)}{-bc+ad}\right]\Bigg)-$$

$$2b^2c^2\left(\text{Log}\left[\frac{c}{d}+x\right]^2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d\,(a+bx)}{-bc+ad}\right]\right)-2\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+dx)}{bc-ad}\right]+2\,\text{PolyLog}\left[3,\frac{b\,(c+dx)}{bc-ad}\right]\right)\Bigg)\Bigg)\Bigg)$$

Problem 188: Result more than twice size of optimal antiderivative.

$$\int\frac{(ag+bgx)\left(A+B\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)^2}{ci+dix}\,dx$$

Optimal (type 4, 303 leaves, 9 steps) :

$$\frac{g\,(a+bx)\left(A+B\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)^2}{di}+\frac{2B\,(bc-ad)\,gn\left(A+B\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)\text{Log}\left[\frac{bc-ad}{b\,(c+dx)}\right]}{d^2i}+\frac{(bc-ad)\,g\left(A+B\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)^2\text{Log}\left[\frac{bc-ad}{b\,(c+dx)}\right]}{d^2i}+$$

$$\frac{2B^2\,(bc-ad)\,gn^2\,\text{PolyLog}\left[2,\frac{d\,(a+bx)}{b\,(c+dx)}\right]}{d^2i}+\frac{2B\,(bc-ad)\,gn\left(A+B\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\right)\text{PolyLog}\left[2,\frac{d\,(a+bx)}{b\,(c+dx)}\right]}{d^2i}-\frac{2B^2\,(bc-ad)\,gn^2\,\text{PolyLog}\left[3,\frac{d\,(a+bx)}{b\,(c+dx)}\right]}{d^2i}$$

Result (type 4, 1367 leaves) :

$$\frac{1}{3\, d^2\, i} g \Bigg(3\, b\, d\, x \left(A + B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B\, n \,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 -$$

$$3 \left(b c - a d\right) \left(A + B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B\, n \,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 \text{Log}[c + d x] - 3\, a\, B\, d\, n \left(A + B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B\, n \,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)$$

$$\Bigg(\text{Log}\left[\frac{c}{d} + x\right]^2 + 2 \left(\text{Log}\left[\frac{a}{b} + x\right] - \text{Log}\left[\frac{c}{d} + x\right] - \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \text{Log}[c + d x] - 2 \left(\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\right)\Bigg) -$$

$$3\, B\, n \left(A + B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B\, n \,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \Bigg(-2\, d\, (a + b x) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) + 2\, b\, (c + d x) \left(-1 + \text{Log}\left[\frac{c}{d} + x\right]\right) - b\, c\, \text{Log}\left[\frac{c}{d} + x\right]^2 +$$

$$2\, b \left(\text{Log}\left[\frac{a}{b} + x\right] - \text{Log}\left[\frac{c}{d} + x\right] - \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) (d x - c\, \text{Log}[c + d x]) + 2\, b\, c \left(\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\right)\Bigg) +$$

$$a\, B^2\, d\, n^2 \Bigg(\text{Log}\left[\frac{c}{d} + x\right]^3 + 3\, \text{Log}\left[\frac{c}{d} + x\right]^2 \left(-\text{Log}\left[\frac{a}{b} + x\right] + \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right]\right) + 3 \left(-\text{Log}\left[\frac{a}{b} + x\right] + \text{Log}\left[\frac{c}{d} + x\right] + \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 \text{Log}[c + d x] +$$

$$3\, \text{Log}\left[\frac{a}{b} + x\right]^2 \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + 6\, \text{Log}\left[\frac{a}{b} + x\right] \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right] +$$

$$3 \left(\text{Log}\left[\frac{a}{b} + x\right] - \text{Log}\left[\frac{c}{d} + x\right] - \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \left(\text{Log}\left[\frac{c}{d} + x\right]^2 - 2 \left(\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\right)\right) +$$

$$6\, \text{Log}\left[\frac{c}{d} + x\right] \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right] - 6\, \text{PolyLog}\left[3, \frac{d (a + b x)}{-b c + a d}\right] - 6\, \text{PolyLog}\left[3, \frac{b (c + d x)}{b c - a d}\right]\Bigg) +$$

$$B^2\, n^2 \Bigg(3\, d\, (a + b x) \left(2 - 2\, \text{Log}\left[\frac{a}{b} + x\right] + \text{Log}\left[\frac{a}{b} + x\right]^2\right) - b\, c\, \text{Log}\left[\frac{c}{d} + x\right]^3 + 3\, b\, (c + d x) \left(2 - 2\, \text{Log}\left[\frac{c}{d} + x\right] + \text{Log}\left[\frac{c}{d} + x\right]^2\right) +$$

$$3\, b \left(-\text{Log}\left[\frac{a}{b} + x\right] + \text{Log}\left[\frac{c}{d} + x\right] + \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 (d x - c\, \text{Log}[c + d x]) - 6 \Bigg(a d + 2 b d x - b d x\, \text{Log}\left[\frac{c}{d} + x\right] - b\, c\, \text{Log}[c + d x] +$$

$$\text{Log}\left[\frac{a}{b} + x\right] \left(-d (a + b x) + d (a + b x)\, \text{Log}\left[\frac{c}{d} + x\right] + (b c - a d)\, \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right]\right) + (b c - a d)\, \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\Bigg) +$$

$$3 \left(\text{Log}\left[\frac{a}{b} + x\right] - \text{Log}\left[\frac{c}{d} + x\right] - \text{Log}\left[\frac{a+b x}{c+d x}\right]\right) \Bigg(-2\, d\, (a + b x) \left(-1 + \text{Log}\left[\frac{a}{b} + x\right]\right) + 2\, b\, (c + d x) \left(-1 + \text{Log}\left[\frac{c}{d} + x\right]\right) -$$

$$b\, c\, \text{Log}\left[\frac{c}{d} + x\right]^2 + 2\, b\, c \left(\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\right)\Bigg) -$$

$$3\, b\, c \left(\text{Log}\left[\frac{a}{b} + x\right]^2 \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + 2\, \text{Log}\left[\frac{a}{b} + x\right] \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right] - 2\, \text{PolyLog}\left[3, \frac{d (a + b x)}{-b c + a d}\right]\right) +$$

$$3\, b\, c \left(\text{Log}\left[\frac{c}{d} + x\right]^2 \left(\text{Log}\left[\frac{a}{b} + x\right] - \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right]\right) - 2\, \text{Log}\left[\frac{c}{d} + x\right] \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right] + 2\, \text{PolyLog}\left[3, \frac{b (c + d x)}{b c - a d}\right]\right)\Bigg)\Bigg)$$

Problem 189: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{c\,i+d\,i\,x}\,dx$$

Optimal (type 4, 137 leaves, 4 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{d\,i}-\frac{2\,B\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d\,i}+\frac{2\,B^2\,n^2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d\,i}$$

Result (type 4, 537 leaves):

$$\frac{1}{3\,d\,i}\left(3\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2\,\text{Log}[c+d\,x]-3\,B\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right.$$
$$\left(\text{Log}\left[\frac{c}{d}+x\right]^2+2\,\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\,\text{Log}[c+d\,x]-2\,\left(\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\right)+$$
$$B^2\,n^2\,\left(\text{Log}\left[\frac{c}{d}+x\right]^3+3\,\text{Log}\left[\frac{c}{d}+x\right]^2\,\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+3\,\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2\,\text{Log}[c+d\,x]+\right.$$
$$3\,\text{Log}\left[\frac{a}{b}+x\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+6\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$
$$3\,\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\,\left(\text{Log}\left[\frac{c}{d}+x\right]^2-2\,\left(\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\right)+$$
$$\left.\left.6\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)$$

Problem 191: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)^2\,(c\,i+d\,i\,x)}\,dx$$

Optimal (type 3, 199 leaves, 7 steps):

$$-\frac{2\,b\,B^2\,n^2\,(c+d\,x)}{(b\,c-a\,d)^2\,g^2\,i\,(a+b\,x)}-\frac{2\,b\,B\,n\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^2\,g^2\,i\,(a+b\,x)}-\frac{b\,(c+d\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^2\,g^2\,i\,(a+b\,x)}-\frac{d\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^3}{3\,B\,(b\,c-a\,d)^2\,g^2\,i\,n}$$

Result (type 3, 793 leaves):

$$-\frac{B^2 d n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^3}{3 (b c-a d)^2 g^2 i}+\frac{2 B n \text{Log}\left[\frac{a+b x}{c+d x}\right] \left(A+B n+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)}{(-b c+a d) g^2 i (a+b x)}+\frac{1}{(-b c+a d)^2 g^2 i (a+b x)}\text{Log}\left[\frac{a+b x}{c+d x}\right]^2$$

$$\left(-a A B d n-b B^2 c n^2-A b B d n x-b B^2 d n^2 x-a B^2 d n \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-b B^2 d n x \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)+$$

$$\frac{1}{(b c-a d) g^2 i (a+b x)}\left(-A^2-2 A B n-2 B^2 n^2-2 A B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-\right.$$

$$\left.2 B^2 n \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-B^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)-\frac{1}{(b c-a d)^2 g^2 i}$$

$$d \text{Log}[a+b x] \left(A^2+2 A B n+2 B^2 n^2+2 A B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+2 B^2 n \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+\right.$$

$$\left.B^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)+\frac{1}{(b c-a d)^2 g^2 i}d \left(A^2+2 A B n+2 B^2 n^2+2 A B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+\right.$$

$$\left.2 B^2 n \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+B^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right) \text{Log}[c+d x]$$

Problem 192: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^3 (c i+d i x)} \, dx$$

Optimal (type 3, 369 leaves, 9 steps):

$$\frac{4 b B^2 d n^2 (c+d x)}{(b c-a d)^3 g^3 i (a+b x)}-\frac{b^2 B^2 n^2 (c+d x)^2}{4 (b c-a d)^3 g^3 i (a+b x)^2}+\frac{4 b B d n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^3 i (a+b x)}-\frac{b^2 B n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^3 g^3 i (a+b x)^2}+$$

$$\frac{2 b d (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^3 g^3 i (a+b x)}-\frac{b^2 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^3 g^3 i (a+b x)^2}+\frac{d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{3 B (b c-a d)^3 g^3 i n}$$

Result (type 3, 975 leaves):

$$\begin{aligned}
&\frac{1}{12\,(b c-a d)^3 g^3 i\,(a+b x)^2}\\
&\Bigg(4 B^2 d^2 n^2 (a+b x)^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^3+6 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]^2 \Big(2 a^2 A d^2-b^2 B c^2 n+4 a b B c d n+4 a A b d^2 x+2 b^2 B c d n x+4 a b B d^2 n x+\\
&\quad 2 A b^2 d^2 x^2+3 b^2 B d^2 n x^2+2 B d^2 (a+b x)^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-2 B d^2 n (a+b x)^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)-6 B (b c-a d) n \text{Log}\left[\frac{a+b x}{c+d x}\right]\\
&\quad \Big(2 A b c-6 a A d+b B c n-7 a B d n-4 A b d x-6 b B d n x+2 B (-3 a d+b (c-2 d x)) \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]+2 B n (-b c+3 a d+2 b d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)-\\
&\quad 3 (b c-a d)^2 \Big(2 A^2+2 A B n+B^2 n^2+2 B^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]^2-2 B n (2 A+B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+2 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+\\
&\quad 2 B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] \Big(2 A+B n-2 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)\Big)+6 d (b c-a d) (a+b x) \Big(2 A^2+6 A B n+7 B^2 n^2+2 B^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]^2-\\
&\quad 2 B n (2 A+3 B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+2 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+2 B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] \Big(2 A+3 B n-2 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)\Big)+\\
&\quad 6 d^2 (a+b x)^2 \text{Log}[a+b x] \Big(2 A^2+6 A B n+7 B^2 n^2+2 B^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]^2-2 B n (2 A+3 B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+\\
&\quad 2 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+2 B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] \Big(2 A+3 B n-2 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)\Big)-\\
&\quad 6 d^2 (a+b x)^2 \Big(2 A^2+6 A B n+7 B^2 n^2+2 B^2 \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]^2-2 B n (2 A+3 B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+2 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+\\
&\quad 2 B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right] \Big(2 A+3 B n-2 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)\Big) \text{Log}[c+d x]\Bigg)
\end{aligned}$$

Problem 193: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^4 (c i+d i x)}\, dx$$

Optimal (type 3, 543 leaves, 11 steps):

$$\begin{aligned}
&-\frac{6 b B^2 d^2 n^2 (c+d x)}{(b c-a d)^4 g^4 i (a+b x)}+\frac{3 b^2 B^2 d n^2 (c+d x)^2}{4 (b c-a d)^4 g^4 i (a+b x)^2}-\frac{2 b^3 B^2 n^2 (c+d x)^3}{27 (b c-a d)^4 g^4 i (a+b x)^3}-\frac{6 b B d^2 n (c+d x) \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^4 i (a+b x)}+\\
&\frac{3 b^2 B d n (c+d x)^2 \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^4 g^4 i (a+b x)^2}-\frac{2 b^3 B n (c+d x)^3 \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d)^4 g^4 i (a+b x)^3}-\frac{3 b d^2 (c+d x) \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^4 g^4 i (a+b x)}+\\
&\frac{3 b^2 d (c+d x)^2 \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^4 g^4 i (a+b x)^2}-\frac{b^3 (c+d x)^3 \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 (b c-a d)^4 g^4 i (a+b x)^3}-\frac{d^3 \left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{3 B (b c-a d)^4 g^4 i n}
\end{aligned}$$

Result (type 3, 1295 leaves):

$$-\frac{1}{108\,(b\,c-a\,d)^4\,g^4\,i\,(a+b\,x)^3}\left(36\,B^2\,d^3\,n^2\,(a+b\,x)^3\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^3+18\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2\right.$$

$$\left(6\,a^3\,A\,d^3+2\,b^3\,B\,c^3\,n-9\,a\,b^2\,B\,c^2\,d\,n+18\,a^2\,b\,B\,c\,d^2\,n+18\,a^2\,A\,b\,d^3\,x-3\,b^3\,B\,c^2\,d\,n\,x+18\,a\,b^2\,B\,c\,d^2\,n\,x+18\,a^2\,b\,B\,d^3\,n\,x+18\,a\,A\,b^2\,d^3\,x^2+\right.$$

$$\left.6\,b^3\,B\,c\,d^2\,n\,x^2+27\,a\,b^2\,B\,d^3\,n\,x^2+6\,A\,b^3\,d^3\,x^3+11\,b^3\,B\,d^3\,n\,x^3+6\,B\,d^3\,(a+b\,x)^3\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-6\,B\,d^3\,n\,(a+b\,x)^3\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-$$

$$3\,d\,(b\,c-a\,d)^2\,(a+b\,x)\left(18\,A^2+30\,A\,B\,n+19\,B^2\,n^2+18\,B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-6\,B\,n\,(6\,A+5\,B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+\right.$$

$$\left.18\,B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(6\,A+5\,B\,n-6\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)+$$

$$6\,d^2\,(b\,c-a\,d)\,(a+b\,x)^2\left(18\,A^2+66\,A\,B\,n+85\,B^2\,n^2+18\,B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-6\,B\,n\,(6\,A+11\,B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+\right.$$

$$\left.18\,B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(6\,A+11\,B\,n-6\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)+$$

$$6\,d^3\,(a+b\,x)^3\,\text{Log}[a+b\,x]\left(18\,A^2+66\,A\,B\,n+85\,B^2\,n^2+18\,B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-6\,B\,n\,(6\,A+11\,B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+\right.$$

$$\left.18\,B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(6\,A+11\,B\,n-6\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)+$$

$$4\,(b\,c-a\,d)^3\left(9\,A^2+6\,A\,B\,n+2\,B^2\,n^2+9\,B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-6\,B\,n\,(3\,A+B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+9\,B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+\right.$$

$$\left.6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(3\,A+B\,n-3\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)+$$

$$6\,B\,(b\,c-a\,d)\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\left(3\,d\,(-b\,c+a\,d)\,(a+b\,x)\left(6\,A+5\,B\,n+6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-6\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+\right.$$

$$\left.6\,d^2\,(a+b\,x)^2\left(6\,A+11\,B\,n+6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-6\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+4\,(b\,c-a\,d)^2\left(3\,A+B\,n+3\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-3\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)-$$

$$6\,d^3\,(a+b\,x)^3\left(18\,A^2+66\,A\,B\,n+85\,B^2\,n^2+18\,B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-6\,B\,n\,(6\,A+11\,B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+\right.$$

$$\left.\left.18\,B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(6\,A+11\,B\,n-6\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\text{Log}[c+d\,x]\right)$$

Problem 194: Result more than twice size of optimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 4, 770 leaves, 18 steps):

$$\frac{2\,A\,B\,(b\,c-a\,d)^2\,g^3\,n\,(a+b\,x)}{d^3\,i^2\,(c+d\,x)}-\frac{2\,B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,(a+b\,x)}{d^3\,i^2\,(c+d\,x)}+\frac{2\,B^2\,(b\,c-a\,d)^2\,g^3\,n\,(a+b\,x)\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d^3\,i^2\,(c+d\,x)}-$$
$$\frac{b\,B\,(b\,c-a\,d)\,g^3\,n\,(a+b\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{d^3\,i^2}-\frac{3\,b\,(b\,c-a\,d)\,g^3\,(a+b\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{d^3\,i^2}-$$
$$\frac{(b\,c-a\,d)^2\,g^3\,(a+b\,x)\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{d^3\,i^2\,(c+d\,x)}+\frac{b^3\,g^3\,(c+d\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{2\,d^4\,i^2}-$$
$$\frac{6\,b\,B\,(b\,c-a\,d)^2\,g^3\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{d^4\,i^2}-\frac{3\,b\,(b\,c-a\,d)^2\,g^3\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\mathrm{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{d^4\,i^2}+$$
$$\frac{b\,B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,\mathrm{Log}[c+d\,x]}{d^4\,i^2}+\frac{b\,B\,(b\,c-a\,d)^2\,g^3\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{Log}\left[1-\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{d^4\,i^2}-$$
$$\frac{6\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i^2}-\frac{6\,b\,B\,(b\,c-a\,d)^2\,g^3\,n\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i^2}-$$
$$\frac{b\,B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{d^4\,i^2}+\frac{6\,b\,B^2\,(b\,c-a\,d)^2\,g^3\,n^2\,\mathrm{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^4\,i^2}$$

Result (type 4, 5396 leaves) :

$$\frac{a^3\,B^2\,g^3\,n^2\,(a+b\,x)\left(2-2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2\right)}{(b\,c-a\,d)\,i^2\,(c+d\,x)}-$$
$$\frac{b^2\,(2\,b\,c-3\,a\,d)\,g^3\,x\left(A+B\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)^2}{d^3\,i^2}+\frac{b^3\,g^3\,x^2\left(A+B\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)^2}{2\,d^2\,i^2}+$$
$$\frac{1}{d^4\,i^2\,(c+d\,x)}\Bigg(A^2\,b^3\,c^3\,g^3-3\,a\,A^2\,b^2\,c^2\,d\,g^3+3\,a^2\,A^2\,b\,c\,d^2\,g^3-a^3\,A^2\,d^3\,g^3+2\,A\,b^3\,B\,c^3\,g^3\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-$$
$$6\,a\,A\,b^2\,B\,c^2\,d\,g^3\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+6\,a^2\,A\,b\,B\,c\,d^2\,g^3\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-2\,a^3\,A\,B\,d^3\,g^3$$
$$\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+b^3\,B^2\,c^3\,g^3\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2-3\,a\,b^2\,B^2\,c^2\,d\,g^3\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2+$$
$$3\,a^2\,b\,B^2\,c\,d^2\,g^3\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2-a^3\,B^2\,d^3\,g^3\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2\Bigg)+$$
$$\frac{3\,b\,(b\,c-a\,d)^2\,g^3\left(A+B\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)^2\mathrm{Log}[c+d\,x]}{d^4\,i^2}+\frac{1}{i^2}2\,a^3\,B\,g^3\,n\left(A+B\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)$$

$$\left(\frac{\left(\frac{c}{d}+x\right)\left(\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{(c+d\,x)^2\,\text{Log}\left[\frac{c}{d}+x\right]}+\frac{\frac{d\left(\frac{a}{b}+x\right)\text{Log}\left[\frac{a}{b}+x\right]}{\left(-c+\frac{a\,d}{b}\right)^2\left(1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right)}+\frac{\text{Log}\left[1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right]}{-c+\frac{a\,d}{b}}}{d}-\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]}{d\,(c+d\,x)}\right)+$$

$$\frac{1}{i^2}\,2\,b^3\,B\,g^3\,n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\left(-\frac{2\,c\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{d^3}+\frac{2\,c\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3}-\right.$$

$$\frac{3\,c^2\,\text{Log}\left[\frac{c}{d}+x\right]^2}{2\,d^4}-\frac{c^3\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^4\,(c+d\,x)}+\frac{-\frac{1}{2}\,b\left(-\frac{a\,x}{b^2}+\frac{x^2}{2\,b}+\frac{a^2\,\text{Log}[a+b\,x]}{b^3}\right)+\frac{1}{2}\,x^2\,\text{Log}\left[\frac{a+b\,x}{b}\right]}{d^2}-\frac{c^3\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d^3}-$$

$$\frac{-\frac{1}{2}\,d\left(-\frac{c\,x}{d^2}+\frac{x^2}{2\,d}+\frac{c^2\,\text{Log}[c+d\,x]}{d^3}\right)+\frac{1}{2}\,x^2\,\text{Log}\left[\frac{c+d\,x}{d}\right]}{d^2}+\frac{\left(-4\,c\,d\,x+d^2\,x^2+\frac{2\,c^3}{c+d\,x}+6\,c^2\,\text{Log}[c+d\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{2\,d^4}+$$

$$\left.\frac{3\,c^2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{d^4}\right)+\frac{1}{i^2}6\,a\,b^2\,B\,g^3\,n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)$$

$$\left(\frac{\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{d^2}-\frac{\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^2}+\frac{c\,\text{Log}\left[\frac{c}{d}+x\right]^2}{d^3}+\frac{c^2\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3\,(c+d\,x)}+\frac{c^2\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d^2}+\right.$$

$$\left.\frac{\left(d\,x-\frac{c^2}{c+d\,x}-2\,c\,\text{Log}[c+d\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{d^3}-\frac{2\,c\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{d^3}\right)+$$

$$\frac{1}{i^2}6\,a^2\,b\,B\,g^3\,n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\left(-\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2\,d^2}-\frac{c\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^2\,(c+d\,x)}-\frac{c\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d}+\right.$$

$$\left.\frac{\left(\frac{c}{c+d x}+\text{Log}[c+d x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)}{d^2}+\frac{\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]}{d^2}\right)+$$

$$\frac{1}{i^2}b^3 B^2 g^3 n^2\left(-\frac{2 c(a+b x)\left(2-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b d^3}+\frac{(a+b x)\left(-7 a+b x+(6 a-2 b x)\text{Log}\left[\frac{a}{b}+x\right]-2(a-b x)\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{4 b^2 d^2}+\right.$$

$$\frac{c^2\,\text{Log}\left[\frac{c}{d}+x\right]^3}{d^4}-\frac{2 c(c+d x)\left(2-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^4}+\frac{c^3\left(2+2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^4(c+d x)}+$$

$$\frac{(c+d x)\left(-7 c+d x+(6 c-2 d x)\text{Log}\left[\frac{c}{d}+x\right]-2(c-d x)\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{4 d^4}+$$

$$\frac{\left(-4 c d x+d^2x^2+\frac{2c^3}{c+d x}+6c^2\,\text{Log}[c+d x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)^2}{2 d^4}-\frac{1}{d^4(-b c+a d)(c+d x)}$$

$$c^3\left(-d(a+b x)\text{Log}\left[\frac{a}{b}+x\right]^2+2 b(c+d x)\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]+2 b(c+d x)\text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]\right)+$$

$$2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)\left(-\frac{2 c\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{d^3}+\frac{2 c\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3}-\right.$$

$$\frac{3c^2\,\text{Log}\left[\frac{c}{d}+x\right]^2}{2 d^4}-\frac{c^3\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^4(c+d x)}+\frac{-\frac{1}{2}b\left(-\frac{a x}{b^2}+\frac{x^2}{2 b}+\frac{a^2\,\text{Log}[a+b x]}{b^3}\right)+\frac{1}{2}x^2\,\text{Log}\left[\frac{a+b x}{b}\right]}{d^2}-\frac{c^3\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d(c+d x)}-\frac{b\,\text{Log}[a+b x]}{d(-b c+a d)}+\frac{b\,\text{Log}[c+d x]}{d(-b c+a d)}\right)}{d^3}-$$

$$\left.\frac{-\frac{1}{2}d\left(-\frac{c x}{d^2}+\frac{x^2}{2 d}+\frac{c^2\,\text{Log}[c+d x]}{d^3}\right)+\frac{1}{2}x^2\,\text{Log}\left[\frac{c+d x}{d}\right]}{d^2}+\frac{3c^2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]\right)}{d^4}\right)+$$

$$\frac{3c^2\left(\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]-2\,\text{PolyLog}\left[3,\frac{d(a+b x)}{-b c+a d}\right]\right)}{d^4}-2\left(-\frac{1}{b d^4}2 c\left(a d+2 b d x-b d x\,\text{Log}\left[\frac{c}{d}+x\right]-b c\right.\right.$$

$$\left.\text{Log}[c+d x]+\text{Log}\left[\frac{a}{b}+x\right]\left(-d(a+b x)+d(a+b x)\text{Log}\left[\frac{c}{d}+x\right]+(b c-a d)\text{Log}\left[\frac{b(c+d x)}{b c-a d}\right]\right)+(b c-a d)\text{PolyLog}\left[2,\frac{d(a+b x)}{-b c+a d}\right]\right)+$$

$$\frac{1}{4 b^2 d^4}\left(-2 a b c d-3 b^2 c d x-3 a b d^2 x+b^2 d^2 x^2+2 a b d^2 x \operatorname{Log}\left[\frac{c}{d}+x\right]-b^2 d^2 x^2 \operatorname{Log}\left[\frac{c}{d}+x\right]+a^2 d^2 \operatorname{Log}[a+b x]+b^2 c^2 \operatorname{Log}[c+d x]+\right.$$

$$2 a b c d \operatorname{Log}[c+d x]+\operatorname{Log}\left[\frac{a}{b}+x\right]\left(b d\left(2 a c+b x\left(2 c-d x\right)\right)-2 d^2\left(a^2-b^2 x^2\right) \operatorname{Log}\left[\frac{c}{d}+x\right]+\left(-2 b^2 c^2+2 a^2 d^2\right) \operatorname{Log}\left[\frac{b\left(c+d x\right)}{b c-a d}\right]\right)+$$

$$\left(-2 b^2 c^2+2 a^2 d^2\right) \operatorname{PolyLog}\left[2, \frac{d\left(a+b x\right)}{-b c+a d}\right]\right)-\left(c^3\left(2\left(b c-a d\right) \operatorname{Log}\left[\frac{a}{b}+x\right]\left(1+\operatorname{Log}\left[\frac{c}{d}+x\right]\right)+b\left(c+d x\right)\left(\operatorname{Log}\left[\frac{c}{d}+x\right]^2-2 \operatorname{Log}[a+b x]-\right.\right.\right.$$

$$\left.\left.\left.2 \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{Log}\left[\frac{d\left(a+b x\right)}{-b c+a d}\right]+2 \operatorname{Log}[c+d x]\right)-2 b\left(c+d x\right) \operatorname{PolyLog}\left[2, \frac{b\left(c+d x\right)}{b c-a d}\right]\right)\right)\Big/\left(2 d^4\left(-b c+a d\right)\left(c+d x\right)\right)+\frac{1}{2 d^4}$$

$$\left.3 c^2\left(\operatorname{Log}\left[\frac{c}{d}+x\right]^2\left(\operatorname{Log}\left[\frac{a}{b}+x\right]-\operatorname{Log}\left[\frac{d\left(a+b x\right)}{-b c+a d}\right]\right)-2 \operatorname{Log}\left[\frac{c}{d}+x\right] \operatorname{PolyLog}\left[2, \frac{b\left(c+d x\right)}{b c-a d}\right]+2 \operatorname{PolyLog}\left[3, \frac{b\left(c+d x\right)}{b c-a d}\right]\right)\right)+$$

$$\frac{1}{i^2} 3 a b^2 B^2 g^3 n^2\left(\frac{\left(a+b x\right)\left(2-2 \operatorname{Log}\left[\frac{a}{b}+x\right]+\operatorname{Log}\left[\frac{a}{b}+x\right]^2\right)}{b d^2}-\frac{2 c \operatorname{Log}\left[\frac{c}{d}+x\right]^3}{3 d^3}+\frac{\left(c+d x\right)\left(2-2 \operatorname{Log}\left[\frac{c}{d}+x\right]+\operatorname{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^3}-\right.$$

$$\frac{c^2\left(2+2 \operatorname{Log}\left[\frac{c}{d}+x\right]+\operatorname{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^3\left(c+d x\right)}+\frac{\left(d x-\frac{c^2}{c+d x}-2 c \operatorname{Log}[c+d x]\right)\left(-\operatorname{Log}\left[\frac{a}{b}+x\right]+\operatorname{Log}\left[\frac{c}{d}+x\right]+\operatorname{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)^2}{d^3}+$$

$$\frac{1}{d^3\left(-b c+a d\right)\left(c+d x\right)} c^2\left(-d\left(a+b x\right) \operatorname{Log}\left[\frac{a}{b}+x\right]^2+2 b\left(c+d x\right) \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b\left(c+d x\right)}{b c-a d}\right]+2 b\left(c+d x\right) \operatorname{PolyLog}\left[2, \frac{d\left(a+b x\right)}{-b c+a d}\right]\right)+$$

$$2\left(-\operatorname{Log}\left[\frac{a}{b}+x\right]+\operatorname{Log}\left[\frac{c}{d}+x\right]+\operatorname{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)\left(\frac{\left(\frac{a}{b}+x\right)\left(-1+\operatorname{Log}\left[\frac{a}{b}+x\right]\right)}{d^2}-\frac{\left(\frac{c}{d}+x\right)\left(-1+\operatorname{Log}\left[\frac{c}{d}+x\right]\right)}{d^2}+\frac{c \operatorname{Log}\left[\frac{c}{d}+x\right]^2}{d^3}+\right.$$

$$\left.\frac{c^2\left(1+\operatorname{Log}\left[\frac{c}{d}+x\right]\right)}{d^3\left(c+d x\right)}+\frac{c^2\left(-\frac{\operatorname{Log}\left[\frac{a}{b}+x\right]}{d\left(c+d x\right)}-\frac{b \operatorname{Log}[a+b x]}{d\left(-b c+a d\right)}+\frac{b \operatorname{Log}[c+d x]}{d\left(-b c+a d\right)}\right)}{d^2}-\frac{2 c\left(\operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{Log}\left[\frac{b\left(c+d x\right)}{b c-a d}\right]+\operatorname{PolyLog}\left[2, \frac{d\left(a+b x\right)}{-b c+a d}\right]\right)}{d^3}\right)-$$

$$\frac{2 c\left(\operatorname{Log}\left[\frac{a}{b}+x\right]^2 \operatorname{Log}\left[\frac{b\left(c+d x\right)}{b c-a d}\right]+2 \operatorname{Log}\left[\frac{a}{b}+x\right] \operatorname{PolyLog}\left[2, \frac{d\left(a+b x\right)}{-b c+a d}\right]-2 \operatorname{PolyLog}\left[3, \frac{d\left(a+b x\right)}{-b c+a d}\right]\right)}{d^3}-$$

$$2\left(\frac{1}{b d^3}\left(a d+2 b d x-b d x \operatorname{Log}\left[\frac{c}{d}+x\right]-b c \operatorname{Log}[c+d x]+\operatorname{Log}\left[\frac{a}{b}+x\right]\left(-d\left(a+b x\right)+d\left(a+b x\right) \operatorname{Log}\left[\frac{c}{d}+x\right]+\left(b c-a d\right) \operatorname{Log}\left[\frac{b\left(c+d x\right)}{b c-a d}\right]\right)+\right.\right.$$

$$(b c-a d)\,\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\Bigg)+\Bigg(c^2\Bigg(2 (b c-a d) \text{Log}\left[\frac{a}{b}+x\right]\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+b (c+d x)\Bigg(\text{Log}\left[\frac{c}{d}+x\right]^2-2 \text{Log}[a+b x]-$$

$$2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 \text{Log}[c+d x]\Bigg)-2 b (c+d x) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\Bigg)\Bigg)\Bigg/\left(2 d^3 (-b c+a d) (c+d x)\right)-\frac{1}{d^3}$$

$$c\left(\text{Log}\left[\frac{c}{d}+x\right]^2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right)-2 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\right)\Bigg)\Bigg)+$$

$$\frac{1}{i^2}\,3 a^2 b B^2 g^3 n^2\left(\frac{\text{Log}\left[\frac{c}{d}+x\right]^3}{3 d^2}+\frac{c\left(2+2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^2 (c+d x)}+\frac{\left(\frac{c}{c+d x}+\text{Log}[c+d x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)^2}{d^2}-\right.$$

$$\frac{1}{d^2 (-b c+a d) (c+d x)}c\left(-d (a+b x) \text{Log}\left[\frac{a}{b}+x\right]^2+2 b (c+d x) \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 b (c+d x) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)+$$

$$2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)$$

$$\left(-\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2 d^2}-\frac{c\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^2 (c+d x)}-\frac{c\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d (c+d x)}-\frac{b \text{Log}[a+b x]}{d (-b c+a d)}+\frac{b \text{Log}[c+d x]}{d (-b c+a d)}\right)}{d}+\frac{\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]}{d^2}\right)+$$

$$\frac{\text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-2 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]}{d^2}-$$

$$2\Bigg(-\Bigg(\Bigg(c\Bigg(2 (b c-a d) \text{Log}\left[\frac{a}{b}+x\right]\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+b (c+d x)\left(\text{Log}\left[\frac{c}{d}+x\right]^2-2 \text{Log}[a+b x]-2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 \text{Log}[c+d x]\right)-$$

$$2 b (c+d x) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\Bigg)\Bigg)\Bigg/\left(2 d^2 (-b c+a d) (c+d x)\right)\Bigg)+\frac{1}{2 d^2}$$

$$\left.\left(\text{Log}\left[\frac{c}{d}+x\right]^2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right)-2 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\right)$$

Problem 195: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(c i+d i x)^2} \, dx$$

Optimal (type 4, 500 leaves, 12 steps):

$$-\frac{2 A B (b c-a d) g^2 n (a+b x)}{d^2 i^2 (c+d x)}+\frac{2 B^2 (b c-a d) g^2 n^2 (a+b x)}{d^2 i^2 (c+d x)}-\frac{2 B^2 (b c-a d) g^2 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^2 i^2 (c+d x)}+$$
$$\frac{b g^2 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^2 i^2}+\frac{(b c-a d) g^2 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^2 i^2 (c+d x)}+\frac{2 b B (b c-a d) g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^3 i^2}+$$
$$\frac{2 b (b c-a d) g^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^3 i^2}+\frac{2 b B^2 (b c-a d) g^2 n^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^2}+$$
$$\frac{4 b B (b c-a d) g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^2}-\frac{4 b B^2 (b c-a d) g^2 n^2 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^2}$$

Result (type 4, 3186 leaves):

$$\frac{a^2 B^2 g^2 n^2 (a+b x) \left(2-2 \text{Log}\left[\frac{a+b x}{c+d x}\right]+\text{Log}\left[\frac{a+b x}{c+d x}\right]^2\right)}{(b c-a d) i^2 (c+d x)}+\frac{b^2 g^2 x \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2}{d^2 i^2}+\frac{1}{d^3 i^2 (c+d x)}$$
$$\left(-A^2 b^2 c^2 g^2+2 a A^2 b c d g^2-a^2 A^2 d^2 g^2-2 A b^2 B c^2 g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+4 a A b B c d g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-\right.$$
$$2 a^2 A B d^2 g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-b^2 B^2 c^2 g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+$$
$$\left.2 a b B^2 c d g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-a^2 B^2 d^2 g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)-$$
$$\frac{2 b (b c-a d) g^2 \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2 \text{Log}[c+d x]}{d^3 i^2}+\frac{1}{i^2} 2 a^2 B g^2 n \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$
$$\left(\frac{\left(\frac{c}{d}+x\right) \left(\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{(c+d x)^2 \text{Log}\left[\frac{c}{d}+x\right]}+\frac{\frac{d \left(\frac{a}{b}+x\right) \text{Log}\left[\frac{a}{b}+x\right]}{\left(-c+\frac{a d}{b}\right)^2 \left(1-\frac{d \left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right)}+\frac{\text{Log}\left[1-\frac{d \left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]}{-c+\frac{a d}{b}}}{d}-\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]}{d (c+d x)}\right)+$$
$$\frac{1}{i^2} 2 b^2 B g^2 n \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)$$

$$\left(\frac{\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{d^2}-\frac{\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^2}+\frac{c\,\text{Log}\left[\frac{c}{d}+x\right]^2}{d^3}+\frac{c^2\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3\,(c+d\,x)}+\frac{c^2\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d^2}+\right.$$

$$\left.\frac{\left(d\,x-\frac{c^2}{c+d\,x}-2\,c\,\text{Log}[c+d\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{d^3}-\frac{2\,c\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{d^3}\right)+$$

$$\frac{1}{i^2}4\,a\,b\,B\,g^2\,n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\left(-\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2\,d^2}-\frac{c\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^2\,(c+d\,x)}-\frac{c\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d}+\right.$$

$$\left.\frac{\left(\frac{c}{c+d\,x}+\text{Log}[c+d\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{d^2}+\frac{\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]}{d^2}\right)+$$

$$\frac{1}{i^2}\,b^2\,B^2\,g^2\,n^2\left(\frac{(a+b\,x)\left(2-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b\,d^2}-\frac{2\,c\,\text{Log}\left[\frac{c}{d}+x\right]^3}{3\,d^3}+\frac{(c+d\,x)\left(2-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^3}-\right.$$

$$\frac{c^2\left(2+2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^3\,(c+d\,x)}+\frac{\left(d\,x-\frac{c^2}{c+d\,x}-2\,c\,\text{Log}[c+d\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)^2}{d^3}+$$

$$\frac{1}{d^3\,(-b\,c+a\,d)\,(c+d\,x)}c^2\left(-d\,(a+b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\,b\,(c+d\,x)\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,b\,(c+d\,x)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+$$

$$2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)\left(\frac{\left(\frac{a}{b}+x\right)\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{d^2}-\frac{\left(\frac{c}{d}+x\right)\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^2}+\frac{c\,\text{Log}\left[\frac{c}{d}+x\right]^2}{d^3}+\right.$$

$$\left.\frac{c^2\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3\,(c+d\,x)}+\frac{c^2\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d^2}-\frac{2\,c\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{d^3}\right)-$$

$$\frac{2\,c\left(\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{d^3}-$$

$$2\left(\frac{1}{b\,d^3}\left(a\,d+2\,b\,d\,x-b\,d\,x\,\text{Log}\left[\frac{c}{d}+x\right]-b\,c\,\text{Log}[c+d\,x]+\text{Log}\left[\frac{a}{b}+x\right]\left(-d\,(a+b\,x)+d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]+(b\,c-a\,d)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+\right.\right.$$

$$(b\,c-a\,d)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\Bigg)+\Bigg(c^2\Bigg(2\,(b\,c-a\,d)\,\text{Log}\left[\frac{a}{b}+x\right]\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+b\,(c+d\,x)\Bigg(\text{Log}\left[\frac{c}{d}+x\right]^2-2\,\text{Log}[a+b\,x]-$$

$$2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,\text{Log}[c+d\,x]\Bigg)-2\,b\,(c+d\,x)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)\Bigg)\Big/\left(2\,d^3\,(-b\,c+a\,d)\,(c+d\,x)\right)-\frac{1}{d^3}$$

$$\left.c\left(\text{Log}\left[\frac{c}{d}+x\right]^2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-2\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)+$$

$$\frac{1}{i^2}\,2\,a\,b\,B^2\,g^2\,n^2\left(\frac{\text{Log}\left[\frac{c}{d}+x\right]^3}{3\,d^2}+\frac{c\left(2+2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^2\,(c+d\,x)}+\frac{\left(\frac{c}{c+d\,x}+\text{Log}[c+d\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)^2}{d^2}-\right.$$

$$\frac{1}{d^2\,(-b\,c+a\,d)\,(c+d\,x)}c\left(-d\,(a+b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\,b\,(c+d\,x)\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,b\,(c+d\,x)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+$$

$$2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)$$

$$\left(-\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2\,d^2}-\frac{c\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^2\,(c+d\,x)}-\frac{c\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d}+\frac{\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]}{d^2}\right)+$$

$$\frac{\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]}{d^2}-$$

$$2\left(-\left(\left(c\left(2\,(b\,c-a\,d)\,\text{Log}\left[\frac{a}{b}+x\right]\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+b\,(c+d\,x)\left(\text{Log}\left[\frac{c}{d}+x\right]^2-2\,\text{Log}[a+b\,x]-2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,\text{Log}[c+d\,x]\right)-\right.\right.\right.\right.$$

$$\left.\left.\left.2\,b\,(c+d\,x)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\Big/\left(2\,d^2\,(-b\,c+a\,d)\,(c+d\,x)\right)\right)+\frac{1}{2\,d^2}$$

$$\left(\text{Log}\left[\frac{c}{d}+x\right]^2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-2\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\Bigg)$$

Problem 196: Result more than twice size of optimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 4, 282 leaves, 9 steps):

$$\frac{2\,A\,B\,g\,n\,(a+b\,x)}{d\,i^2\,(c+d\,x)}-\frac{2\,B^2\,g\,n^2\,(a+b\,x)}{d\,i^2\,(c+d\,x)}+\frac{2\,B^2\,g\,n\,(a+b\,x)\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{d\,i^2\,(c+d\,x)}-\frac{g\,(a+b\,x)\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{d\,i^2\,(c+d\,x)}-$$
$$\frac{b\,g\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{d^2\,i^2}-\frac{2\,b\,B\,g\,n\,\left(A+B\,\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^2\,i^2}+\frac{2\,b\,B^2\,g\,n^2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{d^2\,i^2}$$

Result (type 4, 1305 leaves):

$$\frac{1}{i^2}\, g \Bigg(\frac{(b c - a d) \left(A + B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2}{d^2 (c + d x)} + \frac{a B^2 n^2 (a + b x) \left(2 - 2 \,\text{Log}\left[\frac{a+b x}{c+d x}\right] + \text{Log}\left[\frac{a+b x}{c+d x}\right]^2\right)}{(b c - a d) (c + d x)} +$$

$$\frac{b \left(A + B \,\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] - B n \,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2 \text{Log}[c + d x]}{d^2} + \frac{1}{d (-b c + a d) (c + d x)} 2 a B n \left(-A - B \,\text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] + B n \,\text{Log}\left[\frac{a + b x}{c + d x}\right]\right)$$

$$\left(b c - a d + b (c + d x) \,\text{Log}\left[\frac{a}{b} + x\right] + (-b c + a d) \,\text{Log}\left[\frac{a + b x}{c + d x}\right] - b c \,\text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] - b d x \,\text{Log}\left[\frac{b (c + d x)}{b c - a d}\right]\right) + \frac{1}{d^2}$$

$$b B n \left(A + B \,\text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] - B n \,\text{Log}\left[\frac{a + b x}{c + d x}\right]\right) \Bigg(-\text{Log}\left[\frac{c}{d} + x\right]^2 + 2 \,\text{Log}\left[\frac{c}{d} + x\right] \text{Log}[c + d x] + 2 \Bigg(-\frac{c}{c + d x} + \frac{b c \,\text{Log}[a + b x]}{-b c + a d} + \frac{b c \,\text{Log}[c + d x]}{b c - a d} -$$

$$\text{Log}\left[\frac{a}{b} + x\right] \text{Log}[c + d x] + \text{Log}\left[\frac{a + b x}{c + d x}\right] \left(\frac{c}{c + d x} + \text{Log}[c + d x]\right) + \text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right]\Bigg) + 2 \,\text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\Bigg) +$$

$$\frac{1}{3 d^2 (b c - a d) (c + d x)} b B^2 n^2 \Bigg((b c - a d) (c + d x) \,\text{Log}\left[\frac{c}{d} + x\right]^3 + 3 c (b c - a d) \left(2 + 2 \,\text{Log}\left[\frac{c}{d} + x\right] + \text{Log}\left[\frac{c}{d} + x\right]^2\right) +$$

$$3 (b c - a d) \left(-\text{Log}\left[\frac{a}{b} + x\right] + \text{Log}\left[\frac{c}{d} + x\right] + \text{Log}\left[\frac{a + b x}{c + d x}\right]\right)^2 (c + (c + d x) \,\text{Log}[c + d x]) +$$

$$3 c \,\text{Log}\left[\frac{a}{b} + x\right] \left(-d (a + b x) \,\text{Log}\left[\frac{a}{b} + x\right] + 2 b (c + d x) \,\text{Log}\left[\frac{b (c + d x)}{b c - a d}\right]\right) + 6 b c (c + d x) \,\text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right] + 3$$

$$\left(\text{Log}\left[\frac{a}{b} + x\right] - \text{Log}\left[\frac{c}{d} + x\right] - \text{Log}\left[\frac{a + b x}{c + d x}\right]\right) \Bigg((b c - a d) (c + d x) \,\text{Log}\left[\frac{c}{d} + x\right]^2 + 2 c (b c - a d) \left(1 + \text{Log}\left[\frac{c}{d} + x\right]\right) + 2 c \Bigg((-b c + a d) \,\text{Log}\left[\frac{a}{b} + x\right] +$$

$$b (c + d x) (\text{Log}[a + b x] - \text{Log}[c + d x])\Bigg) - 2 (b c - a d) (c + d x) \left(\text{Log}\left[\frac{a}{b} + x\right] \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right]\right)\Bigg) +$$

$$3 (b c - a d) (c + d x) \left(\text{Log}\left[\frac{a}{b} + x\right]^2 \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + 2 \,\text{Log}\left[\frac{a}{b} + x\right] \text{PolyLog}\left[2, \frac{d (a + b x)}{-b c + a d}\right] - 2 \,\text{PolyLog}\left[3, \frac{d (a + b x)}{-b c + a d}\right]\right) -$$

$$3 \Bigg(c \Bigg(2 (b c - a d) \,\text{Log}\left[\frac{a}{b} + x\right] \left(1 + \text{Log}\left[\frac{c}{d} + x\right]\right) + b (c + d x) \left(\text{Log}\left[\frac{c}{d} + x\right]^2 - 2 \,\text{Log}[a + b x] - 2 \,\text{Log}\left[\frac{c}{d} + x\right] \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] + 2 \,\text{Log}[c + d x]\right) -$$

$$2 b (c + d x) \,\text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right]\Bigg) + (b c - a d) (c + d x)$$

$$\left(\text{Log}\left[\frac{c}{d} + x\right]^2 \left(\text{Log}\left[\frac{a}{b} + x\right] - \text{Log}\left[\frac{d (a + b x)}{-b c + a d}\right]\right) - 2 \,\text{Log}\left[\frac{c}{d} + x\right] \text{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right] + 2 \,\text{PolyLog}\left[3, \frac{b (c + d x)}{b c - a d}\right]\right)\Bigg)\Bigg)\Bigg)$$

Problem 197: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 163 leaves, 4 steps):

$$-\frac{2\,A\,B\,n\,(a+b\,x)}{(b\,c-a\,d)\,i^2\,(c+d\,x)}+\frac{2\,B^2\,n^2\,(a+b\,x)}{(b\,c-a\,d)\,i^2\,(c+d\,x)}-\frac{2\,B^2\,n\,(a+b\,x)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)\,i^2\,(c+d\,x)}+\frac{(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)\,i^2\,(c+d\,x)}$$

Result (type 3, 391 leaves):

$$\frac{1}{d\,(-b\,c+a\,d)\,i^2\,(c+d\,x)}$$
$$\Bigg(A^2\,b\,c-a\,A^2\,d-2\,A\,b\,B\,c\,n+2\,a\,A\,B\,d\,n+2\,b\,B^2\,c\,n^2-2\,a\,B^2\,d\,n^2+B^2\,(b\,c-a\,d)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-b\,B^2\,c\,n^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2-b\,B^2\,d\,n^2\,x\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+$$
$$2\,b\,B\,n\,(c+d\,x)\,\mathrm{Log}[a+b\,x]\,\left(-A+B\,n-B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]+B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+2\,A\,b\,B\,c\,n\,\mathrm{Log}[c+d\,x]-2\,b\,B^2\,c\,n^2\,\mathrm{Log}[c+d\,x]+$$
$$2\,A\,b\,B\,d\,n\,x\,\mathrm{Log}[c+d\,x]-2\,b\,B^2\,d\,n^2\,x\,\mathrm{Log}[c+d\,x]-2\,b\,B^2\,c\,n^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\,\mathrm{Log}[c+d\,x]-$$
$$2\,b\,B^2\,d\,n^2\,x\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\,\mathrm{Log}[c+d\,x]+2\,B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\big((b\,c-a\,d)\,(A-B\,n)+b\,B\,n\,(c+d\,x)\,\mathrm{Log}[c+d\,x]\big)\Bigg)$$

Problem 198: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(a\,g+b\,g\,x)\,(c\,i+d\,i\,x)^2}\,dx$$

Optimal (type 3, 231 leaves, 7 steps):

$$\frac{2\,A\,B\,d\,n\,(a+b\,x)}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}-\frac{2\,B^2\,d\,n^2\,(a+b\,x)}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}+$$
$$\frac{2\,B^2\,d\,n\,(a+b\,x)\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}-\frac{d\,(a+b\,x)\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^2\,g\,i^2\,(c+d\,x)}+\frac{b\,\left(A+B\,\mathrm{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^3}{3\,B\,(b\,c-a\,d)^2\,g\,i^2\,n}$$

Result (type 3, 789 leaves):

$$\frac{b B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^3}{3 (b c-a d)^2 g i^2}-\frac{2 B n \text{Log}\left[\frac{a+b x}{c+d x}\right] \left(-A+B n-B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)}{(b c-a d) g i^2 (c+d x)}+\frac{1}{(b c-a d)^2 g i^2 (c+d x)}\text{Log}\left[\frac{a+b x}{c+d x}\right]^2$$

$$\left(A b B c n-a B^2 d n^2+A b B d n x-b B^2 d n^2 x+b B^2 c n \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+b B^2 d n x \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)+$$

$$\frac{1}{(b c-a d) g i^2 (c+d x)}\left(A^2-2 A B n+2 B^2 n^2+2 A B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-\right.$$

$$\left.2 B^2 n \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+B^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)+\frac{1}{(b c-a d)^2 g i^2}$$

$$b \text{Log}[a+b x] \left(A^2-2 A B n+2 B^2 n^2+2 A B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-2 B^2 n \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+\right.$$

$$\left.B^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)-\frac{1}{(b c-a d)^2 g i^2} b \left(A^2-2 A B n+2 B^2 n^2+2 A B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-\right.$$

$$\left.2 B^2 n \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+B^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right) \text{Log}[c+d x]$$

Problem 199: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^2 (c i+d i x)^2} \, dx$$

Optimal (type 3, 392 leaves, 10 steps):

$$-\frac{2 A B d^2 n (a+b x)}{(b c-a d)^3 g^2 i^2 (c+d x)}+\frac{2 B^2 d^2 n^2 (a+b x)}{(b c-a d)^3 g^2 i^2 (c+d x)}-\frac{2 b^2 B^2 n^2 (c+d x)}{(b c-a d)^3 g^2 i^2 (a+b x)}-\frac{2 B^2 d^2 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d)^3 g^2 i^2 (c+d x)}-$$

$$\frac{2 b^2 B n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^3 g^2 i^2 (a+b x)}+\frac{d^2 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^3 g^2 i^2 (c+d x)}-\frac{b^2 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^3 g^2 i^2 (a+b x)}-\frac{2 b d \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{3 B (b c-a d)^3 g^2 i^2 n}$$

Result (type 3, 870 leaves):

$$-\frac{1}{3\,(b c-a d)^3 g^2 i^2 (a+b x) (c+d x)}\Bigg(2 b B^2 d n^2 (a+b x) (c+d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]^3+3 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]^2 \Big(2 a A b c d+b^2 B c^2 n-a^2 B d^2 n+2 A b^2 c d x+2 a A b d^2 x+2 b^2 B c d n x-2 a b B d^2 n x+2 A b^2 d^2 x^2+2 b B d (a+b x) (c+d x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-2 b B d n (a+b x) (c+d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)+6 B (b c-a d) n \text{Log}\left[\frac{a+b x}{c+d x}\right] \Big(A b c+a A d+b B c n-a B d n+2 A b d x+B (a d+b (c+2 d x)) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n (b c+a d+2 b d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)+6 b d (a+b x) (c+d x) \text{Log}[a+b x] \Big(A^2+2 B^2 n^2+2 A B \Big(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)+B^2 \Big(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)^2\Big)+3 b (b c-a d) (c+d x) \Big(A^2+2 A B n+2 B^2 n^2+B^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-2 B n (A+B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \Big(A+B n-B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)\Big)+3 d (b c-a d) (a+b x) \Big(A^2-2 A B n+2 B^2 n^2+B^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+2 B n (-A+B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2-2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \Big(-A+B n+B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)\Big)-6 b d (a+b x) (c+d x) \Big(A^2+2 B^2 n^2+2 A B \Big(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)+B^2 \Big(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\Big)^2\Big) \text{Log}[c+d x]\Bigg)$$

Problem 200: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^3 (c i+d i x)^2} \, dx$$

Optimal (type 3, 560 leaves, 12 steps):

$$\frac{2 A B d^3 n (a+b x)}{(b c-a d)^4 g^3 i^2 (c+d x)}-\frac{2 B^2 d^3 n^2 (a+b x)}{(b c-a d)^4 g^3 i^2 (c+d x)}+\frac{6 b^2 B^2 d n^2 (c+d x)}{(b c-a d)^4 g^3 i^2 (a+b x)}-\frac{b^3 B^2 n^2 (c+d x)^2}{4 (b c-a d)^4 g^3 i^2 (a+b x)^2}+\frac{2 B^2 d^3 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d)^4 g^3 i^2 (c+d x)}+\frac{6 b^2 B d n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^3 i^2 (a+b x)}-\frac{b^3 B n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^4 g^3 i^2 (a+b x)^2}-\frac{d^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^4 g^3 i^2 (c+d x)}+\frac{3 b^2 d (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^4 g^3 i^2 (a+b x)}-\frac{b^3 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^4 g^3 i^2 (a+b x)^2}+\frac{b d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{B (b c-a d)^4 g^3 i^2 n}$$

Result (type 3, 1340 leaves):

$$\frac{1}{4\,(b c-a d)^4 g^3 i^2 (a+b x)^2 (c+d x)}$$
$$\Bigg(4 b B^2 d^2 n^2 (a+b x)^2 (c+d x) \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^3+2 B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2 \Big(6 a^2 A b c d^2-b^3 B c^3 n+6 a b^2 B c^2 d n-2 a^3 B d^3 n+$$
$$12 a A b^2 c d^2 x+6 a^2 A b d^3 x+3 b^3 B c^2 d n x+12 a b^2 B c d^2 n x-6 a^2 b B d^3 n x+6 A b^3 c d^2 x^2+12 a A b^2 d^3 x^2+9 b^3 B c d^2 n x^2+$$
$$6 A b^3 d^3 x^3+3 b^3 B d^3 n x^3+6 b B d^2 (a+b x)^2 (c+d x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-6 b B d^2 n (a+b x)^2 (c+d x) \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\Big)+$$
$$2 b d (b c-a d) (a+b x) (c+d x) \Big(4 A^2+10 A B n+11 B^2 n^2+4 B^2 \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-2 B n (4 A+5 B n) \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+$$
$$4 B^2 n^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2+2 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(4 A+5 B n-4 B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)\Big)-$$
$$b (b c-a d)^2 (c+d x) \Big(2 A^2+2 A B n+B^2 n^2+2 B^2 \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-2 B n (2 A+B n) \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+$$
$$2 B^2 n^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2+2 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(2 A+B n-2 B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)\Big)+$$
$$6 b d^2 (a+b x)^2 (c+d x) \operatorname{Log}[a+b x] \Big(2 A^2+2 A B n+5 B^2 n^2+2 B^2 \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-2 B n (2 A+B n) \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+$$
$$2 B^2 n^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2+2 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(2 A+B n-2 B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)\Big)+$$
$$2 B (b c-a d) n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right] \Big(2 b d (a+b x) (c+d x) \left(4 A+5 B n+4 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-4 B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)-$$
$$b (b c-a d) (c+d x) \left(2 A+B n+2 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-2 B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)+4 d^2 (a+b x)^2 \left(A-B n+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)\Big)+$$
$$4 d^2 (b c-a d) (a+b x)^2 \Big(A^2-2 A B n+2 B^2 n^2+B^2 \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+2 B n (-A+B n) \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+$$
$$B^2 n^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2-2 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(-A+B n+B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)\Big)-$$
$$6 b d^2 (a+b x)^2 (c+d x) \Big(2 A^2+2 A B n+5 B^2 n^2+2 B^2 \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-2 B n (2 A+B n) \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+$$
$$2 B^2 n^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2+2 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(2 A+B n-2 B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)\Big) \operatorname{Log}[c+d x]\Bigg)$$

Problem 201: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^4 (c i+d i x)^2} \, dx$$

Optimal (type 3, 729 leaves, 14 steps):

$$-\frac{2\,A\,B\,d^4\,n\,(a+b\,x)}{(b\,c-a\,d)^5\,g^4\,i^2\,(c+d\,x)}+\frac{2\,B^2\,d^4\,n^2\,(a+b\,x)}{(b\,c-a\,d)^5\,g^4\,i^2\,(c+d\,x)}-\frac{12\,b^2\,B^2\,d^2\,n^2\,(c+d\,x)}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)}+\frac{b^3\,B^2\,d\,n^2\,(c+d\,x)^2}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^2}-\frac{2\,b^4\,B^2\,n^2\,(c+d\,x)^3}{27\,(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^3}-$$

$$\frac{2\,B^2\,d^4\,n\,(a+b\,x)\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]}{(b\,c-a\,d)^5\,g^4\,i^2\,(c+d\,x)}-\frac{12\,b^2\,B\,d^2\,n\,(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)}+\frac{2\,b^3\,B\,d\,n\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^2}-$$

$$\frac{2\,b^4\,B\,n\,(c+d\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)}{9\,(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^3}+\frac{d^4\,(a+b\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^5\,g^4\,i^2\,(c+d\,x)}-\frac{6\,b^2\,d^2\,(c+d\,x)\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)}+$$

$$\frac{2\,b^3\,d\,(c+d\,x)^2\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^2}-\frac{b^4\,(c+d\,x)^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{3\,(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^3}-\frac{4\,b\,d^3\left(A+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^3}{3\,B\,(b\,c-a\,d)^5\,g^4\,i^2\,n}$$

Result (type 3, 1695 leaves) :

$$-\frac{1}{27\,(b\,c-a\,d)^5\,g^4\,i^2\,(a+b\,x)^3\,(c+d\,x)}$$

$$\Bigg(36\,b\,B^2\,d^3\,n^2\,(a+b\,x)^3\,(c+d\,x)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^3+9\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2\Big(12\,a^3\,A\,b\,c\,d^3+b^4\,B\,c^4\,n-6\,a\,b^3\,B\,c^3\,d\,n+18\,a^2\,b^2\,B\,c^2\,d^2\,n-3\,a^4\,B\,d^4\,n+$$

$$36\,a^2\,A\,b^2\,c\,d^3\,x+12\,a^3\,A\,b\,d^4\,x-2\,b^4\,B\,c^3\,d\,n\,x+18\,a\,b^3\,B\,c^2\,d^2\,n\,x+36\,a^2\,b^2\,B\,c\,d^3\,n\,x-12\,a^3\,b\,B\,d^4\,n\,x+36\,a\,A\,b^3\,c\,d^3\,x^2+$$

$$36\,a^2\,A\,b^2\,d^4\,x^2+6\,b^4\,B\,c^2\,d^2\,n\,x^2+54\,a\,b^3\,B\,c\,d^3\,n\,x^2+12\,A\,b^4\,c\,d^3\,x^3+36\,a\,A\,b^3\,d^4\,x^3+22\,b^4\,B\,c\,d^3\,n\,x^3+18\,a\,b^3\,B\,d^4\,n\,x^3+$$

$$12\,A\,b^4\,d^4\,x^4+10\,b^4\,B\,d^4\,n\,x^4+12\,b\,B\,d^3\,(a+b\,x)^3\,(c+d\,x)\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-12\,b\,B\,d^3\,n\,(a+b\,x)^3\,(c+d\,x)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\Big)+$$

$$3\,b\,d^2\,(b\,c-a\,d)\,(a+b\,x)^2\,(c+d\,x)\,\Big(27\,A^2+78\,A\,B\,n+92\,B^2\,n^2+27\,B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-6\,B\,n\,(9\,A+13\,B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+$$

$$27\,B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(9\,A+13\,B\,n-9\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Big)+$$

$$6\,b\,d^3\,(a+b\,x)^3\,(c+d\,x)\,\text{Log}[a+b\,x]\,\Big(18\,A^2+30\,A\,B\,n+55\,B^2\,n^2+18\,B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-6\,B\,n\,(6\,A+5\,B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+$$

$$18\,B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(6\,A+5\,B\,n-6\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Big)+$$

$$b\,(b\,c-a\,d)^3\,(c+d\,x)\,\Big(9\,A^2+6\,A\,B\,n+2\,B^2\,n^2+9\,B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-6\,B\,n\,(3\,A+B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+$$

$$9\,B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(3\,A+B\,n-3\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Big)-$$

$$3\,b\,d\,(b\,c-a\,d)^2\,(a+b\,x)\,(c+d\,x)\,\Big(9\,A^2+12\,A\,B\,n+7\,B^2\,n^2+9\,B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-6\,B\,n\,(3\,A+2\,B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+$$

$$9\,B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(3\,A+2\,B\,n-3\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Big)+$$

$$6\,B\,(b\,c-a\,d)\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\Big(3\,b\,d^2\,(a+b\,x)^2\,(c+d\,x)\left(9\,A+13\,B\,n+9\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-9\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+$$

$$b\,(b\,c-a\,d)^2\,(c+d\,x)\left(3\,A+B\,n+3\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-3\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-3\,b\,d\,(b\,c-a\,d)\,(a+b\,x)\,(c+d\,x)$$

$$\left(3\,A+2\,B\,n+3\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-3\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+9\,d^3\,(a+b\,x)^3\left(A-B\,n+B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Big)+$$

$$27\,d^3\,(b\,c-a\,d)\,(a+b\,x)^3\,\Big(A^2-2\,A\,B\,n+2\,B^2\,n^2+B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+2\,B\,n\,(-A+B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+$$

$$B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2-2\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(-A+B\,n+B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Big)-$$

$$6\,b\,d^3\,(a+b\,x)^3\,(c+d\,x)\,\Big(18\,A^2+30\,A\,B\,n+55\,B^2\,n^2+18\,B^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-6\,B\,n\,(6\,A+5\,B\,n)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+$$

$$18\,B^2\,n^2\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+6\,B\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(6\,A+5\,B\,n-6\,B\,n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Big)\,\text{Log}[c+d\,x]\Bigg)$$

Problem 202: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(c i+d i x)^3} \, dx$$

Optimal (type 4, 676 leaves, 14 steps):

$$\frac{B^2 (b c-a d) g^3 n^2 (a+b x)^2}{4 d^2 i^3 (c+d x)^2}-\frac{4 A b B (b c-a d) g^3 n (a+b x)}{d^3 i^3 (c+d x)}+\frac{4 b B^2 (b c-a d) g^3 n^2 (a+b x)}{d^3 i^3 (c+d x)}-\frac{4 b B^2 (b c-a d) g^3 n (a+b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^3 i^3 (c+d x)}-$$

$$\frac{B (b c-a d) g^3 n (a+b x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d^2 i^3 (c+d x)^2}+\frac{b^2 g^3 (a+b x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^3 i^3}+\frac{(b c-a d) g^3 (a+b x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d^2 i^3 (c+d x)^2}+$$

$$\frac{2 b (b c-a d) g^3 (a+b x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^3 i^3 (c+d x)}+\frac{2 b^2 B (b c-a d) g^3 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^4 i^3}+$$

$$\frac{3 b^2 (b c-a d) g^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \operatorname{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^4 i^3}+\frac{2 b^2 B^2 (b c-a d) g^3 n^2 \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}+$$

$$\frac{6 b^2 B (b c-a d) g^3 n \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}-\frac{6 b^2 B^2 (b c-a d) g^3 n^2 \operatorname{PolyLog}\left[3, \frac{d (a+b x)}{b (c+d x)}\right]}{d^4 i^3}$$

Result (type 4, 6600 leaves):

$$\frac{b^3 g^3 x \left(A+B \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2}{d^3 i^3}-$$

$$\frac{1}{d^4 i^3 (c+d x)} 3 \left(A^2 b^3 c^2 g^3-2 a A^2 b^2 c d g^3+a^2 A^2 b d^2 g^3+2 A b^3 B c^2 g^3 \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)-4 a A b^2 B c d g^3\right.$$

$$\left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)+2 a^2 A b B d^2 g^3 \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)+b^3 B^2 c^2 g^3 \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-$$

$$\left.2 a b^2 B^2 c d g^3 \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+a^2 b B^2 d^2 g^3 \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)+$$

$$\frac{1}{2 d^4 i^3 (c+d x)^2} \left(A^2 b^3 c^3 g^3-3 a A^2 b^2 c^2 d g^3+3 a^2 A^2 b c d^2 g^3-a^3 A^2 d^3 g^3+2 A b^3 B c^3 g^3 \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)-\right.$$

$$6 a A b^2 B c^2 d g^3 \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)+6 a^2 A b B c d^2 g^3 \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)-2 a^3 A B d^3 g^3$$

$$\left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)+b^3 B^2 c^3 g^3 \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-3 a b^2 B^2 c^2 d g^3 \left(\operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+$$

$$3\,a^2\,b\,B^2\,c\,d^2\,g^3\,\left(\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2-a^3\,B^2\,d^3\,g^3\,\left(\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2\Bigg)-$$

$$\frac{3\,b^2\,(b\,c-a\,d)\,g^3\,\left(A+B\,\left(\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)^2\,\text{Log}[c+d\,x]}{d^4\,i^3}+$$

$$\Bigg(a^3\,B^2\,g^3\,n^2\,\Bigg(-7\,b^2\,c^2+8\,a\,b\,c\,d-a^2\,d^2-6\,b^2\,c\,d\,x+6\,a\,b\,d^2\,x-6\,b^2\,(c+d\,x)^2\,\text{Log}[a+b\,x]+2\,(b\,c-a\,d)\,(3\,b\,c-a\,d+2\,b\,d\,x)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]-$$

$$2\,d\,(a+b\,x)\,(-2\,b\,c+a\,d-b\,d\,x)\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+6\,b^2\,c^2\,\text{Log}[c+d\,x]+12\,b^2\,c\,d\,x\,\text{Log}[c+d\,x]+6\,b^2\,d^2\,x^2\,\text{Log}[c+d\,x]\Bigg)\Bigg)\Big/$$

$$\left(4\,d\,(b\,c-a\,d)^2\,i^3\,(c+d\,x)^2\right)+\frac{1}{i^3}2\,a^3\,B\,g^3\,n\,\left(A+B\,\left(\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\,\Bigg(\frac{\left(\frac{c}{d}+x\right)\,\left(2\,\text{Log}\left[\frac{c}{d}+x\right]+4\,\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{8\,(c+d\,x)^3\,\text{Log}\left[\frac{c}{d}+x\right]}+$$

$$\frac{\frac{d\,\left(\frac{a}{b}+x\right)}{\left(-c+\frac{a\,d}{b}\right)^3\,\left(1-\frac{d\,\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right)}-\left(\frac{d^2\,\left(\frac{a}{b}+x\right)^2}{\left(-c+\frac{a\,d}{b}\right)^4\,\left(1-\frac{d\,\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right)^2}+\frac{2\,d\,\left(\frac{a}{b}+x\right)}{\left(-c+\frac{a\,d}{b}\right)^3\,\left(1-\frac{d\,\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right)}\right)\,\text{Log}\left[\frac{a}{b}+x\right]-\frac{\text{Log}\left[1-\frac{d\,\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right]}{\left(-c+\frac{a\,d}{b}\right)^2}}{2\,d}-\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]}{2\,d\,(c+d\,x)^2}\Bigg)+\frac{1}{i^3}$$

$$6\,a^2\,b\,B\,g^3\,n\,\left(A+B\,\left(\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\,\Bigg(\frac{1+\text{Log}\left[\frac{c}{d}+x\right]}{d^2\,(c+d\,x)}-\frac{c\,\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)}{4\,d^2\,(c+d\,x)^2}+\frac{-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}}{d}-$$

$$\frac{c\,\left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b\,(c+d\,x)\,(b\,c-a\,d+b\,(c+d\,x)\,\text{Log}[a+b\,x]-b\,(c+d\,x)\,\text{Log}[c+d\,x])}{(b\,c-a\,d)^2}\right)}{2\,d^2\,(c+d\,x)^2}-\frac{(c+2\,d\,x)\,\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{2\,d^2\,(c+d\,x)^2}\Bigg)+\frac{1}{i^3}\,2\,b^3\,B\,g^3\,n$$

$$\left(A+B\,\left(\text{Log}\left[e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\,\Bigg(\frac{\left(\frac{a}{b}+x\right)\,\left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{d^3}-\frac{\left(\frac{c}{d}+x\right)\,\left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3}+\frac{3\,c\,\text{Log}\left[\frac{c}{d}+x\right]^2}{2\,d^4}+\frac{3\,c^2\,\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^4\,(c+d\,x)}-$$

$$\frac{c^3\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)}{4\,d^4\,(c+d\,x)^2}+\frac{3\,c^2\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d^3}-\frac{c^3\left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b\,(c+d\,x)\,(b\,c-a\,d+b\,(c+d\,x)\,\text{Log}[a+b\,x]-b\,(c+d\,x)\,\text{Log}[c+d\,x])}{(b\,c-a\,d)^2}\right)}{2\,d^4\,(c+d\,x)^2}-$$

$$\frac{\left(-2\,d\,x+\frac{c^2\,(5\,c+6\,d\,x)}{(c+d\,x)^2}+6\,c\,\text{Log}[c+d\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{2\,d^4}-\frac{3\,c\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{d^4}\Bigg)+$$

$$\frac{1}{i^3}6\,a\,b^2\,B\,g^3\,n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\Bigg(-\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2\,d^3}-\frac{2\,c\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3\,(c+d\,x)}+\frac{c^2\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)}{4\,d^3\,(c+d\,x)^2}-$$

$$\frac{2\,c\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d^2}+\frac{c^2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b\,(c+d\,x)\,(b\,c-a\,d+b\,(c+d\,x)\,\text{Log}[a+b\,x]-b\,(c+d\,x)\,\text{Log}[c+d\,x])}{(b\,c-a\,d)^2}\right)}{2\,d^3\,(c+d\,x)^2}+$$

$$\frac{\left(\frac{c\,(3\,c+4\,d\,x)}{(c+d\,x)^2}+2\,\text{Log}[c+d\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{2\,d^3}+\frac{\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]}{d^3}\Bigg)+$$

$$\frac{1}{i^3}\,3\,a^2\,b\,B^2\,g^3\,n^2\Bigg(-\frac{2+2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2}{d^2\,(c+d\,x)}+\frac{c\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]+2\,\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{4\,d^2\,(c+d\,x)^2}+$$

$$2\left(\frac{1+\text{Log}\left[\frac{c}{d}+x\right]}{d^2\,(c+d\,x)}-\frac{c\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)}{4\,d^2\,(c+d\,x)^2}+\frac{-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}}{d}-\frac{c\left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b\,(c+d\,x)\,(b\,c-a\,d+b\,(c+d\,x)\,\text{Log}[a+b\,x]-b\,(c+d\,x)\,\text{Log}[c+d\,x])}{(b\,c-a\,d)^2}\right)}{2\,d^2\,(c+d\,x)^2}\right)$$

$$\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)-\frac{(c+2\,d\,x)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)^2}{2\,d^2\,(c+d\,x)^2}+$$

$$\frac{-d\,(a+b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\,b\,(c+d\,x)\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,b\,(c+d\,x)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]}{d^2\,(-b\,c+a\,d)\,(c+d\,x)}+$$

$$\Bigg(c\,\Bigg(d\,(a+b\,x)\,(a\,d-b\,(2\,c+d\,x))\,\text{Log}\left[\frac{a}{b}+x\right]^2-2\,b^2\,(c+d\,x)^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,b\,(c+d\,x)\,\text{Log}\left[\frac{a}{b}+x\right]$$

$$\left(d\ (a+b\,x)+b\ (c+d\,x)\ \text{Log}\left[\frac{b\ (c+d\,x)}{b\,c-a\,d}\right]\right)+2\,b^2\ (c+d\,x)^2\ \text{PolyLog}\left[2,\ \frac{d\ (a+b\,x)}{-b\,c+a\,d}\right]\Big)\Big)\Big/\left(2\,d^2\ (b\,c-a\,d)^2\ \left(c+d\,x\right)^2\right)-$$

$$2\ \Big(\Big(\Big(2\ (b\,c-a\,d)\ \text{Log}\left[\frac{a}{b}+x\right]\ \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+b\ (c+d\,x)\ \left(\text{Log}\left[\frac{c}{d}+x\right]^2-2\,\text{Log}[a+b\,x]-2\,\text{Log}\left[\frac{c}{d}+x\right]\ \text{Log}\left[\frac{d\ (a+b\,x)}{-b\,c+a\,d}\right]+2\,\text{Log}[c+d\,x]\right)-$$

$$2\,b\ (c+d\,x)\ \text{PolyLog}\left[2,\ \frac{b\ (c+d\,x)}{b\,c-a\,d}\right]\Big)\Big/\left(2\,d^2\ (-b\,c+a\,d)\ (c+d\,x)\right)+\Big(c\ \Big(-b\ (b\,c-a\,d)\ (c+d\,x)+(b\,c-a\,d)^2\ \text{Log}\left[\frac{a}{b}+x\right]$$

$$\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)-b^2\ (c+d\,x)^2\ \text{Log}[a+b\,x]+b^2\ (c+d\,x)^2\ \text{Log}[c+d\,x]+b\ (c+d\,x)\ \Big(b\ (c+d\,x)\ \text{Log}\left[\frac{c}{d}+x\right]^2-2\ (b\,c-a\,d)$$

$$\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)-2\,b\ (c+d\,x)\ \left(\text{Log}\left[\frac{c}{d}+x\right]\ \text{Log}\left[\frac{d\ (a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\ \frac{b\ (c+d\,x)}{b\,c-a\,d}\right]\right)\Big)\Big)\Big)\Big/\left(4\,d^2\ (b\,c-a\,d)^2\ \left(c+d\,x\right)^2\right)\Big)+$$

$$\frac{1}{i^3}\,b^3\,B^2\,g^3\,n^2\ \Bigg(\frac{(a+b\,x)\ \left(2-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{a}{b}+x\right]^2\right)}{b\,d^3}-\frac{c\,\text{Log}\left[\frac{c}{d}+x\right]^3}{d^4}+\frac{(c+d\,x)\ \left(2-2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^4}-$$

$$\frac{3\,c^2\ \left(2+2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^4\ (c+d\,x)}+\frac{c^3\ \left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]+2\,\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{4\,d^4\ (c+d\,x)^2}-$$

$$\frac{\left(-2\,d\,x+\frac{c^2\ (5\,c+6\,d\,x)}{(c+d\,x)^2}+6\,c\,\text{Log}[c+d\,x]\right)\ \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)^2}{2\,d^4}+\frac{1}{d^4\ (-b\,c+a\,d)\ (c+d\,x)}$$

$$3\,c^2\ \left(-d\ (a+b\,x)\ \text{Log}\left[\frac{a}{b}+x\right]^2+2\,b\ (c+d\,x)\ \text{Log}\left[\frac{a}{b}+x\right]\ \text{Log}\left[\frac{b\ (c+d\,x)}{b\,c-a\,d}\right]+2\,b\ (c+d\,x)\ \text{PolyLog}\left[2,\ \frac{d\ (a+b\,x)}{-b\,c+a\,d}\right]\right)+$$

$$\Big(c^3\ \Big(d\ (a+b\,x)\ (a\,d-b\ (2\,c+d\,x))\ \text{Log}\left[\frac{a}{b}+x\right]^2-2\,b^2\ (c+d\,x)^2\ \text{Log}\left[\frac{b\ (c+d\,x)}{b\,c-a\,d}\right]+2\,b\ (c+d\,x)\ \text{Log}\left[\frac{a}{b}+x\right]$$

$$\left(d\ (a+b\,x)+b\ (c+d\,x)\ \text{Log}\left[\frac{b\ (c+d\,x)}{b\,c-a\,d}\right]\right)+2\,b^2\ (c+d\,x)^2\ \text{PolyLog}\left[2,\ \frac{d\ (a+b\,x)}{-b\,c+a\,d}\right]\Big)\Big)\Big/\left(2\,d^4\ (b\,c-a\,d)^2\ \left(c+d\,x\right)^2\right)+$$

$$2\ \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)\ \Bigg(\frac{\left(\frac{a}{b}+x\right)\ \left(-1+\text{Log}\left[\frac{a}{b}+x\right]\right)}{d^3}-\frac{\left(\frac{c}{d}+x\right)\ \left(-1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3}+$$

$$\frac{3\,c\,\text{Log}\left[\frac{c}{d}+x\right]^2}{2\,d^4}+\frac{3\,c^2\ \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^4\ (c+d\,x)}-\frac{c^3\ \left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)}{4\,d^4\ (c+d\,x)^2}+\frac{3\,c^2\ \left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\ (c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\ (-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\ (-b\,c+a\,d)}\right)}{d^3}-$$

$$\frac{c^3\left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b\,(c+d\,x)\,(b\,c-a\,d+b\,(c+d\,x)\,\text{Log}[a+b\,x]-b\,(c+d\,x)\,\text{Log}[c+d\,x])}{(b\,c-a\,d)^2}\right)}{2\,d^4\,(c+d\,x)^2}-\frac{3\,c\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{d^4}\Bigg)-$$

$$\frac{3\,c\left(\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{d^4}-$$

$$2\left(\frac{1}{b\,d^4}\left(a\,d+2\,b\,d\,x-b\,d\,x\,\text{Log}\left[\frac{c}{d}+x\right]-b\,c\,\text{Log}[c+d\,x]+\text{Log}\left[\frac{a}{b}+x\right]\left(-d\,(a+b\,x)+d\,(a+b\,x)\,\text{Log}\left[\frac{c}{d}+x\right]+(b\,c-a\,d)\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+\right.\right.$$

$$\left.(b\,c-a\,d)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+\left(3\,c^2\left(2\,(b\,c-a\,d)\,\text{Log}\left[\frac{a}{b}+x\right]\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+\right.\right.$$

$$\left.\left.b\,(c+d\,x)\left(\text{Log}\left[\frac{c}{d}+x\right]^2-2\,\text{Log}[a+b\,x]-2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,\text{Log}[c+d\,x]\right)-2\,b\,(c+d\,x)\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\Big/$$

$$\left(2\,d^4\,(-b\,c+a\,d)\,(c+d\,x)\right)+\left(c^3\left(-b\,(b\,c-a\,d)\,(c+d\,x)+(b\,c-a\,d)^2\,\text{Log}\left[\frac{a}{b}+x\right]\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)-b^2\,(c+d\,x)^2\,\text{Log}[a+b\,x]+\right.\right.$$

$$b^2\,(c+d\,x)^2\,\text{Log}[c+d\,x]+b\,(c+d\,x)\left(b\,(c+d\,x)\,\text{Log}\left[\frac{c}{d}+x\right]^2-2\,(b\,c-a\,d)\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)-\right.$$

$$\left.\left.\left.2\,b\,(c+d\,x)\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\right)\right)\Big/\left(4\,d^4\,(b\,c-a\,d)^2\,(c+d\,x)^2\right)-\frac{1}{2\,d^4}$$

$$\left.3\,c\left(\text{Log}\left[\frac{c}{d}+x\right]^2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-2\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\Bigg)+$$

$$\frac{1}{i^3}\,3\,a\,b^2\,B^2\,g^3\,n^2\left(\frac{\text{Log}\left[\frac{c}{d}+x\right]^3}{3\,d^3}+\frac{2\,c\left(2+2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^3\,(c+d\,x)}-\frac{c^2\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]+2\,\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{4\,d^3\,(c+d\,x)^2}+\right.$$

$$\frac{\left(\frac{c\,(3\,c+4\,d\,x)}{(c+d\,x)^2}+2\,\text{Log}[c+d\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)^2}{2\,d^3}-\frac{1}{d^3\,(-b\,c+a\,d)\,(c+d\,x)}$$

$$2\,c\left(-d\,(a+b\,x)\,\text{Log}\left[\frac{a}{b}+x\right]^2+2\,b\,(c+d\,x)\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,b\,(c+d\,x)\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-$$

$$\left(c^2\left(d\,(a+b\,x)\,(a\,d-b\,(2\,c+d\,x))\,\text{Log}\left[\frac{a}{b}+x\right]^2-2\,b^2\,(c+d\,x)^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\right.\right.$$

$$2\,b\,(c+d\,x)\,\mathrm{Log}\left[\frac{a}{b}+x\right]\left(d\,(a+b\,x)+b\,(c+d\,x)\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+2\,b^2\,(c+d\,x)^2\,\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\Bigg)\Bigg)\Big/$$

$$\left(2\,d^3\,(b\,c-a\,d)^2\,(c+d\,x)^2\right)+2\left(-\mathrm{Log}\left[\frac{a}{b}+x\right]+\mathrm{Log}\left[\frac{c}{d}+x\right]+\mathrm{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)$$

$$\Bigg(-\frac{\mathrm{Log}\left[\frac{c}{d}+x\right]^2}{2\,d^3}-\frac{2\,c\left(1+\mathrm{Log}\left[\frac{c}{d}+x\right]\right)}{d^3\,(c+d\,x)}+\frac{c^2\left(1+2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\right)}{4\,d^3\,(c+d\,x)^2}-\frac{2\,c\left(-\frac{\mathrm{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\mathrm{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\mathrm{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d^2}+$$

$$\frac{c^2\left(-\mathrm{Log}\left[\frac{a}{b}+x\right]+\frac{b\,(c+d\,x)\,(b\,c-a\,d+b\,(c+d\,x)\,\mathrm{Log}[a+b\,x]-b\,(c+d\,x)\,\mathrm{Log}[c+d\,x])}{(b\,c-a\,d)^2}\right)}{2\,d^3\,(c+d\,x)^2}+\frac{\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]}{d^3}\Bigg)+$$

$$\frac{\mathrm{Log}\left[\frac{a}{b}+x\right]^2\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-2\,\mathrm{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]}{d^3}-$$

$$2\left(-\frac{1}{d^3\,(-b\,c+a\,d)\,(c+d\,x)}c\left(2\,(b\,c-a\,d)\,\mathrm{Log}\left[\frac{a}{b}+x\right]\left(1+\mathrm{Log}\left[\frac{c}{d}+x\right]\right)+\right.\right.$$

$$b\,(c+d\,x)\left(\mathrm{Log}\left[\frac{c}{d}+x\right]^2-2\,\mathrm{Log}[a+b\,x]-2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+2\,\mathrm{Log}[c+d\,x]\right)-2\,b\,(c+d\,x)\,\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)-$$

$$\Bigg(c^2\Bigg(-b\,(b\,c-a\,d)\,(c+d\,x)+(b\,c-a\,d)^2\,\mathrm{Log}\left[\frac{a}{b}+x\right]\left(1+2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\right)-b^2\,(c+d\,x)^2\,\mathrm{Log}[a+b\,x]+b^2\,(c+d\,x)^2\,\mathrm{Log}[c+d\,x]+b\,(c+d\,x)$$

$$\left(b\,(c+d\,x)\,\mathrm{Log}\left[\frac{c}{d}+x\right]^2-2\,(b\,c-a\,d)\left(1+\mathrm{Log}\left[\frac{c}{d}+x\right]\right)-2\,b\,(c+d\,x)\left(\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\Bigg)\Bigg)\Big/$$

$$\left(4\,d^3\,(b\,c-a\,d)^2\,(c+d\,x)^2\right)+\frac{1}{2\,d^3}\Bigg(\mathrm{Log}\left[\frac{c}{d}+x\right]^2\left(\mathrm{Log}\left[\frac{a}{b}+x\right]-\mathrm{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-2\,\mathrm{Log}\left[\frac{c}{d}+x\right]\mathrm{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$2\,\mathrm{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\Bigg)\Bigg)\Bigg)$$

Problem 203: Result more than twice size of optimal antiderivative.

$$\int\frac{(a\,g+b\,g\,x)^2\left(A+B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\right)^2}{(c\,i+d\,i\,x)^3}\,dx$$

Optimal (type 4, 441 leaves, 11 steps):

$$-\frac{B^2 g^2 n^2 (a+b x)^2}{4 d i^3 (c+d x)^2}+\frac{2 A b B g^2 n (a+b x)}{d^2 i^3 (c+d x)}-\frac{2 b B^2 g^2 n^2 (a+b x)}{d^2 i^3 (c+d x)}+\frac{2 b B^2 g^2 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{d^2 i^3 (c+d x)}+$$
$$\frac{B g^2 n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 d i^3 (c+d x)^2}-\frac{g^2 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 d i^3 (c+d x)^2}-\frac{b g^2 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{d^2 i^3 (c+d x)}-$$
$$\frac{b^2 g^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{d^3 i^3}-\frac{2 b^2 B g^2 n \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^3}+\frac{2 b^2 B^2 g^2 n^2 \text{PolyLog}\left[3,\frac{d (a+b x)}{b (c+d x)}\right]}{d^3 i^3}$$

Result (type 4, 4247 leaves):

$$-\frac{1}{d^3 i^3 (c+d x)}2 \left(-A^2 b^2 c g^2+a A^2 b d g^2-2 A b^2 B c g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+2 a A b B d g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-\right.$$
$$\left. b^2 B^2 c g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+a b B^2 d g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)+\frac{1}{2 d^3 i^3 (c+d x)^2}$$
$$\left(-A^2 b^2 c^2 g^2+2 a A^2 b c d g^2-a^2 A^2 d^2 g^2-2 A b^2 B c^2 g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+4 a A b B c d g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-\right.$$
$$2 a^2 A B d^2 g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-b^2 B^2 c^2 g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2+$$
$$\left. 2 a b B^2 c d g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2-a^2 B^2 d^2 g^2 \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\right)+$$
$$\frac{b^2 g^2 \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)^2 \text{Log}[c+d x]}{d^3 i^3}+$$
$$\left(a^2 B^2 g^2 n^2 \left(-7 b^2 c^2+8 a b c d-a^2 d^2-6 b^2 c d x+6 a b d^2 x-6 b^2 (c+d x)^2 \text{Log}[a+b x]+2 (b c-a d) (3 b c-a d+2 b d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]-\right.\right.$$
$$\left.\left. 2 d (a+b x) (-2 b c+a d-b d x) \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+6 b^2 c^2 \text{Log}[c+d x]+12 b^2 c d x \text{Log}[c+d x]+6 b^2 d^2 x^2 \text{Log}[c+d x]\right)\right)\Big/$$
$$\left(4 d (b c-a d)^2 i^3 (c+d x)^2\right)+\frac{1}{i^3}2 a^2 B g^2 n \left(A+B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right) \left(\frac{\left(\frac{c}{d}+x\right) \left(2 \text{Log}\left[\frac{c}{d}+x\right]+4 \text{Log}\left[\frac{c}{d}+x\right]^2\right)}{8 (c+d x)^3 \text{Log}\left[\frac{c}{d}+x\right]}+\right.$$

$$\left.\frac{\frac{d\left(\frac{a}{b}+x\right)}{\left(-c+\frac{a\,d}{b}\right)^3\left(1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right)}-\left(\frac{d^2\left(\frac{a}{b}+x\right)^2}{\left(-c+\frac{a\,d}{b}\right)^4\left(1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right)^2}+\frac{2\,d\left(\frac{a}{b}+x\right)}{\left(-c+\frac{a\,d}{b}\right)^3\left(1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right)}\right)\text{Log}\left[\frac{a}{b}+x\right]-\frac{\text{Log}\left[1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right]}{\left(-c+\frac{a\,d}{b}\right)^2}}{2\,d}-\frac{-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]}{2\,d\,\left(c+d\,x\right)^2}\right)+\frac{1}{i^3}$$

$$4\,a\,b\,B\,g^2\,n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\left(\frac{1+\text{Log}\left[\frac{c}{d}+x\right]}{d^2\left(c+d\,x\right)}-\frac{c\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)}{4\,d^2\left(c+d\,x\right)^2}+\frac{-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}}{d}-\right.$$

$$\left.\frac{c\left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b\,(c+d\,x)\,\left(b\,c-a\,d+b\,(c+d\,x)\,\text{Log}[a+b\,x]-b\,(c+d\,x)\,\text{Log}[c+d\,x]\right)}{(b\,c-a\,d)^2}\right)}{2\,d^2\left(c+d\,x\right)^2}-\frac{\left(c+2\,d\,x\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{2\,d^2\left(c+d\,x\right)^2}\right)+$$

$$\frac{1}{i^3}2\,b^2\,B\,g^2\,n\left(A+B\left(\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\right)\left(-\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2\,d^3}-\frac{2\,c\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3\left(c+d\,x\right)}+\frac{c^2\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)}{4\,d^3\left(c+d\,x\right)^2}-\right.$$

$$\frac{2\,c\left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}\right)}{d^2}+\frac{c^2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b\,(c+d\,x)\,\left(b\,c-a\,d+b\,(c+d\,x)\,\text{Log}[a+b\,x]-b\,(c+d\,x)\,\text{Log}[c+d\,x]\right)}{(b\,c-a\,d)^2}\right)}{2\,d^3\left(c+d\,x\right)^2}+$$

$$\left.\frac{\left(\frac{c\,(3\,c+4\,d\,x)}{(c+d\,x)^2}+2\,\text{Log}[c+d\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)}{2\,d^3}+\frac{\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]}{d^3}\right)+$$

$$\frac{1}{i^3}\,2\,a\,b\,B^2\,g^2\,n^2\left(-\frac{2+2\,\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2}{d^2\left(c+d\,x\right)}+\frac{c\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]+2\,\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{4\,d^2\left(c+d\,x\right)^2}+\right.$$

$$2\left(\frac{1+\text{Log}\left[\frac{c}{d}+x\right]}{d^2\left(c+d\,x\right)}-\frac{c\left(1+2\,\text{Log}\left[\frac{c}{d}+x\right]\right)}{4\,d^2\left(c+d\,x\right)^2}+\frac{-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d\,(c+d\,x)}-\frac{b\,\text{Log}[a+b\,x]}{d\,(-b\,c+a\,d)}+\frac{b\,\text{Log}[c+d\,x]}{d\,(-b\,c+a\,d)}}{d}-\frac{c\left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b\,(c+d\,x)\,\left(b\,c-a\,d+b\,(c+d\,x)\,\text{Log}[a+b\,x]-b\,(c+d\,x)\,\text{Log}[c+d\,x]\right)}{(b\,c-a\,d)^2}\right)}{2\,d^2\left(c+d\,x\right)^2}\right)$$

$$\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)-\frac{(c+2 d x)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)^2}{2 d^2 (c+d x)^2}+$$

$$\frac{-d (a+b x) \text{Log}\left[\frac{a}{b}+x\right]^2+2 b (c+d x) \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 b (c+d x) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]}{d^2 (-b c+a d) (c+d x)}+$$

$$\left(c \left(d (a+b x) (a d-b (2 c+d x)) \text{Log}\left[\frac{a}{b}+x\right]^2-2 b^2 (c+d x)^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 b (c+d x) \text{Log}\left[\frac{a}{b}+x\right]\right.\right.$$

$$\left.\left.\left(d (a+b x)+b (c+d x) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+2 b^2 (c+d x)^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)\Big/\left(2 d^2 (b c-a d)^2 (c+d x)^2\right)-$$

$$2 \left(\left(2 (b c-a d) \text{Log}\left[\frac{a}{b}+x\right] \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+b (c+d x) \left(\text{Log}\left[\frac{c}{d}+x\right]^2-2 \text{Log}[a+b x]-2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 \text{Log}[c+d x]\right)-\right.\right.$$

$$\left.2 b (c+d x) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\Big/\left(2 d^2 (-b c+a d) (c+d x)\right)+\left(c \left(-b (b c-a d) (c+d x)+(b c-a d)^2 \text{Log}\left[\frac{a}{b}+x\right]\right.\right.$$

$$\left(1+2 \text{Log}\left[\frac{c}{d}+x\right]\right)-b^2 (c+d x)^2 \text{Log}[a+b x]+b^2 (c+d x)^2 \text{Log}[c+d x]+b (c+d x) \left(b (c+d x) \text{Log}\left[\frac{c}{d}+x\right]^2-2 (b c-a d)\right.$$

$$\left.\left.\left.\left.\left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)-2 b (c+d x) \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\right)\right)\Big/\left(4 d^2 (b c-a d)^2 (c+d x)^2\right)\right)+$$

$$\frac{1}{i^3} b^2 B^2 g^2 n^2 \left(\frac{\text{Log}\left[\frac{c}{d}+x\right]^3}{3 d^3}+\frac{2 c \left(2+2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]^2\right)}{d^3 (c+d x)}-\frac{c^2 \left(1+2 \text{Log}\left[\frac{c}{d}+x\right]+2 \text{Log}\left[\frac{c}{d}+x\right]^2\right)}{4 d^3 (c+d x)^2}+\right.$$

$$\frac{\left(\frac{c (3 c+4 d x)}{(c+d x)^2}+2 \text{Log}[c+d x]\right) \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)^2}{2 d^3}-\frac{1}{d^3 (-b c+a d) (c+d x)}$$

$$2 c \left(-d (a+b x) \text{Log}\left[\frac{a}{b}+x\right]^2+2 b (c+d x) \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 b (c+d x) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)-$$

$$\left(c^2 \left(d (a+b x) (a d-b (2 c+d x)) \text{Log}\left[\frac{a}{b}+x\right]^2-2 b^2 (c+d x)^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\right.\right.$$

$$\left.\left.2 b (c+d x) \text{Log}\left[\frac{a}{b}+x\right] \left(d (a+b x)+b (c+d x) \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]\right)+2 b^2 (c+d x)^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)\right)\Big/$$

$$\left(2 d^3 (b c-a d)^2 (c+d x)^2\right)+2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)$$

$$\left(-\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2 d^3}-\frac{2 c \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)}{d^3 (c+d x)}+\frac{c^2 \left(1+2 \text{Log}\left[\frac{c}{d}+x\right]\right)}{4 d^3 (c+d x)^2}-\frac{2 c \left(-\frac{\text{Log}\left[\frac{a}{b}+x\right]}{d (c+d x)}-\frac{b \text{Log}[a+b x]}{d (-b c+a d)}+\frac{b \text{Log}[c+d x]}{d (-b c+a d)}\right)}{d^2}+\right.$$

$$\left.\frac{c^2 \left(-\text{Log}\left[\frac{a}{b}+x\right]+\frac{b (c+d x) (b c-a d+b (c+d x) \text{Log}[a+b x]-b (c+d x) \text{Log}[c+d x])}{(b c-a d)^2}\right)}{2 d^3 (c+d x)^2}+\frac{\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]}{d^3}\right)+$$

$$\frac{\text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]-2 \text{PolyLog}\left[3,\frac{d (a+b x)}{-b c+a d}\right]}{d^3}-2 \left(-\frac{1}{d^3 (-b c+a d) (c+d x)}\right.$$

$$c \left(2 (b c-a d) \text{Log}\left[\frac{a}{b}+x\right] \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)+b (c+d x) \left(\text{Log}\left[\frac{c}{d}+x\right]^2-2 \text{Log}[a+b x]-2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 \text{Log}[c+d x]\right)-\right.$$

$$\left.\left.2 b (c+d x) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)-\left(c^2 \left(-b (b c-a d) (c+d x)+(b c-a d)^2 \text{Log}\left[\frac{a}{b}+x\right] \left(1+2 \text{Log}\left[\frac{c}{d}+x\right]\right)-\right.\right.$$

$$b^2 (c+d x)^2 \text{Log}[a+b x]+b^2 (c+d x)^2 \text{Log}[c+d x]+b (c+d x) \left(b (c+d x) \text{Log}\left[\frac{c}{d}+x\right]^2-2 (b c-a d) \left(1+\text{Log}\left[\frac{c}{d}+x\right]\right)-\right.$$

$$\left.\left.\left.\left.2 b (c+d x) \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]\right)\right)\right)\right)\Big/ \left(4 d^3 (b c-a d)^2 (c+d x)^2\right)+\frac{1}{2 d^3}$$

$$\left.\left(\text{Log}\left[\frac{c}{d}+x\right]^2 \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]\right)-2 \text{Log}\left[\frac{c}{d}+x\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+2 \text{PolyLog}\left[3,\frac{b (c+d x)}{b c-a d}\right]\right)\right)$$

Problem 204: Result more than twice size of optimal antiderivative.

$$\int \frac{(a g+b g x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(c i+d i x)^3} \, dx$$

Optimal (type 3, 151 leaves, 3 steps):

$$\frac{B^2 g n^2 (a+b x)^2}{4 (b c-a d) i^3 (c+d x)^2}-\frac{B g n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d) i^3 (c+d x)^2}+\frac{g (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d) i^3 (c+d x)^2}$$

Result (type 3, 582 leaves):

$$\frac{1}{4 d^2 (b c - a d) i^3 (c + d x)^2} g \left(2 B^2 d^2 n^2 (a + b x)^2 \text{Log}\left[\frac{a + b x}{c + d x}\right]^2 - 2 b^2 B n (c + d x)^2 \text{Log}[a + b x] \left(-2 A + B n - 2 B \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] + 2 B n \text{Log}\left[\frac{a + b x}{c + d x}\right]\right) + 2 B (b c - a d) n (a d + b (c + 2 d x)) \text{Log}\left[\frac{a + b x}{c + d x}\right] \left(-2 A + B n - 2 B \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] + 2 B n \text{Log}\left[\frac{a + b x}{c + d x}\right]\right) + (b c - a d)^2 \left(2 A^2 - 2 A B n + B^2 n^2 + 2 B^2 \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]^2 + 2 B n (-2 A + B n) \text{Log}\left[\frac{a + b x}{c + d x}\right] + 2 B^2 n^2 \text{Log}\left[\frac{a + b x}{c + d x}\right]^2 - 2 B \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] \left(-2 A + B n + 2 B n \text{Log}\left[\frac{a + b x}{c + d x}\right]\right)\right) - 2 b (b c - a d) (c + d x) \left(2 A^2 - 2 A B n + B^2 n^2 + 2 B^2 \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right]^2 + 2 B n (-2 A + B n) \text{Log}\left[\frac{a + b x}{c + d x}\right] + 2 B^2 n^2 \text{Log}\left[\frac{a + b x}{c + d x}\right]^2 - 2 B \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] \left(-2 A + B n + 2 B n \text{Log}\left[\frac{a + b x}{c + d x}\right]\right)\right) + 2 b^2 B n (c + d x)^2 \left(-2 A + B n - 2 B \text{Log}\left[e \left(\frac{a + b x}{c + d x}\right)^n\right] + 2 B n \text{Log}\left[\frac{a + b x}{c + d x}\right]\right) \text{Log}[c + d x]\right)$$

Problem 206: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g + b g x) (c i + d i x)^3} \, dx$$

Optimal (type 3, 402 leaves, 15 steps):

$$\frac{B^2 d^2 n^2 (a + b x)^2}{4 (b c - a d)^3 g i^3 (c + d x)^2} + \frac{4 A b B d n (a + b x)}{(b c - a d)^3 g i^3 (c + d x)} - \frac{4 b B^2 d n^2 (a + b x)}{(b c - a d)^3 g i^3 (c + d x)} + \frac{4 b B^2 d n (a + b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c - a d)^3 g i^3 (c + d x)} - \frac{B d^2 n (a + b x)^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c - a d)^3 g i^3 (c + d x)^2} + \frac{d^2 (a + b x)^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c - a d)^3 g i^3 (c + d x)^2} - \frac{2 b d (a + b x) \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c - a d)^3 g i^3 (c + d x)} + \frac{b^2 \left(A + B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{3 B (b c - a d)^3 g i^3 n}$$

Result (type 3, 971 leaves):

$$
\begin{aligned}
&\frac{1}{12\,(b\,c-a\,d)^{3}\,g\,i^{3}}\\
&\Bigg(4\,b^{2}\,B^{2}\,n^{2}\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]^{3}-\frac{1}{(c+d\,x)^{2}}6\,B\,n\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]^{2}\Big(-2\,A\,b^{2}\,c^{2}+4\,a\,b\,B\,c\,d\,n-a^{2}\,B\,d^{2}\,n-4\,A\,b^{2}\,c\,d\,x+4\,b^{2}\,B\,c\,d\,n\,x+2\,a\,b\,B\,d^{2}\,n\,x-2\,A\,b^{2}\,d^{2}\,x^{2}+\\
&\quad 3\,b^{2}\,B\,d^{2}\,n\,x^{2}-2\,b^{2}\,B\,(c+d\,x)^{2}\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^{n}\Big]+2\,b^{2}\,B\,n\,(c+d\,x)^{2}\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\Big)-\frac{1}{(c+d\,x)^{2}}6\,B\,(b\,c-a\,d)\,n\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\\
&\quad\Big(-6\,A\,b\,c+2\,a\,A\,d+7\,b\,B\,c\,n-a\,B\,d\,n-4\,A\,b\,d\,x+6\,b\,B\,d\,n\,x+2\,B\,(-3\,b\,c+a\,d-2\,b\,d\,x)\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^{n}\Big]+2\,B\,n\,(3\,b\,c-a\,d+2\,b\,d\,x)\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\Big)+\\
&\quad\frac{1}{(c+d\,x)^{2}}3\,(b\,c-a\,d)^{2}\,\Big(2\,A^{2}-2\,A\,B\,n+B^{2}\,n^{2}+2\,B^{2}\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^{n}\Big]^{2}+2\,B\,n\,(-2\,A+B\,n)\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]+\\
&\quad 2\,B^{2}\,n^{2}\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]^{2}-2\,B\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^{n}\Big]\Big(-2\,A+B\,n+2\,B\,n\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\Big)\Big)+\frac{1}{c+d\,x}\\
&\quad 6\,b\,(b\,c-a\,d)\,\Big(2\,A^{2}-6\,A\,B\,n+7\,B^{2}\,n^{2}+2\,B^{2}\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^{n}\Big]^{2}+2\,B\,n\,(-2\,A+3\,B\,n)\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]+2\,B^{2}\,n^{2}\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]^{2}-\\
&\quad 2\,B\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^{n}\Big]\Big(-2\,A+3\,B\,n+2\,B\,n\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\Big)\Big)+6\,b^{2}\,\mathrm{Log}[a+b\,x]\,\Big(2\,A^{2}-6\,A\,B\,n+7\,B^{2}\,n^{2}+2\,B^{2}\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^{n}\Big]^{2}+\\
&\quad 2\,B\,n\,(-2\,A+3\,B\,n)\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]+2\,B^{2}\,n^{2}\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]^{2}-2\,B\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^{n}\Big]\Big(-2\,A+3\,B\,n+2\,B\,n\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\Big)\Big)-\\
&\quad 6\,b^{2}\,\Big(2\,A^{2}-6\,A\,B\,n+7\,B^{2}\,n^{2}+2\,B^{2}\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^{n}\Big]^{2}+2\,B\,n\,(-2\,A+3\,B\,n)\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]+2\,B^{2}\,n^{2}\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]^{2}-\\
&\quad 2\,B\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^{n}\Big]\Big(-2\,A+3\,B\,n+2\,B\,n\,\mathrm{Log}\Big[\frac{a+b\,x}{c+d\,x}\Big]\Big)\Big)\,\mathrm{Log}[c+d\,x]\Bigg)
\end{aligned}
$$

Problem 207: Result more than twice size of optimal antiderivative.

$$\int\frac{\Big(A+B\,\mathrm{Log}\Big[e\,\Big(\frac{a+b\,x}{c+d\,x}\Big)^{n}\Big]\Big)^{2}}{(a\,g+b\,g\,x)^{2}\,(c\,i+d\,i\,x)^{3}}\,dx$$

Optimal (type 3, 562 leaves, 12 steps):

$$-\frac{B^2 d^3 n^2 (a+b x)^2}{4 (b c-a d)^4 g^2 i^3 (c+d x)^2}-\frac{6 A b B d^2 n (a+b x)}{(b c-a d)^4 g^2 i^3 (c+d x)}+\frac{6 b B^2 d^2 n^2 (a+b x)}{(b c-a d)^4 g^2 i^3 (c+d x)}-\frac{2 b^3 B^2 n^2 (c+d x)}{(b c-a d)^4 g^2 i^3 (a+b x)}-$$

$$\frac{6 b B^2 d^2 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d)^4 g^2 i^3 (c+d x)}+\frac{B d^3 n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^4 g^2 i^3 (c+d x)^2}-\frac{2 b^3 B n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^4 g^2 i^3 (a+b x)}-$$

$$\frac{d^3 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^4 g^2 i^3 (c+d x)^2}+\frac{3 b d^2 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^4 g^2 i^3 (c+d x)}-\frac{b^3 (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^4 g^2 i^3 (a+b x)}-\frac{b^2 d \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{B (b c-a d)^4 g^2 i^3 n}$$

Result (type 3, 1334 leaves) :

$$-\frac{1}{4\,(b c-a d)^4 g^2 i^3 (a+b x)(c+d x)^2}$$

$$\Bigg(4 b^2 B^2 d n^2 (a+b x)(c+d x)^2 \,\text{Log}\Big[\frac{a+b x}{c+d x}\Big]^3+2 B n\, \text{Log}\Big[\frac{a+b x}{c+d x}\Big]^2 \Big(6 a A b^2 c^2 d+2 b^3 B c^3 n-6 a^2 b B c d^2 n+a^3 B d^3 n+$$

$$6 A b^3 c^2 d x+12 a A b^2 c d^2 x+6 b^3 B c^2 d n x-12 a b^2 B c d^2 n x-3 a^2 b B d^3 n x+12 A b^3 c d^2 x^2+6 a A b^2 d^3 x^2-9 a b^2 B d^3 n x^2+$$

$$6 A b^3 d^3 x^3-3 b^3 B d^3 n x^3+6 b^2 B d (a+b x)(c+d x)^2 \,\text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]-6 b^2 B d n (a+b x)(c+d x)^2 \,\text{Log}\Big[\frac{a+b x}{c+d x}\Big]\Big)+$$

$$4 b^2 (b c-a d)(c+d x)^2 \Big(A^2+2 A B n+2 B^2 n^2+B^2 \,\text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]^2-2 B n (A+B n)\,\text{Log}\Big[\frac{a+b x}{c+d x}\Big]+$$

$$B^2 n^2 \,\text{Log}\Big[\frac{a+b x}{c+d x}\Big]^2+2 B\, \text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]\Big(A+B n-B n\, \text{Log}\Big[\frac{a+b x}{c+d x}\Big]\Big)\Big)+$$

$$2 B (b c-a d) n\, \text{Log}\Big[\frac{a+b x}{c+d x}\Big]\Big(2 b d (a+b x)(c+d x)\Big(4 A-5 B n+4 B\, \text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]-4 B n\, \text{Log}\Big[\frac{a+b x}{c+d x}\Big]\Big)+$$

$$d (b c-a d)(a+b x)\Big(2 A-B n+2 B\, \text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]-2 B n\, \text{Log}\Big[\frac{a+b x}{c+d x}\Big]\Big)+4 b^2 (c+d x)^2 \Big(A+B n+B\, \text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]-B n\, \text{Log}\Big[\frac{a+b x}{c+d x}\Big]\Big)\Big)+$$

$$d (b c-a d)^2 (a+b x)\Big(2 A^2-2 A B n+B^2 n^2+2 B^2 \,\text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]^2+2 B n (-2 A+B n)\,\text{Log}\Big[\frac{a+b x}{c+d x}\Big]+$$

$$2 B^2 n^2 \,\text{Log}\Big[\frac{a+b x}{c+d x}\Big]^2-2 B\, \text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]\Big(-2 A+B n+2 B n\, \text{Log}\Big[\frac{a+b x}{c+d x}\Big]\Big)\Big)+$$

$$6 b^2 d (a+b x)(c+d x)^2 \,\text{Log}[a+b x]\Big(2 A^2-2 A B n+5 B^2 n^2+2 B^2 \,\text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]^2+2 B n (-2 A+B n)\,\text{Log}\Big[\frac{a+b x}{c+d x}\Big]+$$

$$2 B^2 n^2 \,\text{Log}\Big[\frac{a+b x}{c+d x}\Big]^2-2 B\, \text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]\Big(-2 A+B n+2 B n\, \text{Log}\Big[\frac{a+b x}{c+d x}\Big]\Big)\Big)+$$

$$2 b d (b c-a d)(a+b x)(c+d x)\Big(4 A^2-10 A B n+11 B^2 n^2+4 B^2 \,\text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]^2+2 B n (-4 A+5 B n)\,\text{Log}\Big[\frac{a+b x}{c+d x}\Big]+$$

$$4 B^2 n^2 \,\text{Log}\Big[\frac{a+b x}{c+d x}\Big]^2-2 B\, \text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]\Big(-4 A+5 B n+4 B n\, \text{Log}\Big[\frac{a+b x}{c+d x}\Big]\Big)\Big)-$$

$$6 b^2 d (a+b x)(c+d x)^2 \Big(2 A^2-2 A B n+5 B^2 n^2+2 B^2 \,\text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]^2+2 B n (-2 A+B n)\,\text{Log}\Big[\frac{a+b x}{c+d x}\Big]+$$

$$2 B^2 n^2 \,\text{Log}\Big[\frac{a+b x}{c+d x}\Big]^2-2 B\, \text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]\Big(-2 A+B n+2 B n\, \text{Log}\Big[\frac{a+b x}{c+d x}\Big]\Big)\Big)\,\text{Log}[c+d x]\Bigg)$$

Problem 208: Result more than twice size of optimal antiderivative.

$$\int \frac{\Big(A+B\, \text{Log}\Big[e \Big(\frac{a+b x}{c+d x}\Big)^n\Big]\Big)^2}{(a g+b g x)^3 (c i+d i x)^3}\, dx$$

Optimal (type 3, 732 leaves, 14 steps):

$$\frac{B^2 d^4 n^2 (a+b x)^2}{4 (b c-a d)^5 g^3 i^3 (c+d x)^2}+\frac{8 A b B d^3 n (a+b x)}{(b c-a d)^5 g^3 i^3 (c+d x)}-\frac{8 b B^2 d^3 n^2 (a+b x)}{(b c-a d)^5 g^3 i^3 (c+d x)}+\frac{8 b^3 B^2 d n^2 (c+d x)}{(b c-a d)^5 g^3 i^3 (a+b x)}-\frac{b^4 B^2 n^2 (c+d x)^2}{4 (b c-a d)^5 g^3 i^3 (a+b x)^2}+$$

$$\frac{8 b B^2 d^3 n (a+b x) \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d)^5 g^3 i^3 (c+d x)}-\frac{B d^4 n (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^5 g^3 i^3 (c+d x)^2}+\frac{8 b^3 B d n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^5 g^3 i^3 (a+b x)}-$$

$$\frac{b^4 B n (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^5 g^3 i^3 (a+b x)^2}+\frac{d^4 (a+b x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^5 g^3 i^3 (c+d x)^2}-\frac{4 b d^3 (a+b x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^5 g^3 i^3 (c+d x)}+$$

$$\frac{4 b^3 d (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^5 g^3 i^3 (a+b x)}-\frac{b^4 (c+d x)^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^5 g^3 i^3 (a+b x)^2}+\frac{2 b^2 d^2 \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{B (b c-a d)^5 g^3 i^3 n}$$

Result (type 3, 1653 leaves) :

$$
\begin{aligned}
&\frac{1}{4\,(b\,c-a\,d)^5\,g^3\,i^3\,(a+b\,x)^2\,(c+d\,x)^2}\\
&\Bigg(8\,b^2\,B^2\,d^2\,n^2\,(a+b\,x)^2\,(c+d\,x)^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^3+2\,B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2\,\Big(12\,a^2\,A\,b^2\,c^2\,d^2-b^4\,B\,c^4\,n+8\,a\,b^3\,B\,c^3\,d\,n-8\,a^3\,b\,B\,c\,d^3\,n+a^4\,B\,d^4\,n+\\
&\quad 24\,a\,A\,b^3\,c^2\,d^2\,x+24\,a^2\,A\,b^2\,c\,d^3\,x+4\,b^4\,B\,c^3\,d\,n\,x+24\,a\,b^3\,B\,c^2\,d^2\,n\,x-24\,a^2\,b^2\,B\,c\,d^3\,n\,x-4\,a^3\,b\,B\,d^4\,n\,x+12\,A\,b^4\,c^2\,d^2\,x^2+\\
&\quad 48\,a\,A\,b^3\,c\,d^3\,x^2+12\,a^2\,A\,b^2\,d^4\,x^2+18\,b^4\,B\,c^2\,d^2\,n\,x^2-18\,a^2\,b^2\,B\,d^4\,n\,x^2+24\,A\,b^4\,c\,d^3\,x^3+24\,a\,A\,b^3\,d^4\,x^3+12\,b^4\,B\,c\,d^3\,n\,x^3-\\
&\quad 12\,a\,b^3\,B\,d^4\,n\,x^3+12\,A\,b^4\,d^4\,x^4+12\,b^2\,B\,d^2\,(a+b\,x)^2\,(c+d\,x)^2\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-12\,b^2\,B\,d^2\,n\,(a+b\,x)^2\,(c+d\,x)^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\Big)+\\
&12\,b^2\,d^2\,(a+b\,x)^2\,(c+d\,x)^2\,\mathrm{Log}[a+b\,x]\,\left(2\,A^2+5\,B^2\,n^2+4\,A\,B\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+2\,B^2\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2\right)+\\
&2\,b^2\,d\,(b\,c-a\,d)\,(a+b\,x)\,(c+d\,x)^2\,\Big(6\,A^2+14\,A\,B\,n+15\,B^2\,n^2+6\,B^2\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-\\
&\quad 2\,B\,n\,(6\,A+7\,B\,n)\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+6\,B^2\,n^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+2\,B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(6\,A+7\,B\,n-6\,B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Big)-\\
&b^2\,(b\,c-a\,d)^2\,(c+d\,x)^2\,\Big(2\,A^2+2\,A\,B\,n+B^2\,n^2+2\,B^2\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2-2\,B\,n\,(2\,A+B\,n)\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+\\
&\quad 2\,B^2\,n^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2+2\,B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(2\,A+B\,n-2\,B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Big)+\\
&2\,B\,(b\,c-a\,d)\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\,\Big(2\,b\,d^2\,(a+b\,x)^2\,(c+d\,x)\left(6\,A-7\,B\,n+6\,B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-6\,B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+\\
&\quad 2\,b^2\,d\,(a+b\,x)\,(c+d\,x)^2\left(6\,A+7\,B\,n+6\,B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-6\,B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+d^2\,(b\,c-a\,d)\,(a+b\,x)^2\\
&\quad\quad \left(2\,A-B\,n+2\,B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-2\,B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)-b^2\,(b\,c-a\,d)\,(c+d\,x)^2\left(2\,A+B\,n+2\,B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-2\,B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Big)+\\
&d^2\,(b\,c-a\,d)^2\,(a+b\,x)^2\,\Big(2\,A^2-2\,A\,B\,n+B^2\,n^2+2\,B^2\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+2\,B\,n\,(-2\,A+B\,n)\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+\\
&\quad 2\,B^2\,n^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2-2\,B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(-2\,A+B\,n+2\,B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Big)+\\
&2\,b\,d^2\,(b\,c-a\,d)\,(a+b\,x)^2\,(c+d\,x)\,\Big(6\,A^2-14\,A\,B\,n+15\,B^2\,n^2+6\,B^2\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2+2\,B\,n\,(-6\,A+7\,B\,n)\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]+\\
&\quad 6\,B^2\,n^2\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]^2-2\,B\,\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\left(-6\,A+7\,B\,n+6\,B\,n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)\Big)-\\
&12\,b^2\,d^2\,(a+b\,x)^2\,(c+d\,x)^2\left(2\,A^2+5\,B^2\,n^2+4\,A\,B\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)+2\,B^2\left(\mathrm{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]-n\,\mathrm{Log}\left[\frac{a+b\,x}{c+d\,x}\right]\right)^2\right)\mathrm{Log}[c+d\,x]\Bigg)
\end{aligned}
$$

Problem 209: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(a g+b g x)^4 (c i+d i x)^3} \, dx$$

Optimal (type 3, 908 leaves, 16 steps):

$$-\frac{B^2 d^5 n^2 (a+b x)^2}{4 (b c-a d)^6 g^4 i^3 (c+d x)^2}-\frac{10 A b B d^4 n (a+b x)}{(b c-a d)^6 g^4 i^3 (c+d x)}+\frac{10 b B^2 d^4 n^2 (a+b x)}{(b c-a d)^6 g^4 i^3 (c+d x)}-\frac{20 b^3 B^2 d^2 n^2 (c+d x)}{(b c-a d)^6 g^4 i^3 (a+b x)}+\frac{5 b^4 B^2 d n^2 (c+d x)^2}{4 (b c-a d)^6 g^4 i^3 (a+b x)^2}-\frac{2 b^5 B^2 n^2 (c+d x)^3}{27 (b c-a d)^6 g^4 i^3 (a+b x)^3}-\frac{10 b B^2 d^4 n (a+b x) \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]}{(b c-a d)^6 g^4 i^3 (c+d x)}+\frac{B d^5 n (a+b x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^6 g^4 i^3 (c+d x)^2}-\frac{20 b^3 B d^2 n (c+d x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{(b c-a d)^6 g^4 i^3 (a+b x)}+\frac{5 b^4 B d n (c+d x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{2 (b c-a d)^6 g^4 i^3 (a+b x)^2}-\frac{2 b^5 B n (c+d x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{9 (b c-a d)^6 g^4 i^3 (a+b x)^3}-\frac{d^5 (a+b x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^6 g^4 i^3 (c+d x)^2}+\frac{5 b d^4 (a+b x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^6 g^4 i^3 (c+d x)}-\frac{10 b^3 d^2 (c+d x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{(b c-a d)^6 g^4 i^3 (a+b x)}+\frac{5 b^4 d (c+d x)^2 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{2 (b c-a d)^6 g^4 i^3 (a+b x)^2}-\frac{b^5 (c+d x)^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}{3 (b c-a d)^6 g^4 i^3 (a+b x)^3}-\frac{10 b^2 d^3 \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3}{3 B (b c-a d)^6 g^4 i^3 n}$$

Result (type 3, 2138 leaves):

$$-\frac{1}{108 (b c-a d)^6 g^4 i^3 (a+b x)^3 (c+d x)^2}\left(360 b^2 B^2 d^3 n^2 (a+b x)^3 (c+d x)^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^3+\right.$$
$$18 B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2 \left(60 a^3 A b^2 c^2 d^3+2 b^5 B c^5 n-15 a b^4 B c^4 d n+60 a^2 b^3 B c^3 d^2 n-30 a^4 b B c d^4 n+3 a^5 B d^5 n+180 a^2 A b^3 c^2 d^3 x+\right.$$
$$120 a^3 A b^2 c d^4 x-5 b^5 B c^4 d n x+60 a b^4 B c^3 d^2 n x+180 a^2 b^3 B c^2 d^3 n x-120 a^3 b^2 B c d^4 n x-15 a^4 b B d^5 n x+180 a A b^4 c^2 d^3 x^2+$$
$$360 a^2 A b^3 c d^4 x^2+60 a^3 A b^2 d^5 x^2+20 b^5 B c^3 d^2 n x^2+270 a b^4 B c^2 d^3 n x^2-90 a^3 b^2 B d^5 n x^2+60 A b^5 c^2 d^3 x^3+360 a A b^4 c d^4 x^3+$$
$$180 a^2 A b^3 d^5 x^3+110 b^5 B c^2 d^3 n x^3+180 a b^4 B c d^4 n x^3-90 a^2 b^3 B d^5 n x^3+120 A b^5 c d^4 x^4+180 a A b^4 d^5 x^4+100 b^5 B c d^4 n x^4+$$
$$\left.60 A b^5 d^5 x^5+20 b^5 B d^5 n x^5+60 b^2 B d^3 (a+b x)^3 (c+d x)^2 \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-60 b^2 B d^3 n (a+b x)^3 (c+d x)^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)+$$
$$6 b^2 d^2 (b c-a d) (a+b x)^2 (c+d x)^2 \left(108 A^2+282 A B n+319 B^2 n^2+108 B^2 \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-6 B n (36 A+47 B n) \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+\right.$$
$$\left.108 B^2 n^2 \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]^2+6 B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(36 A+47 B n-36 B n \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)-$$
$$3 b^2 d (b c-a d)^2 (a+b x) (c+d x)^2 \left(54 A^2+66 A B n+37 B^2 n^2+54 B^2 \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-6 B n (18 A+11 B n) \operatorname{Log}\left[\frac{a+b x}{c+d x}\right]+\right.$$

$$54 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(18 A+11 B n-18 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\bigg)+$$

$$4 b^2 (b c-a d)^3 (c+d x)^2 \left(9 A^2+6 A B n+2 B^2 n^2+9 B^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-6 B n (3 A+B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+\right.$$

$$\left.9 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+6 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(3 A+B n-3 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)+$$

$$60 b^2 d^3 (a+b x)^3 (c+d x)^2 \text{Log}[a+b x] \left(18 A^2+12 A B n+49 B^2 n^2+18 B^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-12 B n (3 A+B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+\right.$$

$$\left.18 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+12 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(3 A+B n-3 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)+$$

$$27 d^3 (b c-a d)^2 (a+b x)^3 \left(2 A^2-2 A B n+B^2 n^2+2 B^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+2 B n (-2 A+B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+\right.$$

$$\left.2 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2-2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(-2 A+B n+2 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)+$$

$$54 b d^3 (b c-a d) (a+b x)^3 (c+d x) \left(8 A^2-18 A B n+19 B^2 n^2+8 B^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2+2 B n (-8 A+9 B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+\right.$$

$$\left.8 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2-2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(-8 A+9 B n+8 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)+$$

$$6 B (b c-a d) n \text{Log}\left[\frac{a+b x}{c+d x}\right] \left(18 b d^3 (a+b x)^3 (c+d x) \left(8 A-9 B n+8 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-8 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+4 b^2 (b c-a d)^2 (c+d x)^2\right.$$

$$\left(3 A+B n+3 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-3 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)+9 d^3 (b c-a d) (a+b x)^3 \left(2 A-B n+2 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-2 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)-$$

$$3 b^2 d (b c-a d) (a+b x) (c+d x)^2 \left(18 A+11 B n+18 B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)+$$

$$\left.6 b^2 d^2 (a+b x)^2 (c+d x)^2 \left(36 A+47 B n+36 B \left(\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right)\right)-$$

$$60 b^2 d^3 (a+b x)^3 (c+d x)^2 \left(18 A^2+12 A B n+49 B^2 n^2+18 B^2 \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2-12 B n (3 A+B n) \text{Log}\left[\frac{a+b x}{c+d x}\right]+\right.$$

$$\left.18 B^2 n^2 \text{Log}\left[\frac{a+b x}{c+d x}\right]^2+12 B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \left(3 A+B n-3 B n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\right) \text{Log}[c+d x]\bigg)$$

Problem 210: Unable to integrate problem.

$$\int (a g+b g x)^m (c i+d i x)^{-2-m} \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^p dx$$

Optimal (type 4, 189 leaves, 3 steps) :

$$\left(e^{-\frac{A(1+m)}{B n}} (a+b x) (g (a+b x))^m \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{-\frac{1+m}{n}} (i (c+d x))^{-m} \text{Gamma}\left[1+p,-\frac{(1+m) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^p \left(-\frac{(1+m) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right)^{-p}\right) \Big/ \left((b c-a d) i^2 (1+m) (c+d x)\right)$$

Result (type 8, 51 leaves) :

$$\int (a g+b g x)^m (c i+d i x)^{-2-m} \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^p dx$$

Problem 211: Unable to integrate problem.

$$\int (a g+b g x)^{-2-m} (c i+d i x)^m \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^p dx$$

Optimal (type 4, 190 leaves, 3 steps) :

$$-\left(\left(e^{\frac{A(1+m)}{B n}} (a+b x) (g (a+b x))^{-2-m} \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{\frac{1+m}{n}} (i (c+d x))^{2+m} \text{Gamma}\left[1+p,\frac{(1+m) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right] \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^p \left(\frac{(1+m) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right)^{-p}\right) \Big/ \left((b c-a d) i^2 (1+m) (c+d x)\right)\right)$$

Result (type 8, 51 leaves) :

$$\int (a g+b g x)^{-2-m} (c i+d i x)^m \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^p dx$$

Problem 215: Unable to integrate problem.

$$\int \frac{(a g+b g x)^m (c i+d i x)^{-2-m}}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]} dx$$

Optimal (type 4, 125 leaves, 3 steps) :

$$\frac{e^{-\frac{A(1+m)}{B n}} (a+b x) (g (a+b x))^m \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{-\frac{1+m}{n}} (i (c+d x))^{-m} \text{ExpIntegralEi}\left[\frac{(1+m) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]}{B (b c-a d) i^2 n (c+d x)}$$

Result (type 8, 51 leaves) :

$$\int \frac{(a g+b g x)^m (c i+d i x)^{-2-m}}{A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]} \, dx$$

Problem 216: Unable to integrate problem.

$$\int \frac{(a g+b g x)^m (c i+d i x)^{-2-m}}{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} \, dx$$

Optimal (type 4, 206 leaves, 4 steps):

$$\left(e^{-\frac{A (1+m)}{B n}} (1+m) (a+b x) (g (a+b x))^m \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{-\frac{1+m}{n}} (i (c+d x))^{-m} \text{ExpIntegralEi}\left[\frac{(1+m) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]\right) \Big/ \left(B^2 (b c-a d) i^2 n^2 (c+d x)\right) - \frac{(a+b x) (g (a+b x))^m (i (c+d x))^{-m}}{B (b c-a d) i^2 n (c+d x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}$$

Result (type 8, 51 leaves):

$$\int \frac{(a g+b g x)^m (c i+d i x)^{-2-m}}{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} \, dx$$

Problem 217: Unable to integrate problem.

$$\int \frac{(a g+b g x)^m (c i+d i x)^{-2-m}}{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3} \, dx$$

Optimal (type 4, 295 leaves, 5 steps):

$$\left(e^{-\frac{A (1+m)}{B n}} (1+m)^2 (a+b x) (g (a+b x))^m \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{-\frac{1+m}{n}} (i (c+d x))^{-m} \text{ExpIntegralEi}\left[\frac{(1+m) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]\right) \Big/ \left(2 B^3 (b c-a d) i^2 n^3 (c+d x)\right) - \frac{(a+b x) (g (a+b x))^m (i (c+d x))^{-m}}{2 B (b c-a d) i^2 n (c+d x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} - \frac{(1+m) (a+b x) (g (a+b x))^m (i (c+d x))^{-m}}{2 B^2 (b c-a d) i^2 n^2 (c+d x) \left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}$$

Result (type 8, 51 leaves):

$$\int \frac{(a g+b g x)^m (c i+d i x)^{-2-m}}{\left(A+B \operatorname{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3} \, dx$$

Problem 221: Unable to integrate problem.

$$\int \frac{(a g+b g x)^{-2-m} (c i+d i x)^m}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]} \, dx$$

Optimal (type 4, 128 leaves, 3 steps):

$$\frac{e^{\frac{A (1+m)}{B n}} (a+b x) (g (a+b x))^{-2-m} \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{\frac{1+m}{n}} (i (c+d x))^{2+m} \text{ExpIntegralEi}\left[-\frac{(1+m) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]}{B (b c-a d) i^2 n (c+d x)}$$

Result (type 8, 51 leaves):

$$\int \frac{(a g+b g x)^{-2-m} (c i+d i x)^m}{A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]} \, dx$$

Problem 222: Unable to integrate problem.

$$\int \frac{(a g+b g x)^{-2-m} (c i+d i x)^m}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} \, dx$$

Optimal (type 4, 214 leaves, 4 steps):

$$-\left(\left(e^{\frac{A (1+m)}{B n}} (1+m) (a+b x) (g (a+b x))^{-2-m} \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{\frac{1+m}{n}} (i (c+d x))^{2+m} \text{ExpIntegralEi}\left[-\frac{(1+m) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]\right) \Big/ \left(B^2 (b c-a d) i^2 n^2 (c+d x)\right)\right)-\frac{(a+b x) (g (a+b x))^{-2-m} (i (c+d x))^{2+m}}{B (b c-a d) i^2 n (c+d x) \left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)}$$

Result (type 8, 51 leaves):

$$\int \frac{(a g+b g x)^{-2-m} (c i+d i x)^m}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2} \, dx$$

Problem 223: Unable to integrate problem.

$$\int \frac{(a g+b g x)^{-2-m} (c i+d i x)^m}{\left(A+B \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3} \, dx$$

Optimal (type 4, 306 leaves, 5 steps):

$$\left(e^{\frac{A(1+m)}{B n}}(1+m)^2 (a+b x) (g (a+b x))^{-2-m} \left(e \left(\frac{a+b x}{c+d x}\right)^n\right)^{\frac{1+m}{n}} (i (c+d x))^{2+m} \text{ExpIntegralEi}\left[-\frac{(1+m)\left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}{B n}\right]\right) \Big/ \left(2 B^3 (b c-a d) i^2 n^3 (c+d x)\right)-\frac{(a+b x)(g (a+b x))^{-2-m}(i (c+d x))^{2+m}}{2 B (b c-a d) i^2 n (c+d x)\left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^2}+\frac{(1+m)(a+b x)(g (a+b x))^{-2-m}(i (c+d x))^{2+m}}{2 B^2 (b c-a d) i^2 n^2 (c+d x)\left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)}$$

Result (type 8, 51 leaves):

$$\int \frac{(a g+b g x)^{-2-m} (c i+d i x)^m}{\left(A+B \text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\right)^3} \, dx$$

Problem 226: Unable to integrate problem.

$$\int (a g+b g x)^m (c i+d i x)^{-2-m} \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^p \, dx$$

Optimal (type 4, 193 leaves, 4 steps):

$$\left(e^{-\frac{A(1+m)}{B n}} (a+b x) (g (a+b x))^m (i (c+d x))^{-m} \left(e (a+b x)^n (c+d x)^{-n}\right)^{-\frac{1+m}{n}} \text{Gamma}\left[1+p,-\frac{(1+m)\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{B n}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^p \left(-\frac{(1+m)\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{B n}\right)^{-p}\right) \Big/ \left((b c-a d) i^2 (1+m) (c+d x)\right)$$

Result (type 8, 52 leaves):

$$\int (a g+b g x)^m (c i+d i x)^{-2-m} \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^p \, dx$$

Problem 227: Unable to integrate problem.

$$\int (a g+b g x)^{-2-m} (c i+d i x)^m \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^p \, dx$$

Optimal (type 4, 194 leaves, 4 steps):

$$-\left(\left(e^{\frac{A(1+m)}{B n}} (a+b x) (g (a+b x))^{-2-m} (i (c+d x))^{2+m} \left(e (a+b x)^n (c+d x)^{-n}\right)^{\frac{1+m}{n}} \text{Gamma}\left[1+p,\frac{(1+m)\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{B n}\right] \left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)^p \left(\frac{(1+m)\left(A+B \text{Log}\left[e (a+b x)^n (c+d x)^{-n}\right]\right)}{B n}\right)^{-p}\right) \Big/ \left((b c-a d) i^2 (1+m) (c+d x)\right)\right)$$

Result (type 8, 52 leaves):

$$\int (a\,g + b\,g\,x)^{-2-m}\,(c\,i + d\,i\,x)^m\,\left(A + B\,\text{Log}\left[e\,(a + b\,x)^n\,(c + d\,x)^{-n}\right]\right)^p\,dx$$

Problem 228: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A + B\,\text{Log}\left[e\,(a + b\,x)^n\,(c + d\,x)^{-n}\right]\right)^3}{(a + b\,x)\,(c + d\,x)}\,dx$$

Optimal (type 3, 45 leaves, 4 steps):

$$\frac{\left(A + B\,\text{Log}\left[e\,(a + b\,x)^n\,(c + d\,x)^{-n}\right]\right)^4}{4\,B\,(b\,c - a\,d)\,n}$$

Result (type 3, 118 leaves):

$$\frac{1}{4\,b\,c\,n - 4\,a\,d\,n}\left(4\,A^3\,\text{Log}\left[e\,(a + b\,x)^n\,(c + d\,x)^{-n}\right] + 6\,A^2\,B\,\text{Log}\left[e\,(a + b\,x)^n\,(c + d\,x)^{-n}\right]^2 + 4\,A\,B^2\,\text{Log}\left[e\,(a + b\,x)^n\,(c + d\,x)^{-n}\right]^3 + B^3\,\text{Log}\left[e\,(a + b\,x)^n\,(c + d\,x)^{-n}\right]^4\right)$$

Problem 240: Unable to integrate problem.

$$\int \frac{(a + b\,x)^m\,(c + d\,x)^{-2-m}}{\text{Log}\left[e\,(a + b\,x)^n\,(c + d\,x)^{-n}\right]}\,dx$$

Optimal (type 4, 88 leaves, 4 steps):

$$\frac{(a + b\,x)^{1+m}\,(c + d\,x)^{-1-m}\,\left(e\,(a + b\,x)^n\,(c + d\,x)^{-n}\right)^{-\frac{1+m}{n}}\,\text{ExpIntegralEi}\left[\frac{(1+m)\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{n}\right]}{(b\,c - a\,d)\,n}$$

Result (type 8, 42 leaves):

$$\int \frac{(a + b\,x)^m\,(c + d\,x)^{-2-m}}{\text{Log}\left[e\,(a + b\,x)^n\,(c + d\,x)^{-n}\right]}\,dx$$

Problem 249: Unable to integrate problem.

$$\int \frac{\left(A + B\,\text{Log}\left[e\,(a + b\,x)^n\,(c + d\,x)^{-n}\right]\right)^4}{(f + g\,x)\,(a\,h + b\,h\,x)}\,dx$$

Optimal (type 4, 361 leaves, 8 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^4\,\text{Log}\left[1-\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{4\,B\,n\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3\,\text{PolyLog}\left[2,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{12\,B^2\,n^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2\,\text{PolyLog}\left[3,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{24\,B^3\,n^3\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\text{PolyLog}\left[4,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{24\,B^4\,n^4\,\text{PolyLog}\left[5,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Result (type 8, 45 leaves) :

$$\int\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^4}{(f+g\,x)\,(a\,h+b\,h\,x)}\,dx$$

Problem 250: Unable to integrate problem.

$$\int\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3}{(f+g\,x)\,(a\,h+b\,h\,x)}\,dx$$

Optimal (type 4, 282 leaves, 7 steps) :

$$-\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3\,\text{Log}\left[1-\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{3\,B\,n\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2\,\text{PolyLog}\left[2,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{6\,B^2\,n^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\text{PolyLog}\left[3,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{6\,B^3\,n^3\,\text{PolyLog}\left[4,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Result (type 8, 45 leaves) :

$$\int\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3}{(f+g\,x)\,(a\,h+b\,h\,x)}\,dx$$

Problem 251: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{(f+g\,x)\,(a\,h+b\,h\,x)}\,dx$$

Optimal (type 4, 203 leaves, 6 steps) :

$$-\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2\,\text{Log}\left[1-\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+$$

$$\frac{2\,B\,n\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\text{PolyLog}\left[2,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{2\,B^2\,n^2\,\text{PolyLog}\left[3,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Result (type 4, 1415 leaves) :

$$\frac{1}{3\,(b\,f-a\,g)\,h}\Bigg(3\,\text{Log}[a+b\,x]\,\left(A+B\left(-n\,\text{Log}[a+b\,x]+n\,\text{Log}[c+d\,x]+\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\right)^2-$$

$$3\left(A+B\left(-n\,\text{Log}[a+b\,x]+n\,\text{Log}[c+d\,x]+\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\right)^2\text{Log}[f+g\,x]+$$

$$3\,B\,n\left(A+B\left(-n\,\text{Log}[a+b\,x]+n\,\text{Log}[c+d\,x]+\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\right)$$

$$\left(\text{Log}[a+b\,x]^2-2\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]+\text{PolyLog}\left[2,\frac{g\,(a+b\,x)}{-b\,f+a\,g}\right]\right)\right)-$$

$$6\,A\,B\,n\left(\text{Log}[c+d\,x]\left(\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]\right)+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-\text{PolyLog}\left[2,\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\right)+$$

$$6\,B^2\,n\left(n\,\text{Log}[a+b\,x]-n\,\text{Log}[c+d\,x]-\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)$$

$$\left(\text{Log}[c+d\,x]\left(\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]\right)+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-\text{PolyLog}\left[2,\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\right)+$$

$$B^2\,n^2\left(\text{Log}[a+b\,x]^2\left(\text{Log}[a+b\,x]-3\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]\right)-6\,\text{Log}[a+b\,x]\,\text{PolyLog}\left[2,\frac{g\,(a+b\,x)}{-b\,f+a\,g}\right]+6\,\text{PolyLog}\left[3,\frac{g\,(a+b\,x)}{-b\,f+a\,g}\right]\right)+$$

$$3\,B^2\,n^2\left(\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\text{Log}[c+d\,x]^2-\text{Log}[c+d\,x]^2\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+2\,\text{Log}[c+d\,x]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-\right.$$

$$\left.2\,\text{Log}[c+d\,x]\,\text{PolyLog}\left[2,\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]-2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\text{PolyLog}\left[3,\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\right)-$$

$$6\,B^2\,n^2\left(\frac{1}{2}\,\text{Log}[a+b\,x]^2\left(\text{Log}[c+d\,x]-\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)-\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-\right.$$

$$\frac{1}{2}\,\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\left(-2\,\text{Log}[a+b\,x]+\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\right)\left(\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]\right)+$$

$$\text{Log}\left[\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\left(\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]\right)-$$

$$\frac{1}{2}\,\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]^2\left(\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]+\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-\text{Log}\left[\frac{(-b\,c+a\,d)\,(f+g\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)-\text{Log}[a+b\,x]\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-$$

$$\left(\text{Log}[c+d\,x]-\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,\frac{g\,(a+b\,x)}{-b\,f+a\,g}\right]-\left(\text{Log}[a+b\,x]+\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]-$$

$$\text{Log}\left[\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\left(\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]-\text{PolyLog}\left[2,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)+\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$

$$\left.\text{PolyLog}\left[3,\frac{g\,(a+b\,x)}{-b\,f+a\,g}\right]+\text{PolyLog}\left[3,\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]+\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]-\text{PolyLog}\left[3,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]\right)\Bigg)$$

Problem 252: Result more than twice size of optimal antiderivative.

$$\int \frac{A + B \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]}{(f + g x) (a h + b h x)} \, dx$$

Optimal (type 4, 123 leaves, 5 steps):

$$-\frac{\left(A + B \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right]\right) \operatorname{Log}\left[1 - \frac{(b f - a g) (c + d x)}{(d f - c g) (a + b x)}\right]}{(b f - a g) h} + \frac{B n \operatorname{PolyLog}\left[2, \frac{(b f - a g) (c + d x)}{(d f - c g) (a + b x)}\right]}{(b f - a g) h}$$

Result (type 4, 304 leaves):

$$-\frac{1}{2 (b f - a g) h}\left(-2 A \operatorname{Log}[a + b x] + B n \operatorname{Log}[a + b x]^2 - 2 B n \operatorname{Log}[a + b x] \operatorname{Log}[c + d x] + 2 B n \operatorname{Log}\left[\frac{d (a + b x)}{-b c + a d}\right] \operatorname{Log}[c + d x] - 2 B \operatorname{Log}[a + b x] \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right] + 2 A \operatorname{Log}[f + g x] - 2 B n \operatorname{Log}[a + b x] \operatorname{Log}[f + g x] + 2 B n \operatorname{Log}[c + d x] \operatorname{Log}[f + g x] + 2 B \operatorname{Log}\left[e (a + b x)^n (c + d x)^{-n}\right] \operatorname{Log}[f + g x] + 2 B n \operatorname{Log}[a + b x] \operatorname{Log}\left[\frac{b (f + g x)}{b f - a g}\right] - 2 B n \operatorname{Log}[c + d x] \operatorname{Log}\left[\frac{d (f + g x)}{d f - c g}\right] + 2 B n \operatorname{PolyLog}\left[2, \frac{g (a + b x)}{-b f + a g}\right] + 2 B n \operatorname{PolyLog}\left[2, \frac{b (c + d x)}{b c - a d}\right] - 2 B n \operatorname{PolyLog}\left[2, \frac{g (c + d x)}{-d f + c g}\right]\right)$$

Problem 255: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Log}\left[\frac{c + d x}{a + b x}\right]}{(a + b x) ((a - c) h + (b - d) h x)} \, dx$$

Optimal (type 4, 33 leaves, 2 steps):

$$-\frac{\operatorname{PolyLog}\left[2, 1 - \frac{c + d x}{a + b x}\right]}{(b c - a d) h}$$

Result (type 4, 324 leaves):

$$\frac{1}{(2 b c-2 a d) h}\left(\text{Log}\left[\frac{a}{b}+x\right]^2-2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]+2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a+b x]-2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a-c+b x-d x]-2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[a-c+b x-d x]-2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (a-c+b x-d x)}{-b c+a d}\right]+2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (a-c+b x-d x)}{-b c+a d}\right]-2 \text{Log}[a+b x] \text{Log}\left[\frac{c+d x}{a+b x}\right]+2 \text{Log}[a-c+b x-d x] \text{Log}\left[\frac{c+d x}{a+b x}\right]-2 \text{PolyLog}\left[2, \frac{(b-d) (a+b x)}{b c-a d}\right]-2 \text{PolyLog}\left[2, \frac{b (c+d x)}{b c-a d}\right]+2 \text{PolyLog}\left[2, \frac{(b-d) (c+d x)}{b c-a d}\right]\right)$$

Problem 256: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{a-c g+(b-d g) x}{a+b x}\right]}{(a+b x) (c+d x)} \, dx$$

Optimal (type 4, 27 leaves, 2 steps):

$$\frac{\text{PolyLog}\left[2, \frac{g (c+d x)}{a+b x}\right]}{b c-a d}$$

Result (type 4, 375 leaves):

$$\frac{1}{2 b c-2 a d}\left(-\text{Log}\left[\frac{a}{b}+x\right]^2+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]-2 \text{Log}\left[\frac{a-c g}{b-d g}+x\right] \text{Log}[a+b x]+2 \text{Log}\left[\frac{a-c g}{b-d g}+x\right] \text{Log}\left[\frac{(b-d g) (a+b x)}{(b c-a d) g}\right]-2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+2 \text{Log}\left[\frac{a-c g}{b-d g}+x\right] \text{Log}[c+d x]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-2 \text{Log}\left[\frac{a-c g}{b-d g}+x\right] \text{Log}\left[\frac{(b-d g) (c+d x)}{b c-a d}\right]+2 \text{Log}[a+b x] \text{Log}\left[\frac{a-c g+b x-d g x}{a+b x}\right]-2 \text{Log}[c+d x] \text{Log}\left[\frac{a-c g+b x-d g x}{a+b x}\right]+2 \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]+2 \text{PolyLog}\left[2, -\frac{b (a-c g+b x-d g x)}{(b c-a d) g}\right]-2 \text{PolyLog}\left[2, -\frac{d (-a+c g-b x+d g x)}{-b c+a d}\right]\right)$$

Problem 257: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[1-\frac{g (c+d x)}{a+b x}\right]}{(a+b x) (c+d x)} \, dx$$

Optimal (type 4, 27 leaves, 3 steps):

$$\frac{\text{PolyLog}\left[2,\frac{g(c+d x)}{a+b x}\right]}{b c-a d}$$

Result (type 4, 375 leaves):

$$\frac{1}{2 b c-2 a d}\left(-\text{Log}\left[\frac{a}{b}+x\right]^2+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]-2 \text{Log}\left[\frac{a-c g}{b-d g}+x\right] \text{Log}[a+b x]+ 2 \text{Log}\left[\frac{a-c g}{b-d g}+x\right] \text{Log}\left[\frac{(b-d g) (a+b x)}{(b c-a d) g}\right]-2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+2 \text{Log}\left[\frac{a-c g}{b-d g}+x\right] \text{Log}[c+d x]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]- 2 \text{Log}\left[\frac{a-c g}{b-d g}+x\right] \text{Log}\left[\frac{(b-d g) (c+d x)}{b c-a d}\right]+2 \text{Log}[a+b x] \text{Log}\left[\frac{a-c g+b x-d g x}{a+b x}\right]-2 \text{Log}[c+d x] \text{Log}\left[\frac{a-c g+b x-d g x}{a+b x}\right]+ 2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+2 \text{PolyLog}\left[2,-\frac{b (a-c g+b x-d g x)}{(b c-a d) g}\right]-2 \text{PolyLog}\left[2,-\frac{d (-a+c g-b x+d g x)}{-b c+a d}\right]\right)$$

Problem 258: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{a-c g+b x-d g x}{a+b x}\right]}{(a+b x) (c+d x)} \, dx$$

Optimal (type 4, 27 leaves, 3 steps):

$$\frac{\text{PolyLog}\left[2,\frac{g(c+d x)}{a+b x}\right]}{b c-a d}$$

Result (type 4, 375 leaves):

$$\frac{1}{2 b c-2 a d}\left(-\text{Log}\left[\frac{a}{b}+x\right]^2+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[a+b x]-2 \text{Log}\left[\frac{a-c g}{b-d g}+x\right] \text{Log}[a+b x]+ 2 \text{Log}\left[\frac{a-c g}{b-d g}+x\right] \text{Log}\left[\frac{(b-d g) (a+b x)}{(b c-a d) g}\right]-2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}[c+d x]+2 \text{Log}\left[\frac{a-c g}{b-d g}+x\right] \text{Log}[c+d x]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]- 2 \text{Log}\left[\frac{a-c g}{b-d g}+x\right] \text{Log}\left[\frac{(b-d g) (c+d x)}{b c-a d}\right]+2 \text{Log}[a+b x] \text{Log}\left[\frac{a-c g+b x-d g x}{a+b x}\right]-2 \text{Log}[c+d x] \text{Log}\left[\frac{a-c g+b x-d g x}{a+b x}\right]+ 2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+2 \text{PolyLog}\left[2,-\frac{b (a-c g+b x-d g x)}{(b c-a d) g}\right]-2 \text{PolyLog}\left[2,-\frac{d (-a+c g-b x+d g x)}{-b c+a d}\right]\right)$$

Problem 259: Unable to integrate problem.

$$\int \frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3}{a\,f\,h+b\,g\,h\,x^2+h\,(b\,f\,x+a\,g\,x)}\,dx$$

Optimal (type 4, 282 leaves, 8 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3\,\text{Log}\left[1-\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{3\,B\,n\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2\,\text{PolyLog}\left[2,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{6\,B^2\,n^2\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\text{PolyLog}\left[3,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{6\,B^3\,n^3\,\text{PolyLog}\left[4,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Result (type 8, 53 leaves):

$$\int \frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^3}{a\,f\,h+b\,g\,h\,x^2+h\,(b\,f\,x+a\,g\,x)}\,dx$$

Problem 260: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2}{a\,f\,h+b\,g\,h\,x^2+h\,(b\,f\,x+a\,g\,x)}\,dx$$

Optimal (type 4, 203 leaves, 7 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)^2\,\text{Log}\left[1-\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{2\,B\,n\,\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\,\text{PolyLog}\left[2,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{2\,B^2\,n^2\,\text{PolyLog}\left[3,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Result (type 4, 1415 leaves):

$$\frac{1}{3\,(b f-a g)\,h}\Bigg(3\,\text{Log}[a+b x]\,\left(A+B\left(-n\,\text{Log}[a+b x]+n\,\text{Log}[c+d x]+\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)\right)^2-$$

$$3\left(A+B\left(-n\,\text{Log}[a+b x]+n\,\text{Log}[c+d x]+\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)\right)^2\text{Log}[f+g x]+$$

$$3\,B\,n\left(A+B\left(-n\,\text{Log}[a+b x]+n\,\text{Log}[c+d x]+\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)\right)$$

$$\left(\text{Log}[a+b x]^2-2\left(\text{Log}[a+b x]\,\text{Log}\left[\frac{b\,(f+g x)}{b f-a g}\right]+\text{PolyLog}\left[2,\frac{g\,(a+b x)}{-b f+a g}\right]\right)\right)-$$

$$6\,A\,B\,n\left(\text{Log}[c+d x]\left(\text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]-\text{Log}\left[\frac{d\,(f+g x)}{d f-c g}\right]\right)+\text{PolyLog}\left[2,\frac{b\,(c+d x)}{b c-a d}\right]-\text{PolyLog}\left[2,\frac{g\,(c+d x)}{-d f+c g}\right]\right)+$$

$$6\,B^2\,n\left(n\,\text{Log}[a+b x]-n\,\text{Log}[c+d x]-\text{Log}\left[e\,(a+b x)^n\,(c+d x)^{-n}\right]\right)$$

$$\left(\text{Log}[c+d x]\left(\text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]-\text{Log}\left[\frac{d\,(f+g x)}{d f-c g}\right]\right)+\text{PolyLog}\left[2,\frac{b\,(c+d x)}{b c-a d}\right]-\text{PolyLog}\left[2,\frac{g\,(c+d x)}{-d f+c g}\right]\right)+$$

$$B^2\,n^2\left(\text{Log}[a+b x]^2\left(\text{Log}[a+b x]-3\,\text{Log}\left[\frac{b\,(f+g x)}{b f-a g}\right]\right)-6\,\text{Log}[a+b x]\,\text{PolyLog}\left[2,\frac{g\,(a+b x)}{-b f+a g}\right]+6\,\text{PolyLog}\left[3,\frac{g\,(a+b x)}{-b f+a g}\right]\right)+$$

$$3\,B^2\,n^2\left(\text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]\text{Log}[c+d x]^2-\text{Log}[c+d x]^2\,\text{Log}\left[\frac{d\,(f+g x)}{d f-c g}\right]+2\,\text{Log}[c+d x]\,\text{PolyLog}\left[2,\frac{b\,(c+d x)}{b c-a d}\right]-\right.$$

$$\left.2\,\text{Log}[c+d x]\,\text{PolyLog}\left[2,\frac{g\,(c+d x)}{-d f+c g}\right]-2\,\text{PolyLog}\left[3,\frac{b\,(c+d x)}{b c-a d}\right]+2\,\text{PolyLog}\left[3,\frac{g\,(c+d x)}{-d f+c g}\right]\right)-$$

$$6\,B^2\,n^2\left(\frac{1}{2}\,\text{Log}[a+b x]^2\left(\text{Log}[c+d x]-\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]\right)-\text{Log}[a+b x]\,\text{Log}[c+d x]\,\text{Log}\left[\frac{b\,(f+g x)}{b f-a g}\right]-\right.$$

$$\frac{1}{2}\,\text{Log}\left[\frac{g\,(c+d x)}{-d f+c g}\right]\left(-2\,\text{Log}[a+b x]+\text{Log}\left[\frac{g\,(c+d x)}{-d f+c g}\right]\right)\left(\text{Log}\left[\frac{b\,(f+g x)}{b f-a g}\right]-\text{Log}\left[\frac{d\,(f+g x)}{d f-c g}\right]\right)+$$

$$\text{Log}\left[\frac{g\,(c+d x)}{-d f+c g}\right]\text{Log}\left[\frac{(b f-a g)\,(c+d x)}{(d f-c g)\,(a+b x)}\right]\left(\text{Log}\left[\frac{b\,(f+g x)}{b f-a g}\right]-\text{Log}\left[\frac{d\,(f+g x)}{d f-c g}\right]\right)-$$

$$\frac{1}{2}\,\text{Log}\left[\frac{(b f-a g)\,(c+d x)}{(d f-c g)\,(a+b x)}\right]^2\left(\text{Log}\left[\frac{-b c+a d}{d\,(a+b x)}\right]+\text{Log}\left[\frac{b\,(f+g x)}{b f-a g}\right]-\text{Log}\left[\frac{(-b c+a d)\,(f+g x)}{(d f-c g)\,(a+b x)}\right]\right)-\text{Log}[a+b x]\,\text{PolyLog}\left[2,\frac{d\,(a+b x)}{-b c+a d}\right]-$$

$$\left(\text{Log}[c+d x]-\text{Log}\left[\frac{(b f-a g)\,(c+d x)}{(d f-c g)\,(a+b x)}\right]\right)\text{PolyLog}\left[2,\frac{g\,(a+b x)}{-b f+a g}\right]-\left(\text{Log}[a+b x]+\text{Log}\left[\frac{(b f-a g)\,(c+d x)}{(d f-c g)\,(a+b x)}\right]\right)\text{PolyLog}\left[2,\frac{g\,(c+d x)}{-d f+c g}\right]-$$

$$\text{Log}\left[\frac{(b f-a g)\,(c+d x)}{(d f-c g)\,(a+b x)}\right]\left(\text{PolyLog}\left[2,\frac{b\,(c+d x)}{d\,(a+b x)}\right]-\text{PolyLog}\left[2,\frac{(b f-a g)\,(c+d x)}{(d f-c g)\,(a+b x)}\right]\right)+\text{PolyLog}\left[3,\frac{d\,(a+b x)}{-b c+a d}\right]+$$

$$\left.\text{PolyLog}\left[3,\frac{g\,(a+b x)}{-b f+a g}\right]+\text{PolyLog}\left[3,\frac{g\,(c+d x)}{-d f+c g}\right]+\text{PolyLog}\left[3,\frac{b\,(c+d x)}{d\,(a+b x)}\right]-\text{PolyLog}\left[3,\frac{(b f-a g)\,(c+d x)}{(d f-c g)\,(a+b x)}\right]\right)\Bigg)$$

Problem 261: Result more than twice size of optimal antiderivative.

$$\int \frac{A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]}{a\,f\,h+b\,g\,h\,x^2+h\,(b\,f\,x+a\,g\,x)}\,dx$$

Optimal (type 4, 123 leaves, 6 steps):

$$-\frac{\left(A+B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\right)\text{Log}\left[1-\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}+\frac{B\,n\,\text{PolyLog}\left[2,\frac{(b\,f-a\,g)\,(c+d\,x)}{(d\,f-c\,g)\,(a+b\,x)}\right]}{(b\,f-a\,g)\,h}$$

Result (type 4, 303 leaves):

$$-\frac{1}{(2\,b\,f-2\,a\,g)\,h}\Big(-2\,A\,\text{Log}[a+b\,x]+B\,n\,\text{Log}[a+b\,x]^2-2\,B\,n\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]+$$
$$2\,B\,n\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\text{Log}[c+d\,x]-2\,B\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]+2\,A\,\text{Log}[f+g\,x]-2\,B\,n\,\text{Log}[a+b\,x]\,\text{Log}[f+g\,x]+$$
$$2\,B\,n\,\text{Log}[c+d\,x]\,\text{Log}[f+g\,x]+2\,B\,\text{Log}\left[e\,(a+b\,x)^n\,(c+d\,x)^{-n}\right]\text{Log}[f+g\,x]+2\,B\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(f+g\,x)}{b\,f-a\,g}\right]-$$
$$2\,B\,n\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{d\,(f+g\,x)}{d\,f-c\,g}\right]+2\,B\,n\,\text{PolyLog}\left[2,\frac{g\,(a+b\,x)}{-b\,f+a\,g}\right]+2\,B\,n\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-2\,B\,n\,\text{PolyLog}\left[2,\frac{g\,(c+d\,x)}{-d\,f+c\,g}\right]\Big)$$

Test results for the 108 problems in "3.2.3 u log(e (f (a+b x)^p (c+d x)^q)^r)^s.m"

Problem 16: Result more than twice size of optimal antiderivative.

$$\int (a+b\,x)^4\,\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]^2\,dx$$

Optimal (type 4, 920 leaves, 32 steps):

$$-\frac{a\,(b c-a d)^3 p q r^2 x}{5 d^3}+\frac{2\,(b c-a d)^4 p q r^2 x}{25 d^4}+\frac{77\,(b c-a d)^4 q^2 r^2 x}{150 d^4}+\frac{2\,(b c-a d)^4 q\,(p+q)\,r^2 x}{5 d^4}-$$

$$\frac{b\,(b c-a d)^3 p q r^2 x^2}{10 d^3}-\frac{(b c-a d)^3 p q r^2\,(a+b x)^2}{25 b d^3}-\frac{77\,(b c-a d)^3 q^2 r^2\,(a+b x)^2}{300 b d^3}+\frac{16\,(b c-a d)^2 p q r^2\,(a+b x)^3}{225 b d^2}+$$

$$\frac{47\,(b c-a d)^2 q^2 r^2\,(a+b x)^3}{450 b d^2}-\frac{9\,(b c-a d)\,p q r^2\,(a+b x)^4}{200 b d}-\frac{9\,(b c-a d)\,q^2 r^2\,(a+b x)^4}{200 b d}+\frac{2 p^2 r^2\,(a+b x)^5}{125 b}+$$

$$\frac{4 p q r^2\,(a+b x)^5}{125 b}+\frac{2 q^2 r^2\,(a+b x)^5}{125 b}-\frac{2\,(b c-a d)^5 p q r^2\,\text{Log}[c+d x]}{25 b d^5}-\frac{137\,(b c-a d)^5 q^2 r^2\,\text{Log}[c+d x]}{150 b d^5}-$$

$$\frac{2\,(b c-a d)^5 p q r^2\,\text{Log}\left[-\frac{d\,(a+b x)}{b c-a d}\right]\text{Log}[c+d x]}{5 b d^5}-\frac{(b c-a d)^5 q^2 r^2\,\text{Log}[c+d x]^2}{5 b d^5}-\frac{2\,(b c-a d)^4 q r\,(a+b x)\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]}{5 b d^4}+$$

$$\frac{(b c-a d)^3 q r\,(a+b x)^2\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]}{5 b d^3}-\frac{2\,(b c-a d)^2 q r\,(a+b x)^3\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]}{15 b d^2}+$$

$$\frac{(b c-a d)\,q r\,(a+b x)^4\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]}{10 b d}-\frac{2 p r\,(a+b x)^5\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]}{25 b}-$$

$$\frac{2 q r\,(a+b x)^5\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]}{25 b}+\frac{2\,(b c-a d)^5 q r\,\text{Log}[c+d x]\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]}{5 b d^5}+$$

$$\frac{(a+b x)^5\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]^2}{5 b}-\frac{2\,(b c-a d)^5 p q r^2\,\text{PolyLog}\left[2,\frac{b\,(c+d x)}{b c-a d}\right]}{5 b d^5}$$

Result (type 4, 2508 leaves) :

$$\frac{2 a^5 p q r^2}{b}+\frac{2 a b^3 c^4 p q r^2}{5 d^4}-\frac{2 a^2 b^2 c^3 p q r^2}{d^3}+\frac{4 a^3 b c^2 p q r^2}{d^2}-\frac{4 a^4 c p q r^2}{d}+\frac{2}{25} a^4 p^2 r^2 x+\frac{197}{150} a^4 p q r^2 x+\frac{12 b^4 c^4 p q r^2 x}{25 d^4}-$$

$$\frac{11 a b^3 c^3 p q r^2 x}{5 d^3}+\frac{59 a^2 b^2 c^2 p q r^2 x}{15 d^2}-\frac{101 a^3 b c p q r^2 x}{30 d}+2 a^4 q^2 r^2 x+\frac{137 b^4 c^4 q^2 r^2 x}{150 d^4}-\frac{25 a b^3 c^3 q^2 r^2 x}{6 d^3}+\frac{22 a^2 b^2 c^2 q^2 r^2 x}{3 d^2}-$$

$$\frac{6 a^3 b c q^2 r^2 x}{d}+\frac{4}{25} a^3 b p^2 r^2 x^2+\frac{283}{300} a^3 b p q r^2 x^2-\frac{7 b^4 c^3 p q r^2 x^2}{50 d^3}+\frac{19 a b^3 c^2 p q r^2 x^2}{30 d^2}-\frac{67 a^2 b^2 c p q r^2 x^2}{60 d}+a^3 b q^2 r^2 x^2-$$

$$\frac{77 b^4 c^3 q^2 r^2 x^2}{300 d^3}+\frac{13 a b^3 c^2 q^2 r^2 x^2}{12 d^2}-\frac{5 a^2 b^2 c q^2 r^2 x^2}{3 d}+\frac{4}{25} a^2 b^2 p^2 r^2 x^3+\frac{257}{450} a^2 b^2 p q r^2 x^3+\frac{16 b^4 c^2 p q r^2 x^3}{225 d^2}-\frac{29 a b^3 c p q r^2 x^3}{90 d}+$$

$$\frac{4}{9} a^2 b^2 q^2 r^2 x^3+\frac{47 b^4 c^2 q^2 r^2 x^3}{450 d^2}-\frac{7 a b^3 c q^2 r^2 x^3}{18 d}+\frac{2}{25} a b^3 p^2 r^2 x^4+\frac{41}{200} a b^3 p q r^2 x^4-\frac{9 b^4 c p q r^2 x^4}{200 d}+\frac{1}{8} a b^3 q^2 r^2 x^4-\frac{9 b^4 c q^2 r^2 x^4}{200 d}+$$

$$\frac{2}{125} b^4 p^2 r^2 x^5+\frac{4}{125} b^4 p q r^2 x^5+\frac{2}{125} b^4 q^2 r^2 x^5-\frac{a^5 p^2 r^2\,\text{Log}[a+b x]^2}{5 b}+\frac{2 a^5 p q r^2\,\text{Log}[c+d x]}{b}-\frac{2 b^4 c^5 p q r^2\,\text{Log}[c+d x]}{25 d^5}+$$

$$\frac{2 a b^3 c^4 p q r^2\,\text{Log}[c+d x]}{5 d^4}-\frac{4 a^2 b^2 c^3 p q r^2\,\text{Log}[c+d x]}{5 d^3}+\frac{4 a^3 b c^2 p q r^2\,\text{Log}[c+d x]}{5 d^2}-\frac{2 a^4 c p q r^2\,\text{Log}[c+d x]}{5 d}-$$

$$\frac{137 b^4 c^5 q^2 r^2\,\text{Log}[c+d x]}{150 d^5}+\frac{25 a b^3 c^4 q^2 r^2\,\text{Log}[c+d x]}{6 d^4}-\frac{22 a^2 b^2 c^3 q^2 r^2\,\text{Log}[c+d x]}{3 d^3}+\frac{6 a^3 b c^2 q^2 r^2\,\text{Log}[c+d x]}{d^2}-\frac{2 a^4 c q^2 r^2\,\text{Log}[c+d x]}{d}-$$

$$\frac{b^4 c^5 q^2 r^2 \text{Log}[c+d x]^2}{5 d^5}+\frac{a b^3 c^4 q^2 r^2 \text{Log}[c+d x]^2}{d^4}-\frac{2 a^2 b^2 c^3 q^2 r^2 \text{Log}[c+d x]^2}{d^3}+\frac{2 a^3 b c^2 q^2 r^2 \text{Log}[c+d x]^2}{d^2}-\frac{a^4 c q^2 r^2 \text{Log}[c+d x]^2}{d}-$$

$$\frac{2 a^5 p r \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{b}-\frac{2}{5} a^4 p r x \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]-2 a^4 q r x \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]-$$

$$\frac{2 b^4 c^4 q r x \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{5 d^4}+\frac{2 a b^3 c^3 q r x \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{d^3}-\frac{4 a^2 b^2 c^2 q r x \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{d^2}+$$

$$\frac{4 a^3 b c q r x \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{d}-\frac{4}{5} a^3 b p r x^2 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]-2 a^3 b q r x^2 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]+$$

$$\frac{b^4 c^3 q r x^2 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{5 d^3}-\frac{a b^3 c^2 q r x^2 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{d^2}+\frac{2 a^2 b^2 c q r x^2 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{d}-$$

$$\frac{4}{5} a^2 b^2 p r x^3 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]-\frac{4}{3} a^2 b^2 q r x^3 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]-\frac{2 b^4 c^2 q r x^3 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{15 d^2}+$$

$$\frac{2 a b^3 c q r x^3 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{3 d}-\frac{2}{5} a b^3 p r x^4 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]-\frac{1}{2} a b^3 q r x^4 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]+$$

$$\frac{b^4 c q r x^4 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{10 d}-\frac{2}{25} b^4 p r x^5 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]-\frac{2}{25} b^4 q r x^5 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]+$$

$$\frac{2 b^4 c^5 q r \text{Log}[c+d x] \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{5 d^5}-\frac{2 a b^3 c^4 q r \text{Log}[c+d x] \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{d^4}+$$

$$\frac{4 a^2 b^2 c^3 q r \text{Log}[c+d x] \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{d^3}-\frac{4 a^3 b c^2 q r \text{Log}[c+d x] \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{d^2}+$$

$$\frac{2 a^4 c q r \text{Log}[c+d x] \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{d}+a^4 x \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2+2 a^3 b x^2 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2+$$

$$2 a^2 b^2 x^3 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2+a b^3 x^4 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2+\frac{1}{5} b^4 x^5 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2+$$

$$\frac{1}{150 b d^5} p r \text{Log}[a+b x] \Big(a d \left(a^4 d^4 (288 p-137 q)-60 b^4 c^4 q+270 a b^3 c^3 d q-470 a^2 b^2 c^2 d^2 q+385 a^3 b c d^3 q\right) r-$$

$$60 b c \left(b^4 c^4-5 a b^3 c^3 d+10 a^2 b^2 c^2 d^2-10 a^3 b c d^3+5 a^4 d^4\right) q r \text{Log}[c+d x]+60 (b c-a d)^5 q r \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+$$

$$60 a^5 d^5 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\Big)+\frac{2 (b c-a d)^5 p q r^2 \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]}{5 b d^5}$$

Problem 17: Result more than twice size of optimal antiderivative.

$$\int (a+b x)^3 \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2 \, dx$$

Optimal (type 4, 805 leaves, 28 steps) :

$$\frac{a\,(b c-a d)^2 p q r^2 x}{4 d^2}-\frac{(b c-a d)^3 p q r^2 x}{8 d^3}-\frac{13\,(b c-a d)^3 q^2 r^2 x}{24 d^3}-\frac{(b c-a d)^3 q\,(p+q)\,r^2 x}{2 d^3}+\frac{b\,(b c-a d)^2 p q r^2 x^2}{8 d^2}+\frac{(b c-a d)^2 p q r^2\,(a+b x)^2}{16 b d^2}+\frac{13\,(b c-a d)^2 q^2 r^2\,(a+b x)^2}{48 b d^2}-\frac{7\,(b c-a d)\,p q r^2\,(a+b x)^3}{72 b d}-\frac{7\,(b c-a d)\,q^2 r^2\,(a+b x)^3}{72 b d}+\frac{p^2 r^2\,(a+b x)^4}{32 b}+\frac{p q r^2\,(a+b x)^4}{16 b}+\frac{q^2 r^2\,(a+b x)^4}{32 b}+\frac{(b c-a d)^4 p q r^2 \,\text{Log}[c+d x]}{8 b d^4}+\frac{25\,(b c-a d)^4 q^2 r^2 \,\text{Log}[c+d x]}{24 b d^4}+\frac{(b c-a d)^4 p q r^2 \,\text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{2 b d^4}+\frac{(b c-a d)^4 q^2 r^2 \,\text{Log}[c+d x]^2}{4 b d^4}+\frac{(b c-a d)^3 q r\,(a+b x)\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]}{2 b d^3}-\frac{(b c-a d)^2 q r\,(a+b x)^2\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]}{4 b d^2}+\frac{(b c-a d)\,q r\,(a+b x)^3\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]}{6 b d}-\frac{p r\,(a+b x)^4\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]}{8 b}-\frac{q r\,(a+b x)^4\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]}{8 b}-\frac{(b c-a d)^4 q r \,\text{Log}[c+d x]\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]}{2 b d^4}+\frac{(a+b x)^4\,\text{Log}\left[e\left(f\,(a+b x)^p\,(c+d x)^q\right)^r\right]^2}{4 b}+\frac{(b c-a d)^4 p q r^2\,\text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{2 b d^4}$$

Result (type 4, 1853 leaves) :

$$\frac{2 a^4 p q r^2}{b} - \frac{a b^2 c^3 p q r^2}{2 d^3} + \frac{2 a^2 b c^2 p q r^2}{d^2} - \frac{3 a^3 c p q r^2}{d} + \frac{1}{8} a^3 p^2 r^2 x + \frac{37}{24} a^3 p q r^2 x - \frac{5 b^3 c^3 p q r^2 x}{8 d^3} + \frac{9 a b^2 c^2 p q r^2 x}{4 d^2} -$$

$$\frac{35 a^2 b c p q r^2 x}{12 d} + 2 a^3 q^2 r^2 x - \frac{25 b^3 c^3 q^2 r^2 x}{24 d^3} + \frac{11 a b^2 c^2 q^2 r^2 x}{3 d^2} - \frac{9 a^2 b c q^2 r^2 x}{2 d} + \frac{3}{16} a^2 b p^2 r^2 x^2 + \frac{41}{48} a^2 b p q r^2 x^2 +$$

$$\frac{3 b^3 c^2 p q r^2 x^2}{16 d^2} - \frac{2 a b^2 c p q r^2 x^2}{3 d} + \frac{3}{4} a^2 b q^2 r^2 x^2 + \frac{13 b^3 c^2 q^2 r^2 x^2}{48 d^2} - \frac{5 a b^2 c q^2 r^2 x^2}{6 d} + \frac{1}{8} a b^2 p^2 r^2 x^3 + \frac{25}{72} a b^2 p q r^2 x^3 -$$

$$\frac{7 b^3 c p q r^2 x^3}{72 d} + \frac{2}{9} a b^2 q^2 r^2 x^3 - \frac{7 b^3 c q^2 r^2 x^3}{72 d} + \frac{1}{32} b^3 p^2 r^2 x^4 + \frac{1}{16} b^3 p q r^2 x^4 + \frac{1}{32} b^3 q^2 r^2 x^4 - \frac{a^4 p^2 r^2 \text{Log}[a + b x]^2}{4 b} +$$

$$\frac{2 a^4 p q r^2 \text{Log}[c + d x]}{b} + \frac{b^3 c^4 p q r^2 \text{Log}[c + d x]}{8 d^4} - \frac{a b^2 c^3 p q r^2 \text{Log}[c + d x]}{2 d^3} + \frac{3 a^2 b c^2 p q r^2 \text{Log}[c + d x]}{4 d^2} - \frac{a^3 c p q r^2 \text{Log}[c + d x]}{2 d} +$$

$$\frac{25 b^3 c^4 q^2 r^2 \text{Log}[c + d x]}{24 d^4} - \frac{11 a b^2 c^3 q^2 r^2 \text{Log}[c + d x]}{3 d^3} + \frac{9 a^2 b c^2 q^2 r^2 \text{Log}[c + d x]}{2 d^2} - \frac{2 a^3 c q^2 r^2 \text{Log}[c + d x]}{d} + \frac{b^3 c^4 q^2 r^2 \text{Log}[c + d x]^2}{4 d^4} -$$

$$\frac{a b^2 c^3 q^2 r^2 \text{Log}[c + d x]^2}{d^3} + \frac{3 a^2 b c^2 q^2 r^2 \text{Log}[c + d x]^2}{2 d^2} - \frac{a^3 c q^2 r^2 \text{Log}[c + d x]^2}{d} - \frac{2 a^4 p r \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]}{b} -$$

$$\frac{1}{2} a^3 p r x \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right] - 2 a^3 q r x \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right] + \frac{b^3 c^3 q r x \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]}{2 d^3} -$$

$$\frac{2 a b^2 c^2 q r x \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]}{d^2} + \frac{3 a^2 b c q r x \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]}{d} - \frac{3}{4} a^2 b p r x^2 \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right] -$$

$$\frac{3}{2} a^2 b q r x^2 \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right] - \frac{b^3 c^2 q r x^2 \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]}{4 d^2} + \frac{a b^2 c q r x^2 \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]}{d} -$$

$$\frac{1}{2} a b^2 p r x^3 \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right] - \frac{2}{3} a b^2 q r x^3 \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right] + \frac{b^3 c q r x^3 \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]}{6 d} -$$

$$\frac{1}{8} b^3 p r x^4 \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right] - \frac{1}{8} b^3 q r x^4 \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right] - \frac{b^3 c^4 q r \text{Log}[c + d x] \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]}{2 d^4} +$$

$$\frac{2 a b^2 c^3 q r \text{Log}[c + d x] \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]}{d^3} - \frac{3 a^2 b c^2 q r \text{Log}[c + d x] \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]}{d^2} +$$

$$\frac{2 a^3 c q r \text{Log}[c + d x] \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]}{d} + a^3 x \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]^2 +$$

$$\frac{3}{2} a^2 b x^2 \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]^2 + a b^2 x^3 \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]^2 + \frac{1}{4} b^3 x^4 \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]^2 + \frac{1}{24 b d^4}$$

$$p r \text{Log}[a + b x] \left(a d \left(5 a^3 d^3 (9 p - 5 q) + 12 b^3 c^3 q - 42 a b^2 c^2 d q + 52 a^2 b c d^2 q\right) r + 12 b c \left(b^3 c^3 - 4 a b^2 c^2 d + 6 a^2 b c d^2 - 4 a^3 d^3\right) q r \text{Log}[c + d x] - \right.$$

$$\left. 12 (b c - a d)^4 q r \text{Log}\left[\frac{b (c + d x)}{b c - a d}\right] + 12 a^4 d^4 \text{Log}\left[e \left(f (a + b x)^p (c + d x)^q\right)^r\right]\right) - \frac{(b c - a d)^4 p q r^2 \text{PolyLog}\left[2, \frac{d (a+b x)}{-b c+a d}\right]}{2 b d^4}$$

Problem 23: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]^2}{(a+b\,x)^4}\,dx$$

Optimal (type 4, 764 leaves, 28 steps):

$$-\frac{2\,p^2\,r^2}{27\,b\,(a+b\,x)^3}-\frac{5\,d\,p\,q\,r^2}{18\,b\,(b\,c-a\,d)\,(a+b\,x)^2}+\frac{8\,d^2\,p\,q\,r^2}{9\,b\,(b\,c-a\,d)^2\,(a+b\,x)}-\frac{d^2\,q^2\,r^2}{3\,b\,(b\,c-a\,d)^2\,(a+b\,x)}+$$
$$\frac{2\,d^3\,p\,q\,r^2\,\text{Log}[a+b\,x]}{9\,b\,(b\,c-a\,d)^3}-\frac{d^3\,q^2\,r^2\,\text{Log}[a+b\,x]}{b\,(b\,c-a\,d)^3}-\frac{d^3\,p\,q\,r^2\,\text{Log}[a+b\,x]^2}{3\,b\,(b\,c-a\,d)^3}-\frac{2\,d^3\,p\,q\,r^2\,\text{Log}[c+d\,x]}{9\,b\,(b\,c-a\,d)^3}+\frac{d^3\,q^2\,r^2\,\text{Log}[c+d\,x]}{b\,(b\,c-a\,d)^3}+$$
$$\frac{2\,d^3\,p\,q\,r^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{3\,b\,(b\,c-a\,d)^3}+\frac{d^3\,q^2\,r^2\,\text{Log}[c+d\,x]^2}{3\,b\,(b\,c-a\,d)^3}-\frac{2\,d^3\,q^2\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b\,(b\,c-a\,d)^3}-$$
$$\frac{2\,p\,r\,\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]}{9\,b\,(a+b\,x)^3}-\frac{d\,q\,r\,\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]}{3\,b\,(b\,c-a\,d)\,(a+b\,x)^2}+\frac{2\,d^2\,q\,r\,\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]}{3\,b\,(b\,c-a\,d)^2\,(a+b\,x)}+$$
$$\frac{2\,d^3\,q\,r\,\text{Log}[a+b\,x]\,\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]}{3\,b\,(b\,c-a\,d)^3}-\frac{2\,d^3\,q\,r\,\text{Log}[c+d\,x]\,\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]}{3\,b\,(b\,c-a\,d)^3}-$$
$$\frac{\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]^2}{3\,b\,(a+b\,x)^3}-\frac{2\,d^3\,q^2\,r^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{3\,b\,(b\,c-a\,d)^3}+\frac{2\,d^3\,p\,q\,r^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{3\,b\,(b\,c-a\,d)^3}$$

Result (type 4, 10 507 leaves):

$$-\frac{p^2\,r^2\,\left(6\,\text{Log}[a+b\,x]+18\,\text{Log}[a+b\,x]^2+27\,\text{Log}[a+b\,x]^3\right)}{81\,b\,(a+b\,x)^3\,\text{Log}[a+b\,x]}+\frac{q^2\,r^2\,\left(b^2\,c^3-3\,a\,b\,c^2\,d+3\,a^2\,c\,d^2+3\,a^2\,d^3\,x+3\,a\,b\,d^3\,x^2+b^2\,d^3\,x^3\right)\,\text{Log}[c+d\,x]^2}{3\,(-b\,c+a\,d)^3\,(a+b\,x)^3}-$$
$$\frac{1}{3\,b\,(a+b\,x)^3}\left(-p\,r\,\text{Log}[a+b\,x]-\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+\right.$$
$$\left.\text{Log}\left[e\,e^{r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\right)^2-$$
$$\frac{1}{9\,b\,(b\,c-a\,d)^2\,(a+b\,x)}\,d^2\,q\,r\,\left(-2\,p\,r+3\,q\,r-6\,r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)-\right.$$
$$6\,\left(-p\,r\,\text{Log}[a+b\,x]-r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)-\right.$$
$$\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\mathrm{Log}\left[e\, e^{r\left(-p\,\mathrm{Log}[a+b x]-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)}\,(a+b x)^{p r}\,\left(f\,(a+b x)^p\,(c+d x)^q\right)^{r-\frac{r\left(-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)}{\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]}}\right]\Bigg)\Bigg)-$$

$$\frac{1}{9 b\,(b c-a d)^3}\,d^3\,q\,r\,\mathrm{Log}[a+b x]\,\Bigg(-2 p r+9 q r-6 r\left(-p\,\mathrm{Log}[a+b x]-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)-$$

$$6\,\Bigg(-p\,r\,\mathrm{Log}[a+b x]-r\left(-p\,\mathrm{Log}[a+b x]-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)-$$

$$\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\left(r-\frac{r\left(-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)}{\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]}\right)+$$

$$\mathrm{Log}\left[e\, e^{r\left(-p\,\mathrm{Log}[a+b x]-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)}\,(a+b x)^{p r}\,\left(f\,(a+b x)^p\,(c+d x)^q\right)^{r-\frac{r\left(-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)}{\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]}}\right]\Bigg)\Bigg)+$$

$$\frac{1}{9 b\,(b c-a d)^3}\,d^3\,q\,r\,\mathrm{Log}[c+d x]\,\Bigg(-2 p r+9 q r-6 r\left(-p\,\mathrm{Log}[a+b x]-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)-$$

$$6\,\Bigg(-p\,r\,\mathrm{Log}[a+b x]-r\left(-p\,\mathrm{Log}[a+b x]-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)-$$

$$\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\left(r-\frac{r\left(-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)}{\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]}\right)+$$

$$\mathrm{Log}\left[e\, e^{r\left(-p\,\mathrm{Log}[a+b x]-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)}\,(a+b x)^{p r}\,\left(f\,(a+b x)^p\,(c+d x)^q\right)^{r-\frac{r\left(-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)}{\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]}}\right]\Bigg)\Bigg)-$$

$$\frac{1}{9 b\,(b c-a d)\,(a+b x)^2}\,d\,q\,r\,\Bigg(p r+3 r\left(-p\,\mathrm{Log}[a+b x]-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)+$$

$$3\,\Bigg(-p\,r\,\mathrm{Log}[a+b x]-r\left(-p\,\mathrm{Log}[a+b x]-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)-$$

$$\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\left(r-\frac{r\left(-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)}{\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]}\right)+$$

$$\mathrm{Log}\left[e\, e^{r\left(-p\,\mathrm{Log}[a+b x]-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)}\,(a+b x)^{p r}\,\left(f\,(a+b x)^p\,(c+d x)^q\right)^{r-\frac{r\left(-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)}{\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]}}\right]\Bigg)\Bigg)+$$

$$\mathrm{Log}[c+d x]\,\Bigg(-\frac{d\,q^2\,r^2}{3 b\,(b c-a d)\,(a+b x)^2}+\frac{2\,d^2\,q^2\,r^2}{3 b\,(b c-a d)^2\,(a+b x)}+\frac{2\,d^3\,q^2\,r^2\,\mathrm{Log}[a+b x]}{3 b\,(b c-a d)^3}-\frac{2\,p\,q\,r^2\,\mathrm{Log}[a+b x]}{3 b\,(a+b x)^3}-$$

$$\frac{1}{9 b\,(a+b x)^3}\,2\,q\,r\,\Bigg(p r+3 r\left(-p\,\mathrm{Log}[a+b x]-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f\,(a+b x)^p\,(c+d x)^q\right]\right)+3\,\Bigg(-p\,r\,\mathrm{Log}[a+b x]-r\,\Big(-p\,\mathrm{Log}[a+b x]-$$

$$q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\Big)-\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\text{Log}\left[e\,e^{r\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\Bigg)\Bigg)\Bigg)-$$

$$\frac{1}{3\,(b\,c-a\,d)^3}8\,a\,b^2\,d^4\,q^2\,r^2\left(\frac{c^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}+\frac{\left(3\,a\,b^2\,c^2-3\,a^2\,b\,c\,d+a^3\,d^2\right)\,(1+\text{Log}[a+b\,x])}{b^2\,(b\,c-a\,d)^3\,(a\,b+b^2\,x)}-\frac{\left(3\,a^2\,b\,c-2\,a^3\,d\right)\,(1+2\,\text{Log}[a+b\,x])}{4\,b^3\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\right.$$

$$\left.\frac{a^3\,(1+3\,\text{Log}[a+b\,x])}{9\,b^3\,(b\,c-a\,d)\,(a+b\,x)^3}-\frac{c^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)-\frac{1}{3\,(b\,c-a\,d)^3}$$

$$2\,b^3\,d^4\,q^2\,r^2\left(-\frac{\left(4\,a\,b^3\,c^3-6\,a^2\,b^2\,c^2\,d+4\,a^3\,b\,c\,d^2-a^4\,d^3\right)\,\text{Log}[a+b\,x]^2}{2\,b^4\,(b\,c-a\,d)^4}-\frac{\left(6\,a^2\,b^2\,c^2-8\,a^3\,b\,c\,d+3\,a^4\,d^2\right)\,(1+\text{Log}[a+b\,x])}{b^3\,(b\,c-a\,d)^3\,(a\,b+b^2\,x)}+\right.$$

$$\left.\frac{\left(4\,a^3\,b\,c-3\,a^4\,d\right)\,(1+2\,\text{Log}[a+b\,x])}{4\,b^4\,(b\,c-a\,d)^2\,(a+b\,x)^2}-\frac{a^4\,(1+3\,\text{Log}[a+b\,x])}{9\,b^4\,(b\,c-a\,d)\,(a+b\,x)^3}+\frac{c^4\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{d\,(b\,c-a\,d)^4}\right)-$$

$$\frac{1}{(b\,c-a\,d)^3}4\,a^2\,b\,d^4\,q^2\,r^2\left(-\frac{c^2\,d\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}-\frac{b\,c^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}+\frac{\left(2\,a\,b\,c-a^2\,d\right)\,(1+2\,\text{Log}[a+b\,x])}{4\,b^2\,(b\,c-a\,d)^2\,(a+b\,x)^2}-\right.$$

$$\left.\frac{a^2\,(1+3\,\text{Log}[a+b\,x])}{9\,b^2\,(b\,c-a\,d)\,(a+b\,x)^3}+\frac{c^2\,d\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)+$$

$$\frac{1}{3\,(b\,c-a\,d)^3}2\,b^3\,c^3\,d\,p\,q\,r^2\left(\frac{c\,d^2\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}+\frac{b\,c\,d\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}-\frac{c\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}-\right.$$

$$\left.\frac{a\,(1+3\,\text{Log}[a+b\,x])}{9\,b\,(-b\,c+a\,d)\,(a+b\,x)^3}-\frac{c\,d^2\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)-$$

$$\frac{1}{(b\,c-a\,d)^3}2\,a\,b^2\,c^2\,d^2\,p\,q\,r^2\left(\frac{c\,d^2\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}+\frac{b\,c\,d\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}-\frac{c\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}-\right.$$

$$\left.\frac{a\,(1+3\,\text{Log}[a+b\,x])}{9\,b\,(-b\,c+a\,d)\,(a+b\,x)^3}-\frac{c\,d^2\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)+$$

$$\frac{1}{(b\,c-a\,d)^3}2\,a^2\,b\,c\,d^3\,p\,q\,r^2\left(\frac{c\,d^2\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}+\frac{b\,c\,d\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}-\frac{c\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}-\right.$$

$$\left.\frac{a\left(1+3\,\mathrm{Log}[a+b\,x]\right)}{9\,b\left(-b\,c+a\,d\right)\left(a+b\,x\right)^3}-\frac{c\,d^2\left(\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{\left(b\,c-a\,d\right)^4}\right)-$$

$$\frac{1}{3\left(b\,c-a\,d\right)^3}2\,a^3\,d^4\,p\,q\,r^2\left(\frac{c\,d^2\,\mathrm{Log}[a+b\,x]^2}{2\left(b\,c-a\,d\right)^4}+\frac{b\,c\,d\left(1+\mathrm{Log}[a+b\,x]\right)}{\left(b\,c-a\,d\right)^3\left(a\,b+b^2\,x\right)}-\frac{c\left(1+2\,\mathrm{Log}[a+b\,x]\right)}{4\left(b\,c-a\,d\right)^2\left(a+b\,x\right)^2}-\right.$$

$$\left.\frac{a\left(1+3\,\mathrm{Log}[a+b\,x]\right)}{9\,b\left(-b\,c+a\,d\right)\left(a+b\,x\right)^3}-\frac{c\,d^2\left(\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{\left(b\,c-a\,d\right)^4}\right)-$$

$$\frac{1}{3\left(b\,c-a\,d\right)^3}8\,a^3\,d^4\,q^2\,r^2\left(\frac{c\,d^2\,\mathrm{Log}[a+b\,x]^2}{2\left(b\,c-a\,d\right)^4}+\frac{b\,c\,d\left(1+\mathrm{Log}[a+b\,x]\right)}{\left(b\,c-a\,d\right)^3\left(a\,b+b^2\,x\right)}-\frac{c\left(1+2\,\mathrm{Log}[a+b\,x]\right)}{4\left(b\,c-a\,d\right)^2\left(a+b\,x\right)^2}-\right.$$

$$\left.\frac{a\left(1+3\,\mathrm{Log}[a+b\,x]\right)}{9\,b\left(-b\,c+a\,d\right)\left(a+b\,x\right)^3}-\frac{c\,d^2\left(\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{\left(b\,c-a\,d\right)^4}\right)+$$

$$\frac{1}{\left(b\,c-a\,d\right)^3}2\,b^3\,c^3\,d\,p\,r^2\left(-p\,\mathrm{Log}[a+b\,x]-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\left(a+b\,x\right)^p\left(c+d\,x\right)^q\right]\right)$$

$$\left(\frac{c\,d^2\,\mathrm{Log}[a+b\,x]^2}{2\left(b\,c-a\,d\right)^4}+\frac{b\,c\,d\left(1+\mathrm{Log}[a+b\,x]\right)}{\left(b\,c-a\,d\right)^3\left(a\,b+b^2\,x\right)}-\frac{c\left(1+2\,\mathrm{Log}[a+b\,x]\right)}{4\left(b\,c-a\,d\right)^2\left(a+b\,x\right)^2}-\right.$$

$$\left.\frac{a\left(1+3\,\mathrm{Log}[a+b\,x]\right)}{9\,b\left(-b\,c+a\,d\right)\left(a+b\,x\right)^3}-\frac{c\,d^2\left(\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{\left(b\,c-a\,d\right)^4}\right)-$$

$$\frac{1}{\left(b\,c-a\,d\right)^3}6\,a\,b^2\,c^2\,d^2\,p\,r^2\left(-p\,\mathrm{Log}[a+b\,x]-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\left(a+b\,x\right)^p\left(c+d\,x\right)^q\right]\right)$$

$$\left(\frac{c\,d^2\,\mathrm{Log}[a+b\,x]^2}{2\left(b\,c-a\,d\right)^4}+\frac{b\,c\,d\left(1+\mathrm{Log}[a+b\,x]\right)}{\left(b\,c-a\,d\right)^3\left(a\,b+b^2\,x\right)}-\frac{c\left(1+2\,\mathrm{Log}[a+b\,x]\right)}{4\left(b\,c-a\,d\right)^2\left(a+b\,x\right)^2}-\right.$$

$$\left.\frac{a\left(1+3\,\mathrm{Log}[a+b\,x]\right)}{9\,b\left(-b\,c+a\,d\right)\left(a+b\,x\right)^3}-\frac{c\,d^2\left(\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{\left(b\,c-a\,d\right)^4}\right)+$$

$$\frac{1}{\left(b\,c-a\,d\right)^3}6\,a^2\,b\,c\,d^3\,p\,r^2\left(-p\,\mathrm{Log}[a+b\,x]-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\left(a+b\,x\right)^p\left(c+d\,x\right)^q\right]\right)$$

$$\left(\frac{c\,d^2\,\mathrm{Log}[a+b\,x]^2}{2\left(b\,c-a\,d\right)^4}+\frac{b\,c\,d\left(1+\mathrm{Log}[a+b\,x]\right)}{\left(b\,c-a\,d\right)^3\left(a\,b+b^2\,x\right)}-\frac{c\left(1+2\,\mathrm{Log}[a+b\,x]\right)}{4\left(b\,c-a\,d\right)^2\left(a+b\,x\right)^2}-\right.$$

$$\frac{a\left(1+3\,\mathrm{Log}[a+b\,x]\right)}{9\,b\,(-b\,c+a\,d)\,(a+b\,x)^3}-\frac{c\,d^2\left(\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\Bigg)-$$

$$\frac{1}{(b\,c-a\,d)^3}2\,a^3\,d^4\,p\,r^2\left(-p\,\mathrm{Log}[a+b\,x]-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)$$

$$\Bigg(\frac{c\,d^2\,\mathrm{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}+\frac{b\,c\,d\,(1+\mathrm{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}-\frac{c\,(1+2\,\mathrm{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}-$$

$$\frac{a\left(1+3\,\mathrm{Log}[a+b\,x]\right)}{9\,b\,(-b\,c+a\,d)\,(a+b\,x)^3}-\frac{c\,d^2\left(\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\Bigg)+$$

$$\frac{1}{(b\,c-a\,d)^3}\,2\,b^3\,c^3\,d\,p\,r\,\Bigg(-p\,r\,\mathrm{Log}[a+b\,x]-r\left(-p\,\mathrm{Log}[a+b\,x]-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)-$$

$$\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\left(-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\mathrm{Log}\left[e\,e^{r\left(-p\,\mathrm{Log}[a+b\,x]-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\left(-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\Bigg)\Bigg(\frac{c\,d^2\,\mathrm{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}+$$

$$\frac{b\,c\,d\,(1+\mathrm{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}-\frac{c\,(1+2\,\mathrm{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}-\frac{a\left(1+3\,\mathrm{Log}[a+b\,x]\right)}{9\,b\,(-b\,c+a\,d)\,(a+b\,x)^3}-\frac{c\,d^2\left(\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\Bigg)-$$

$$\frac{1}{(b\,c-a\,d)^3}\,6\,a\,b^2\,c^2\,d^2\,p\,r\,\Bigg(-p\,r\,\mathrm{Log}[a+b\,x]-r\left(-p\,\mathrm{Log}[a+b\,x]-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)-$$

$$\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\left(-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\mathrm{Log}\left[e\,e^{r\left(-p\,\mathrm{Log}[a+b\,x]-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\left(-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\Bigg)\Bigg(\frac{c\,d^2\,\mathrm{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}+$$

$$\frac{b\,c\,d\,(1+\mathrm{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}-\frac{c\,(1+2\,\mathrm{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}-\frac{a\left(1+3\,\mathrm{Log}[a+b\,x]\right)}{9\,b\,(-b\,c+a\,d)\,(a+b\,x)^3}-\frac{c\,d^2\left(\mathrm{Log}[a+b\,x]\,\mathrm{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\mathrm{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\Bigg)+$$

$$\frac{1}{(b\,c-a\,d)^3}\,6\,a^2\,b\,c\,d^3\,p\,r\,\Bigg(-p\,r\,\mathrm{Log}[a+b\,x]-r\left(-p\,\mathrm{Log}[a+b\,x]-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)-$$

$$\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\left(-q\,\mathrm{Log}[c+d\,x]+\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\mathrm{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\text{Log}\left[e\, e^{r\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\left(\frac{c\,d^2\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}+\right.$$

$$\left.\frac{b\,c\,d\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}-\frac{c\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}-\frac{a\,(1+3\,\text{Log}[a+b\,x])}{9\,b\,(-b\,c+a\,d)\,(a+b\,x)^3}-\frac{c\,d^2\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)-$$

$$\frac{1}{(b\,c-a\,d)^3}\,2\,a^3\,d^4\,p\,r\left(-p\,r\,\text{Log}[a+b\,x]-r\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)-\right.$$

$$\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\text{Log}\left[e\, e^{r\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\left(\frac{c\,d^2\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}+\right.$$

$$\left.\frac{b\,c\,d\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}-\frac{c\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}-\frac{a\,(1+3\,\text{Log}[a+b\,x])}{9\,b\,(-b\,c+a\,d)\,(a+b\,x)^3}-\frac{c\,d^2\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)+$$

$$\frac{1}{3\,(b\,c-a\,d)^3}\,2\,a\,b^2\,c^3\,d\,p\,q\,r^2\left(-\frac{d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}-\frac{b\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}+\frac{d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\right.$$

$$\left.\frac{1+3\,\text{Log}[a+b\,x]}{9\,(-b\,c+a\,d)\,(a+b\,x)^3}+\frac{d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)-$$

$$\frac{1}{(b\,c-a\,d)^3}\,2\,a^2\,b\,c^2\,d^2\,p\,q\,r^2\left(-\frac{d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}-\frac{b\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}+\frac{d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\right.$$

$$\left.\frac{1+3\,\text{Log}[a+b\,x]}{9\,(-b\,c+a\,d)\,(a+b\,x)^3}+\frac{d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)+$$

$$\frac{1}{(b\,c-a\,d)^3}\,2\,a^3\,c\,d^3\,p\,q\,r^2\left(-\frac{d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}-\frac{b\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}+\frac{d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\right.$$

$$\left.\frac{1+3\,\text{Log}[a+b\,x]}{9\,(-b\,c+a\,d)\,(a+b\,x)^3}+\frac{d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)-$$

$$\frac{1}{3\,b\,(b\,c-a\,d)^3}\,2\,a^4\,d^4\,p\,q\,r^2\left(-\frac{d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}-\frac{b\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}+\frac{d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\right.$$

$$\frac{1+3\,\text{Log}[a+b\,x]}{9\,(-b\,c+a\,d)\,(a+b\,x)^3}+\frac{d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\Bigg)-$$

$$\frac{1}{3\,b\,(b\,c-a\,d)^3}2\,a^4\,d^4\,q^2\,r^2\left(-\frac{d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}-\frac{b\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}+\frac{d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\right.$$

$$\left.\frac{1+3\,\text{Log}[a+b\,x]}{9\,(-b\,c+a\,d)\,(a+b\,x)^3}+\frac{d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)+$$

$$\frac{1}{(b\,c-a\,d)^3}2\,b^3\,c^4\,p\,r^2\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)$$

$$\left(-\frac{d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}-\frac{b\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}+\frac{d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\right.$$

$$\left.\frac{1+3\,\text{Log}[a+b\,x]}{9\,(-b\,c+a\,d)\,(a+b\,x)^3}+\frac{d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)-$$

$$\frac{1}{(b\,c-a\,d)^3}6\,a\,b^2\,c^3\,d\,p\,r^2\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)$$

$$\left(-\frac{d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}-\frac{b\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}+\frac{d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\right.$$

$$\left.\frac{1+3\,\text{Log}[a+b\,x]}{9\,(-b\,c+a\,d)\,(a+b\,x)^3}+\frac{d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)+$$

$$\frac{1}{(b\,c-a\,d)^3}6\,a^2\,b\,c^2\,d^2\,p\,r^2\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)$$

$$\left(-\frac{d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}-\frac{b\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}+\frac{d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\right.$$

$$\left.\frac{1+3\,\text{Log}[a+b\,x]}{9\,(-b\,c+a\,d)\,(a+b\,x)^3}+\frac{d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)-$$

$$\frac{1}{(b\,c-a\,d)^3}2\,a^3\,c\,d^3\,p\,r^2\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)$$

$$\left(-\frac{d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}-\frac{b\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}+\frac{d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\right.$$

$$\left.\frac{1+3\,\text{Log}[a+b\,x]}{9\,(-b\,c+a\,d)\,(a+b\,x)^3}+\frac{d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\right)+$$

$$\frac{1}{(b\,c-a\,d)^3}\,2\,b^3\,c^4\,p\,r\,\Bigg(-p\,r\,\text{Log}[a+b\,x]-r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)-$$

$$\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\text{Log}\left[e\,e^{r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\Bigg)\,\Bigg(-\frac{d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}-$$

$$\frac{b\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}+\frac{d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\frac{1+3\,\text{Log}[a+b\,x]}{9\,(-b\,c+a\,d)\,(a+b\,x)^3}+\frac{d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\Bigg)-$$

$$\frac{1}{(b\,c-a\,d)^3}\,6\,a\,b^2\,c^3\,d\,p\,r\,\Bigg(-p\,r\,\text{Log}[a+b\,x]-r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)-$$

$$\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\text{Log}\left[e\,e^{r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\Bigg)\,\Bigg(-\frac{d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}-$$

$$\frac{b\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^3\,(a\,b+b^2\,x)}+\frac{d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^2\,(a+b\,x)^2}+\frac{1+3\,\text{Log}[a+b\,x]}{9\,(-b\,c+a\,d)\,(a+b\,x)^3}+\frac{d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^4}\Bigg)+$$

$$\frac{1}{(b\,c-a\,d)^3}\,6\,a^2\,b\,c^2\,d^2\,p\,r\,\Bigg(-p\,r\,\text{Log}[a+b\,x]-r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)-$$

$$\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\text{Log}\left[e\,e^{r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\Bigg)\,\Bigg(-\frac{d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^4}-$$

$$\frac{b d^2 (1+\text{Log}[a+b x])}{(b c-a d)^3 (a b+b^2 x)}+\frac{d (1+2 \text{Log}[a+b x])}{4 (b c-a d)^2 (a+b x)^2}+\frac{1+3 \text{Log}[a+b x]}{9 (-b c+a d) (a+b x)^3}+\frac{d^3 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^4}\Bigg)-$$

$$\frac{1}{(b c-a d)^3} 2 a^3 c d^3 p r \Big(-p r \text{Log}[a+b x]-r \big(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\big)-$$

$$\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\left(r-\frac{r \left(-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)}{\text{Log}\left[f (a+b x)^p (c+d x)^q\right]}\right)+$$

$$\text{Log}\left[e\, e^{r \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)} (a+b x)^{p r} \left(f (a+b x)^p (c+d x)^q\right)^{r-\frac{r \left(-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)}{\text{Log}\left[f (a+b x)^p (c+d x)^q\right]}}\right]\Big)\left(-\frac{d^3 \text{Log}[a+b x]^2}{2 (b c-a d)^4}-\right.$$

$$\left.\frac{b d^2 (1+\text{Log}[a+b x])}{(b c-a d)^3 (a b+b^2 x)}+\frac{d (1+2 \text{Log}[a+b x])}{4 (b c-a d)^2 (a+b x)^2}+\frac{1+3 \text{Log}[a+b x]}{9 (-b c+a d) (a+b x)^3}+\frac{d^3 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^4}\right)$$

Problem 24: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2}{(a+b x)^5} \, dx$$

Optimal (type 4, 884 leaves, 32 steps):

$$-\frac{p^2 r^2}{32 b (a+b x)^4}-\frac{7 d p q r^2}{72 b (b c-a d) (a+b x)^3}+\frac{3 d^2 p q r^2}{16 b (b c-a d)^2 (a+b x)^2}-\frac{d^2 q^2 r^2}{12 b (b c-a d)^2 (a+b x)^2}-\frac{5 d^3 p q r^2}{8 b (b c-a d)^3 (a+b x)}+$$

$$\frac{5 d^3 q^2 r^2}{12 b (b c-a d)^3 (a+b x)}-\frac{d^4 p q r^2 \text{Log}[a+b x]}{8 b (b c-a d)^4}+\frac{11 d^4 q^2 r^2 \text{Log}[a+b x]}{12 b (b c-a d)^4}+\frac{d^4 p q r^2 \text{Log}[a+b x]^2}{4 b (b c-a d)^4}+\frac{d^4 p q r^2 \text{Log}[c+d x]}{8 b (b c-a d)^4}-$$

$$\frac{11 d^4 q^2 r^2 \text{Log}[c+d x]}{12 b (b c-a d)^4}-\frac{d^4 p q r^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{2 b (b c-a d)^4}-\frac{d^4 q^2 r^2 \text{Log}[c+d x]^2}{4 b (b c-a d)^4}+\frac{d^4 q^2 r^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{2 b (b c-a d)^4}-$$

$$\frac{p r \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{8 b (a+b x)^4}-\frac{d q r \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{6 b (b c-a d) (a+b x)^3}+\frac{d^2 q r \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{4 b (b c-a d)^2 (a+b x)^2}-$$

$$\frac{d^3 q r \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{2 b (b c-a d)^3 (a+b x)}-\frac{d^4 q r \text{Log}[a+b x] \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{2 b (b c-a d)^4}+\frac{d^4 q r \text{Log}[c+d x] \text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]}{2 b (b c-a d)^4}-$$

$$\frac{\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2}{4 b (a+b x)^4}+\frac{d^4 q^2 r^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{2 b (b c-a d)^4}-\frac{d^4 p q r^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{2 b (b c-a d)^4}$$

Result (type 4, 14 321 leaves):

$$-\frac{p^2 r^2 \left(8 \text{Log}[a+b x]+32 \text{Log}[a+b x]^2+64 \text{Log}[a+b x]^3\right)}{256 b (a+b x)^4 \text{Log}[a+b x]}+\frac{1}{4 (-b c+a d)^4 (a+b x)^4}$$

$$q^2 r^2 \left(-b^3 c^4+4 a b^2 c^3 d-6 a^2 b c^2 d^2+4 a^3 c d^3+4 a^3 d^4 x+6 a^2 b d^4 x^2+4 a b^2 d^4 x^3+b^3 d^4 x^4\right) \text{Log}[c+d x]^2-$$

$$\frac{1}{4 b (a+b x)^4}\left(-p r \text{Log}[a+b x]-\text{Log}\left[f (a+b x)^p (c+d x)^q\right] \left(r-\frac{r \left(-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)}{\text{Log}\left[f (a+b x)^p (c+d x)^q\right]}\right)+\right.$$

$$\left.\text{Log}\left[e\, e^{r \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)} (a+b x)^{p r} \left(f (a+b x)^p (c+d x)^q\right)^{r-\frac{r \left(-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)}{\text{Log}\left[f (a+b x)^p (c+d x)^q\right]}}\right]\right)^2-$$

$$\frac{1}{48 b (b c-a d)^2 (a+b x)^2} d^2 q r \left(-3 p r+4 q r-12 r \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)-\right.$$

$$12 \left(-p r \text{Log}[a+b x]-r \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)-\right.$$

$$\text{Log}\left[f (a+b x)^p (c+d x)^q\right] \left(r-\frac{r \left(-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)}{\text{Log}\left[f (a+b x)^p (c+d x)^q\right]}\right)+$$

$$\left.\left.\text{Log}\left[e\, e^{r \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)} (a+b x)^{p r} \left(f (a+b x)^p (c+d x)^q\right)^{r-\frac{r \left(-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)}{\text{Log}\left[f (a+b x)^p (c+d x)^q\right]}}\right]\right)\right)+$$

$$\frac{1}{24 b (b c-a d)^3 (a+b x)} d^3 q r \left(-3 p r+10 q r-12 r \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)-\right.$$

$$12 \left(-p r \text{Log}[a+b x]-r \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)-\right.$$

$$\text{Log}\left[f (a+b x)^p (c+d x)^q\right] \left(r-\frac{r \left(-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)}{\text{Log}\left[f (a+b x)^p (c+d x)^q\right]}\right)+$$

$$\left.\left.\text{Log}\left[e\, e^{r \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)} (a+b x)^{p r} \left(f (a+b x)^p (c+d x)^q\right)^{r-\frac{r \left(-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)}{\text{Log}\left[f (a+b x)^p (c+d x)^q\right]}}\right]\right)\right)+$$

$$\frac{1}{24 b (b c-a d)^4} d^4 q r \text{Log}[a+b x] \left(-3 p r+22 q r-12 r \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)-\right.$$

$$12 \left(-p r \text{Log}[a+b x]-r \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)-\right.$$

$$\text{Log}\left[f (a+b x)^p (c+d x)^q\right] \left(r-\frac{r \left(-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)}{\text{Log}\left[f (a+b x)^p (c+d x)^q\right]}\right)+$$

$$\left.\left.\text{Log}\left[e\, e^{r \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)} (a+b x)^{p r} \left(f (a+b x)^p (c+d x)^q\right)^{r-\frac{r \left(-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)}{\text{Log}\left[f (a+b x)^p (c+d x)^q\right]}}\right]\right)\right)-$$

$$\frac{1}{24\,b\,(b\,c-a\,d)^4}\,d^4\,q\,r\,\text{Log}[c+d\,x]\,\Big(-3\,p\,r+22\,q\,r-12\,r\,\big(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]\big)-$$

$$12\,\Big(-p\,r\,\text{Log}[a+b\,x]-r\,\big(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]\big)-$$

$$\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]\,\left(r-\frac{r\,\big(-q\,\text{Log}[c+d\,x]+\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]\big)}{\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]}\right)+$$

$$\text{Log}\Big[e\,\mathbb{e}^{r\,(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}[f\,(a+b\,x)^p\,(c+d\,x)^q])}\,(a+b\,x)^{p\,r}\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^{r-\frac{r\,(-q\,\text{Log}[c+d\,x]+\text{Log}[f\,(a+b\,x)^p\,(c+d\,x)^q])}{\text{Log}[f\,(a+b\,x)^p\,(c+d\,x)^q]}}\Big]\Big)\Big)-$$

$$\frac{1}{24\,b\,(b\,c-a\,d)\,(a+b\,x)^3}\,d\,q\,r\,\Big(p\,r+4\,r\,\big(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]\big)+$$

$$4\,\Big(-p\,r\,\text{Log}[a+b\,x]-r\,\big(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]\big)-$$

$$\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]\,\left(r-\frac{r\,\big(-q\,\text{Log}[c+d\,x]+\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]\big)}{\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]}\right)+$$

$$\text{Log}\Big[e\,\mathbb{e}^{r\,(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}[f\,(a+b\,x)^p\,(c+d\,x)^q])}\,(a+b\,x)^{p\,r}\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^{r-\frac{r\,(-q\,\text{Log}[c+d\,x]+\text{Log}[f\,(a+b\,x)^p\,(c+d\,x)^q])}{\text{Log}[f\,(a+b\,x)^p\,(c+d\,x)^q]}}\Big]\Big)\Big)+$$

$$\text{Log}[c+d\,x]\,\Big(-\frac{d\,q^2\,r^2}{6\,b\,(b\,c-a\,d)\,(a+b\,x)^3}+\frac{d^2\,q^2\,r^2}{4\,b\,(b\,c-a\,d)^2\,(a+b\,x)^2}-\frac{d^3\,q^2\,r^2}{2\,b\,(b\,c-a\,d)^3\,(a+b\,x)}-\frac{d^4\,q^2\,r^2\,\text{Log}[a+b\,x]}{2\,b\,(b\,c-a\,d)^4}-\frac{p\,q\,r^2\,\text{Log}[a+b\,x]}{2\,b\,(a+b\,x)^4}-$$

$$\frac{1}{8\,b\,(a+b\,x)^4}\,q\,r\,\Big(p\,r+4\,r\,\big(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]\big)+4\,\Big(-p\,r\,\text{Log}[a+b\,x]-r\,\big(-p\,\text{Log}[a+b\,x]-$$

$$q\,\text{Log}[c+d\,x]+\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]\big)-\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]\,\left(r-\frac{r\,\big(-q\,\text{Log}[c+d\,x]+\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]\big)}{\text{Log}\big[f\,(a+b\,x)^p\,(c+d\,x)^q\big]}\right)+$$

$$\text{Log}\Big[e\,\mathbb{e}^{r\,(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}[f\,(a+b\,x)^p\,(c+d\,x)^q])}\,(a+b\,x)^{p\,r}\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^{r-\frac{r\,(-q\,\text{Log}[c+d\,x]+\text{Log}[f\,(a+b\,x)^p\,(c+d\,x)^q])}{\text{Log}[f\,(a+b\,x)^p\,(c+d\,x)^q]}}\Big]\Big)\Big)\Big)+$$

$$\frac{1}{2\,(b\,c-a\,d)^4}5\,a\,b^3\,d^5\,q^2\,r^2\,\left(\frac{c^4\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^5}+\frac{\big(4\,a\,b^3\,c^3-6\,a^2\,b^2\,c^2\,d+4\,a^3\,b\,c\,d^2-a^4\,d^3\big)\,\big(1+\text{Log}[a+b\,x]\big)}{b^3\,(b\,c-a\,d)^4\,(a\,b+b^2\,x)}-\right.$$

$$\frac{\big(6\,a^2\,b^2\,c^2-8\,a^3\,b\,c\,d+3\,a^4\,d^2\big)\,\big(1+2\,\text{Log}[a+b\,x]\big)}{4\,b^4\,(b\,c-a\,d)^3\,(a+b\,x)^2}+\frac{\big(4\,a^3\,b\,c-3\,a^4\,d\big)\,\big(1+3\,\text{Log}[a+b\,x]\big)}{9\,b^4\,(b\,c-a\,d)^2\,(a+b\,x)^3}-$$

$$\left.\frac{a^4\,\big(1+4\,\text{Log}[a+b\,x]\big)}{16\,b^4\,(b\,c-a\,d)\,(a+b\,x)^4}-\frac{c^4\,\Big(\text{Log}[a+b\,x]\,\text{Log}\Big[\frac{b\,(c+d\,x)}{b\,c-a\,d}\Big]+\text{PolyLog}\Big[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\Big]\Big)}{(b\,c-a\,d)^5}\right)+$$

$$\frac{1}{2\,(b\,c-a\,d)^4}b^4\,d^5\,q^2\,r^2\left(-\frac{\left(5\,a\,b^4\,c^4-10\,a^2\,b^3\,c^3\,d+10\,a^3\,b^2\,c^2\,d^2-5\,a^4\,b\,c\,d^3+a^5\,d^4\right)\text{Log}[a+b\,x]^2}{2\,b^5\,(b\,c-a\,d)^5}-\right.$$

$$\frac{\left(10\,a^2\,b^3\,c^3-20\,a^3\,b^2\,c^2\,d+15\,a^4\,b\,c\,d^2-4\,a^5\,d^3\right)\left(1+\text{Log}[a+b\,x]\right)}{b^4\,(b\,c-a\,d)^4\,\left(a\,b+b^2\,x\right)}+\frac{\left(10\,a^3\,b^2\,c^2-15\,a^4\,b\,c\,d+6\,a^5\,d^2\right)\left(1+2\,\text{Log}[a+b\,x]\right)}{4\,b^5\,(b\,c-a\,d)^3\,(a+b\,x)^2}-$$

$$\left.\frac{\left(5\,a^4\,b\,c-4\,a^5\,d\right)\left(1+3\,\text{Log}[a+b\,x]\right)}{9\,b^5\,(b\,c-a\,d)^2\,(a+b\,x)^3}+\frac{a^5\left(1+4\,\text{Log}[a+b\,x]\right)}{16\,b^5\,(b\,c-a\,d)\,(a+b\,x)^4}+\frac{c^5\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{d\,(b\,c-a\,d)^5}\right)+$$

$$\frac{1}{(b\,c-a\,d)^4}5\,a^2\,b^2\,d^5\,q^2\,r^2\left(-\frac{c^3\,d\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^5}-\frac{b\,c^3\left(1+\text{Log}[a+b\,x]\right)}{(b\,c-a\,d)^4\,\left(a\,b+b^2\,x\right)}+\frac{\left(3\,a\,b^2\,c^2-3\,a^2\,b\,c\,d+a^3\,d^2\right)\left(1+2\,\text{Log}[a+b\,x]\right)}{4\,b^3\,(b\,c-a\,d)^3\,(a+b\,x)^2}-\right.$$

$$\left.\frac{\left(3\,a^2\,b\,c-2\,a^3\,d\right)\left(1+3\,\text{Log}[a+b\,x]\right)}{9\,b^3\,(b\,c-a\,d)^2\,(a+b\,x)^3}+\frac{a^3\left(1+4\,\text{Log}[a+b\,x]\right)}{16\,b^3\,(b\,c-a\,d)\,(a+b\,x)^4}+\frac{c^3\,d\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^5}\right)+$$

$$\frac{1}{(b\,c-a\,d)^4}5\,a^3\,b\,d^5\,q^2\,r^2\left(\frac{c^2\,d^2\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^5}+\frac{b\,c^2\,d\left(1+\text{Log}[a+b\,x]\right)}{(b\,c-a\,d)^4\,\left(a\,b+b^2\,x\right)}-\frac{c^2\left(1+2\,\text{Log}[a+b\,x]\right)}{4\,(b\,c-a\,d)^3\,(a+b\,x)^2}+\frac{\left(2\,a\,b\,c-a^2\,d\right)\left(1+3\,\text{Log}[a+b\,x]\right)}{9\,b^2\,(b\,c-a\,d)^2\,(a+b\,x)^3}-\right.$$

$$\left.\frac{a^2\left(1+4\,\text{Log}[a+b\,x]\right)}{16\,b^2\,(b\,c-a\,d)\,(a+b\,x)^4}-\frac{c^2\,d^2\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^5}\right)+\frac{1}{2\,(b\,c-a\,d)^4}$$

$$b^4\,c^4\,d\,p\,q\,r^2\left(-\frac{c\,d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^5}-\frac{b\,c\,d^2\left(1+\text{Log}[a+b\,x]\right)}{(b\,c-a\,d)^4\,\left(a\,b+b^2\,x\right)}+\frac{c\,d\left(1+2\,\text{Log}[a+b\,x]\right)}{4\,(b\,c-a\,d)^3\,(a+b\,x)^2}-\frac{c\left(1+3\,\text{Log}[a+b\,x]\right)}{9\,(b\,c-a\,d)^2\,(a+b\,x)^3}-\right.$$

$$\left.\frac{a\left(1+4\,\text{Log}[a+b\,x]\right)}{16\,b\,(-b\,c+a\,d)\,(a+b\,x)^4}+\frac{c\,d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^5}\right)-\frac{1}{(b\,c-a\,d)^4}$$

$$2\,a\,b^3\,c^3\,d^2\,p\,q\,r^2\left(-\frac{c\,d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^5}-\frac{b\,c\,d^2\left(1+\text{Log}[a+b\,x]\right)}{(b\,c-a\,d)^4\,\left(a\,b+b^2\,x\right)}+\frac{c\,d\left(1+2\,\text{Log}[a+b\,x]\right)}{4\,(b\,c-a\,d)^3\,(a+b\,x)^2}-\frac{c\left(1+3\,\text{Log}[a+b\,x]\right)}{9\,(b\,c-a\,d)^2\,(a+b\,x)^3}-\right.$$

$$\left.\frac{a\left(1+4\,\text{Log}[a+b\,x]\right)}{16\,b\,(-b\,c+a\,d)\,(a+b\,x)^4}+\frac{c\,d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^5}\right)+\frac{1}{(b\,c-a\,d)^4}$$

$$3\,a^2\,b^2\,c^2\,d^3\,p\,q\,r^2\left(-\frac{c\,d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^5}-\frac{b\,c\,d^2\left(1+\text{Log}[a+b\,x]\right)}{(b\,c-a\,d)^4\,\left(a\,b+b^2\,x\right)}+\frac{c\,d\left(1+2\,\text{Log}[a+b\,x]\right)}{4\,(b\,c-a\,d)^3\,(a+b\,x)^2}-\frac{c\left(1+3\,\text{Log}[a+b\,x]\right)}{9\,(b\,c-a\,d)^2\,(a+b\,x)^3}-\right.$$

$$\left.\frac{a\left(1+4\,\text{Log}[a+b\,x]\right)}{16\,b\,(-b\,c+a\,d)\,(a+b\,x)^4}+\frac{c\,d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^5}\right)-\frac{1}{(b\,c-a\,d)^4}$$

$$2 a^3 b c d^4 p q r^2 \left(-\frac{c d^3 \text{Log}[a+b x]^2}{2 (b c-a d)^5}-\frac{b c d^2 (1+\text{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}+\frac{c d (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}-\frac{c (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}-\frac{a (1+4 \text{Log}[a+b x])}{16 b (-b c+a d) (a+b x)^4}+\frac{c d^3 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)+\frac{1}{2 (b c-a d)^4}$$

$$a^4 d^5 p q r^2 \left(-\frac{c d^3 \text{Log}[a+b x]^2}{2 (b c-a d)^5}-\frac{b c d^2 (1+\text{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}+\frac{c d (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}-\frac{c (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}-\frac{a (1+4 \text{Log}[a+b x])}{16 b (-b c+a d) (a+b x)^4}+\frac{c d^3 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)+\frac{1}{2 (b c-a d)^4}$$

$$5 a^4 d^5 q^2 r^2 \left(-\frac{c d^3 \text{Log}[a+b x]^2}{2 (b c-a d)^5}-\frac{b c d^2 (1+\text{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}+\frac{c d (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}-\frac{c (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}-\frac{a (1+4 \text{Log}[a+b x])}{16 b (-b c+a d) (a+b x)^4}+\frac{c d^3 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)+$$

$$\frac{1}{(b c-a d)^4} 2 b^4 c^4 d p r^2 \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right) \left(-\frac{c d^3 \text{Log}[a+b x]^2}{2 (b c-a d)^5}-\frac{b c d^2 (1+\text{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}+\frac{c d (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}-\frac{c (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}-\frac{a (1+4 \text{Log}[a+b x])}{16 b (-b c+a d) (a+b x)^4}+\frac{c d^3 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)-$$

$$\frac{1}{(b c-a d)^4} 8 a b^3 c^3 d^2 p r^2 \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right) \left(-\frac{c d^3 \text{Log}[a+b x]^2}{2 (b c-a d)^5}-\frac{b c d^2 (1+\text{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}+\frac{c d (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}-\frac{c (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}-\frac{a (1+4 \text{Log}[a+b x])}{16 b (-b c+a d) (a+b x)^4}+\frac{c d^3 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)+$$

$$\frac{1}{(b c-a d)^4} 12 a^2 b^2 c^2 d^3 p r^2 \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)$$

$$\left(-\frac{c\, d^3\, \text{Log}[a+b\, x]^2}{2\, (b\, c-a\, d)^5}-\frac{b\, c\, d^2\, (1+\text{Log}[a+b\, x])}{(b\, c-a\, d)^4\, (a\, b+b^2\, x)}+\frac{c\, d\, (1+2\, \text{Log}[a+b\, x])}{4\, (b\, c-a\, d)^3\, (a+b\, x)^2}-\frac{c\, (1+3\, \text{Log}[a+b\, x])}{9\, (b\, c-a\, d)^2\, (a+b\, x)^3}-\right.$$

$$\left.\frac{a\, (1+4\, \text{Log}[a+b\, x])}{16\, b\, (-b\, c+a\, d)\, (a+b\, x)^4}+\frac{c\, d^3\, \left(\text{Log}[a+b\, x]\, \text{Log}\left[\frac{b\, (c+d\, x)}{b\, c-a\, d}\right]+\text{PolyLog}\left[2, \frac{d\, (a+b\, x)}{-b\, c+a\, d}\right]\right)}{(b\, c-a\, d)^5}\right)-$$

$$\frac{1}{(b\, c-a\, d)^4} 8\, a^3\, b\, c\, d^4\, p\, r^2\, \left(-p\, \text{Log}[a+b\, x]-q\, \text{Log}[c+d\, x]+\text{Log}\left[f\, (a+b\, x)^p\, (c+d\, x)^q\right]\right)$$

$$\left(-\frac{c\, d^3\, \text{Log}[a+b\, x]^2}{2\, (b\, c-a\, d)^5}-\frac{b\, c\, d^2\, (1+\text{Log}[a+b\, x])}{(b\, c-a\, d)^4\, (a\, b+b^2\, x)}+\frac{c\, d\, (1+2\, \text{Log}[a+b\, x])}{4\, (b\, c-a\, d)^3\, (a+b\, x)^2}-\frac{c\, (1+3\, \text{Log}[a+b\, x])}{9\, (b\, c-a\, d)^2\, (a+b\, x)^3}-\right.$$

$$\left.\frac{a\, (1+4\, \text{Log}[a+b\, x])}{16\, b\, (-b\, c+a\, d)\, (a+b\, x)^4}+\frac{c\, d^3\, \left(\text{Log}[a+b\, x]\, \text{Log}\left[\frac{b\, (c+d\, x)}{b\, c-a\, d}\right]+\text{PolyLog}\left[2, \frac{d\, (a+b\, x)}{-b\, c+a\, d}\right]\right)}{(b\, c-a\, d)^5}\right)+$$

$$\frac{1}{(b\, c-a\, d)^4} 2\, a^4\, d^5\, p\, r^2\, \left(-p\, \text{Log}[a+b\, x]-q\, \text{Log}[c+d\, x]+\text{Log}\left[f\, (a+b\, x)^p\, (c+d\, x)^q\right]\right)$$

$$\left(-\frac{c\, d^3\, \text{Log}[a+b\, x]^2}{2\, (b\, c-a\, d)^5}-\frac{b\, c\, d^2\, (1+\text{Log}[a+b\, x])}{(b\, c-a\, d)^4\, (a\, b+b^2\, x)}+\frac{c\, d\, (1+2\, \text{Log}[a+b\, x])}{4\, (b\, c-a\, d)^3\, (a+b\, x)^2}-\frac{c\, (1+3\, \text{Log}[a+b\, x])}{9\, (b\, c-a\, d)^2\, (a+b\, x)^3}-\right.$$

$$\left.\frac{a\, (1+4\, \text{Log}[a+b\, x])}{16\, b\, (-b\, c+a\, d)\, (a+b\, x)^4}+\frac{c\, d^3\, \left(\text{Log}[a+b\, x]\, \text{Log}\left[\frac{b\, (c+d\, x)}{b\, c-a\, d}\right]+\text{PolyLog}\left[2, \frac{d\, (a+b\, x)}{-b\, c+a\, d}\right]\right)}{(b\, c-a\, d)^5}\right)+$$

$$\frac{1}{(b\, c-a\, d)^4}\, 2\, b^4\, c^4\, d\, p\, r\, \left(-p\, r\, \text{Log}[a+b\, x]-r\, \left(-p\, \text{Log}[a+b\, x]-q\, \text{Log}[c+d\, x]+\text{Log}\left[f\, (a+b\, x)^p\, (c+d\, x)^q\right]\right)-\right.$$

$$\text{Log}\left[f\, (a+b\, x)^p\, (c+d\, x)^q\right]\, \left(r-\frac{r\, \left(-q\, \text{Log}[c+d\, x]+\text{Log}\left[f\, (a+b\, x)^p\, (c+d\, x)^q\right]\right)}{\text{Log}\left[f\, (a+b\, x)^p\, (c+d\, x)^q\right]}\right)+$$

$$\left.\text{Log}\left[e\, e^{r\, \left(-p\, \text{Log}[a+b\, x]-q\, \text{Log}[c+d\, x]+\text{Log}\left[f\, (a+b\, x)^p\, (c+d\, x)^q\right]\right)}\, (a+b\, x)^{p\, r}\, \left(f\, (a+b\, x)^p\, (c+d\, x)^q\right)^{r-\frac{r\, \left(-q\, \text{Log}[c+d\, x]+\text{Log}\left[f\, (a+b\, x)^p\, (c+d\, x)^q\right]\right)}{\text{Log}\left[f\, (a+b\, x)^p\, (c+d\, x)^q\right]}}\right]\right)$$

$$\left(-\frac{c\, d^3\, \text{Log}[a+b\, x]^2}{2\, (b\, c-a\, d)^5}-\frac{b\, c\, d^2\, (1+\text{Log}[a+b\, x])}{(b\, c-a\, d)^4\, (a\, b+b^2\, x)}+\frac{c\, d\, (1+2\, \text{Log}[a+b\, x])}{4\, (b\, c-a\, d)^3\, (a+b\, x)^2}-\frac{c\, (1+3\, \text{Log}[a+b\, x])}{9\, (b\, c-a\, d)^2\, (a+b\, x)^3}-\right.$$

$$\left.\frac{a\, (1+4\, \text{Log}[a+b\, x])}{16\, b\, (-b\, c+a\, d)\, (a+b\, x)^4}+\frac{c\, d^3\, \left(\text{Log}[a+b\, x]\, \text{Log}\left[\frac{b\, (c+d\, x)}{b\, c-a\, d}\right]+\text{PolyLog}\left[2, \frac{d\, (a+b\, x)}{-b\, c+a\, d}\right]\right)}{(b\, c-a\, d)^5}\right)-$$

$$\frac{1}{(b\, c-a\, d)^4}\, 8\, a\, b^3\, c^3\, d^2\, p\, r\, \left(-p\, r\, \text{Log}[a+b\, x]-r\, \left(-p\, \text{Log}[a+b\, x]-q\, \text{Log}[c+d\, x]+\text{Log}\left[f\, (a+b\, x)^p\, (c+d\, x)^q\right]\right)-\right.$$

$$\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\left.\text{Log}\left[e\,e^{r\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\right)$$

$$\left(-\frac{c\,d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^5}-\frac{b\,c\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^4\,(a\,b+b^2\,x)}+\frac{c\,d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^3\,(a+b\,x)^2}-\frac{c\,(1+3\,\text{Log}[a+b\,x])}{9\,(b\,c-a\,d)^2\,(a+b\,x)^3}-\right.$$

$$\left.\frac{a\,(1+4\,\text{Log}[a+b\,x])}{16\,b\,(-b\,c+a\,d)\,(a+b\,x)^4}+\frac{c\,d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^5}\right)+$$

$$\frac{1}{(b\,c-a\,d)^4}\,12\,a^2\,b^2\,c^2\,d^3\,p\,r\left(-p\,r\,\text{Log}[a+b\,x]-r\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)-\right.$$

$$\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\left.\text{Log}\left[e\,e^{r\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\right)$$

$$\left(-\frac{c\,d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^5}-\frac{b\,c\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^4\,(a\,b+b^2\,x)}+\frac{c\,d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^3\,(a+b\,x)^2}-\frac{c\,(1+3\,\text{Log}[a+b\,x])}{9\,(b\,c-a\,d)^2\,(a+b\,x)^3}-\right.$$

$$\left.\frac{a\,(1+4\,\text{Log}[a+b\,x])}{16\,b\,(-b\,c+a\,d)\,(a+b\,x)^4}+\frac{c\,d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^5}\right)-$$

$$\frac{1}{(b\,c-a\,d)^4}\,8\,a^3\,b\,c\,d^4\,p\,r\left(-p\,r\,\text{Log}[a+b\,x]-r\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)-\right.$$

$$\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\left.\text{Log}\left[e\,e^{r\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\right)$$

$$\left(-\frac{c\,d^3\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^5}-\frac{b\,c\,d^2\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^4\,(a\,b+b^2\,x)}+\frac{c\,d\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^3\,(a+b\,x)^2}-\frac{c\,(1+3\,\text{Log}[a+b\,x])}{9\,(b\,c-a\,d)^2\,(a+b\,x)^3}-\right.$$

$$\left.\frac{a\,(1+4\,\text{Log}[a+b\,x])}{16\,b\,(-b\,c+a\,d)\,(a+b\,x)^4}+\frac{c\,d^3\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^5}\right)+$$

$$\frac{1}{(b c-a d)^4} 2 a^4 d^5 p r \left(-p r \text{Log}[a+b x]-r \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)-\right.$$

$$\text{Log}\left[f (a+b x)^p (c+d x)^q\right] \left(r-\frac{r \left(-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)}{\text{Log}\left[f (a+b x)^p (c+d x)^q\right]}\right)+$$

$$\left.\text{Log}\left[e\, e^{r \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)} (a+b x)^{p r} \left(f (a+b x)^p (c+d x)^q\right)^{r-\frac{r \left(-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)}{\text{Log}\left[f (a+b x)^p (c+d x)^q\right]}}\right]\right)$$

$$\left(-\frac{c d^3 \text{Log}[a+b x]^2}{2 (b c-a d)^5}-\frac{b c d^2 (1+\text{Log}[a+b x])}{(b c-a d)^4 \left(a b+b^2 x\right)}+\frac{c d (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}-\frac{c (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}-\right.$$

$$\left.\frac{a (1+4 \text{Log}[a+b x])}{16 b (-b c+a d) (a+b x)^4}+\frac{c d^3 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)+\frac{1}{2 (b c-a d)^4}$$

$$a b^3 c^4 d p q r^2 \left(\frac{d^4 \text{Log}[a+b x]^2}{2 (b c-a d)^5}+\frac{b d^3 (1+\text{Log}[a+b x])}{(b c-a d)^4 \left(a b+b^2 x\right)}-\frac{d^2 (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}+\frac{d (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}+\right.$$

$$\left.\frac{1+4 \text{Log}[a+b x]}{16 (-b c+a d) (a+b x)^4}-\frac{d^4 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)-\frac{1}{(b c-a d)^4}$$

$$2 a^2 b^2 c^3 d^2 p q r^2 \left(\frac{d^4 \text{Log}[a+b x]^2}{2 (b c-a d)^5}+\frac{b d^3 (1+\text{Log}[a+b x])}{(b c-a d)^4 \left(a b+b^2 x\right)}-\frac{d^2 (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}+\frac{d (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}+\right.$$

$$\left.\frac{1+4 \text{Log}[a+b x]}{16 (-b c+a d) (a+b x)^4}-\frac{d^4 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)+\frac{1}{(b c-a d)^4}$$

$$3 a^3 b c^2 d^3 p q r^2 \left(\frac{d^4 \text{Log}[a+b x]^2}{2 (b c-a d)^5}+\frac{b d^3 (1+\text{Log}[a+b x])}{(b c-a d)^4 \left(a b+b^2 x\right)}-\frac{d^2 (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}+\frac{d (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}+\right.$$

$$\left.\frac{1+4 \text{Log}[a+b x]}{16 (-b c+a d) (a+b x)^4}-\frac{d^4 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)-\frac{1}{(b c-a d)^4}$$

$$2 a^4 c d^4 p q r^2 \left(\frac{d^4 \text{Log}[a+b x]^2}{2 (b c-a d)^5}+\frac{b d^3 (1+\text{Log}[a+b x])}{(b c-a d)^4 \left(a b+b^2 x\right)}-\frac{d^2 (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}+\frac{d (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}+\right.$$

$$\left.\frac{1+4 \text{Log}[a+b x]}{16 (-b c+a d) (a+b x)^4}-\frac{d^4 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)+\frac{1}{2 b (b c-a d)^4}$$

$$a^5 d^5 p\, q\, r^2 \left(\frac{d^4 \text{Log}[a+b x]^2}{2 (b c-a d)^5}+\frac{b d^3 (1+\text{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}-\frac{d^2 (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}+\frac{d (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}+\frac{1+4 \text{Log}[a+b x]}{16 (-b c+a d) (a+b x)^4}-\frac{d^4 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)+\frac{1}{2 b (b c-a d)^4}$$

$$a^5 d^5 q^2 r^2 \left(\frac{d^4 \text{Log}[a+b x]^2}{2 (b c-a d)^5}+\frac{b d^3 (1+\text{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}-\frac{d^2 (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}+\frac{d (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}+\frac{1+4 \text{Log}[a+b x]}{16 (-b c+a d) (a+b x)^4}-\frac{d^4 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)+$$

$$\frac{1}{(b c-a d)^4} 2 b^4 c^5 p\, r^2 \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)$$
$$\left(\frac{d^4 \text{Log}[a+b x]^2}{2 (b c-a d)^5}+\frac{b d^3 (1+\text{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}-\frac{d^2 (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}+\frac{d (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}+\frac{1+4 \text{Log}[a+b x]}{16 (-b c+a d) (a+b x)^4}-\frac{d^4 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)-$$

$$\frac{1}{(b c-a d)^4} 8 a b^3 c^4 d\, p\, r^2 \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)$$
$$\left(\frac{d^4 \text{Log}[a+b x]^2}{2 (b c-a d)^5}+\frac{b d^3 (1+\text{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}-\frac{d^2 (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}+\frac{d (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}+\frac{1+4 \text{Log}[a+b x]}{16 (-b c+a d) (a+b x)^4}-\frac{d^4 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)+$$

$$\frac{1}{(b c-a d)^4} 12 a^2 b^2 c^3 d^2 p\, r^2 \left(-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)$$
$$\left(\frac{d^4 \text{Log}[a+b x]^2}{2 (b c-a d)^5}+\frac{b d^3 (1+\text{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}-\frac{d^2 (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}+\frac{d (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}+\frac{1+4 \text{Log}[a+b x]}{16 (-b c+a d) (a+b x)^4}-\frac{d^4 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)-$$

$$\frac{1}{(b\,c-a\,d)^4} 8\,a^3\,b\,c^2\,d^3\,p\,r^2\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)$$

$$\left(\frac{d^4\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^5}+\frac{b\,d^3\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^4\,(a\,b+b^2\,x)}-\frac{d^2\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^3\,(a+b\,x)^2}+\frac{d\,(1+3\,\text{Log}[a+b\,x])}{9\,(b\,c-a\,d)^2\,(a+b\,x)^3}+\right.$$

$$\left.\frac{1+4\,\text{Log}[a+b\,x]}{16\,(-b\,c+a\,d)\,(a+b\,x)^4}-\frac{d^4\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^5}\right)+$$

$$\frac{1}{(b\,c-a\,d)^4} 2\,a^4\,c\,d^4\,p\,r^2\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)$$

$$\left(\frac{d^4\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^5}+\frac{b\,d^3\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^4\,(a\,b+b^2\,x)}-\frac{d^2\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^3\,(a+b\,x)^2}+\frac{d\,(1+3\,\text{Log}[a+b\,x])}{9\,(b\,c-a\,d)^2\,(a+b\,x)^3}+\right.$$

$$\left.\frac{1+4\,\text{Log}[a+b\,x]}{16\,(-b\,c+a\,d)\,(a+b\,x)^4}-\frac{d^4\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^5}\right)+$$

$$\frac{1}{(b\,c-a\,d)^4}\,2\,b^4\,c^5\,p\,r\,\left(-p\,r\,\text{Log}[a+b\,x]-r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)-\right.$$

$$\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\,\left(r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\left.\text{Log}\left[e\,e^{r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\right)$$

$$\left(\frac{d^4\,\text{Log}[a+b\,x]^2}{2\,(b\,c-a\,d)^5}+\frac{b\,d^3\,(1+\text{Log}[a+b\,x])}{(b\,c-a\,d)^4\,(a\,b+b^2\,x)}-\frac{d^2\,(1+2\,\text{Log}[a+b\,x])}{4\,(b\,c-a\,d)^3\,(a+b\,x)^2}+\frac{d\,(1+3\,\text{Log}[a+b\,x])}{9\,(b\,c-a\,d)^2\,(a+b\,x)^3}+\right.$$

$$\left.\frac{1+4\,\text{Log}[a+b\,x]}{16\,(-b\,c+a\,d)\,(a+b\,x)^4}-\frac{d^4\left(\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)}{(b\,c-a\,d)^5}\right)-$$

$$\frac{1}{(b\,c-a\,d)^4}\,8\,a\,b^3\,c^4\,d\,p\,r\,\left(-p\,r\,\text{Log}[a+b\,x]-r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)-\right.$$

$$\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\,\left(r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+$$

$$\left.\text{Log}\left[e\,e^{r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\right)$$

$$\left(\frac{d^4 \text{Log}[a+b x]^2}{2 (b c-a d)^5}+\frac{b d^3 (1+\text{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}-\frac{d^2 (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}+\frac{d (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}+\right.$$

$$\left.\frac{1+4 \text{Log}[a+b x]}{16 (-b c+a d) (a+b x)^4}-\frac{d^4 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)+$$

$$\frac{1}{(b c-a d)^4} 12 a^2 b^2 c^3 d^2 p r \left(-p r \text{Log}[a+b x]-r (-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}[f (a+b x)^p (c+d x)^q])-\right.$$

$$\text{Log}[f (a+b x)^p (c+d x)^q] \left(r-\frac{r (-q \text{Log}[c+d x]+\text{Log}[f (a+b x)^p (c+d x)^q])}{\text{Log}[f (a+b x)^p (c+d x)^q]}\right)+$$

$$\left.\text{Log}\left[e\, e^{r (-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}[f (a+b x)^p (c+d x)^q])} (a+b x)^{p r} (f (a+b x)^p (c+d x)^q)^{r-\frac{r (-q \text{Log}[c+d x]+\text{Log}[f (a+b x)^p (c+d x)^q])}{\text{Log}[f (a+b x)^p (c+d x)^q]}}\right]\right)$$

$$\left(\frac{d^4 \text{Log}[a+b x]^2}{2 (b c-a d)^5}+\frac{b d^3 (1+\text{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}-\frac{d^2 (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}+\frac{d (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}+\right.$$

$$\left.\frac{1+4 \text{Log}[a+b x]}{16 (-b c+a d) (a+b x)^4}-\frac{d^4 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)-$$

$$\frac{1}{(b c-a d)^4} 8 a^3 b c^2 d^3 p r \left(-p r \text{Log}[a+b x]-r (-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}[f (a+b x)^p (c+d x)^q])-\right.$$

$$\text{Log}[f (a+b x)^p (c+d x)^q] \left(r-\frac{r (-q \text{Log}[c+d x]+\text{Log}[f (a+b x)^p (c+d x)^q])}{\text{Log}[f (a+b x)^p (c+d x)^q]}\right)+$$

$$\left.\text{Log}\left[e\, e^{r (-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}[f (a+b x)^p (c+d x)^q])} (a+b x)^{p r} (f (a+b x)^p (c+d x)^q)^{r-\frac{r (-q \text{Log}[c+d x]+\text{Log}[f (a+b x)^p (c+d x)^q])}{\text{Log}[f (a+b x)^p (c+d x)^q]}}\right]\right)$$

$$\left(\frac{d^4 \text{Log}[a+b x]^2}{2 (b c-a d)^5}+\frac{b d^3 (1+\text{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}-\frac{d^2 (1+2 \text{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}+\frac{d (1+3 \text{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}+\right.$$

$$\left.\frac{1+4 \text{Log}[a+b x]}{16 (-b c+a d) (a+b x)^4}-\frac{d^4 \left(\text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)+$$

$$\frac{1}{(b c-a d)^4} 2 a^4 c d^4 p r \left(-p r \text{Log}[a+b x]-r (-p \text{Log}[a+b x]-q \text{Log}[c+d x]+\text{Log}[f (a+b x)^p (c+d x)^q])-\right.$$

$$\text{Log}[f (a+b x)^p (c+d x)^q] \left(r-\frac{r (-q \text{Log}[c+d x]+\text{Log}[f (a+b x)^p (c+d x)^q])}{\text{Log}[f (a+b x)^p (c+d x)^q]}\right)+$$

$$\mathrm{Log}\left[e\, e^{r\left(-p\,\mathrm{Log}[a+b x]-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)} (a+b x)^{p r} \left(f (a+b x)^p (c+d x)^q\right)^{r-\frac{r\left(-q\,\mathrm{Log}[c+d x]+\mathrm{Log}\left[f (a+b x)^p (c+d x)^q\right]\right)}{\mathrm{Log}\left[f (a+b x)^p (c+d x)^q\right]}}\right]\Bigg)$$

$$\left(\frac{d^4\,\mathrm{Log}[a+b x]^2}{2 (b c-a d)^5}+\frac{b d^3 (1+\mathrm{Log}[a+b x])}{(b c-a d)^4 (a b+b^2 x)}-\frac{d^2 (1+2\,\mathrm{Log}[a+b x])}{4 (b c-a d)^3 (a+b x)^2}+\frac{d (1+3\,\mathrm{Log}[a+b x])}{9 (b c-a d)^2 (a+b x)^3}+\right.$$
$$\left.\frac{1+4\,\mathrm{Log}[a+b x]}{16 (-b c+a d) (a+b x)^4}-\frac{d^4\left(\mathrm{Log}[a+b x]\,\mathrm{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\mathrm{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]\right)}{(b c-a d)^5}\right)$$

Problem 40: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2}{(g+h x)^2}\,dx$$

Optimal (type 4, 832 leaves, 31 steps):

$$\frac{2 b p q r^2\,\mathrm{Log}\left[-\frac{d (a+b x)}{b c-a d}\right]\mathrm{Log}[c+d x]}{h (b g-a h)}+\frac{2 d p q r^2\,\mathrm{Log}[a+b x]\,\mathrm{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{h (d g-c h)}-$$
$$\frac{2 b p r\,\mathrm{Log}[a+b x]\left(p r\,\mathrm{Log}[a+b x]+q r\,\mathrm{Log}[c+d x]-\mathrm{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)}{h (b g-a h)}-$$
$$\frac{2 d q r\,\mathrm{Log}[c+d x]\left(p r\,\mathrm{Log}[a+b x]+q r\,\mathrm{Log}[c+d x]-\mathrm{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)}{h (d g-c h)}-$$
$$\frac{\mathrm{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2}{h (g+h x)}+\frac{2 b p r\left(p r\,\mathrm{Log}[a+b x]+q r\,\mathrm{Log}[c+d x]-\mathrm{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)\mathrm{Log}[g+h x]}{h (b g-a h)}+$$
$$\frac{2 d q r\left(p r\,\mathrm{Log}[a+b x]+q r\,\mathrm{Log}[c+d x]-\mathrm{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)\mathrm{Log}[g+h x]}{h (d g-c h)}-\frac{2 d p q r^2\,\mathrm{Log}[a+b x]\,\mathrm{Log}\left[\frac{b (g+h x)}{b g-a h}\right]}{h (d g-c h)}-$$
$$\frac{2 b p q r^2\,\mathrm{Log}[c+d x]\,\mathrm{Log}\left[\frac{d (g+h x)}{d g-c h}\right]}{h (b g-a h)}-\frac{2 b p^2 r^2\,\mathrm{Log}[a+b x]\,\mathrm{Log}\left[1+\frac{b g-a h}{h (a+b x)}\right]}{h (b g-a h)}-\frac{2 d q^2 r^2\,\mathrm{Log}[c+d x]\,\mathrm{Log}\left[1+\frac{d g-c h}{h (c+d x)}\right]}{h (d g-c h)}+$$
$$\frac{2 b p^2 r^2\,\mathrm{PolyLog}\left[2,-\frac{b g-a h}{h (a+b x)}\right]}{h (b g-a h)}+\frac{2 d p q r^2\,\mathrm{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{h (d g-c h)}-\frac{2 d p q r^2\,\mathrm{PolyLog}\left[2,-\frac{h (a+b x)}{b g-a h}\right]}{h (d g-c h)}+$$
$$\frac{2 d q^2 r^2\,\mathrm{PolyLog}\left[2,-\frac{d g-c h}{h (c+d x)}\right]}{h (d g-c h)}+\frac{2 b p q r^2\,\mathrm{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{h (b g-a h)}-\frac{2 b p q r^2\,\mathrm{PolyLog}\left[2,-\frac{h (c+d x)}{d g-c h}\right]}{h (b g-a h)}$$

Result (type 4, 2930 leaves):

$$\frac{1}{h\,(-b\,g+a\,h)\,(-d\,g+c\,h)\,(g+h\,x)}$$

$$\Big(-b\,d\,g^2\,p^2\,r^2\,\text{Log}[a+b\,x]^2+b\,c\,g\,h\,p^2\,r^2\,\text{Log}[a+b\,x]^2-b\,d\,g\,h\,p^2\,r^2\,x\,\text{Log}[a+b\,x]^2+b\,c\,h^2\,p^2\,r^2\,x\,\text{Log}[a+b\,x]^2-2\,b\,d\,g^2\,p\,q\,r^2\,\text{Log}[a+b\,x]$$

$$\text{Log}[c+d\,x]+2\,a\,d\,g\,h\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]-2\,b\,d\,g\,h\,p\,q\,r^2\,x\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]+2\,a\,d\,h^2\,p\,q\,r^2\,x\,\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]-$$

$$b\,d\,g^2\,q^2\,r^2\,\text{Log}[c+d\,x]^2+a\,d\,g\,h\,q^2\,r^2\,\text{Log}[c+d\,x]^2-b\,d\,g\,h\,q^2\,r^2\,x\,\text{Log}[c+d\,x]^2+a\,d\,h^2\,q^2\,r^2\,x\,\text{Log}[c+d\,x]^2+$$

$$2\,b\,c\,g\,h\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]-2\,a\,d\,g\,h\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]+2\,b\,c\,h^2\,p\,q\,r^2\,x\,\text{Log}[a+b\,x]\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]-$$

$$2\,a\,d\,h^2\,p\,q\,r^2\,x\,\text{Log}[a+b\,x]\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]-b\,c\,g\,h\,p\,q\,r^2\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]^2+a\,d\,g\,h\,p\,q\,r^2\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]^2-$$

$$b\,c\,h^2\,p\,q\,r^2\,x\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]^2+a\,d\,h^2\,p\,q\,r^2\,x\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]^2+2\,b\,c\,g\,h\,p\,q\,r^2\,\text{Log}\Big[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\Big]\,\text{Log}\Big[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\Big]-$$

$$2\,a\,d\,g\,h\,p\,q\,r^2\,\text{Log}\Big[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\Big]\,\text{Log}\Big[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\Big]+2\,b\,c\,h^2\,p\,q\,r^2\,x\,\text{Log}\Big[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\Big]\,\text{Log}\Big[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\Big]-$$

$$2\,a\,d\,h^2\,p\,q\,r^2\,x\,\text{Log}\Big[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\Big]\,\text{Log}\Big[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\Big]+2\,b\,c\,g\,h\,p\,q\,r^2\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]\,\text{Log}\Big[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\Big]-$$

$$2\,a\,d\,g\,h\,p\,q\,r^2\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]\,\text{Log}\Big[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\Big]+2\,b\,c\,h^2\,p\,q\,r^2\,x\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]\,\text{Log}\Big[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\Big]-$$

$$2\,a\,d\,h^2\,p\,q\,r^2\,x\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]\,\text{Log}\Big[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\Big]-b\,c\,g\,h\,p\,q\,r^2\,\text{Log}\Big[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\Big]^2+a\,d\,g\,h\,p\,q\,r^2\,\text{Log}\Big[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\Big]^2-$$

$$b\,c\,h^2\,p\,q\,r^2\,x\,\text{Log}\Big[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\Big]^2+a\,d\,h^2\,p\,q\,r^2\,x\,\text{Log}\Big[\frac{(b\,g-a\,h)\,(c+d\,x)}{(d\,g-c\,h)\,(a+b\,x)}\Big]^2+2\,b\,d\,g^2\,p\,r\,\text{Log}[a+b\,x]\,\text{Log}\big[e\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^r\big]-$$

$$2\,b\,c\,g\,h\,p\,r\,\text{Log}[a+b\,x]\,\text{Log}\big[e\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^r\big]+2\,b\,d\,g\,h\,p\,r\,x\,\text{Log}[a+b\,x]\,\text{Log}\big[e\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^r\big]-$$

$$2\,b\,c\,h^2\,p\,r\,x\,\text{Log}[a+b\,x]\,\text{Log}\big[e\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^r\big]+2\,b\,d\,g^2\,q\,r\,\text{Log}[c+d\,x]\,\text{Log}\big[e\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^r\big]-$$

$$2\,a\,d\,g\,h\,q\,r\,\text{Log}[c+d\,x]\,\text{Log}\big[e\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^r\big]+2\,b\,d\,g\,h\,q\,r\,x\,\text{Log}[c+d\,x]\,\text{Log}\big[e\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^r\big]-$$

$$2\,a\,d\,h^2\,q\,r\,x\,\text{Log}[c+d\,x]\,\text{Log}\big[e\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^r\big]-b\,d\,g^2\,\text{Log}\big[e\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^r\big]^2+b\,c\,g\,h\,\text{Log}\big[e\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^r\big]^2+$$

$$a\,d\,g\,h\,\text{Log}\big[e\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^r\big]^2-a\,c\,h^2\,\text{Log}\big[e\,\big(f\,(a+b\,x)^p\,(c+d\,x)^q\big)^r\big]^2-2\,b\,d\,g^2\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\Big[\frac{b\,(g+h\,x)}{b\,g-a\,h}\Big]+$$

$$2\,a\,d\,g\,h\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\Big[\frac{b\,(g+h\,x)}{b\,g-a\,h}\Big]-2\,b\,d\,g\,h\,p\,q\,r^2\,x\,\text{Log}[a+b\,x]\,\text{Log}\Big[\frac{b\,(g+h\,x)}{b\,g-a\,h}\Big]+2\,a\,d\,h^2\,p\,q\,r^2\,x\,\text{Log}[a+b\,x]\,\text{Log}\Big[\frac{b\,(g+h\,x)}{b\,g-a\,h}\Big]+$$

$$2\,b\,d\,g^2\,p\,q\,r^2\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]\,\text{Log}\Big[\frac{b\,(g+h\,x)}{b\,g-a\,h}\Big]-2\,b\,c\,g\,h\,p\,q\,r^2\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]\,\text{Log}\Big[\frac{b\,(g+h\,x)}{b\,g-a\,h}\Big]+$$

$$2\,b\,d\,g\,h\,p\,q\,r^2\,x\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]\,\text{Log}\Big[\frac{b\,(g+h\,x)}{b\,g-a\,h}\Big]-2\,b\,c\,h^2\,p\,q\,r^2\,x\,\text{Log}\Big[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]\,\text{Log}\Big[\frac{b\,(g+h\,x)}{b\,g-a\,h}\Big]-$$

$$2\,b\,d\,g^2\,p\,r\,\text{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+2\,b\,c\,g\,h\,p\,r\,\text{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-$$
$$2\,b\,d\,g\,h\,p\,r\,x\,\text{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+2\,b\,c\,h^2\,p\,r\,x\,\text{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+$$
$$2\,b\,d\,g^2\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-2\,a\,d\,g\,h\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+2\,b\,d\,g\,h\,p\,q\,r^2\,x\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-$$
$$2\,a\,d\,h^2\,p\,q\,r^2\,x\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-2\,b\,d\,g^2\,p\,q\,r^2\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+$$
$$2\,b\,c\,g\,h\,p\,q\,r^2\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-2\,b\,d\,g\,h\,p\,q\,r^2\,x\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+$$
$$2\,b\,c\,h^2\,p\,q\,r^2\,x\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-2\,b\,d\,g^2\,q\,r\,\text{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+$$
$$2\,a\,d\,g\,h\,q\,r\,\text{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]-2\,b\,d\,g\,h\,q\,r\,x\,\text{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+$$
$$2\,a\,d\,h^2\,q\,r\,x\,\text{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]+2\,p\,(b\,c\,h\,p+a\,d\,h\,q-b\,d\,g\,(p+q))\,r^2\,(g+h\,x)\,\text{PolyLog}\left[2,\frac{h\,(a+b\,x)}{-b\,g+a\,h}\right]+$$
$$2\,q\,(b\,c\,h\,p+a\,d\,h\,q-b\,d\,g\,(p+q))\,r^2\,(g+h\,x)\,\text{PolyLog}\left[2,\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]+2\,b\,c\,g\,h\,p\,q\,r^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]-$$
$$2\,a\,d\,g\,h\,p\,q\,r^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]+2\,b\,c\,h^2\,p\,q\,r^2\,x\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]-2\,a\,d\,h^2\,p\,q\,r^2\,x\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]\Bigg)$$

Problem 41: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]^2}{(g+h\,x)^3}\,dx$$

Optimal (type 4, 1304 leaves, 43 steps) :

$$-\frac{b\,d\,p\,q\,r^2\,\text{Log}[a+b\,x]}{h\,(b\,g-a\,h)\,(d\,g-c\,h)}+\frac{d\,p\,q\,r^2\,\text{Log}[a+b\,x]}{h\,(d\,g-c\,h)\,(g+h\,x)}-\frac{b\,p^2\,r^2\,(a+b\,x)\,\text{Log}[a+b\,x]}{(b\,g-a\,h)^2\,(g+h\,x)}-$$

$$\frac{b\,d\,p\,q\,r^2\,\text{Log}[c+d\,x]}{h\,(b\,g-a\,h)\,(d\,g-c\,h)}+\frac{b\,p\,q\,r^2\,\text{Log}[c+d\,x]}{h\,(b\,g-a\,h)\,(g+h\,x)}-\frac{d\,q^2\,r^2\,(c+d\,x)\,\text{Log}[c+d\,x]}{(d\,g-c\,h)^2\,(g+h\,x)}+\frac{b^2\,p\,q\,r^2\,\text{Log}\left[-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]\,\text{Log}[c+d\,x]}{h\,(b\,g-a\,h)^2}+$$

$$\frac{d^2\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{h\,(d\,g-c\,h)^2}-\frac{b\,p\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)}{h\,(b\,g-a\,h)\,(g+h\,x)}-$$

$$\frac{d\,q\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)}{h\,(d\,g-c\,h)\,(g+h\,x)}-$$

$$\frac{b^2\,p\,r\,\text{Log}[a+b\,x]\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)}{h\,(b\,g-a\,h)^2}-$$

$$\frac{d^2\,q\,r\,\text{Log}[c+d\,x]\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)}{h\,(d\,g-c\,h)^2}-\frac{\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]^2}{2\,h\,(g+h\,x)^2}+\frac{b^2\,p^2\,r^2\,\text{Log}[g+h\,x]}{h\,(b\,g-a\,h)^2}+$$

$$\frac{2\,b\,d\,p\,q\,r^2\,\text{Log}[g+h\,x]}{h\,(b\,g-a\,h)\,(d\,g-c\,h)}+\frac{d^2\,q^2\,r^2\,\text{Log}[g+h\,x]}{h\,(d\,g-c\,h)^2}+\frac{b^2\,p\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\,\text{Log}[g+h\,x]}{h\,(b\,g-a\,h)^2}+$$

$$\frac{d^2\,q\,r\,\left(p\,r\,\text{Log}[a+b\,x]+q\,r\,\text{Log}[c+d\,x]-\text{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]\right)\,\text{Log}[g+h\,x]}{h\,(d\,g-c\,h)^2}-\frac{d^2\,p\,q\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h\,(d\,g-c\,h)^2}-$$

$$\frac{b^2\,p\,q\,r^2\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h\,(b\,g-a\,h)^2}-\frac{b^2\,p^2\,r^2\,\text{Log}[a+b\,x]\,\text{Log}\left[1+\frac{b\,g-a\,h}{h\,(a+b\,x)}\right]}{h\,(b\,g-a\,h)^2}-\frac{d^2\,q^2\,r^2\,\text{Log}[c+d\,x]\,\text{Log}\left[1+\frac{d\,g-c\,h}{h\,(c+d\,x)}\right]}{h\,(d\,g-c\,h)^2}+$$

$$\frac{b^2\,p^2\,r^2\,\text{PolyLog}\left[2,-\frac{b\,g-a\,h}{h\,(a+b\,x)}\right]}{h\,(b\,g-a\,h)^2}+\frac{d^2\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{d\,(a+b\,x)}{b\,c-a\,d}\right]}{h\,(d\,g-c\,h)^2}-\frac{d^2\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h\,(d\,g-c\,h)^2}+$$

$$\frac{d^2\,q^2\,r^2\,\text{PolyLog}\left[2,-\frac{d\,g-c\,h}{h\,(c+d\,x)}\right]}{h\,(d\,g-c\,h)^2}+\frac{b^2\,p\,q\,r^2\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]}{h\,(b\,g-a\,h)^2}-\frac{b^2\,p\,q\,r^2\,\text{PolyLog}\left[2,-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]}{h\,(b\,g-a\,h)^2}$$

Result (type 4, 15 976 leaves) :

$$-\frac{1}{2\,h\,(g+h\,x)^2}\left(-p\,r\,\text{Log}[a+b\,x]-\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\left(r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}\right)+\right.$$

$$\left.\text{Log}\left[e\,e^{r\,\left(-p\,\text{Log}[a+b\,x]-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}\,(a+b\,x)^{p\,r}\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^{r-\frac{r\,\left(-q\,\text{Log}[c+d\,x]+\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]\right)}{\text{Log}\left[f\,(a+b\,x)^p\,(c+d\,x)^q\right]}}\right]\right)^2+$$

$$\frac{1}{h} p\, r \left(-p\, r \operatorname{Log}[a+b x] - \operatorname{Log}\left[f\, (a+b x)^p\, (c+d x)^q\right] \left(r - \frac{r\left(-q \operatorname{Log}[c+d x] + \operatorname{Log}\left[f\, (a+b x)^p\, (c+d x)^q\right]\right)}{\operatorname{Log}\left[f\, (a+b x)^p\, (c+d x)^q\right]}\right) + \right.$$

$$\left. \operatorname{Log}\left[e\, e^{r\left(-p \operatorname{Log}[a+b x] - q \operatorname{Log}[c+d x] + \operatorname{Log}\left[f\, (a+b x)^p\, (c+d x)^q\right]\right)}\, (a+b x)^{p r} \left(f\, (a+b x)^p\, (c+d x)^q\right)^{r - \frac{r\left(-q \operatorname{Log}[c+d x] + \operatorname{Log}\left[f\, (a+b x)^p (c+d x)^q\right]\right)}{\operatorname{Log}\left[f\, (a+b x)^p (c+d x)^q\right]}}\right]\right)$$

$$\left(\frac{b^2 h\, (a+b x)}{(-b g+a h)^3 \left(1-\frac{h (a+b x)}{-b g+a h}\right)} - \left(\frac{b^2 h^2\, (a+b x)^2}{(-b g+a h)^4 \left(1-\frac{h (a+b x)}{-b g+a h}\right)^2} + \frac{2 b^2 h\, (a+b x)}{(-b g+a h)^3 \left(1-\frac{h (a+b x)}{-b g+a h}\right)}\right) \operatorname{Log}[a+b x] - \frac{b^2 \operatorname{Log}\left[1-\frac{h (a+b x)}{-b g+a h}\right]}{(-b g+a h)^2}\right) +$$

$$\frac{1}{h} q\, r^2 \left(-p \operatorname{Log}[a+b x] - q \operatorname{Log}[c+d x] + \operatorname{Log}\left[f\, (a+b x)^p\, (c+d x)^q\right]\right)$$

$$\left(\frac{d^2 h\, (c+d x)}{(-d g+c h)^3 \left(1-\frac{h (c+d x)}{-d g+c h}\right)} - \left(\frac{d^2 h^2\, (c+d x)^2}{(-d g+c h)^4 \left(1-\frac{h (c+d x)}{-d g+c h}\right)^2} + \frac{2 d^2 h\, (c+d x)}{(-d g+c h)^3 \left(1-\frac{h (c+d x)}{-d g+c h}\right)}\right) \operatorname{Log}[c+d x] - \frac{d^2 \operatorname{Log}\left[1-\frac{h (c+d x)}{-d g+c h}\right]}{(-d g+c h)^2}\right) +$$

$$\frac{1}{h} q\, r \left(-p\, r \operatorname{Log}[a+b x] - r\left(-p \operatorname{Log}[a+b x] - q \operatorname{Log}[c+d x] + \operatorname{Log}\left[f\, (a+b x)^p\, (c+d x)^q\right]\right) - \right.$$

$$\operatorname{Log}\left[f\, (a+b x)^p\, (c+d x)^q\right] \left(r - \frac{r\left(-q \operatorname{Log}[c+d x] + \operatorname{Log}\left[f\, (a+b x)^p\, (c+d x)^q\right]\right)}{\operatorname{Log}\left[f\, (a+b x)^p\, (c+d x)^q\right]}\right) +$$

$$\left. \operatorname{Log}\left[e\, e^{r\left(-p \operatorname{Log}[a+b x] - q \operatorname{Log}[c+d x] + \operatorname{Log}\left[f\, (a+b x)^p\, (c+d x)^q\right]\right)}\, (a+b x)^{p r} \left(f\, (a+b x)^p\, (c+d x)^q\right)^{r - \frac{r\left(-q \operatorname{Log}[c+d x] + \operatorname{Log}\left[f\, (a+b x)^p (c+d x)^q\right]\right)}{\operatorname{Log}\left[f\, (a+b x)^p (c+d x)^q\right]}}\right]\right)$$

$$\left(\frac{d^2 h\, (c+d x)}{(-d g+c h)^3 \left(1-\frac{h (c+d x)}{-d g+c h}\right)} - \left(\frac{d^2 h^2\, (c+d x)^2}{(-d g+c h)^4 \left(1-\frac{h (c+d x)}{-d g+c h}\right)^2} + \frac{2 d^2 h\, (c+d x)}{(-d g+c h)^3 \left(1-\frac{h (c+d x)}{-d g+c h}\right)}\right) \operatorname{Log}[c+d x] - \frac{d^2 \operatorname{Log}\left[1-\frac{h (c+d x)}{-d g+c h}\right]}{(-d g+c h)^2}\right) +$$

$$\frac{1}{h} p^2 r^2 \left(-\frac{1}{2}\left(\frac{b^2 h^2\, (a+b x)^2}{(-b g+a h)^4 \left(1-\frac{h (a+b x)}{-b g+a h}\right)^2} + \frac{2 b^2 h\, (a+b x)}{(-b g+a h)^3 \left(1-\frac{h (a+b x)}{-b g+a h}\right)}\right) \operatorname{Log}[a+b x]^2 + \frac{b^2 \operatorname{Log}\left[1-\frac{h (a+b x)}{-b g+a h}\right]}{(-b g+a h)^2} + \right.$$

$$\left. \operatorname{Log}[a+b x] \left(\frac{b^2 h\, (a+b x)}{(-b g+a h)^3 \left(1-\frac{h (a+b x)}{-b g+a h}\right)} - \frac{b^2 \operatorname{Log}\left[1-\frac{h (a+b x)}{-b g+a h}\right]}{(-b g+a h)^2}\right) - \frac{b^2 \operatorname{PolyLog}\left[2, \frac{h (a+b x)}{-b g+a h}\right]}{(-b g+a h)^2}\right) +$$

$$\frac{1}{h} q^2 r^2 \left(-\frac{1}{2}\left(\frac{d^2 h^2\, (c+d x)^2}{(-d g+c h)^4 \left(1-\frac{h (c+d x)}{-d g+c h}\right)^2} + \frac{2 d^2 h\, (c+d x)}{(-d g+c h)^3 \left(1-\frac{h (c+d x)}{-d g+c h}\right)}\right) \operatorname{Log}[c+d x]^2 + \frac{d^2 \operatorname{Log}\left[1-\frac{h (c+d x)}{-d g+c h}\right]}{(-d g+c h)^2} + \right.$$

$$\left. \operatorname{Log}[c+d x] \left(\frac{d^2 h\, (c+d x)}{(-d g+c h)^3 \left(1-\frac{h (c+d x)}{-d g+c h}\right)} - \frac{d^2 \operatorname{Log}\left[1-\frac{h (c+d x)}{-d g+c h}\right]}{(-d g+c h)^2}\right) - \frac{d^2 \operatorname{PolyLog}\left[2, \frac{h (c+d x)}{-d g+c h}\right]}{(-d g+c h)^2}\right) +$$

$$\frac{1}{g^2}\,p\,q\,r^2\left(\frac{1}{h}\,2\left(\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+\frac{1}{2}\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\left(-2\,\text{Log}[a+b\,x]+\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\right)\right.\right.$$

$$\left(\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-\text{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)+\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\left(-\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+\text{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)+$$

$$\frac{1}{2}\,\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]^2\left(\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]+\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-\text{Log}\left[-\frac{(-b\,c+a\,d)\,(g+h\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)+$$

$$\left(\text{Log}[c+d\,x]-\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]+\left(\text{Log}[a+b\,x]+\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)$$

$$\text{PolyLog}\left[2,\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]+\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\left(\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]-\text{PolyLog}\left[2,-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)-$$

$$\left.\text{PolyLog}\left[3,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]-\text{PolyLog}\left[3,\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]-\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]+\text{PolyLog}\left[3,-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)+$$

$$h^2\left(\frac{1}{h}\left(\left(\frac{(b\,g-a\,h)\left(\frac{2\,a\,b\,x}{(b\,g-a\,h)^2}+\frac{2\,a^2\,b\,(g+h\,x)}{(b\,g-a\,h)^3}\right)}{b\,(g+h\,x)}-\frac{(b\,g-a\,h)\,x\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^2}\right)}{b\,(g+h\,x)^2}-\frac{a\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^2}\right)}{b\,(g+h\,x)}\right)\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]-\right.\right.$$

$$\frac{1}{(b\,g-a\,h)\,(c+d\,x)}2\,(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)\left(\frac{(b\,g-a\,h)\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^2}\right)}{b\,(g+h\,x)}+\right.$$

$$\left.\frac{(-d\,g+c\,h)\,(a+b\,x)\left(-\frac{(-b\,c+a\,d)\,x}{(-d\,g+c\,h)\,(a+b\,x)}+\frac{c\,(-b\,c+a\,d)\,(g+h\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}\right)}{(-b\,c+a\,d)\,(g+h\,x)}\right)\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]+\left(-\frac{(b\,g-a\,h)\left(\frac{2\,a\,b\,x}{(b\,g-a\,h)^2}+\frac{2\,a^2\,b\,(g+h\,x)}{(b\,g-a\,h)^3}\right)}{b\,(g+h\,x)}+\right.$$

$$\frac{(b\,g-a\,h)\,x\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^2}\right)}{b\,(g+h\,x)^2}+\frac{a\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^2}\right)}{b\,(g+h\,x)}-\frac{(-d\,g+c\,h)\left(\frac{2\,c\,d\,x}{(-d\,g+c\,h)^2}-\frac{2\,c^2\,d\,(g+h\,x)}{(-d\,g+c\,h)^3}\right)}{d\,(g+h\,x)}+\frac{(-d\,g+c\,h)\,x\left(-\frac{d\,x}{-d\,g+c\,h}+\frac{c\,d\,(g+h\,x)}{(-d\,g+c\,h)^2}\right)}{d\,(g+h\,x)^2}-$$

$$\left.\frac{c\left(-\frac{d\,x}{-d\,g+c\,h}+\frac{c\,d\,(g+h\,x)}{(-d\,g+c\,h)^2}\right)}{d\,(g+h\,x)}\right)\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]+\frac{1}{2}\left(\frac{(b\,g-a\,h)\left(\frac{2\,a\,b\,x}{(b\,g-a\,h)^2}+\frac{2\,a^2\,b\,(g+h\,x)}{(b\,g-a\,h)^3}\right)}{b\,(g+h\,x)}-\right.$$

$$\frac{(b\,g-a\,h)\,x\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^2}\right)}{b\,(g+h\,x)^2}-\frac{a\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^2}\right)}{b\,(g+h\,x)}+\frac{(-d\,g+c\,h)\,(a+b\,x)\left(\frac{2\,c\,(-b\,c+a\,d)\,x}{(-d\,g+c\,h)^2\,(a+b\,x)}-\frac{2\,c^2\,(-b\,c+a\,d)\,(g+h\,x)}{(-d\,g+c\,h)^3\,(a+b\,x)}\right)}{(-b\,c+a\,d)\,(g+h\,x)}-$$

$$\frac{(-d g+c h)\, x\, (a+b x)\left(-\frac{(-b c+a d)\, x}{(-d g+c h)\,(a+b x)}+\frac{c\,(-b c+a d)\,(g+h x)}{(-d g+c h)^2\,(a+b x)}\right)}{(-b c+a d)\,(g+h x)^2}+\frac{c\,(a+b x)\left(-\frac{(-b c+a d)\, x}{(-d g+c h)\,(a+b x)}+\frac{c\,(-b c+a d)\,(g+h x)}{(-d g+c h)^2\,(a+b x)}\right)}{(-b c+a d)\,(g+h x)}\Bigg)$$

$$\text{Log}\left[-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]^2+2\left(-\frac{(b g-a h)\left(\frac{b x}{b g-a h}+\frac{a b\,(g+h x)}{(b g-a h)^2}\right)}{b\,(g+h x)}-\frac{(-d g+c h)\left(-\frac{d x}{-d g+c h}+\frac{c d\,(g+h x)}{(-d g+c h)^2}\right)}{d\,(g+h x)}\right)$$

$$\left(-\frac{(-d g+c h)\,(a+b x)\left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)\text{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right]}{(b g-a h)\,(c+d x)}+\frac{(-d g+c h)\left(-\frac{c h\,(c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)\text{Log}\left[-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]}{h\,(c+d x)}\right)+$$

$$\frac{1}{h\,(c+d x)}(-d g+c h)\left(-\frac{c h\,(c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)\Bigg(\left(\frac{(b g-a h)\left(\frac{b x}{b g-a h}+\frac{a b\,(g+h x)}{(b g-a h)^2}\right)}{b\,(g+h x)}+\frac{(-d g+c h)\left(-\frac{d x}{-d g+c h}+\frac{c d\,(g+h x)}{(-d g+c h)^2}\right)}{d\,(g+h x)}\right)$$

$$\left(-2\,\text{Log}[a+b x]+\text{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right]\right)+\frac{(-d g+c h)\left(-\frac{c h\,(c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)\left(\text{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]-\text{Log}\left[-\frac{d\,(g+h x)}{-d g+c h}\right]\right)}{h\,(c+d x)}\Bigg)+$$

$$\frac{1}{2}\,\text{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right]\Bigg(\frac{2\,(-d g+c h)\left(-\frac{c h\,(c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)\left(\frac{(b g-a h)\left(\frac{b x}{b g-a h}+\frac{a b\,(g+h x)}{(b g-a h)^2}\right)}{b\,(g+h x)}+\frac{(-d g+c h)\left(-\frac{d x}{-d g+c h}+\frac{c d\,(g+h x)}{(-d g+c h)^2}\right)}{d\,(g+h x)}\right)}{h\,(c+d x)}+$$

$$\Bigg(\frac{(b g-a h)\left(\frac{2 a b x}{(b g-a h)^2}+\frac{2 a^2 b\,(g+h x)}{(b g-a h)^3}\right)}{b\,(g+h x)}-\frac{(b g-a h)\, x\left(\frac{b x}{b g-a h}+\frac{a b\,(g+h x)}{(b g-a h)^2}\right)}{b\,(g+h x)^2}-\frac{a\left(\frac{b x}{b g-a h}+\frac{a b\,(g+h x)}{(b g-a h)^2}\right)}{b\,(g+h x)}+\frac{(-d g+c h)\left(\frac{2 c d x}{(-d g+c h)^2}-\frac{2 c^2 d\,(g+h x)}{(-d g+c h)^3}\right)}{d\,(g+h x)}-$$

$$\frac{(-d g+c h)\, x\left(-\frac{d x}{-d g+c h}+\frac{c d\,(g+h x)}{(-d g+c h)^2}\right)}{d\,(g+h x)^2}+\frac{c\left(-\frac{d x}{-d g+c h}+\frac{c d\,(g+h x)}{(-d g+c h)^2}\right)}{d\,(g+h x)}\Bigg)\left(-2\,\text{Log}[a+b x]+\text{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right]\right)+$$

$$\left(\frac{(-d g+c h)\left(\frac{2 c^2 h\,(c+d x)}{(-d g+c h)^3}-\frac{2 c\,(c+d x)}{(-d g+c h)^2}\right)}{h\,(c+d x)}+\frac{c\left(-\frac{c h\,(c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)}{h\,(c+d x)}-\frac{(-d g+c h)\left(-\frac{c h\,(c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)}{h^2\,(c+d x)}\right)$$

$$\left(\text{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]-\text{Log}\left[-\frac{d\,(g+h x)}{-d g+c h}\right]\right)\Bigg)+\frac{1}{2}\Bigg(\frac{(-d g+c h)\left(\frac{2 c^2 h\,(c+d x)}{(-d g+c h)^3}-\frac{2 c\,(c+d x)}{(-d g+c h)^2}\right)}{h\,(c+d x)}+\frac{c\left(-\frac{c h\,(c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)}{h\,(c+d x)}-$$

$$\frac{(-d\,g+c\,h)\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\right)}{h^2\,(c+d\,x)}\Bigg)\left(-2\,\text{Log}[a+b\,x]+\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\right)\left(\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-\text{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)+$$

$$\Bigg(-\frac{2\,(-d\,g+c\,h)^2\,(a+b\,x)\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\right)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)}{h\,(b\,g-a\,h)\,(c+d\,x)^2}+$$

$$\Bigg(-\frac{(-d\,g+c\,h)\,(a+b\,x)\left(-\frac{2\,c^2\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^3\,(a+b\,x)}-\frac{2\,a\,c\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}\right)}{(b\,g-a\,h)\,(c+d\,x)}-\frac{c\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)}{(b\,g-a\,h)\,(c+d\,x)}-$$

$$\frac{a\,(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)}{(b\,g-a\,h)^2\,(c+d\,x)}\Bigg)\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]+$$

$$\left(\frac{(-d\,g+c\,h)\left(\frac{2\,c^2\,h\,(c+d\,x)}{(-d\,g+c\,h)^3}-\frac{2\,c\,(c+d\,x)}{(-d\,g+c\,h)^2}\right)}{h\,(c+d\,x)}+\frac{c\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\right)}{h\,(c+d\,x)}-\frac{(-d\,g+c\,h)\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\right)}{h^2\,(c+d\,x)}\right)\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\Bigg)$$

$$\left(-\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+\text{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)+\frac{1}{2}\Bigg(\frac{2\,(-d\,g+c\,h)^2\,(a+b\,x)^2\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)^2}{(b\,g-a\,h)^2\,(c+d\,x)^2}-$$

$$\frac{2\,(-d\,g+c\,h)\,(a+b\,x)\left(-\frac{2\,c^2\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^3\,(a+b\,x)}-\frac{2\,a\,c\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}\right)\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]}{(b\,g-a\,h)\,(c+d\,x)}-$$

$$\frac{2\,c\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]}{(b\,g-a\,h)\,(c+d\,x)}-$$

$$\frac{2\,a\,(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]}{(b\,g-a\,h)^2\,(c+d\,x)}\Bigg)$$

$$\left(\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]+\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-\text{Log}\left[-\frac{(-b\,c+a\,d)\,(g+h\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)+\frac{(b\,g-a\,h)^2\left(-\frac{a\,h\,(a+b\,x)}{(b\,g-a\,h)^2}-\frac{a+b\,x}{b\,g-a\,h}\right)^2\text{Log}\left[1+\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h^2\,(a+b\,x)^2}+$$

$$\frac{2\,(-d\,g+c\,h)\left(-\frac{a\,h\,(a+b\,x)}{(b\,g-a\,h)^2}-\frac{a+b\,x}{b\,g-a\,h}\right)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)\text{Log}\left[1+\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h\,(c+d\,x)}+\left(\text{Log}[c+d\,x]-\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)$$

$$\Bigg(\frac{(b\,g-a\,h)\left(-\frac{a\,h\,(a+b\,x)}{(b\,g-a\,h)^2}-\frac{a+b\,x}{b\,g-a\,h}\right)\left(\frac{a\,h\,(a+b\,x)}{(b\,g-a\,h)^2}+\frac{a+b\,x}{b\,g-a\,h}\right)}{h\,(a+b\,x)\left(1+\frac{h\,(a+b\,x)}{b\,g-a\,h}\right)}+\frac{(b\,g-a\,h)\left(-\frac{2\,a^2\,h\,(a+b\,x)}{(b\,g-a\,h)^3}-\frac{2\,a\,(a+b\,x)}{(b\,g-a\,h)^2}\right)\text{Log}\left[1+\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]}{h\,(a+b\,x)}-$$

$$\frac{a\,\Big(-\frac{a\,h\,(a+b\,x)}{(b\,g-a\,h)^2}-\frac{a+b\,x}{b\,g-a\,h}\Big)\,\mathrm{Log}\Big[1+\frac{h\,(a+b\,x)}{b\,g-a\,h}\Big]}{h\,(a+b\,x)}-\frac{(b\,g-a\,h)\,\Big(-\frac{a\,h\,(a+b\,x)}{(b\,g-a\,h)^2}-\frac{a+b\,x}{b\,g-a\,h}\Big)\,\mathrm{Log}\Big[1+\frac{h\,(a+b\,x)}{b\,g-a\,h}\Big]}{h^2\,(a+b\,x)}\Bigg)+$$

$$\frac{(-d\,g+c\,h)^2\,\Big(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\Big)^2\,\mathrm{Log}\Big[1-\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]}{h^2\,(c+d\,x)^2}+\frac{1}{h\,(b\,g-a\,h)\,(c+d\,x)^2}2\,(-d\,g+c\,h)^2\,(a+b\,x)\,\Bigg(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\Bigg)$$

$$\Bigg(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\Bigg)\,\mathrm{Log}\Big[1-\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]+\Bigg(\mathrm{Log}[a+b\,x]+\mathrm{Log}\Big[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\Big]\Bigg)$$

$$\Bigg(-\frac{(-d\,g+c\,h)\,\Big(\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}-\frac{c+d\,x}{-d\,g+c\,h}\Big)\,\Big(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\Big)}{h\,(c+d\,x)\,\Big(1-\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big)}-\frac{(-d\,g+c\,h)\,\Big(\frac{2\,c^2\,h\,(c+d\,x)}{(-d\,g+c\,h)^3}-\frac{2\,c\,(c+d\,x)}{(-d\,g+c\,h)^2}\Big)\,\mathrm{Log}\Big[1-\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]}{h\,(c+d\,x)}-$$

$$\frac{c\,\Big(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\Big)\,\mathrm{Log}\Big[1-\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]}{h\,(c+d\,x)}+\frac{(-d\,g+c\,h)\,\Big(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^2}+\frac{c+d\,x}{-d\,g+c\,h}\Big)\,\mathrm{Log}\Big[1-\frac{h\,(c+d\,x)}{-d\,g+c\,h}\Big]}{h^2\,(c+d\,x)}\Bigg)+$$

$$\frac{(-d\,g+c\,h)^2\,(a+b\,x)^2\,\Big(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\Big)^2\,\mathrm{Log}\Big[1+\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\Big]}{(b\,g-a\,h)^2\,(c+d\,x)^2}+\mathrm{Log}\Big[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\Big]$$

$$\Bigg(-\frac{(-d\,g+c\,h)\,(a+b\,x)\,\Big(-\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}-\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\Big)\,\Big(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\Big)}{(b\,g-a\,h)\,(c+d\,x)\,\Big(1+\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\Big)}-$$

$$\frac{(-d\,g+c\,h)\,(a+b\,x)\,\Big(-\frac{2\,c^2\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^3\,(a+b\,x)}-\frac{2\,a\,c\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}\Big)\,\mathrm{Log}\Big[1+\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\Big]}{(b\,g-a\,h)\,(c+d\,x)}-$$

$$\frac{c\,(a+b\,x)\,\Big(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\Big)\,\mathrm{Log}\Big[1+\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\Big]}{(b\,g-a\,h)\,(c+d\,x)}-$$

$$\frac{a\,(-d\,g+c\,h)\,(a+b\,x)\,\Big(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\Big)\,\mathrm{Log}\Big[1+\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\Big]}{(b\,g-a\,h)^2\,(c+d\,x)}\Bigg)+$$

$$\frac{(b\,g-a\,h)\,\Big(-\frac{2\,a^2\,h\,(a+b\,x)}{(b\,g-a\,h)^3}-\frac{2\,a\,(a+b\,x)}{(b\,g-a\,h)^2}\Big)\,\mathrm{PolyLog}\Big[2,\,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\Big]}{h\,(a+b\,x)}-\frac{a\,\Big(-\frac{a\,h\,(a+b\,x)}{(b\,g-a\,h)^2}-\frac{a+b\,x}{b\,g-a\,h}\Big)\,\mathrm{PolyLog}\Big[2,\,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\Big]}{h\,(a+b\,x)}-$$

$$\frac{(b\,g-a\,h)\,\Big(-\frac{a\,h\,(a+b\,x)}{(b\,g-a\,h)^2}-\frac{a+b\,x}{b\,g-a\,h}\Big)\,\mathrm{PolyLog}\Big[2,\,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\Big]}{h^2\,(a+b\,x)}+\Bigg(\frac{(-d\,g+c\,h)\,(a+b\,x)\,\Big(-\frac{2\,c^2\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^3\,(a+b\,x)}-\frac{2\,a\,c\,(c+d\,x)}{(-d\,g+c\,h)^2\,(a+b\,x)}\Big)}{(b\,g-a\,h)\,(c+d\,x)}+$$

$$\frac{c\,(a+b x) \left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)}{(b g-a h)\,(c+d x)}+\frac{a\,(-d g+c h)\,(a+b x) \left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)}{(b g-a h)^2\,(c+d x)}\Bigg)\,\text{PolyLog}\left[2,-\frac{h\,(a+b x)}{b g-a h}\right]-$$

$$\frac{(-d g+c h) \left(\frac{2 c^2 h\,(c+d x)}{(-d g+c h)^3}-\frac{2 c\,(c+d x)}{(-d g+c h)^2}\right) \text{PolyLog}\left[2,\frac{h\,(c+d x)}{-d g+c h}\right]}{h\,(c+d x)}-\frac{c \left(-\frac{c h\,(c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right) \text{PolyLog}\left[2,\frac{h\,(c+d x)}{-d g+c h}\right]}{h\,(c+d x)}+$$

$$\frac{(-d g+c h) \left(-\frac{c h\,(c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right) \text{PolyLog}\left[2,\frac{h\,(c+d x)}{-d g+c h}\right]}{h^2\,(c+d x)}+\Bigg(-\frac{(-d g+c h)\,(a+b x) \left(-\frac{2 c^2\,(b g-a h)\,(c+d x)}{(-d g+c h)^3\,(a+b x)}-\frac{2 a c\,(c+d x)}{(-d g+c h)^2\,(a+b x)}\right)}{(b g-a h)\,(c+d x)}-$$

$$\frac{c\,(a+b x) \left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)}{(b g-a h)\,(c+d x)}-\frac{a\,(-d g+c h)\,(a+b x) \left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)}{(b g-a h)^2\,(c+d x)}\Bigg)\,\text{PolyLog}\left[2,\frac{h\,(c+d x)}{-d g+c h}\right]+$$

$$\Bigg(-\frac{(-d g+c h)\,(a+b x) \left(-\frac{2 c^2\,(b g-a h)\,(c+d x)}{(-d g+c h)^3\,(a+b x)}-\frac{2 a c\,(c+d x)}{(-d g+c h)^2\,(a+b x)}\right)}{(b g-a h)\,(c+d x)}-\frac{c\,(a+b x) \left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)}{(b g-a h)\,(c+d x)}-$$

$$\frac{a\,(-d g+c h)\,(a+b x) \left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)}{(b g-a h)^2\,(c+d x)}\Bigg) \left(\text{PolyLog}\left[2,\frac{b\,(c+d x)}{d\,(a+b x)}\right]-\text{PolyLog}\left[2,-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]\right)-$$

$$\frac{(-d g+c h)\,(a+b x) \left(-\frac{2 c^2\,(b g-a h)\,(c+d x)}{(-d g+c h)^3\,(a+b x)}-\frac{2 a c\,(c+d x)}{(-d g+c h)^2\,(a+b x)}\right) \text{PolyLog}\left[2,-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]}{(b g-a h)\,(c+d x)}-$$

$$\frac{c\,(a+b x) \left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right) \text{PolyLog}\left[2,-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]}{(b g-a h)\,(c+d x)}-$$

$$\frac{a\,(-d g+c h)\,(a+b x) \left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right) \text{PolyLog}\left[2,-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]}{(b g-a h)^2\,(c+d x)}\Bigg)-$$

$$\frac{1}{h^2}\,2\,\Bigg(\frac{(b g-a h) \left(\frac{b x}{b g-a h}+\frac{a b\,(g+h x)}{(b g-a h)^2}\right) \text{Log}[a+b x]\,\text{Log}[c+d x]}{b\,(g+h x)}+\frac{1}{2}\Bigg(\frac{(b g-a h) \left(\frac{b x}{b g-a h}+\frac{a b\,(g+h x)}{(b g-a h)^2}\right)}{b\,(g+h x)}+\frac{(-d g+c h) \left(-\frac{d x}{-d g+c h}+\frac{c d\,(g+h x)}{(-d g+c h)^2}\right)}{d\,(g+h x)}\Bigg)$$

$$\text{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right] \left(-2\,\text{Log}[a+b x]+\text{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right]\right)+$$

$$\left(-\frac{(b g-a h)\left(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\right)}{b (g+h x)}-\frac{(-d g+c h)\left(-\frac{d x}{-d g+c h}+\frac{c d (g+h x)}{(-d g+c h)^2}\right)}{d (g+h x)}\right)\text{Log}\left[\frac{h (c+d x)}{-d g+c h}\right]\text{Log}\left[-\frac{(b g-a h)(c+d x)}{(-d g+c h)(a+b x)}\right]+$$

$$\frac{1}{2}\left(\frac{(b g-a h)\left(\frac{b x}{b g-a h}+\frac{a b (g+h x)}{(b g-a h)^2}\right)}{b (g+h x)}+\frac{(-d g+c h)(a+b x)\left(-\frac{(-b c+a d) x}{(-d g+c h)(a+b x)}+\frac{c (-b c+a d)(g+h x)}{(-d g+c h)^2 (a+b x)}\right)}{(-b c+a d)(g+h x)}\right)\text{Log}\left[-\frac{(b g-a h)(c+d x)}{(-d g+c h)(a+b x)}\right]^2+$$

$$\frac{(-d g+c h)\left(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)\text{Log}\left[\frac{h (c+d x)}{-d g+c h}\right]\left(\text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]-\text{Log}\left[-\frac{d (g+h x)}{-d g+c h}\right]\right)}{2 h (c+d x)}+\frac{1}{2 h (c+d x)}(-d g+c h)$$

$$\left(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)\left(-2\,\text{Log}[a+b x]+\text{Log}\left[\frac{h (c+d x)}{-d g+c h}\right]\right)\left(\text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]-\text{Log}\left[-\frac{d (g+h x)}{-d g+c h}\right]\right)-\frac{1}{(b g-a h)(c+d x)}$$

$$(-d g+c h)(a+b x)\left(\frac{c (b g-a h)(c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h)(a+b x)}\right)\text{Log}\left[\frac{h (c+d x)}{-d g+c h}\right]\left(-\text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]+\text{Log}\left[-\frac{d (g+h x)}{-d g+c h}\right]\right)+$$

$$\frac{(-d g+c h)\left(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)\text{Log}\left[-\frac{(b g-a h)(c+d x)}{(-d g+c h)(a+b x)}\right]\left(-\text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]+\text{Log}\left[-\frac{d (g+h x)}{-d g+c h}\right]\right)}{h (c+d x)}-\frac{1}{(b g-a h)(c+d x)}(-d g+c h)$$

$$(a+b x)\left(\frac{c (b g-a h)(c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h)(a+b x)}\right)\text{Log}\left[-\frac{(b g-a h)(c+d x)}{(-d g+c h)(a+b x)}\right]\Bigg(\text{Log}\left[\frac{-b c+a d}{d (a+b x)}\right]+\text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]-\text{Log}\Bigg[$$

$$-\frac{(-b c+a d)(g+h x)}{(-d g+c h)(a+b x)}\Bigg]\Bigg)+\frac{(b g-a h)\left(-\frac{a h (a+b x)}{(b g-a h)^2}-\frac{a+b x}{b g-a h}\right)\left(\text{Log}[c+d x]-\text{Log}\left[-\frac{(b g-a h)(c+d x)}{(-d g+c h)(a+b x)}\right]\right)\text{Log}\left[1+\frac{h (a+b x)}{b g-a h}\right]}{h (a+b x)}-$$

$$\frac{(-d g+c h)\left(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)\left(\text{Log}[a+b x]+\text{Log}\left[-\frac{(b g-a h)(c+d x)}{(-d g+c h)(a+b x)}\right]\right)\text{Log}\left[1-\frac{h (c+d x)}{-d g+c h}\right]}{h (c+d x)}-\frac{1}{(b g-a h)(c+d x)}$$

$$(-d g+c h)(a+b x)\left(\frac{c (b g-a h)(c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h)(a+b x)}\right)\text{Log}\left[-\frac{(b g-a h)(c+d x)}{(-d g+c h)(a+b x)}\right]$$

$$\text{Log}\left[1+\frac{(b g-a h)(c+d x)}{(-d g+c h)(a+b x)}\right]+\frac{(b g-a h)\left(-\frac{a h (a+b x)}{(b g-a h)^2}-\frac{a+b x}{b g-a h}\right)\text{PolyLog}\left[2,-\frac{h (a+b x)}{b g-a h}\right]}{h (a+b x)}+$$

$$\frac{(-d g+c h)(a+b x)\left(\frac{c (b g-a h)(c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h)(a+b x)}\right)\text{PolyLog}\left[2,-\frac{h (a+b x)}{b g-a h}\right]}{(b g-a h)(c+d x)}-$$

$$\frac{(-d g+c h)\left(-\frac{c h (c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)\text{PolyLog}\left[2,\frac{h (c+d x)}{-d g+c h}\right]}{h (c+d x)}-\frac{(-d g+c h)(a+b x)\left(\frac{c (b g-a h)(c+d x)}{(-d g+c h)^2 (a+b x)}+\frac{a (c+d x)}{(-d g+c h)(a+b x)}\right)\text{PolyLog}\left[2,\frac{h (c+d x)}{-d g+c h}\right]}{(b g-a h)(c+d x)}-$$

$$\frac{1}{(b\,g-a\,h)\,(c+d\,x)}(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^{2}\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)\left(\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]-\text{PolyLog}\left[\right.\right.$$

$$\left.\left.2,\,-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)-\frac{(-d\,g+c\,h)\,(a+b\,x)\left(\frac{c\,(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)^{2}\,(a+b\,x)}+\frac{a\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right)\text{PolyLog}\left[2,\,-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]}{(b\,g-a\,h)\,(c+d\,x)}\Bigg)+$$

$$\frac{1}{h^{3}}\,2\left(\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]\,\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+\frac{1}{2}\,\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\left(-2\,\text{Log}[a+b\,x]+\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\right)\right.$$

$$\left(\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-\text{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)+\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\left(-\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]+\text{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)+$$

$$\frac{1}{2}\,\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]^{2}\left(\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]+\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-\text{Log}\left[-\frac{(-b\,c+a\,d)\,(g+h\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)+$$

$$\left(\text{Log}[c+d\,x]-\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,\,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]+\left(\text{Log}[a+b\,x]+\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)$$

$$\text{PolyLog}\left[2,\,\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]+\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\left(\text{PolyLog}\left[2,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]-\text{PolyLog}\left[2,\,-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)-$$

$$\left.\text{PolyLog}\left[3,\,-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]-\text{PolyLog}\left[3,\,\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]-\text{PolyLog}\left[3,\,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]+\text{PolyLog}\left[3,\,-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]\right)\Bigg)+$$

$$4\,h\left(\frac{1}{h}\left(\frac{(b\,g-a\,h)\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^{2}}\right)\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]}{b\,(g+h\,x)}+\frac{1}{2}\left(\frac{(b\,g-a\,h)\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^{2}}\right)}{b\,(g+h\,x)}+\frac{(-d\,g+c\,h)\left(-\frac{d\,x}{-d\,g+c\,h}+\frac{c\,d\,(g+h\,x)}{(-d\,g+c\,h)^{2}}\right)}{d\,(g+h\,x)}\right)\right.\right.$$

$$\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\left(-2\,\text{Log}[a+b\,x]+\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\right)+$$

$$\left(-\frac{(b\,g-a\,h)\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^{2}}\right)}{b\,(g+h\,x)}-\frac{(-d\,g+c\,h)\left(-\frac{d\,x}{-d\,g+c\,h}+\frac{c\,d\,(g+h\,x)}{(-d\,g+c\,h)^{2}}\right)}{d\,(g+h\,x)}\right)\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]+$$

$$\frac{1}{2}\left(\frac{(b\,g-a\,h)\left(\frac{b\,x}{b\,g-a\,h}+\frac{a\,b\,(g+h\,x)}{(b\,g-a\,h)^{2}}\right)}{b\,(g+h\,x)}+\frac{(-d\,g+c\,h)\,(a+b\,x)\left(-\frac{(-b\,c+a\,d)\,x}{(-d\,g+c\,h)\,(a+b\,x)}+\frac{c\,(-b\,c+a\,d)\,(g+h\,x)}{(-d\,g+c\,h)^{2}\,(a+b\,x)}\right)}{(-b\,c+a\,d)\,(g+h\,x)}\right)\text{Log}\left[-\frac{(b\,g-a\,h)\,(c+d\,x)}{(-d\,g+c\,h)\,(a+b\,x)}\right]^{2}+$$

$$\frac{(-d\,g+c\,h)\left(-\frac{c\,h\,(c+d\,x)}{(-d\,g+c\,h)^{2}}+\frac{c+d\,x}{-d\,g+c\,h}\right)\text{Log}\left[\frac{h\,(c+d\,x)}{-d\,g+c\,h}\right]\left(\text{Log}\left[\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]-\text{Log}\left[-\frac{d\,(g+h\,x)}{-d\,g+c\,h}\right]\right)}{2\,h\,(c+d\,x)}+\frac{1}{2\,h\,(c+d\,x)}$$

$$(-d g+c h)\left(-\frac{c h\,(c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)\left(-2\,\text{Log}[a+b x]+\text{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right]\right)\left(\text{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]-\text{Log}\left[-\frac{d\,(g+h x)}{-d g+c h}\right]\right)-$$

$$\frac{1}{(b g-a h)\,(c+d x)}(-d g+c h)\,(a+b x)\left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)\text{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right]$$

$$\left(-\text{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]+\text{Log}\left[-\frac{d\,(g+h x)}{-d g+c h}\right]\right)+\frac{(-d g+c h)\left(-\frac{c h\,(c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)\text{Log}\left[-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]\left(-\text{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]+\text{Log}\left[-\frac{d\,(g+h x)}{-d g+c h}\right]\right)}{h\,(c+d x)}-$$

$$\frac{1}{(b g-a h)\,(c+d x)}(-d g+c h)\,(a+b x)\left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)$$

$$\text{Log}\left[-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]\left(\text{Log}\left[\frac{-b c+a d}{d\,(a+b x)}\right]+\text{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]-\text{Log}\left[-\frac{(-b c+a d)\,(g+h x)}{(-d g+c h)\,(a+b x)}\right]\right)+$$

$$\frac{(b g-a h)\left(-\frac{a h\,(a+b x)}{(b g-a h)^2}-\frac{a+b x}{b g-a h}\right)\left(\text{Log}[c+d x]-\text{Log}\left[-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]\right)\text{Log}\left[1+\frac{h\,(a+b x)}{b g-a h}\right]}{h\,(a+b x)}-$$

$$\frac{(-d g+c h)\left(-\frac{c h\,(c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)\left(\text{Log}[a+b x]+\text{Log}\left[-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]\right)\text{Log}\left[1-\frac{h\,(c+d x)}{-d g+c h}\right]}{h\,(c+d x)}-\frac{1}{(b g-a h)\,(c+d x)}$$

$$(-d g+c h)\,(a+b x)\left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)\text{Log}\left[-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]\text{Log}\left[1+\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]+$$

$$\frac{(b g-a h)\left(-\frac{a h\,(a+b x)}{(b g-a h)^2}-\frac{a+b x}{b g-a h}\right)\text{PolyLog}\left[2,-\frac{h\,(a+b x)}{b g-a h}\right]}{h\,(a+b x)}+\frac{(-d g+c h)\,(a+b x)\left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)\text{PolyLog}\left[2,-\frac{h\,(a+b x)}{b g-a h}\right]}{(b g-a h)\,(c+d x)}-$$

$$\frac{(-d g+c h)\left(-\frac{c h\,(c+d x)}{(-d g+c h)^2}+\frac{c+d x}{-d g+c h}\right)\text{PolyLog}\left[2,\frac{h\,(c+d x)}{-d g+c h}\right]}{h\,(c+d x)}-$$

$$\frac{(-d g+c h)\,(a+b x)\left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)\text{PolyLog}\left[2,\frac{h\,(c+d x)}{-d g+c h}\right]}{(b g-a h)\,(c+d x)}-\frac{1}{(b g-a h)\,(c+d x)}$$

$$(-d g+c h)\,(a+b x)\left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)\left(\text{PolyLog}\left[2,\frac{b\,(c+d x)}{d\,(a+b x)}\right]-\text{PolyLog}\left[2,-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]\right)-$$

$$\left.\frac{(-d g+c h)\,(a+b x)\left(\frac{c\,(b g-a h)\,(c+d x)}{(-d g+c h)^2\,(a+b x)}+\frac{a\,(c+d x)}{(-d g+c h)\,(a+b x)}\right)\text{PolyLog}\left[2,-\frac{(b g-a h)\,(c+d x)}{(-d g+c h)\,(a+b x)}\right]}{(b g-a h)\,(c+d x)}\right)-$$

$$\frac{1}{h^2}\left(\text{Log}[a+b x]\,\text{Log}[c+d x]\,\text{Log}\left[\frac{b\,(g+h x)}{b g-a h}\right]+\frac{1}{2}\text{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right]\left(-2\,\text{Log}[a+b x]+\text{Log}\left[\frac{h\,(c+d x)}{-d g+c h}\right]\right)\right.$$

$$\left(\text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]-\text{Log}\left[-\frac{d (g+h x)}{-d g+c h}\right]\right)+\text{Log}\left[\frac{h (c+d x)}{-d g+c h}\right] \text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right] \left(-\text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]+\text{Log}\left[-\frac{d (g+h x)}{-d g+c h}\right]\right)+$$
$$\frac{1}{2} \text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]^2 \left(\text{Log}\left[\frac{-b c+a d}{d (a+b x)}\right]+\text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]-\text{Log}\left[-\frac{(-b c+a d) (g+h x)}{(-d g+c h) (a+b x)}\right]\right)+$$
$$\left(\text{Log}[c+d x]-\text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]\right) \text{PolyLog}\left[2,-\frac{h (a+b x)}{b g-a h}\right]+\left(\text{Log}[a+b x]+\text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]\right)$$
$$\text{PolyLog}\left[2,\frac{h (c+d x)}{-d g+c h}\right]+\text{Log}\left[-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right] \left(\text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]-\text{PolyLog}\left[2,-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]\right)-$$
$$\text{PolyLog}\left[3,-\frac{h (a+b x)}{b g-a h}\right]-\text{PolyLog}\left[3,\frac{h (c+d x)}{-d g+c h}\right]-\text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]+\text{PolyLog}\left[3,-\frac{(b g-a h) (c+d x)}{(-d g+c h) (a+b x)}\right]\Bigg)\Bigg)\Bigg)$$

Problem 42: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2}{(g+h x)^4} \, dx$$

Optimal (type 4, 1957 leaves, 57 steps):

$$-\frac{b^2 p^2 r^2}{3 h (b g-a h)^2 (g+h x)}-\frac{2 b d p q r^2}{3 h (b g-a h) (d g-c h) (g+h x)}-\frac{d^2 q^2 r^2}{3 h (d g-c h)^2 (g+h x)}-\frac{b^3 p^2 r^2 \text{Log}[a+b x]}{3 h (b g-a h)^3}-$$
$$\frac{2 b d^2 p q r^2 \text{Log}[a+b x]}{3 h (b g-a h) (d g-c h)^2}-\frac{b^2 d p q r^2 \text{Log}[a+b x]}{3 h (b g-a h)^2 (d g-c h)}+\frac{b p^2 r^2 \text{Log}[a+b x]}{3 h (b g-a h) (g+h x)^2}+\frac{d p q r^2 \text{Log}[a+b x]}{3 h (d g-c h) (g+h x)^2}+\frac{2 d^2 p q r^2 \text{Log}[a+b x]}{3 h (d g-c h)^2 (g+h x)}-$$
$$\frac{2 b^2 p^2 r^2 (a+b x) \text{Log}[a+b x]}{3 (b g-a h)^3 (g+h x)}-\frac{b d^2 p q r^2 \text{Log}[c+d x]}{3 h (b g-a h) (d g-c h)^2}-\frac{2 b^2 d p q r^2 \text{Log}[c+d x]}{3 h (b g-a h)^2 (d g-c h)}-\frac{d^3 q^2 r^2 \text{Log}[c+d x]}{3 h (d g-c h)^3}+\frac{b p q r^2 \text{Log}[c+d x]}{3 h (b g-a h) (g+h x)^2}+$$
$$\frac{d q^2 r^2 \text{Log}[c+d x]}{3 h (d g-c h) (g+h x)^2}+\frac{2 b^2 p q r^2 \text{Log}[c+d x]}{3 h (b g-a h)^2 (g+h x)}-\frac{2 d^2 q^2 r^2 (c+d x) \text{Log}[c+d x]}{3 (d g-c h)^3 (g+h x)}+\frac{2 b^3 p q r^2 \text{Log}\left[-\frac{d (a+b x)}{b c-a d}\right] \text{Log}[c+d x]}{3 h (b g-a h)^3}+$$
$$\frac{2 d^3 p q r^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]}{3 h (d g-c h)^3}-\frac{b p r \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)}{3 h (b g-a h) (g+h x)^2}-$$
$$\frac{d q r \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)}{3 h (d g-c h) (g+h x)^2}-$$

$$\frac{2 b^2 p r \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)}{3 h (b g-a h)^2 (g+h x)}-$$
$$\frac{2 d^2 q r \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)}{3 h (d g-c h)^2 (g+h x)}-$$
$$\frac{2 b^3 p r \text{Log}[a+b x] \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)}{3 h (b g-a h)^3}-$$
$$\frac{2 d^3 q r \text{Log}[c+d x] \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right)}{3 h (d g-c h)^3}-$$
$$\frac{\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]^2}{3 h (g+h x)^3}+\frac{b^3 p^2 r^2 \text{Log}[g+h x]}{h (b g-a h)^3}+\frac{b d^2 p q r^2 \text{Log}[g+h x]}{h (b g-a h) (d g-c h)^2}+\frac{b^2 d p q r^2 \text{Log}[g+h x]}{h (b g-a h)^2 (d g-c h)}+$$
$$\frac{d^3 q^2 r^2 \text{Log}[g+h x]}{h (d g-c h)^3}+\frac{2 b^3 p r \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right) \text{Log}[g+h x]}{3 h (b g-a h)^3}+$$
$$\frac{2 d^3 q r \left(p r \text{Log}[a+b x]+q r \text{Log}[c+d x]-\text{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right]\right) \text{Log}[g+h x]}{3 h (d g-c h)^3}-\frac{2 d^3 p q r^2 \text{Log}[a+b x] \text{Log}\left[\frac{b (g+h x)}{b g-a h}\right]}{3 h (d g-c h)^3}-$$
$$\frac{2 b^3 p q r^2 \text{Log}[c+d x] \text{Log}\left[\frac{d (g+h x)}{d g-c h}\right]}{3 h (b g-a h)^3}-\frac{2 b^3 p^2 r^2 \text{Log}[a+b x] \text{Log}\left[1+\frac{b g-a h}{h (a+b x)}\right]}{3 h (b g-a h)^3}-\frac{2 d^3 q^2 r^2 \text{Log}[c+d x] \text{Log}\left[1+\frac{d g-c h}{h (c+d x)}\right]}{3 h (d g-c h)^3}+$$
$$\frac{2 b^3 p^2 r^2 \text{PolyLog}\left[2,-\frac{b g-a h}{h (a+b x)}\right]}{3 h (b g-a h)^3}+\frac{2 d^3 p q r^2 \text{PolyLog}\left[2,-\frac{d (a+b x)}{b c-a d}\right]}{3 h (d g-c h)^3}-\frac{2 d^3 p q r^2 \text{PolyLog}\left[2,-\frac{h (a+b x)}{b g-a h}\right]}{3 h (d g-c h)^3}+$$
$$\frac{2 d^3 q^2 r^2 \text{PolyLog}\left[2,-\frac{d g-c h}{h (c+d x)}\right]}{3 h (d g-c h)^3}+\frac{2 b^3 p q r^2 \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]}{3 h (b g-a h)^3}-\frac{2 b^3 p q r^2 \text{PolyLog}\left[2,-\frac{h (c+d x)}{d g-c h}\right]}{3 h (b g-a h)^3}$$

Result (type 4, 47 110 leaves) : Display of huge result suppressed!

Problem 44: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right)^3}{1-c^2 x^2} \, dx$$

Optimal (type 3, 37 leaves, 5 steps) :

$$-\frac{\left(a+b \operatorname{Log}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right)^4}{4 b c}$$

Result (type 3, 117 leaves):

$$-\frac{\operatorname{Log}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right] \left(4 a^3+6 a^2 b \operatorname{Log}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]+4 a b^2 \operatorname{Log}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]^2+b^3 \operatorname{Log}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]^3\right)}{4 c}$$

Problem 45: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right)^2}{1-c^2 x^2} \, dx$$

Optimal (type 3, 37 leaves, 5 steps):

$$-\frac{\left(a+b \operatorname{Log}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right)^3}{3 b c}$$

Result (type 3, 86 leaves):

$$-\frac{\operatorname{Log}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right] \left(3 a^2+3 a b \operatorname{Log}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]+b^2 \operatorname{Log}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]^2\right)}{3 c}$$

Problem 51: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Log}\left[e \left(f (a+b x)^p (c+d x)^q\right)^r\right] \left(s+t \operatorname{Log}\left[i (g+h x)^n\right]\right)^2}{g k+h k x} \, dx$$

Optimal (type 4, 410 leaves, 11 steps):

$$-\frac{p\,r\,\text{Log}\left[-\frac{h\,(a+b\,x)}{b\,g-a\,h}\right]\,\left(s+t\,\text{Log}\left[i\,\left(g+h\,x\right)^n\right]\right)^3}{3\,h\,k\,n\,t}-\frac{q\,r\,\text{Log}\left[-\frac{h\,(c+d\,x)}{d\,g-c\,h}\right]\,\left(s+t\,\text{Log}\left[i\,\left(g+h\,x\right)^n\right]\right)^3}{3\,h\,k\,n\,t}+$$
$$\frac{\text{Log}\left[e\,\left(f\,\left(a+b\,x\right)^p\,\left(c+d\,x\right)^q\right)^r\right]\,\left(s+t\,\text{Log}\left[i\,\left(g+h\,x\right)^n\right]\right)^3}{3\,h\,k\,n\,t}-\frac{p\,r\,\left(s+t\,\text{Log}\left[i\,\left(g+h\,x\right)^n\right]\right)^2\,\text{PolyLog}\left[2,\,\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h\,k}-$$
$$\frac{q\,r\,\left(s+t\,\text{Log}\left[i\,\left(g+h\,x\right)^n\right]\right)^2\,\text{PolyLog}\left[2,\,\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h\,k}+\frac{2\,n\,p\,r\,t\,\left(s+t\,\text{Log}\left[i\,\left(g+h\,x\right)^n\right]\right)\,\text{PolyLog}\left[3,\,\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h\,k}+$$
$$\frac{2\,n\,q\,r\,t\,\left(s+t\,\text{Log}\left[i\,\left(g+h\,x\right)^n\right]\right)\,\text{PolyLog}\left[3,\,\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h\,k}-\frac{2\,n^2\,p\,r\,t^2\,\text{PolyLog}\left[4,\,\frac{b\,(g+h\,x)}{b\,g-a\,h}\right]}{h\,k}-\frac{2\,n^2\,q\,r\,t^2\,\text{PolyLog}\left[4,\,\frac{d\,(g+h\,x)}{d\,g-c\,h}\right]}{h\,k}$$

Result (type 4, 22 595 leaves) : Display of huge result suppressed!

Problem 56: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[i\,\left(j\,\left(h\,x\right)^t\right)^u\right]^3\,\text{Log}\left[e\,\left(f\,\left(a+b\,x\right)^p\,\left(c+d\,x\right)^q\right)^r\right]}{x}\,dx$$

Optimal (type 4, 328 leaves, 13 steps) :

$$-\frac{p\,r\,\text{Log}\left[i\,\left(j\,\left(h\,x\right)^t\right)^u\right]^4\,\text{Log}\left[1+\frac{b\,x}{a}\right]}{4\,t\,u}+\frac{\text{Log}\left[i\,\left(j\,\left(h\,x\right)^t\right)^u\right]^4\,\text{Log}\left[e\,\left(f\,\left(a+b\,x\right)^p\,\left(c+d\,x\right)^q\right)^r\right]}{4\,t\,u}-\frac{q\,r\,\text{Log}\left[i\,\left(j\,\left(h\,x\right)^t\right)^u\right]^4\,\text{Log}\left[1+\frac{d\,x}{c}\right]}{4\,t\,u}-$$
$$p\,r\,\text{Log}\left[i\,\left(j\,\left(h\,x\right)^t\right)^u\right]^3\,\text{PolyLog}\left[2,\,-\frac{b\,x}{a}\right]-q\,r\,\text{Log}\left[i\,\left(j\,\left(h\,x\right)^t\right)^u\right]^3\,\text{PolyLog}\left[2,\,-\frac{d\,x}{c}\right]+3\,p\,r\,t\,u\,\text{Log}\left[i\,\left(j\,\left(h\,x\right)^t\right)^u\right]^2\,\text{PolyLog}\left[3,\,-\frac{b\,x}{a}\right]+$$
$$3\,q\,r\,t\,u\,\text{Log}\left[i\,\left(j\,\left(h\,x\right)^t\right)^u\right]^2\,\text{PolyLog}\left[3,\,-\frac{d\,x}{c}\right]-6\,p\,r\,t^2\,u^2\,\text{Log}\left[i\,\left(j\,\left(h\,x\right)^t\right)^u\right]\,\text{PolyLog}\left[4,\,-\frac{b\,x}{a}\right]-$$
$$6\,q\,r\,t^2\,u^2\,\text{Log}\left[i\,\left(j\,\left(h\,x\right)^t\right)^u\right]\,\text{PolyLog}\left[4,\,-\frac{d\,x}{c}\right]+6\,p\,r\,t^3\,u^3\,\text{PolyLog}\left[5,\,-\frac{b\,x}{a}\right]+6\,q\,r\,t^3\,u^3\,\text{PolyLog}\left[5,\,-\frac{d\,x}{c}\right]$$

Result (type 4, 1241 leaves) :

$$p\,r\,t^3 u^3 \mathrm{Log}[x]\,\mathrm{Log}[h\,x]^3\,\mathrm{Log}[a+b\,x]-p\,r\,t^3 u^3\,\mathrm{Log}[h\,x]^4\,\mathrm{Log}[a+b\,x]-3\,p\,r\,t^2 u^2\,\mathrm{Log}[x]\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\mathrm{Log}[a+b\,x]+3\,p\,r\,t^2 u^2\,\mathrm{Log}[h\,x]^3\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\mathrm{Log}[a+b\,x]+3\,p\,r\,t\,u\,\mathrm{Log}[x]\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^2\mathrm{Log}[a+b\,x]-3\,p\,r\,t\,u\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^2\mathrm{Log}[a+b\,x]-p\,r\,\mathrm{Log}[x]\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^3\mathrm{Log}[a+b\,x]+p\,r\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^3\mathrm{Log}[a+b\,x]+\frac{1}{4}\,p\,r\,t^3 u^3\,\mathrm{Log}[h\,x]^4\,\mathrm{Log}\left[1+\frac{b\,x}{a}\right]-p\,r\,t^2 u^2\,\mathrm{Log}[h\,x]^3\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\mathrm{Log}\left[1+\frac{b\,x}{a}\right]+\frac{3}{2}\,p\,r\,t\,u\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^2\mathrm{Log}\left[1+\frac{b\,x}{a}\right]-p\,r\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^3\mathrm{Log}\left[1+\frac{b\,x}{a}\right]+q\,r\,t^3 u^3\,\mathrm{Log}[x]\,\mathrm{Log}[h\,x]^3\,\mathrm{Log}[c+d\,x]-q\,r\,t^3 u^3\,\mathrm{Log}[h\,x]^4\,\mathrm{Log}[c+d\,x]-3\,q\,r\,t^2 u^2\,\mathrm{Log}[x]\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\mathrm{Log}[c+d\,x]+3\,q\,r\,t^2 u^2\,\mathrm{Log}[h\,x]^3\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\mathrm{Log}[c+d\,x]+3\,q\,r\,t\,u\,\mathrm{Log}[x]\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^2\mathrm{Log}[c+d\,x]-3\,q\,r\,t\,u\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^2\mathrm{Log}[c+d\,x]-q\,r\,\mathrm{Log}[x]\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^3\mathrm{Log}[c+d\,x]+q\,r\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^3\mathrm{Log}[c+d\,x]-t^3 u^3\,\mathrm{Log}[x]\,\mathrm{Log}[h\,x]^3\,\mathrm{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]+\frac{3}{4}\,t^3 u^3\,\mathrm{Log}[h\,x]^4\,\mathrm{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]+3\,t^2 u^2\,\mathrm{Log}[x]\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\mathrm{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]-2\,t^2 u^2\,\mathrm{Log}[h\,x]^3\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\mathrm{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]-3\,t\,u\,\mathrm{Log}[x]\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^2\mathrm{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]+\frac{3}{2}\,t\,u\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^2\mathrm{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]+\mathrm{Log}[x]\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^3\mathrm{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]+\frac{1}{4}\,q\,r\,t^3 u^3\,\mathrm{Log}[h\,x]^4\,\mathrm{Log}\left[1+\frac{d\,x}{c}\right]-q\,r\,t^2 u^2\,\mathrm{Log}[h\,x]^3\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\mathrm{Log}\left[1+\frac{d\,x}{c}\right]+\frac{3}{2}\,q\,r\,t\,u\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^2\mathrm{Log}\left[1+\frac{d\,x}{c}\right]-q\,r\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^3\mathrm{Log}\left[1+\frac{d\,x}{c}\right]-p\,r\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^3\mathrm{PolyLog}\left[2,-\frac{b\,x}{a}\right]-q\,r\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^3\mathrm{PolyLog}\left[2,-\frac{d\,x}{c}\right]+3\,p\,r\,t\,u\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^2\mathrm{PolyLog}\left[3,-\frac{b\,x}{a}\right]+3\,q\,r\,t\,u\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^2\mathrm{PolyLog}\left[3,-\frac{d\,x}{c}\right]-6\,p\,r\,t^2 u^2\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\mathrm{PolyLog}\left[4,-\frac{b\,x}{a}\right]-6\,q\,r\,t^2 u^2\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\mathrm{PolyLog}\left[4,-\frac{d\,x}{c}\right]+6\,p\,r\,t^3 u^3\,\mathrm{PolyLog}\left[5,-\frac{b\,x}{a}\right]+6\,q\,r\,t^3 u^3\,\mathrm{PolyLog}\left[5,-\frac{d\,x}{c}\right]$$

Problem 57: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^2\,\mathrm{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]}{x}\,dx$$

Optimal (type 4, 262 leaves, 11 steps):

$$-\frac{p\,r\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^3\,\mathrm{Log}\left[1+\frac{b\,x}{a}\right]}{3\,t\,u}+\frac{\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^3\,\mathrm{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]}{3\,t\,u}-\frac{q\,r\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^3\,\mathrm{Log}\left[1+\frac{d\,x}{c}\right]}{3\,t\,u}-p\,r\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^2\mathrm{PolyLog}\left[2,-\frac{b\,x}{a}\right]-q\,r\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]^2\mathrm{PolyLog}\left[2,-\frac{d\,x}{c}\right]+2\,p\,r\,t\,u\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\mathrm{PolyLog}\left[3,-\frac{b\,x}{a}\right]+2\,q\,r\,t\,u\,\mathrm{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\mathrm{PolyLog}\left[3,-\frac{d\,x}{c}\right]-2\,p\,r\,t^2 u^2\,\mathrm{PolyLog}\left[4,-\frac{b\,x}{a}\right]-2\,q\,r\,t^2 u^2\,\mathrm{PolyLog}\left[4,-\frac{d\,x}{c}\right]$$

Result (type 4, 839 leaves):

$$-p\,r\,t^2 u^2 \mathrm{Log}[x]\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}[a+b\,x]+p\,r\,t^2 u^2\,\mathrm{Log}[h\,x]^3\,\mathrm{Log}[a+b\,x]+2\,p\,r\,t\,u\,\mathrm{Log}[x]\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]\,\mathrm{Log}[a+b\,x]-2\,p\,r\,t\,u\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]\,\mathrm{Log}[a+b\,x]-p\,r\,\mathrm{Log}[x]\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]^2\,\mathrm{Log}[a+b\,x]+p\,r\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]^2\,\mathrm{Log}[a+b\,x]-\frac{1}{3}\,p\,r\,t^2 u^2\,\mathrm{Log}[h\,x]^3\,\mathrm{Log}\left[1+\frac{b\,x}{a}\right]+p\,r\,t\,u\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]\,\mathrm{Log}\left[1+\frac{b\,x}{a}\right]-p\,r\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]^2\,\mathrm{Log}\left[1+\frac{b\,x}{a}\right]-q\,r\,t^2 u^2\,\mathrm{Log}[x]\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}[c+d\,x]+q\,r\,t^2 u^2\,\mathrm{Log}[h\,x]^3\,\mathrm{Log}[c+d\,x]+2\,q\,r\,t\,u\,\mathrm{Log}[x]\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]\,\mathrm{Log}[c+d\,x]-2\,q\,r\,t\,u\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]\,\mathrm{Log}[c+d\,x]-q\,r\,\mathrm{Log}[x]\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]^2\,\mathrm{Log}[c+d\,x]+q\,r\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]^2\,\mathrm{Log}[c+d\,x]+t^2 u^2\,\mathrm{Log}[x]\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]-\frac{2}{3}\,t^2 u^2\,\mathrm{Log}[h\,x]^3\,\mathrm{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]-2\,t\,u\,\mathrm{Log}[x]\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]\,\mathrm{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]+t\,u\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]\,\mathrm{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]+\mathrm{Log}[x]\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]^2\,\mathrm{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]-\frac{1}{3}\,q\,r\,t^2 u^2\,\mathrm{Log}[h\,x]^3\,\mathrm{Log}\left[1+\frac{d\,x}{c}\right]+q\,r\,t\,u\,\mathrm{Log}[h\,x]^2\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]\,\mathrm{Log}\left[1+\frac{d\,x}{c}\right]-q\,r\,\mathrm{Log}[h\,x]\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]^2\,\mathrm{Log}\left[1+\frac{d\,x}{c}\right]-p\,r\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]^2\,\mathrm{PolyLog}\left[2,-\frac{b\,x}{a}\right]-q\,r\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]^2\,\mathrm{PolyLog}\left[2,-\frac{d\,x}{c}\right]+2\,p\,r\,t\,u\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]\,\mathrm{PolyLog}\left[3,-\frac{b\,x}{a}\right]+2\,q\,r\,t\,u\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]\,\mathrm{PolyLog}\left[3,-\frac{d\,x}{c}\right]-2\,p\,r\,t^2 u^2\,\mathrm{PolyLog}\left[4,-\frac{b\,x}{a}\right]-2\,q\,r\,t^2 u^2\,\mathrm{PolyLog}\left[4,-\frac{d\,x}{c}\right]$$

Problem 58: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]\,\mathrm{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]}{x}\,dx$$

Optimal (type 4, 194 leaves, 9 steps):

$$-\frac{p\,r\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]^2\,\mathrm{Log}\left[1+\frac{b\,x}{a}\right]}{2\,t\,u}+\frac{\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]^2\,\mathrm{Log}\left[e\,\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]}{2\,t\,u}-\frac{q\,r\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]^2\,\mathrm{Log}\left[1+\frac{d\,x}{c}\right]}{2\,t\,u}-p\,r\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]\,\mathrm{PolyLog}\left[2,-\frac{b\,x}{a}\right]-q\,r\,\mathrm{Log}\left[i\,\left(j\,(h\,x)^t\right)^u\right]\,\mathrm{PolyLog}\left[2,-\frac{d\,x}{c}\right]+p\,r\,t\,u\,\mathrm{PolyLog}\left[3,-\frac{b\,x}{a}\right]+q\,r\,t\,u\,\mathrm{PolyLog}\left[3,-\frac{d\,x}{c}\right]$$

Result (type 4, 451 leaves):

$$p\,r\,t\,u\,\text{Log}[x]\,\text{Log}[h\,x]\,\text{Log}[a+b\,x]-p\,r\,t\,u\,\text{Log}[h\,x]^2\,\text{Log}[a+b\,x]-p\,r\,\text{Log}[x]\,\text{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\,\text{Log}[a+b\,x]+$$
$$p\,r\,\text{Log}[h\,x]\,\text{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\,\text{Log}[a+b\,x]+\frac{1}{2}\,p\,r\,t\,u\,\text{Log}[h\,x]^2\,\text{Log}\left[1+\frac{b\,x}{a}\right]-p\,r\,\text{Log}[h\,x]\,\text{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\,\text{Log}\left[1+\frac{b\,x}{a}\right]+$$
$$q\,r\,t\,u\,\text{Log}[x]\,\text{Log}[h\,x]\,\text{Log}[c+d\,x]-q\,r\,t\,u\,\text{Log}[h\,x]^2\,\text{Log}[c+d\,x]-q\,r\,\text{Log}[x]\,\text{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\,\text{Log}[c+d\,x]+$$
$$q\,r\,\text{Log}[h\,x]\,\text{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\,\text{Log}[c+d\,x]-t\,u\,\text{Log}[x]\,\text{Log}[h\,x]\,\text{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]+\frac{1}{2}\,t\,u\,\text{Log}[h\,x]^2\,\text{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]+$$
$$\text{Log}[x]\,\text{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\,\text{Log}\left[e\left(f\,(a+b\,x)^p\,(c+d\,x)^q\right)^r\right]+\frac{1}{2}\,q\,r\,t\,u\,\text{Log}[h\,x]^2\,\text{Log}\left[1+\frac{d\,x}{c}\right]-q\,r\,\text{Log}[h\,x]\,\text{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\,\text{Log}\left[1+\frac{d\,x}{c}\right]-$$
$$p\,r\,\text{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\,\text{PolyLog}\left[2,-\frac{b\,x}{a}\right]-q\,r\,\text{Log}\left[i\left(j\,(h\,x)^t\right)^u\right]\,\text{PolyLog}\left[2,-\frac{d\,x}{c}\right]+p\,r\,t\,u\,\text{PolyLog}\left[3,-\frac{b\,x}{a}\right]+q\,r\,t\,u\,\text{PolyLog}\left[3,-\frac{d\,x}{c}\right]$$

Problem 67: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^3\,\text{Log}\left[h\,(f+g\,x)^m\right]}{(a+b\,x)\,(c+d\,x)}\,dx$$

Optimal (type 4, 620 leaves, 14 steps):

$$\frac{m\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^4\,\text{Log}\left[\frac{b\,c-a\,d}{b\,(c+d\,x)}\right]}{4\,(b\,c-a\,d)\,n}+\frac{\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^4\,\text{Log}\left[h\,(f+g\,x)^m\right]}{4\,(b\,c-a\,d)\,n}-\frac{m\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^4\,\text{Log}\left[1-\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{4\,(b\,c-a\,d)\,n}+$$
$$\frac{m\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^3\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,c-a\,d}-\frac{m\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^3\,\text{PolyLog}\left[2,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{b\,c-a\,d}-\frac{3\,m\,n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,c-a\,d}+$$
$$\frac{3\,m\,n\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2\,\text{PolyLog}\left[3,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{b\,c-a\,d}+\frac{6\,m\,n^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{PolyLog}\left[4,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,c-a\,d}-$$
$$\frac{6\,m\,n^2\,\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]\,\text{PolyLog}\left[4,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{b\,c-a\,d}-\frac{6\,m\,n^3\,\text{PolyLog}\left[5,\frac{d\,(a+b\,x)}{b\,(c+d\,x)}\right]}{b\,c-a\,d}+\frac{6\,m\,n^3\,\text{PolyLog}\left[5,\frac{(d\,f-c\,g)\,(a+b\,x)}{(b\,f-a\,g)\,(c+d\,x)}\right]}{b\,c-a\,d}$$

Result (type 4, 31 404 leaves): Display of huge result suppressed!

Problem 68: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right]^2\,\text{Log}\left[h\,(f+g\,x)^m\right]}{(a+b\,x)\,(c+d\,x)}\,dx$$

Optimal (type 4, 496 leaves, 12 steps):

$$\frac{m\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]^3\text{Log}\left[\frac{bc-ad}{b(c+dx)}\right]}{3(bc-ad)n}+\frac{\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]^3\text{Log}\left[h(f+gx)^m\right]}{3(bc-ad)n}-\frac{m\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]^3\text{Log}\left[1-\frac{(df-cg)(a+bx)}{(bf-ag)(c+dx)}\right]}{3(bc-ad)n}+$$
$$\frac{m\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]^2\text{PolyLog}\left[2,\frac{d(a+bx)}{b(c+dx)}\right]}{bc-ad}-\frac{m\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]^2\text{PolyLog}\left[2,\frac{(df-cg)(a+bx)}{(bf-ag)(c+dx)}\right]}{bc-ad}-\frac{2mn\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\text{PolyLog}\left[3,\frac{d(a+bx)}{b(c+dx)}\right]}{bc-ad}+$$
$$\frac{2mn\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\text{PolyLog}\left[3,\frac{(df-cg)(a+bx)}{(bf-ag)(c+dx)}\right]}{bc-ad}+\frac{2mn^2\,\text{PolyLog}\left[4,\frac{d(a+bx)}{b(c+dx)}\right]}{bc-ad}-\frac{2mn^2\,\text{PolyLog}\left[4,\frac{(df-cg)(a+bx)}{(bf-ag)(c+dx)}\right]}{bc-ad}$$

Result (type 4, 25 557 leaves) : Display of huge result suppressed!

Problem 69: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\text{Log}\left[h(f+gx)^m\right]}{(a+bx)(c+dx)}\,dx$$

Optimal (type 4, 371 leaves, 10 steps) :

$$\frac{m\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]^2\text{Log}\left[\frac{bc-ad}{b(c+dx)}\right]}{2(bc-ad)n}+\frac{\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]^2\text{Log}\left[h(f+gx)^m\right]}{2(bc-ad)n}-\frac{m\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]^2\text{Log}\left[1-\frac{(df-cg)(a+bx)}{(bf-ag)(c+dx)}\right]}{2(bc-ad)n}+$$
$$\frac{m\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\text{PolyLog}\left[2,\frac{d(a+bx)}{b(c+dx)}\right]}{bc-ad}-\frac{m\,\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]\text{PolyLog}\left[2,\frac{(df-cg)(a+bx)}{(bf-ag)(c+dx)}\right]}{bc-ad}-\frac{mn\,\text{PolyLog}\left[3,\frac{d(a+bx)}{b(c+dx)}\right]}{bc-ad}+\frac{mn\,\text{PolyLog}\left[3,\frac{(df-cg)(a+bx)}{(bf-ag)(c+dx)}\right]}{bc-ad}$$

Result (type 4, 6704 leaves) :

$$\frac{m\,\text{Log}\left[\frac{a+bx}{c+dx}\right]\left(n\,\text{Log}\left[\frac{a+bx}{c+dx}\right]+2\left(\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]-n\,\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)\right)\text{Log}[f+gx]}{2(bc-ad)}-$$
$$\frac{\text{Log}[a+bx]\left(\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]-n\,\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)\left(-m\,\text{Log}[f+gx]+\text{Log}\left[h(f+gx)^m\right]\right)}{-bc+ad}+$$
$$\frac{\left(\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]-n\,\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)\text{Log}[c+dx]\left(-m\,\text{Log}[f+gx]+\text{Log}\left[h(f+gx)^m\right]\right)}{-bc+ad}+$$
$$\frac{1}{-bc+ad}bdgm\left(\text{Log}\left[e\left(\frac{a+bx}{c+dx}\right)^n\right]-n\,\text{Log}\left[\frac{a+bx}{c+dx}\right]\right)\left(\frac{a^2\,\text{Log}\left[\frac{a}{b}+x\right]^2}{2b^3\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{a}{b}+\frac{f}{g}\right)g}+\frac{c^2\,\text{Log}\left[\frac{c}{d}+x\right]^2}{2b\left(-\frac{a}{b}+\frac{c}{d}\right)d^3\left(-\frac{c}{d}+\frac{f}{g}\right)g}+\right.$$
$$\left(\frac{a^2\,\text{Log}[a+bx]}{b(bc-ad)(bf-ag)}+\frac{c^2\,\text{Log}[c+dx]}{d(bc-ad)(-df+cg)}+\frac{f^2\,\text{Log}[f+gx]}{g(bf-ag)(df-cg)}\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+dx}+\frac{bx}{c+dx}\right]\right)-$$

$$\frac{c^2 \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]+\text{PolyLog}\left[2,\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]\right)}{b\left(-\frac{a}{b}+\frac{c}{d}\right) d^3\left(-\frac{c}{d}+\frac{f}{g}\right) g}-\frac{f^2 \left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]+\text{PolyLog}\left[2,\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]\right)}{b d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right) g^3}-$$

$$\left.\frac{a^2 \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]+\text{PolyLog}\left[2,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]\right)}{b^3\left(-\frac{a}{b}+\frac{c}{d}\right) d\left(-\frac{a}{b}+\frac{f}{g}\right) g}+\frac{f^2 \left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]+\text{PolyLog}\left[2,\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]\right)}{b d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right) g^3}\right)+$$

$$\frac{1}{-b c+a d} b c g m\left(\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\left(-\frac{a \text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^2\left(-\frac{a}{b}+\frac{c}{d}\right) d\left(-\frac{a}{b}+\frac{f}{g}\right) g}-\frac{c \text{Log}\left[\frac{c}{d}+x\right]^2}{2 b\left(-\frac{a}{b}+\frac{c}{d}\right) d^2\left(-\frac{c}{d}+\frac{f}{g}\right) g}+\right.$$

$$\left(\left(a(d f-c g) \text{Log}[a+b x]+(-b c f+a c g) \text{Log}[c+d x]+(b c-a d) f \text{Log}[f+g x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)\right)\Big/$$

$$\left((b c-a d)(b f-a g)(-d f+c g)\right)+\frac{c\left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]+\text{PolyLog}\left[2,\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]\right)}{b\left(-\frac{a}{b}+\frac{c}{d}\right) d^2\left(-\frac{c}{d}+\frac{f}{g}\right) g}+$$

$$\frac{f\left(\text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]+\text{PolyLog}\left[2,\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]\right)}{b d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right) g^2}+\frac{a\left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]+\text{PolyLog}\left[2,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]\right)}{b^2\left(-\frac{a}{b}+\frac{c}{d}\right) d\left(-\frac{a}{b}+\frac{f}{g}\right) g}-$$

$$\left.\frac{f\left(\text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]+\text{PolyLog}\left[2,\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]\right)}{b d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right) g^2}\right)+$$

$$\frac{1}{-b c+a d} a d g m\left(\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-n \text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\left(-\frac{a \text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^2\left(-\frac{a}{b}+\frac{c}{d}\right) d\left(-\frac{a}{b}+\frac{f}{g}\right) g}-\frac{c \text{Log}\left[\frac{c}{d}+x\right]^2}{2 b\left(-\frac{a}{b}+\frac{c}{d}\right) d^2\left(-\frac{c}{d}+\frac{f}{g}\right) g}+\right.$$

$$\left(\left(a(d f-c g) \text{Log}[a+b x]+(-b c f+a c g) \text{Log}[c+d x]+(b c-a d) f \text{Log}[f+g x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)\right)\Big/$$

$$\left((b c-a d)(b f-a g)(-d f+c g)\right)+\frac{c\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]+\text{PolyLog}\left[2,\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]\right)}{b\left(-\frac{a}{b}+\frac{c}{d}\right)d^2\left(-\frac{c}{d}+\frac{f}{g}\right)g}+$$

$$\frac{f\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]+\text{PolyLog}\left[2,\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]\right)}{b d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right)g^2}+\frac{a\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]+\text{PolyLog}\left[2,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]\right)}{b^2\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{a}{b}+\frac{f}{g}\right)g}-$$

$$\left.\frac{f\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]+\text{PolyLog}\left[2,\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]\right)}{b d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right)g^2}\right)-$$

$$\frac{1}{-b c+a d}\,b c g n\left(-m\,\text{Log}[f+g x]+\text{Log}\left[h\,(f+g x)^m\right]\right)\left(-\frac{a\,\text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^2\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{a}{b}+\frac{f}{g}\right)g}-\frac{c\,\text{Log}\left[\frac{c}{d}+x\right]^2}{2 b\left(-\frac{a}{b}+\frac{c}{d}\right)d^2\left(-\frac{c}{d}+\frac{f}{g}\right)g}+\right.$$

$$\left(\left(a(d f-c g)\,\text{Log}[a+b x]+(-b c f+a c g)\,\text{Log}[c+d x]+(b c-a d) f\,\text{Log}[f+g x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)\right)\Big/$$

$$\left((b c-a d)(b f-a g)(-d f+c g)\right)+\frac{c\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]+\text{PolyLog}\left[2,\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]\right)}{b\left(-\frac{a}{b}+\frac{c}{d}\right)d^2\left(-\frac{c}{d}+\frac{f}{g}\right)g}+$$

$$\frac{f\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]+\text{PolyLog}\left[2,\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]\right)}{b d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right)g^2}+\frac{a\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]+\text{PolyLog}\left[2,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]\right)}{b^2\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{a}{b}+\frac{f}{g}\right)g}-$$

$$\left.\frac{f\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]+\text{PolyLog}\left[2,\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]\right)}{b d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right)g^2}\right)+$$

$$\frac{1}{-b c+a d}\,a d g n\left(-m\,\text{Log}[f+g x]+\text{Log}\left[h\,(f+g x)^m\right]\right)\left(-\frac{a\,\text{Log}\left[\frac{a}{b}+x\right]^2}{2 b^2\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{a}{b}+\frac{f}{g}\right)g}-\frac{c\,\text{Log}\left[\frac{c}{d}+x\right]^2}{2 b\left(-\frac{a}{b}+\frac{c}{d}\right)d^2\left(-\frac{c}{d}+\frac{f}{g}\right)g}+\right.$$

$$\left(\left(a\,(d f-c g)\,\text{Log}[a+b x]+(-b c f+a c g)\,\text{Log}[c+d x]+(b c-a d)\,f\,\text{Log}[f+g x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)\right)\Big/$$

$$\left((b c-a d)\,(b f-a g)\,(-d f+c g)\right)+\frac{c\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]+\text{PolyLog}\left[2,\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]\right)}{b\left(-\frac{a}{b}+\frac{c}{d}\right)d^2\left(-\frac{c}{d}+\frac{f}{g}\right)g}+$$

$$\frac{f\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]+\text{PolyLog}\left[2,\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]\right)}{b d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right)g^2}+\frac{a\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]+\text{PolyLog}\left[2,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]\right)}{b^2\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{a}{b}+\frac{f}{g}\right)g}-$$

$$\left.\frac{f\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]+\text{PolyLog}\left[2,\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]\right)}{b d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right)g^2}\right)+$$

$$\frac{1}{-b c+a d}\,a c g m\left(\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2 b\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{a}{b}+\frac{f}{g}\right)g}+\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2 b\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{c}{d}+\frac{f}{g}\right)g}+\right.$$

$$\left(\left(b\,(-d f+c g)\,\text{Log}[a+b x]+d\,(b f-a g)\,\text{Log}[c+d x]+(-b c+a d)\,g\,\text{Log}[f+g x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)\right)\Big/$$

$$\left((b c-a d)\,(b f-a g)\,(-d f+c g)\right)-\frac{\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]+\text{PolyLog}\left[2,\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a d}{b}}\right]}{b\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{c}{d}+\frac{f}{g}\right)g}-\frac{\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]+\text{PolyLog}\left[2,\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a g}{b}}\right]}{b d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right)g}-$$

$$\left.\frac{\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]+\text{PolyLog}\left[2,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b c}{d}}\right]}{b\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{a}{b}+\frac{f}{g}\right)g}+\frac{\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]+\text{PolyLog}\left[2,\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]}{b d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right)g}\right)-$$

$$\frac{1}{-b c+a d}\,b c f n\left(-m\,\text{Log}[f+g x]+\text{Log}\left[h\,(f+g x)^m\right]\right)\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^2}{2 b\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{a}{b}+\frac{f}{g}\right)g}+\frac{\text{Log}\left[\frac{c}{d}+x\right]^2}{2 b\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{c}{d}+\frac{f}{g}\right)g}+\right.$$

$$\left(\left(b\,(-d f+c g)\,\text{Log}[a+b x]+d\,(b f-a g)\,\text{Log}[c+d x]+(-b c+a d)\,g\,\text{Log}[f+g x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d x}+\frac{b x}{c+d x}\right]\right)\right)\Big/$$

$$\left((b\,c-a\,d)\,(b\,f-a\,g)\,(-d\,f+c\,g)\right)-\frac{\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right]+\text{PolyLog}\left[2,\,\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right]}{b\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{c}{d}+\frac{f}{g}\right)g}-\frac{\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right]+\text{PolyLog}\left[2,\,\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right]}{b\,d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right)g}-$$

$$\left.\frac{\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]+\text{PolyLog}\left[2,\,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]}{b\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{a}{b}+\frac{f}{g}\right)g}+\frac{\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right]+\text{PolyLog}\left[2,\,\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right]}{b\,d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right)g}\right)+$$

$$\frac{1}{-b\,c+a\,d}\,a\,d\,f\,n\left(-m\,\text{Log}[f+g\,x]+\text{Log}\left[h\,(f+g\,x)^{m}\right]\right)\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]^{2}}{2\,b\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{a}{b}+\frac{f}{g}\right)g}+\frac{\text{Log}\left[\frac{c}{d}+x\right]^{2}}{2\,b\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{c}{d}+\frac{f}{g}\right)g}+\right.$$

$$\left(\left(b\,(-d\,f+c\,g)\,\text{Log}[a+b\,x]+d\,(b\,f-a\,g)\,\text{Log}[c+d\,x]+(-b\,c+a\,d)\,g\,\text{Log}[f+g\,x]\right)\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)\right)\Big/$$

$$\left((b\,c-a\,d)\,(b\,f-a\,g)\,(-d\,f+c\,g)\right)-\frac{\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[1-\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right]+\text{PolyLog}\left[2,\,\frac{d\left(\frac{a}{b}+x\right)}{-c+\frac{a\,d}{b}}\right]}{b\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{c}{d}+\frac{f}{g}\right)g}-\frac{\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right]+\text{PolyLog}\left[2,\,\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right]}{b\,d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right)g}-$$

$$\left.\frac{\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[1-\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]+\text{PolyLog}\left[2,\,\frac{b\left(\frac{c}{d}+x\right)}{-a+\frac{b\,c}{d}}\right]}{b\left(-\frac{a}{b}+\frac{c}{d}\right)d\left(-\frac{a}{b}+\frac{f}{g}\right)g}+\frac{\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right]+\text{PolyLog}\left[2,\,\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right]}{b\,d\left(\frac{c}{d}-\frac{f}{g}\right)\left(-\frac{a}{b}+\frac{f}{g}\right)g}\right)-$$

$$\frac{1}{2\,(b\,c-a\,d)}\,g\,m\,n\left(\frac{\text{Log}[f+g\,x]\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)^{2}}{g}+2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a}{c+d\,x}+\frac{b\,x}{c+d\,x}\right]\right)\right.$$

$$\left(\frac{\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right]+\text{PolyLog}\left[2,\,\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right]}{g}-\frac{\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right]+\text{PolyLog}\left[2,\,\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c\,g}{d}}\right]}{g}\right)+$$

$$\frac{2\left(\frac{1}{2}\,\text{Log}\left[\frac{a}{b}+x\right]^{2}\,\text{Log}\left[1-\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right]+\text{Log}\left[\frac{a}{b}+x\right]\,\text{PolyLog}\left[2,\,\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right]-\text{PolyLog}\left[3,\,\frac{g\left(\frac{a}{b}+x\right)}{-f+\frac{a\,g}{b}}\right]\right)}{g}+$$

$$\frac{2\left(\frac{1}{2}\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[1-\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]+\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]-\text{PolyLog}\left[3,\frac{g\left(\frac{c}{d}+x\right)}{-f+\frac{c g}{d}}\right]\right)}{g}-$$

$$\frac{1}{g}2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]+\frac{1}{2}\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\left(-2\,\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\right)\right.$$

$$\left(\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{d(f+g x)}{-d f+c g}\right]\right)+\text{Log}\left[\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(-\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]+\text{Log}\left[-\frac{d(f+g x)}{-d f+c g}\right]\right)+$$

$$\frac{1}{2}\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]^2\left(\text{Log}\left[\frac{-b c+a d}{b d\left(\frac{a}{b}+x\right)}\right]+\text{Log}\left[\frac{b(f+g x)}{b f-a g}\right]-\text{Log}\left[-\frac{(-b c+a d)(f+g x)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)+$$

$$\left(\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)\text{PolyLog}\left[2,-\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]+\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)$$

$$\text{PolyLog}\left[2,\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]+\text{Log}\left[-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\left(\text{PolyLog}\left[2,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]-\text{PolyLog}\left[2,-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)-$$

$$\left.\text{PolyLog}\left[3,-\frac{b g\left(\frac{a}{b}+x\right)}{b f-a g}\right]-\text{PolyLog}\left[3,\frac{d g\left(\frac{c}{d}+x\right)}{-d f+c g}\right]-\text{PolyLog}\left[3,\frac{\frac{c}{d}+x}{\frac{a}{b}+x}\right]+\text{PolyLog}\left[3,-\frac{d(b f-a g)\left(\frac{c}{d}+x\right)}{b(-d f+c g)\left(\frac{a}{b}+x\right)}\right]\right)$$

Problem 90: Unable to integrate problem.

$$\int\frac{\text{Log}\left[\frac{a}{a+b x}\right]\text{Log}\left[\frac{c x}{a+b x}\right]^2}{x(a+b x)}\,dx$$

Optimal (type 4, 82 leaves, 3 steps):

$$-\frac{\text{Log}\left[\frac{c x}{a+b x}\right]^2\text{PolyLog}\left[2,1-\frac{a}{a+b x}\right]}{a}+\frac{2\,\text{Log}\left[\frac{c x}{a+b x}\right]\text{PolyLog}\left[3,1-\frac{a}{a+b x}\right]}{a}-\frac{2\,\text{PolyLog}\left[4,1-\frac{a}{a+b x}\right]}{a}$$

Result (type 8, 36 leaves):

$$\int\frac{\text{Log}\left[\frac{a}{a+b x}\right]\text{Log}\left[\frac{c x}{a+b x}\right]^2}{x(a+b x)}\,dx$$

Problem 91: Unable to integrate problem.

$$\int \frac{\text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(c+d x) (a g+b g x)} \, dx$$

Optimal (type 4, 150 leaves, 3 steps):

$$-\frac{\text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2 \text{PolyLog}\left[2, 1-\frac{b c-a d}{b (c+d x)}\right]}{(b c-a d) g}+\frac{2 \text{Log}\left[\frac{e (a+b x)}{c+d x}\right] \text{PolyLog}\left[3, 1-\frac{b c-a d}{b (c+d x)}\right]}{(b c-a d) g}-\frac{2 \text{PolyLog}\left[4, 1-\frac{b c-a d}{b (c+d x)}\right]}{(b c-a d) g}$$

Result (type 8, 57 leaves):

$$\int \frac{\text{Log}\left[\frac{b c-a d}{b (c+d x)}\right] \text{Log}\left[\frac{e (a+b x)}{c+d x}\right]^2}{(c+d x) (a g+b g x)} \, dx$$

Problem 92: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 \text{Log}\left[\frac{b c-a d}{b (c+d x)}\right]}{(c+d x) (a g+b g x)} \, dx$$

Optimal (type 4, 160 leaves, 3 steps):

$$-\frac{\text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right]^2 \text{PolyLog}\left[2, 1-\frac{b c-a d}{b (c+d x)}\right]}{(b c-a d) g}+\frac{2 n \text{Log}\left[e \left(\frac{a+b x}{c+d x}\right)^n\right] \text{PolyLog}\left[3, 1-\frac{b c-a d}{b (c+d x)}\right]}{(b c-a d) g}-\frac{2 n^2 \text{PolyLog}\left[4, 1-\frac{b c-a d}{b (c+d x)}\right]}{(b c-a d) g}$$

Result (type 4, 785 leaves):

$$\frac{1}{3\,(b c-a d)\,g}\left(\text{Log}\left[\frac{a+b x}{c+d x}\right]\left(3\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]^2-3\,n\,\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]\text{Log}\left[\frac{a+b x}{c+d x}\right]+n^2\,\text{Log}\left[\frac{a+b x}{c+d x}\right]^2\right)\text{Log}\left[\frac{b c-a d}{b c+b d x}\right]+\right.$$
$$\frac{3}{2}\left(\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\left(-\text{Log}\left[\frac{c}{d}+x\right]^2-2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d x]+2\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d x]+\right.$$
$$\left.2\,\text{Log}\left[\frac{a+b x}{c+d x}\right]\text{Log}[c+d x]+2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+2\,\text{PolyLog}\left[2,\frac{d\,(a+b x)}{-b c+a d}\right]\right)+$$
$$n\left(\text{Log}\left[e\left(\frac{a+b x}{c+d x}\right)^n\right]-n\,\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\left(\text{Log}\left[\frac{c}{d}+x\right]^3+3\,\text{Log}\left[\frac{c}{d}+x\right]^2\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d\,(a+b x)}{-b c+a d}\right]\right)+\right.$$
$$3\left(-\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)^2\text{Log}[c+d x]+3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\,(a+b x)}{-b c+a d}\right]+$$
$$3\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]-\text{Log}\left[\frac{a+b x}{c+d x}\right]\right)\left(\text{Log}\left[\frac{c}{d}+x\right]^2-2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d x)}{b c-a d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b x)}{-b c+a d}\right]\right)\right)+$$
$$\left.6\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+d x)}{b c-a d}\right]-6\,\text{PolyLog}\left[3,\frac{d\,(a+b x)}{-b c+a d}\right]-6\,\text{PolyLog}\left[3,\frac{b\,(c+d x)}{b c-a d}\right]\right)-n^2$$
$$\left.\left(\text{Log}\left[\frac{a+b x}{c+d x}\right]^3\text{Log}\left[\frac{b c-a d}{b c+b d x}\right]+3\,\text{Log}\left[\frac{a+b x}{c+d x}\right]^2\text{PolyLog}\left[2,\frac{d\,(a+b x)}{b\,(c+d x)}\right]-6\,\text{Log}\left[\frac{a+b x}{c+d x}\right]\text{PolyLog}\left[3,\frac{d\,(a+b x)}{b\,(c+d x)}\right]+6\,\text{PolyLog}\left[4,\frac{d\,(a+b x)}{b\,(c+d x)}\right]\right)\right)$$

Problem 98: Unable to integrate problem.

$$\int \text{Log}\left[\frac{c\,(b+a x)^2}{x^2}\right]^3 dx$$

Optimal (type 4, 102 leaves, 5 steps):

$$x\,\text{Log}\left[\frac{c\,(b+a x)^2}{x^2}\right]^3-\frac{6\,b\,\text{Log}\left[\frac{c\,(b+a x)^2}{x^2}\right]^2\text{Log}\left[1-\frac{a x}{b+a x}\right]}{a}+\frac{24\,b\,\text{Log}\left[\frac{c\,(b+a x)^2}{x^2}\right]\text{PolyLog}\left[2,\frac{a x}{b+a x}\right]}{a}+\frac{48\,b\,\text{PolyLog}\left[3,\frac{a x}{b+a x}\right]}{a}$$

Result (type 8, 17 leaves):

$$\int \text{Log}\left[\frac{c\,(b+a x)^2}{x^2}\right]^3 dx$$

Problem 101: Unable to integrate problem.

$$\int \text{Log}\left[\frac{c\,x^2}{(b+a x)^2}\right]^3 dx$$

Optimal (type 4, 98 leaves, 5 steps):

$$x \operatorname{Log}\left[\frac{c x^2}{(b+a x)^2}\right]^3+\frac{6 b \operatorname{Log}\left[\frac{c x^2}{(b+a x)^2}\right]^2 \operatorname{Log}\left[\frac{b}{b+a x}\right]}{a}+\frac{24 b \operatorname{Log}\left[\frac{c x^2}{(b+a x)^2}\right] \operatorname{PolyLog}\left[2, \frac{a x}{b+a x}\right]}{a}-\frac{48 b \operatorname{PolyLog}\left[3, \frac{a x}{b+a x}\right]}{a}$$

Result (type 8, 17 leaves):

$$\int \operatorname{Log}\left[\frac{c x^2}{(b+a x)^2}\right]^3 dx$$

Problem 102: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{PolyLog}\left[2, 1+\frac{b c-a d}{d (a+b x)}\right]}{(a+b x) (c+d x)} dx$$

Optimal (type 4, 35 leaves, 1 step):

$$-\frac{\operatorname{PolyLog}\left[3, 1+\frac{b c-a d}{d (a+b x)}\right]}{b c-a d}$$

Result (type 4, 1037 leaves):

$$\frac{\left(\text{Log}[a+b\,x]-\text{Log}[c+d\,x]\right)\,\text{PolyLog}\left[2,\frac{b\,c}{d\,(a+b\,x)}+\frac{b\,x}{a+b\,x}\right]}{b\,c-a\,d}-$$

$$\frac{1}{6\,b\,c-6\,a\,d}\left(-3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]+3\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]+2\,\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]^3-3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}[a+b\,x]+\right.$$

$$6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}[a+b\,x]+6\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}[a+b\,x]+$$

$$6\,\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]^2\text{Log}[a+b\,x]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b\,x]^2+6\,\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}[a+b\,x]^2-6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$

$$3\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+9\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}[c+d\,x]-$$

$$6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[c+d\,x]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}[c+d\,x]-6\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}[c+d\,x]-$$

$$12\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]-12\,\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}[a+b\,x]\,\text{Log}[c+d\,x]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]^2+$$

$$6\,\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}[c+d\,x]^2-9\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[c+d\,x]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-$$

$$6\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]-\text{Log}[a+b\,x]+\text{Log}[c+d\,x]\right)\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-$$

$$\left.6\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)$$

Problem 103: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]}{(a+b\,x)\,(c+d\,x)}\,dx$$

Optimal (type 4, 85 leaves, 2 steps):

$$\frac{\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\text{PolyLog}\left[2,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b\,c-a\,d}-\frac{\text{PolyLog}\left[3,1+\frac{b\,c-a\,d}{d\,(a+b\,x)}\right]}{b\,c-a\,d}$$

Result (type 4, 617 leaves):

$$\frac{1}{6\,(b\,c-a\,d)}\left(2\,\text{Log}\left[\frac{a}{b}+x\right]^3+3\,\text{Log}\left[\frac{c}{d}+x\right]^2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)+3\,\text{Log}\left[\frac{a}{b}+x\right]^2\left(-\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+\right.$$

$$6\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\right)\left(\text{Log}[a+b\,x]-\text{Log}[c+d\,x]\right)\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)+$$

$$6\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-$$

$$3\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\right)\left(\text{Log}\left[\frac{a}{b}+x\right]^2-2\left(\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)\right)-$$

$$6\,\text{Log}\left[\frac{c}{d}+x\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-3\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\right)\left(\text{Log}\left[\frac{a}{b}+x\right]^2+\text{Log}\left[\frac{c}{d}+x\right]^2-\right.$$

$$\left.2\left(\text{Log}\left[\frac{a}{b}+x\right]\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-2\left(\text{Log}\left[\frac{c}{d}+x\right]\,\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)-$$

$$6\left(\text{Log}\left[\frac{a}{b}+x\right]^2\,\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]\,\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-$$

$$\left.6\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+6\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)$$

Problem 104: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]^2}{a+b\,x}\,dx$$

Optimal (type 4, 140 leaves, 4 steps):

$$-\frac{\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\,\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]^2}{b}-\frac{2\,\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\,\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b}+\frac{2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]}{b}$$

Result (type 4, 363 leaves):

$$\frac{1}{3b}\left(\text{Log}\left[\frac{a}{b}+x\right]^3+3\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+3\,\text{Log}\left[\frac{a}{b}+x\right]^2\left(-\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)+\right.$$
$$3\,\text{Log}[a+b\,x]\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]\right)^2+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+$$
$$6\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-3\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]\right)$$
$$\left.\left(\text{Log}\left[\frac{a}{b}+x\right]^2-2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)-6\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)$$

Problem 105: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\text{Log}\left[\frac{(-b\,c+a\,d)\,(e+f\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]}{(a+b\,x)\,(c+d\,x)}\,dx$$

Optimal (type 4, 109 leaves, 2 steps):

$$\frac{\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\text{PolyLog}\left[2,1+\frac{(b\,c-a\,d)\,(e+f\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]}{b\,c-a\,d}-\frac{\text{PolyLog}\left[3,1+\frac{(b\,c-a\,d)\,(e+f\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]}{b\,c-a\,d}$$

Result (type 4, 1681 leaves):

$$
\begin{aligned}
&-\frac{1}{6\,b\,c-6\,a\,d}\Bigg(-2\,\text{Log}\left[\frac{a}{b}+x\right]^3+3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}[a+b\,x]-6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]+3\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}[a+b\,x]+\\
&6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-3\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-\\
&3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]-6\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+\\
&6\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]+3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]^2+3\,\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]^2-\\
&3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}[e+f\,x]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[e+f\,x]-3\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}[e+f\,x]-\\
&6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\text{Log}[e+f\,x]+6\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\text{Log}[e+f\,x]-3\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]^2\text{Log}[e+f\,x]+\\
&3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]-6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]\text{Log}\left[\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]+3\,\text{Log}\left[\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]^2\text{Log}\left[\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]+\\
&6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\text{Log}\left[\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]-6\,\text{Log}\left[\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\text{Log}\left[\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]+\\
&3\,\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]^2\text{Log}\left[\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]-6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]+3\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]+\\
&6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]\text{Log}\left[\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]-3\,\text{Log}\left[\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]^2\text{Log}\left[\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]-6\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\text{Log}\left[\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]+\\
&6\,\text{Log}\left[\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\text{Log}\left[\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]+3\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]^2\text{Log}\left[\frac{(-b\,c+a\,d)\,(e+f\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]-\\
&3\,\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]^2\text{Log}\left[\frac{(-b\,c+a\,d)\,(e+f\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\\
&6\left(\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]-\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\\
&6\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-6\,\text{Log}\left[\frac{e\,(c+d\,x)}{a+b\,x}\right]\text{PolyLog}\left[2,\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]+6\,\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\text{PolyLog}\left[2,\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]+\\
&6\,\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]-6\,\text{Log}\left[\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\text{PolyLog}\left[2,\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]-\\
&6\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]+6\,\text{PolyLog}\left[3,\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\Bigg)
\end{aligned}
$$

Problem 106: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{(b e-a f)\,(c+d x)}{(d e-c f)\,(a+b x)}\right]^2}{(a+b x)\,(e+f x)}\,dx$$

Optimal (type 4, 204 leaves, 4 steps):

$$-\frac{\text{Log}\left[\frac{(b e-a f)\,(c+d x)}{(d e-c f)\,(a+b x)}\right]^2\,\text{Log}\left[1-\frac{(b e-a f)\,(c+d x)}{(d e-c f)\,(a+b x)}\right]}{b e-a f}-\frac{2\,\text{Log}\left[\frac{(b e-a f)\,(c+d x)}{(d e-c f)\,(a+b x)}\right]\,\text{PolyLog}\left[2,\frac{(b e-a f)\,(c+d x)}{(d e-c f)\,(a+b x)}\right]}{b e-a f}+\frac{2\,\text{PolyLog}\left[3,\frac{(b e-a f)\,(c+d x)}{(d e-c f)\,(a+b x)}\right]}{b e-a f}$$

Result (type 4, 1636 leaves):

$$\frac{1}{3\,b\,e-3\,a\,f}\left(-2\,\text{Log}\left[\frac{a}{b}+x\right]^3+3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}[a+b\,x]-\right.$$

$$6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]+3\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}[a+b\,x]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-$$

$$3\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]+$$

$$6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}[a+b\,x]\,\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]-6\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[a+b\,x]\,\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]+$$

$$6\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]+3\,\text{Log}\left[\frac{-b\,c+a\,d}{d\,(a+b\,x)}\right]\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]^2+$$

$$3\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]^2-3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}[e+f\,x]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}[e+f\,x]-$$

$$3\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}[e+f\,x]-6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]\text{Log}[e+f\,x]+6\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]\text{Log}[e+f\,x]-$$

$$3\,\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]^2\text{Log}[e+f\,x]+3\,\text{Log}\left[\frac{a}{b}+x\right]^2\text{Log}\left[\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]-6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]\text{Log}\left[\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]+$$

$$3\,\text{Log}\left[\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]^2\text{Log}\left[\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]\text{Log}\left[\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]-$$

$$6\,\text{Log}\left[\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]\text{Log}\left[\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]+3\,\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]^2\text{Log}\left[\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]-$$

$$6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]+3\,\text{Log}\left[\frac{c}{d}+x\right]^2\text{Log}\left[\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]+6\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]\text{Log}\left[\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]-$$

$$3\,\text{Log}\left[\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]^2\text{Log}\left[\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]-6\,\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]\text{Log}\left[\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]+$$

$$6\,\text{Log}\left[\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]\text{Log}\left[\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]-3\,\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]^2\text{Log}\left[\frac{(-b\,c+a\,d)\,(e+f\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]+$$

$$6\,\text{Log}\left[\frac{a}{b}+x\right]\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+6\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+$$

$$6\,\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]-6\,\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]\text{PolyLog}\left[2,\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]-$$

$$\left.6\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-6\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{d\,(a+b\,x)}\right]+6\,\text{PolyLog}\left[3,\frac{(b\,e-a\,f)\,(c+d\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\right)$$

Problem 107: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]^2}{e+f x}\,dx$$

Optimal (type 4, 322 leaves, 9 steps):

$$-\frac{\text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]^2}{f}+\frac{\text{Log}\left[\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]^2 \text{Log}\left[1-\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]}{f}-\frac{2 \text{Log}\left[\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{f}+\frac{2 \text{Log}\left[\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right] \text{PolyLog}\left[2,\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]}{f}+\frac{2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{f}-\frac{2 \text{PolyLog}\left[3,\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]}{f}$$

Result (type 4, 1080 leaves):

$$\frac{1}{f}\left(-\text{Log}\left[\frac{-b c+a d}{d (a+b x)}\right] \text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right]^2+\text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}[e+f x]-\right.$$
$$2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}[e+f x]+\text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}[e+f x]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right] \text{Log}[e+f x]-$$
$$2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right] \text{Log}[e+f x]+\text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right]^2 \text{Log}[e+f x]-$$
$$\text{Log}\left[\frac{a}{b}+x\right]^2 \text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{f (c+d x)}{-d e+c f}\right] \text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]-\text{Log}\left[\frac{f (c+d x)}{-d e+c f}\right]^2 \text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]-$$
$$2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right] \text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]+2 \text{Log}\left[\frac{f (c+d x)}{-d e+c f}\right] \text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right] \text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]-$$
$$\text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right]^2 \text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{d (e+f x)}{d e-c f}\right]-$$
$$\text{Log}\left[\frac{c}{d}+x\right]^2 \text{Log}\left[\frac{d (e+f x)}{d e-c f}\right]-2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{f (c+d x)}{-d e+c f}\right] \text{Log}\left[\frac{d (e+f x)}{d e-c f}\right]+\text{Log}\left[\frac{f (c+d x)}{-d e+c f}\right]^2 \text{Log}\left[\frac{d (e+f x)}{d e-c f}\right]+$$
$$2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right] \text{Log}\left[\frac{d (e+f x)}{d e-c f}\right]-2 \text{Log}\left[\frac{f (c+d x)}{-d e+c f}\right] \text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right] \text{Log}\left[\frac{d (e+f x)}{d e-c f}\right]+$$
$$\text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right]^2 \text{Log}\left[\frac{(-b c+a d)(e+f x)}{(d e-c f)(a+b x)}\right]-2 \text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]+$$
$$\left.2 \text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right] \text{PolyLog}\left[2,\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]+2 \text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]-2 \text{PolyLog}\left[3,\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]\right)$$

Problem 108: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right] \text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]}{(a+b x)(c+d x)} \, dx$$

Optimal (type 4, 433 leaves, 10 steps):

$$-\frac{\text{Log}\left[-\frac{b c-a d}{d (a+b x)}\right] \text{Log}\left[\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]^2}{2 (b c-a d)}-\frac{\text{Log}\left[\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]^2 \text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]}{2 (b c-a d)}+\frac{\text{Log}\left[\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]^2 \text{Log}\left[1-\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]}{2 (b c-a d)}-$$
$$\frac{\text{Log}\left[\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right] \text{PolyLog}\left[2,\frac{b (c+d x)}{d (a+b x)}\right]}{b c-a d}+\frac{\text{Log}\left[\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right] \text{PolyLog}\left[2,\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]}{b c-a d}+\frac{\text{PolyLog}\left[3,\frac{b (c+d x)}{d (a+b x)}\right]}{b c-a d}-\frac{\text{PolyLog}\left[3,\frac{(b e-a f)(c+d x)}{(d e-c f)(a+b x)}\right]}{b c-a d}$$

Result (type 4, 1855 leaves):

$$\frac{1}{2 (b c-a d)}\left(2 \text{Log}\left[\frac{c}{d}+x\right] \text{Log}\left[\frac{e}{f}+x\right] \text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{e}{f}+x\right] \text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-\right.$$
$$2 (\text{Log}[a+b x]-\text{Log}[c+d x]) \left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right]\right) \left(\text{Log}\left[\frac{e}{f}+x\right]-\text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]\right)+$$
$$\left(\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]-\text{Log}\left[\frac{f (a+b x)}{-b e+a f}\right]\right) \text{Log}\left[\frac{b (e+f x)}{b e-a f}\right] \left(-2 \text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]\right)+$$
$$\text{Log}\left[\frac{a}{b}+x\right]^2 \left(-\text{Log}\left[\frac{e}{f}+x\right]+\text{Log}\left[\frac{b (e+f x)}{b e-a f}\right]\right)+\left(\text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-\text{Log}\left[\frac{f (c+d x)}{-d e+c f}\right]\right) \text{Log}\left[\frac{d (e+f x)}{d e-c f}\right] \left(-2 \text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{d (e+f x)}{d e-c f}\right]\right)+$$
$$\text{Log}\left[\frac{c}{d}+x\right]^2 \left(-\text{Log}\left[\frac{e}{f}+x\right]+\text{Log}\left[\frac{d (e+f x)}{d e-c f}\right]\right)+2 \left(-\text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]+\text{Log}\left[\frac{f (c+d x)}{-d e+c f}\right]\right) \text{Log}\left[\frac{d (e+f x)}{d e-c f}\right] \text{Log}\left[\frac{(-b c+a d)(e+f x)}{(d e-c f)(a+b x)}\right]+$$
$$\left(\text{Log}\left[\frac{-b e+a f}{f (a+b x)}\right]+\text{Log}\left[\frac{b (c+d x)}{b c-a d}\right]-\text{Log}\left[\frac{(-b e+a f)(c+d x)}{(-d e+c f)(a+b x)}\right]\right) \text{Log}\left[\frac{(-b c+a d)(e+f x)}{(d e-c f)(a+b x)}\right]^2+$$
$$2 \left(-\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{Log}\left[\frac{f (a+b x)}{-b e+a f}\right]\right) \text{Log}\left[\frac{b (e+f x)}{b e-a f}\right] \text{Log}\left[\frac{(b c-a d)(e+f x)}{(b e-a f)(c+d x)}\right]+$$
$$\left(\text{Log}\left[\frac{d (a+b x)}{-b c+a d}\right]+\text{Log}\left[\frac{-d e+c f}{f (c+d x)}\right]-\text{Log}\left[\frac{(d e-c f)(a+b x)}{(b e-a f)(c+d x)}\right]\right) \text{Log}\left[\frac{(b c-a d)(e+f x)}{(b e-a f)(c+d x)}\right]^2+$$
$$2 \left(\text{Log}\left[\frac{e}{f}+x\right]-\text{Log}\left[\frac{(-b c+a d)(e+f x)}{(d e-c f)(a+b x)}\right]\right) \text{PolyLog}\left[2,\frac{d (a+b x)}{-b c+a d}\right]+$$
$$2 \text{Log}\left[\frac{a}{b}+x\right] \text{PolyLog}\left[2,\frac{f (a+b x)}{-b e+a f}\right]+2 \left(\text{Log}\left[\frac{e}{f}+x\right]-\text{Log}\left[\frac{(b c-a d)(e+f x)}{(b e-a f)(c+d x)}\right]\right) \text{PolyLog}\left[2,\frac{b (c+d x)}{b c-a d}\right]+$$

$$\left(\text{Log}\left[\frac{e}{f}+x\right]-\text{Log}\left[\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]\right)\left(\text{Log}\left[\frac{a}{b}+x\right]^2+\text{Log}\left[\frac{c}{d}+x\right]^2-2\left(\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]+\text{PolyLog}\left[2,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]\right)-$$
$$2\left(\text{Log}\left[\frac{c}{d}+x\right]\text{Log}\left[\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]+\text{PolyLog}\left[2,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]\right)\right)\Bigg)+2\,\text{Log}\left[\frac{c}{d}+x\right]\text{PolyLog}\left[2,\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]+$$
$$2\left(\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{(b\,c-a\,d)\,(e+f\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)\text{PolyLog}\left[2,\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]+2\left(\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{c}{d}+x\right]+\text{Log}\left[\frac{(-b\,e+a\,f)\,(c+d\,x)}{(-d\,e+c\,f)\,(a+b\,x)}\right]\right)$$
$$\left(\text{Log}\left[\frac{e}{f}+x\right]\left(\text{Log}\left[\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]-\text{Log}\left[\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]\right)+\text{PolyLog}\left[2,\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]-\text{PolyLog}\left[2,\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]\right)+$$
$$2\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{(-b\,c+a\,d)\,(e+f\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\right)\text{PolyLog}\left[2,\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]+$$
$$2\,\text{Log}\left[\frac{(-b\,c+a\,d)\,(e+f\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\left(\text{PolyLog}\left[2,\frac{b\,(e+f\,x)}{f\,(a+b\,x)}\right]-\text{PolyLog}\left[2,-\frac{(b\,c-a\,d)\,(e+f\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]\right)+$$
$$2\,\text{Log}\left[\frac{(b\,c-a\,d)\,(e+f\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\left(\text{PolyLog}\left[2,\frac{d\,(e+f\,x)}{f\,(c+d\,x)}\right]-\text{PolyLog}\left[2,\frac{(b\,c-a\,d)\,(e+f\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\right)-2\,\text{PolyLog}\left[3,\frac{d\,(a+b\,x)}{-b\,c+a\,d}\right]-$$
$$2\,\text{PolyLog}\left[3,\frac{f\,(a+b\,x)}{-b\,e+a\,f}\right]-2\,\text{PolyLog}\left[3,\frac{b\,(c+d\,x)}{b\,c-a\,d}\right]-2\,\text{PolyLog}\left[3,\frac{f\,(c+d\,x)}{-d\,e+c\,f}\right]-2\,\text{PolyLog}\left[3,\frac{b\,(e+f\,x)}{b\,e-a\,f}\right]-2\,\text{PolyLog}\left[3,\frac{d\,(e+f\,x)}{d\,e-c\,f}\right]-$$
$$2\,\text{PolyLog}\left[3,\frac{b\,(e+f\,x)}{f\,(a+b\,x)}\right]+2\,\text{PolyLog}\left[3,-\frac{(b\,c-a\,d)\,(e+f\,x)}{(d\,e-c\,f)\,(a+b\,x)}\right]-2\,\text{PolyLog}\left[3,\frac{d\,(e+f\,x)}{f\,(c+d\,x)}\right]+2\,\text{PolyLog}\left[3,\frac{(b\,c-a\,d)\,(e+f\,x)}{(b\,e-a\,f)\,(c+d\,x)}\right]\Bigg)$$

Test results for the 547 problems in "3.3 u (a+b log(c (d+e x)^n))^p.m"

Problem 17: Result more than twice size of optimal antiderivative.

$$\int\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^4\,dx$$

Optimal (type 3, 131 leaves, 6 steps):

$$-24\,a\,b^3\,n^3\,x+24\,b^4\,n^4\,x-\frac{24\,b^4\,n^3\,(d+e\,x)\,\text{Log}\left[c\,(d+e\,x)^n\right]}{e}+$$
$$\frac{12\,b^2\,n^2\,(d+e\,x)\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{e}-\frac{4\,b\,n\,(d+e\,x)\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3}{e}+\frac{(d+e\,x)\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^4}{e}$$

Result (type 3, 390 leaves):

$$\frac{1}{e}\Big(-b^4 d n^4 \text{Log}[d+e x]^4+4 b^3 d n^3 \text{Log}[d+e x]^3 \left(a-b n+b \text{Log}\left[c (d+e x)^n\right]\right)-6 b^2 d n^2 \text{Log}[d+e x]^2 \left(a^2-2 a b n+2 b^2 n^2+2 b (a-b n) \text{Log}\left[c (d+e x)^n\right]+b^2 \text{Log}\left[c (d+e x)^n\right]^2\right)+4 b d n \text{Log}[d+e x] \left(a^3-3 a^2 b n+6 a b^2 n^2-6 b^3 n^3+3 b \left(a^2-2 a b n+2 b^2 n^2\right) \text{Log}\left[c (d+e x)^n\right]+3 b^2 (a-b n) \text{Log}\left[c (d+e x)^n\right]^2+b^3 \text{Log}\left[c (d+e x)^n\right]^3\right)+e x \left(a^4-4 a^3 b n+12 a^2 b^2 n^2-24 a b^3 n^3+24 b^4 n^4+4 b \left(a^3-3 a^2 b n+6 a b^2 n^2-6 b^3 n^3\right) \text{Log}\left[c (d+e x)^n\right]+6 b^2 \left(a^2-2 a b n+2 b^2 n^2\right) \text{Log}\left[c (d+e x)^n\right]^2+4 b^3 (a-b n) \text{Log}\left[c (d+e x)^n\right]^3+b^4 \text{Log}\left[c (d+e x)^n\right]^4\right)\Big)$$

Problem 18: Result more than twice size of optimal antiderivative.

$$\int \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3 dx$$

Optimal (type 3, 99 leaves, 5 steps):

$$6 a b^2 n^2 x-6 b^3 n^3 x+\frac{6 b^3 n^2 (d+e x) \text{Log}\left[c (d+e x)^n\right]}{e}-\frac{3 b n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{e}+\frac{(d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^3}{e}$$

Result (type 3, 219 leaves):

$$\frac{1}{e}\Big(b^3 d n^3 \text{Log}[d+e x]^3-3 b^2 d n^2 \text{Log}[d+e x]^2 \left(a-b n+b \text{Log}\left[c (d+e x)^n\right]\right)+3 b d n \text{Log}[d+e x] \left(a^2-2 a b n+2 b^2 n^2+2 b (a-b n) \text{Log}\left[c (d+e x)^n\right]+b^2 \text{Log}\left[c (d+e x)^n\right]^2\right)+e x \left(a^3-3 a^2 b n+6 a b^2 n^2-6 b^3 n^3+3 b \left(a^2-2 a b n+2 b^2 n^2\right) \text{Log}\left[c (d+e x)^n\right]+3 b^2 (a-b n) \text{Log}\left[c (d+e x)^n\right]^2+b^3 \text{Log}\left[c (d+e x)^n\right]^3\right)\Big)$$

Problem 24: Unable to integrate problem.

$$\int \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{5/2} dx$$

Optimal (type 4, 179 leaves, 7 steps):

$$-\frac{15 b^{5/2} e^{-\frac{a}{b n}} n^{5/2} \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{8 e}+\frac{15 b^2 n^2 (d+e x) \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{4 e}-\frac{5 b n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2}}{2 e}+\frac{(d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{5/2}}{e}$$

Result (type 8, 20 leaves):

$$\int \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{5/2} dx$$

Problem 25: Unable to integrate problem.

$$\int \left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right)^{3/2} dx$$

Optimal (type 4, 143 leaves, 6 steps):

$$\frac{3 b^{3/2} e^{-\frac{a}{b n}} n^{3/2} \sqrt{\pi} \left(d + e x\right) \left(c \left(d + e x\right)^n\right)^{-1/n} \operatorname{Erfi}\left[\frac{\sqrt{a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{4 e} - \frac{3 b n \left(d + e x\right) \sqrt{a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]}}{2 e} + \frac{\left(d + e x\right) \left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right)^{3/2}}{e}$$

Result (type 8, 20 leaves):

$$\int \left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right)^{3/2} dx$$

Problem 26: Unable to integrate problem.

$$\int \sqrt{a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]} \, dx$$

Optimal (type 4, 111 leaves, 5 steps):

$$-\frac{\sqrt{b} e^{-\frac{a}{b n}} \sqrt{n} \sqrt{\pi} \left(d + e x\right) \left(c \left(d + e x\right)^n\right)^{-1/n} \operatorname{Erfi}\left[\frac{\sqrt{a+b \operatorname{Log}\left[c \left(d+e x\right)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{2 e} + \frac{\left(d + e x\right) \sqrt{a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]}}{e}$$

Result (type 8, 20 leaves):

$$\int \sqrt{a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]} \, dx$$

Problem 52: Result more than twice size of optimal antiderivative.

$$\int \left(f + g x\right)^3 \left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right)^3 dx$$

Optimal (type 3, 598 leaves, 19 steps):

$$\frac{6 a b^2 (e f-d g)^3 n^2 x}{e^3}-\frac{6 b^3 (e f-d g)^3 n^3 x}{e^3}-\frac{9 b^3 g (e f-d g)^2 n^3 (d+e x)^2}{8 e^4}-\frac{2 b^3 g^2 (e f-d g) n^3 (d+e x)^3}{9 e^4}-$$
$$\frac{3 b^3 g^3 n^3 (d+e x)^4}{128 e^4}+\frac{6 b^3 (e f-d g)^3 n^2 (d+e x) \text{Log}[c (d+e x)^n]}{e^4}+\frac{9 b^2 g (e f-d g)^2 n^2 (d+e x)^2 (a+b \text{Log}[c (d+e x)^n])}{4 e^4}+$$
$$\frac{2 b^2 g^2 (e f-d g) n^2 (d+e x)^3 (a+b \text{Log}[c (d+e x)^n])}{3 e^4}+\frac{3 b^2 g^3 n^2 (d+e x)^4 (a+b \text{Log}[c (d+e x)^n])}{32 e^4}-$$
$$\frac{3 b (e f-d g)^3 n (d+e x) (a+b \text{Log}[c (d+e x)^n])^2}{e^4}-\frac{9 b g (e f-d g)^2 n (d+e x)^2 (a+b \text{Log}[c (d+e x)^n])^2}{4 e^4}-$$
$$\frac{b g^2 (e f-d g) n (d+e x)^3 (a+b \text{Log}[c (d+e x)^n])^2}{e^4}-\frac{3 b g^3 n (d+e x)^4 (a+b \text{Log}[c (d+e x)^n])^2}{16 e^4}+\frac{(e f-d g)^3 (d+e x) (a+b \text{Log}[c (d+e x)^n])^3}{e^4}+$$
$$\frac{3 g (e f-d g)^2 (d+e x)^2 (a+b \text{Log}[c (d+e x)^n])^3}{2 e^4}+\frac{g^2 (e f-d g) (d+e x)^3 (a+b \text{Log}[c (d+e x)^n])^3}{e^4}+\frac{g^3 (d+e x)^4 (a+b \text{Log}[c (d+e x)^n])^3}{4 e^4}$$

Result (type 3, 1241 leaves) :

$$\frac{1}{1152 e^4} \Big(-288 b^3 d (-4 e^3 f^3+6 d e^2 f^2 g-4 d^2 e f g^2+d^3 g^3) n^3 \text{Log}[d+e x]^3+$$
$$72 b^2 d n^2 \text{Log}[d+e x]^2 \big(-12 a (4 e^3 f^3-6 d e^2 f^2 g+4 d^2 e f g^2-d^3 g^3)+b (48 e^3 f^3-108 d e^2 f^2 g+88 d^2 e f g^2-25 d^3 g^3) n-$$
$$12 b (4 e^3 f^3-6 d e^2 f^2 g+4 d^2 e f g^2-d^3 g^3) \text{Log}[c (d+e x)^n]\big)-12 b d n \text{Log}[d+e x] \big(-72 a^2 (4 e^3 f^3-6 d e^2 f^2 g+4 d^2 e f g^2-d^3 g^3)+$$
$$12 a b (48 e^3 f^3-108 d e^2 f^2 g+88 d^2 e f g^2-25 d^3 g^3) n+b^2 (-576 e^3 f^3+1512 d e^2 f^2 g-1360 d^2 e f g^2+415 d^3 g^3) n^2-$$
$$12 b (12 a (4 e^3 f^3-6 d e^2 f^2 g+4 d^2 e f g^2-d^3 g^3)+b (-48 e^3 f^3+108 d e^2 f^2 g-88 d^2 e f g^2+25 d^3 g^3) n) \text{Log}[c (d+e x)^n]-$$
$$72 b^2 (4 e^3 f^3-6 d e^2 f^2 g+4 d^2 e f g^2-d^3 g^3) \text{Log}[c (d+e x)^n]^2\big)+e x \big(288 a^3 e^3 (4 f^3+6 f^2 g x+4 f g^2 x^2+g^3 x^3)-$$
$$72 a^2 b n (-12 d^3 g^3+6 d^2 e g^2 (8 f+g x)-4 d e^2 g (18 f^2+6 f g x+g^2 x^2)+e^3 (48 f^3+36 f^2 g x+16 f g^2 x^2+3 g^3 x^3))+$$
$$12 a b^2 n^2 (-300 d^3 g^3+6 d^2 e g^2 (176 f+13 g x)-4 d e^2 g (324 f^2+60 f g x+7 g^2 x^2)+e^3 (576 f^3+216 f^2 g x+64 f g^2 x^2+9 g^3 x^3))-$$
$$b^3 n^3 (-4980 d^3 g^3+30 d^2 e g^2 (544 f+23 g x)-4 d e^2 g (4536 f^2+456 f g x+37 g^2 x^2)+e^3 (6912 f^3+1296 f^2 g x+256 f g^2 x^2+27 g^3 x^3))+$$
$$12 b \big(72 a^2 e^3 (4 f^3+6 f^2 g x+4 f g^2 x^2+g^3 x^3)-$$
$$12 a b n (-12 d^3 g^3+6 d^2 e g^2 (8 f+g x)-4 d e^2 g (18 f^2+6 f g x+g^2 x^2)+e^3 (48 f^3+36 f^2 g x+16 f g^2 x^2+3 g^3 x^3))+$$
$$b^2 n^2 (-300 d^3 g^3+6 d^2 e g^2 (176 f+13 g x)-4 d e^2 g (324 f^2+60 f g x+7 g^2 x^2)+e^3 (576 f^3+216 f^2 g x+64 f g^2 x^2+9 g^3 x^3))\big)$$
$$\text{Log}[c (d+e x)^n]+72 b^2 (12 a e^3 (4 f^3+6 f^2 g x+4 f g^2 x^2+g^3 x^3)-b n (-12 d^3 g^3+6 d^2 e g^2 (8 f+g x)-4 d e^2 g (18 f^2+6 f g x+g^2 x^2)+$$
$$e^3 (48 f^3+36 f^2 g x+16 f g^2 x^2+3 g^3 x^3))) \text{Log}[c (d+e x)^n]^2+288 b^3 e^3 (4 f^3+6 f^2 g x+4 f g^2 x^2+g^3 x^3) \text{Log}[c (d+e x)^n]^3\big)\Big)$$

Problem 55: Result more than twice size of optimal antiderivative.

$$\int (a+b \text{Log}[c (d+e x)^n])^3 \, dx$$

Optimal (type 3, 99 leaves, 5 steps) :

$$6 a b^2 n^2 x - 6 b^3 n^3 x + \frac{6 b^3 n^2 (d+e x) \text{Log}[c (d+e x)^n]}{e} - \frac{3 b n (d+e x) (a+b \text{Log}[c (d+e x)^n])^2}{e} + \frac{(d+e x) (a+b \text{Log}[c (d+e x)^n])^3}{e}$$

Result (type 3, 219 leaves):

$$\frac{1}{e}\Big(b^3 d n^3 \text{Log}[d+e x]^3 - 3 b^2 d n^2 \text{Log}[d+e x]^2 (a-b n+b \text{Log}[c (d+e x)^n]) + 3 b d n \text{Log}[d+e x] \left(a^2-2 a b n+2 b^2 n^2+2 b (a-b n) \text{Log}[c (d+e x)^n]+b^2 \text{Log}[c (d+e x)^n]^2\right) + e x \left(a^3-3 a^2 b n+6 a b^2 n^2-6 b^3 n^3+3 b (a^2-2 a b n+2 b^2 n^2) \text{Log}[c (d+e x)^n]+3 b^2 (a-b n) \text{Log}[c (d+e x)^n]^2+b^3 \text{Log}[c (d+e x)^n]^3\right)\Big)$$

Problem 56: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b \text{Log}[c (d+e x)^n])^3}{f+g x} \, dx$$

Optimal (type 4, 158 leaves, 5 steps):

$$\frac{(a+b \text{Log}[c (d+e x)^n])^3 \text{Log}\left[\frac{e (f+g x)}{e f-d g}\right]}{g} + \frac{3 b n (a+b \text{Log}[c (d+e x)^n])^2 \text{PolyLog}\left[2,-\frac{g (d+e x)}{e f-d g}\right]}{g} - \frac{6 b^2 n^2 (a+b \text{Log}[c (d+e x)^n]) \text{PolyLog}\left[3,-\frac{g (d+e x)}{e f-d g}\right]}{g} + \frac{6 b^3 n^3 \text{PolyLog}\left[4,-\frac{g (d+e x)}{e f-d g}\right]}{g}$$

Result (type 4, 335 leaves):

$$\frac{1}{g}\Bigg((a-b n \text{Log}[d+e x]+b \text{Log}[c (d+e x)^n])^3 \text{Log}[f+g x] + 3 b n (a-b n \text{Log}[d+e x]+b \text{Log}[c (d+e x)^n])^2 \left(\text{Log}[d+e x] \text{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+\text{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]\right) + 6 b^2 n^2 (a-b n \text{Log}[d+e x]+b \text{Log}[c (d+e x)^n]) \left(\frac{1}{2} \text{Log}[d+e x]^2 \text{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+\text{Log}[d+e x] \text{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]-\text{PolyLog}\left[3,\frac{g (d+e x)}{-e f+d g}\right]\right) + b^3 n^3 \left(\text{Log}[d+e x]^3 \text{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+3 \text{Log}[d+e x]^2 \text{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]-6 \text{Log}[d+e x] \text{PolyLog}\left[3,\frac{g (d+e x)}{-e f+d g}\right]+6 \text{PolyLog}\left[4,\frac{g (d+e x)}{-e f+d g}\right]\right)\Bigg)$$

Problem 57: Result more than twice size of optimal antiderivative.

$$\int \frac{(a+b \text{Log}[c (d+e x)^n])^3}{(f+g x)^2} \, dx$$

Optimal (type 4, 190 leaves, 5 steps):

$$\frac{(d+e x)\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3}{(e f-d g)(f+g x)}-\frac{3 b e n\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]}{g (e f-d g)}-\frac{6 b^2 e n^2\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{g (d+e x)}{e f-d g}\right]}{g (e f-d g)}+\frac{6 b^3 e n^3 \operatorname{PolyLog}\left[3,-\frac{g (d+e x)}{e f-d g}\right]}{g (e f-d g)}$$

Result (type 4, 410 leaves) :

$$\frac{1}{g (e f-d g)(f+g x)}\Big(-3 b (e f-d g) n \operatorname{Log}[d+e x]\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2+ 3 b e n (f+g x) \operatorname{Log}[d+e x]\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2-(e f-d g)\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3- 3 b e n (f+g x)\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}[f+g x]+3 b^2 n^2\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \left(\operatorname{Log}[d+e x]\left(g (d+e x) \operatorname{Log}[d+e x]-2 e (f+g x) \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]\right)-2 e (f+g x) \operatorname{PolyLog}\left[2, \frac{g (d+e x)}{-e f+d g}\right]\right)+ b^3 n^3\left(\operatorname{Log}[d+e x]^2\left(g (d+e x) \operatorname{Log}[d+e x]-3 e (f+g x) \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]\right)- 6 e (f+g x) \operatorname{Log}[d+e x] \operatorname{PolyLog}\left[2, \frac{g (d+e x)}{-e f+d g}\right]+6 e (f+g x) \operatorname{PolyLog}\left[3, \frac{g (d+e x)}{-e f+d g}\right]\right)\Big)$$

Problem 60: Result more than twice size of optimal antiderivative.

$$\int (f+g x)\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^4 \, dx$$

Optimal (type 3, 340 leaves, 13 steps) :

$$-\frac{24 a b^3 (e f-d g) n^3 x}{e}+\frac{24 b^4 (e f-d g) n^4 x}{e}+\frac{3 b^4 g n^4 (d+e x)^2}{4 e^2}-\frac{24 b^4 (e f-d g) n^3 (d+e x) \operatorname{Log}\left[c (d+e x)^n\right]}{e^2}-\frac{3 b^3 g n^3 (d+e x)^2\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{2 e^2}+\frac{12 b^2 (e f-d g) n^2 (d+e x)\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{e^2}+\frac{3 b^2 g n^2 (d+e x)^2\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{2 e^2}-\frac{4 b (e f-d g) n (d+e x)\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3}{e^2}-\frac{b g n (d+e x)^2\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3}{e^2}+\frac{(e f-d g)(d+e x)\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^4}{e^2}+\frac{g (d+e x)^2\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^4}{2 e^2}$$

Result (type 3, 748 leaves) :

$$\frac{1}{4 e^2} \left(2 b^4 d (-2 e f + d g) n^4 \text{Log}[d + e x]^4 - 4 b^3 d n^3 \text{Log}[d + e x]^3 \left(-4 a e f + 2 a d g + 4 b e f n - 3 b d g n + b (-4 e f + 2 d g) \text{Log}\left[c (d + e x)^n\right]\right) + 6 b^2 d n^2 \text{Log}[d + e x]^2 \left(a^2 (-4 e f + 2 d g) + 2 a b (4 e f - 3 d g) n + b^2 (-8 e f + 7 d g) n^2 + 2 b (-4 a e f + 2 a d g + 4 b e f n - 3 b d g n) \text{Log}\left[c (d + e x)^n\right] + 2 b^2 (-2 e f + d g) \text{Log}\left[c (d + e x)^n\right]^2\right) - 2 b d n \text{Log}[d + e x] \left(a^3 (-8 e f + 4 d g) + 6 a^2 b (4 e f - 3 d g) n - 6 a b^2 (8 e f - 7 d g) n^2 + 3 b^3 (16 e f - 15 d g) n^3 - 6 b \left(a^2 (4 e f - 2 d g) + b^2 (8 e f - 7 d g) n^2 + a b (-8 e f n + 6 d g n)\right) \text{Log}\left[c (d + e x)^n\right] + 6 b^2 (-4 a e f + 2 a d g + 4 b e f n - 3 b d g n) \text{Log}\left[c (d + e x)^n\right]^2 + 4 b^3 (-2 e f + d g) \text{Log}\left[c (d + e x)^n\right]^3\right) + e x \left(2 a^4 e (2 f + g x) + 3 b^4 n^4 (32 e f - 30 d g + e g x) - 6 a b^3 n^3 (16 e f - 14 d g + e g x) + 6 a^2 b^2 n^2 (8 e f - 6 d g + e g x) - 4 a^3 b n (4 e f - 2 d g + e g x) + 2 b \left(4 a^3 e (2 f + g x) - 3 b^3 n^3 (16 e f - 14 d g + e g x) + 6 a b^2 n^2 (8 e f - 6 d g + e g x) - 6 a^2 b n (4 e f - 2 d g + e g x)\right) \text{Log}\left[c (d + e x)^n\right] + 6 b^2 \left(2 a^2 e (2 f + g x) + b^2 n^2 (8 e f - 6 d g + e g x) - 2 a b n (4 e f - 2 d g + e g x)\right) \text{Log}\left[c (d + e x)^n\right]^2 + 4 b^3 \left(2 a e (2 f + g x) - b n (4 e f - 2 d g + e g x)\right) \text{Log}\left[c (d + e x)^n\right]^3 + 2 b^4 e (2 f + g x) \text{Log}\left[c (d + e x)^n\right]^4\right)\right)$$

Problem 61: Result more than twice size of optimal antiderivative.

$$\int \left(a + b \text{Log}\left[c (d + e x)^n\right]\right)^4 \, dx$$

Optimal (type 3, 131 leaves, 6 steps):

$$-24 a b^3 n^3 x + 24 b^4 n^4 x - \frac{24 b^4 n^3 (d + e x) \text{Log}\left[c (d + e x)^n\right]}{e} + \frac{12 b^2 n^2 (d + e x) \left(a + b \text{Log}\left[c (d + e x)^n\right]\right)^2}{e} - \frac{4 b n (d + e x) \left(a + b \text{Log}\left[c (d + e x)^n\right]\right)^3}{e} + \frac{(d + e x) \left(a + b \text{Log}\left[c (d + e x)^n\right]\right)^4}{e}$$

Result (type 3, 390 leaves):

$$\frac{1}{e} \left(-b^4 d n^4 \text{Log}[d + e x]^4 + 4 b^3 d n^3 \text{Log}[d + e x]^3 \left(a - b n + b \text{Log}\left[c (d + e x)^n\right]\right) - 6 b^2 d n^2 \text{Log}[d + e x]^2 \left(a^2 - 2 a b n + 2 b^2 n^2 + 2 b (a - b n) \text{Log}\left[c (d + e x)^n\right] + b^2 \text{Log}\left[c (d + e x)^n\right]^2\right) + 4 b d n \text{Log}[d + e x] \left(a^3 - 3 a^2 b n + 6 a b^2 n^2 - 6 b^3 n^3 + 3 b (a^2 - 2 a b n + 2 b^2 n^2) \text{Log}\left[c (d + e x)^n\right] + 3 b^2 (a - b n) \text{Log}\left[c (d + e x)^n\right]^2 + b^3 \text{Log}\left[c (d + e x)^n\right]^3\right) + e x \left(a^4 - 4 a^3 b n + 12 a^2 b^2 n^2 - 24 a b^3 n^3 + 24 b^4 n^4 + 4 b (a^3 - 3 a^2 b n + 6 a b^2 n^2 - 6 b^3 n^3) \text{Log}\left[c (d + e x)^n\right] + 6 b^2 (a^2 - 2 a b n + 2 b^2 n^2) \text{Log}\left[c (d + e x)^n\right]^2 + 4 b^3 (a - b n) \text{Log}\left[c (d + e x)^n\right]^3 + b^4 \text{Log}\left[c (d + e x)^n\right]^4\right)\right)$$

Problem 62: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a + b \text{Log}\left[c (d + e x)^n\right]\right)^4}{f + g x} \, dx$$

Optimal (type 4, 205 leaves, 6 steps):

$$\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^4\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]}{g}+\frac{4\,b\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\,\text{PolyLog}\left[2,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g}-\frac{12\,b^2\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{PolyLog}\left[3,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g}+\frac{24\,b^3\,n^3\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[4,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g}-\frac{24\,b^4\,n^4\,\text{PolyLog}\left[5,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g}$$

Result (type 4, 503 leaves):

$$\frac{1}{g}\left(\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^4\,\text{Log}[f+g\,x]+4\,b\,n\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\left(\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)+6\,b^2\,n^2\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-2\,\text{PolyLog}\left[3,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)-4\,b^3\,n^3\,\left(-a+b\,n\,\text{Log}[d+e\,x]-b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\left(\text{Log}[d+e\,x]^3\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+3\,\text{Log}[d+e\,x]^2\,\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-6\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[3,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+6\,\text{PolyLog}\left[4,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)+b^4\,n^4\left(\text{Log}[d+e\,x]^4\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+4\,\text{Log}[d+e\,x]^3\,\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-12\,\text{Log}[d+e\,x]^2\,\text{PolyLog}\left[3,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+24\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[4,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-24\,\text{PolyLog}\left[5,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)\right)$$

Problem 63: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^4}{(f+g\,x)^2}\,dx$$

Optimal (type 4, 248 leaves, 6 steps):

$$\frac{(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^4}{(e\,f-d\,g)\,(f+g\,x)}-\frac{4\,b\,e\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]}{g\,(e\,f-d\,g)}-\frac{12\,b^2\,e\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{PolyLog}\left[2,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g\,(e\,f-d\,g)}+\frac{24\,b^3\,e\,n^3\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[3,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g\,(e\,f-d\,g)}-\frac{24\,b^4\,e\,n^4\,\text{PolyLog}\left[4,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g\,(e\,f-d\,g)}$$

Result (type 4, 531 leaves):

$$\frac{1}{g\,(e f-d g)\,(f+g x)}\Bigg(-(e f-d g)\,(a-b n \text{Log}[d+e x]+b \text{Log}[c\,(d+e x)^n])^4+4 b n\,(a-b n \text{Log}[d+e x]+b \text{Log}[c\,(d+e x)^n])^3$$
$$\Big(g\,(d+e x)\,\text{Log}[d+e x]-e\,(f+g x)\,\text{Log}\Big[\frac{e\,(f+g x)}{e f-d g}\Big]\Big)+6 b^2 n^2\,(a-b n \text{Log}[d+e x]+b \text{Log}[c\,(d+e x)^n])^2$$
$$\Big(\text{Log}[d+e x]\,\Big(g\,(d+e x)\,\text{Log}[d+e x]-2 e\,(f+g x)\,\text{Log}\Big[\frac{e\,(f+g x)}{e f-d g}\Big]\Big)-2 e\,(f+g x)\,\text{PolyLog}\Big[2,\frac{g\,(d+e x)}{-e f+d g}\Big]\Big)+$$
$$4 b^3 n^3\,(a-b n \text{Log}[d+e x]+b \text{Log}[c\,(d+e x)^n])\,\Big(\text{Log}[d+e x]^2\,\Big(g\,(d+e x)\,\text{Log}[d+e x]-3 e\,(f+g x)\,\text{Log}\Big[\frac{e\,(f+g x)}{e f-d g}\Big]\Big)-$$
$$6 e\,(f+g x)\,\text{Log}[d+e x]\,\text{PolyLog}\Big[2,\frac{g\,(d+e x)}{-e f+d g}\Big]+6 e\,(f+g x)\,\text{PolyLog}\Big[3,\frac{g\,(d+e x)}{-e f+d g}\Big]\Big)+$$
$$b^4 n^4\,\Big(g\,(d+e x)\,\text{Log}[d+e x]^4-4 e\,(f+g x)\,\text{Log}[d+e x]^3\,\text{Log}\Big[\frac{e\,(f+g x)}{e f-d g}\Big]-12 e\,(f+g x)\,\text{Log}[d+e x]^2\,\text{PolyLog}\Big[2,\frac{g\,(d+e x)}{-e f+d g}\Big]+$$
$$24 e\,(f+g x)\,\text{Log}[d+e x]\,\text{PolyLog}\Big[3,\frac{g\,(d+e x)}{-e f+d g}\Big]-24 e\,(f+g x)\,\text{PolyLog}\Big[4,\frac{g\,(d+e x)}{-e f+d g}\Big]\Big)\Bigg)$$

Problem 71: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\Big[-\frac{g\,(d+e x)}{e f-d g}\Big]}{f+g x}\,dx$$

Optimal (type 4, 24 leaves, 2 steps):

$$-\frac{\text{PolyLog}\Big[2,\frac{e\,(f+g x)}{e f-d g}\Big]}{g}$$

Result (type 4, 61 leaves):

$$\frac{\text{Log}\Big[\frac{g\,(d+e x)}{-e f+d g}\Big]\,\text{Log}\Big[\frac{e\,(f+g x)}{e f-d g}\Big]+\text{PolyLog}\Big[2,\frac{g\,(d+e x)}{-e f+d g}\Big]}{g}$$

Problem 94: Result more than twice size of optimal antiderivative.

$$\int \frac{(f+g x)^3}{(a+b \text{Log}[c\,(d+e x)^n])^2}\,dx$$

Optimal (type 4, 339 leaves, 26 steps):

$$\frac{e^{-\frac{a}{b n}} (e f-d g)^3 (d+e x) \left(c (d+e x)^n\right)^{-1/n} \text{ExpIntegralEi}\left[\frac{a+b \text{Log}\left[c (d+e x)^n\right]}{b n}\right]}{b^2 e^4 n^2}+$$

$$\frac{6 e^{-\frac{2 a}{b n}} g (e f-d g)^2 (d+e x)^2 \left(c (d+e x)^n\right)^{-2/n} \text{ExpIntegralEi}\left[\frac{2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{b n}\right]}{b^2 e^4 n^2}+$$

$$\frac{9 e^{-\frac{3 a}{b n}} g^2 (e f-d g) (d+e x)^3 \left(c (d+e x)^n\right)^{-3/n} \text{ExpIntegralEi}\left[\frac{3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{b n}\right]}{b^2 e^4 n^2}+$$

$$\frac{4 e^{-\frac{4 a}{b n}} g^3 (d+e x)^4 \left(c (d+e x)^n\right)^{-4/n} \text{ExpIntegralEi}\left[\frac{4 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{b n}\right]}{b^2 e^4 n^2}-\frac{(d+e x) (f+g x)^3}{b e n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}$$

Result (type 4, 1674 leaves) :

$$\frac{1}{b^2 e^4 n^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}$$

$$e^{-\frac{4 a}{b n}} \left(c (d+e x)^n\right)^{-4/n} \Bigg(-b d e^3 e^{\frac{4 a}{b n}} f^3 n \left(c (d+e x)^n\right)^{4/n}-b e^4 e^{\frac{4 a}{b n}} f^3 n x \left(c (d+e x)^n\right)^{4/n}-3 b d e^3 e^{\frac{4 a}{b n}} f^2 g n x \left(c (d+e x)^n\right)^{4/n}-$$

$$3 b e^4 e^{\frac{4 a}{b n}} f^2 g n x^2 \left(c (d+e x)^n\right)^{4/n}-3 b d e^3 e^{\frac{4 a}{b n}} f g^2 n x^2 \left(c (d+e x)^n\right)^{4/n}-3 b e^4 e^{\frac{4 a}{b n}} f g^2 n x^3 \left(c (d+e x)^n\right)^{4/n}-b d e^3 e^{\frac{4 a}{b n}} g^3 n x^3 \left(c (d+e x)^n\right)^{4/n}-$$

$$b e^4 e^{\frac{4 a}{b n}} g^3 n x^4 \left(c (d+e x)^n\right)^{4/n}+a e^3 e^{\frac{3 a}{b n}} f^3 (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{ExpIntegralEi}\left[\frac{a+b \text{Log}\left[c (d+e x)^n\right]}{b n}\right]-$$

$$3 a d e^2 e^{\frac{3 a}{b n}} f^2 g (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{ExpIntegralEi}\left[\frac{a+b \text{Log}\left[c (d+e x)^n\right]}{b n}\right]+$$

$$3 a d^2 e e^{\frac{3 a}{b n}} f g^2 (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{ExpIntegralEi}\left[\frac{a+b \text{Log}\left[c (d+e x)^n\right]}{b n}\right]-a d^3 e^{\frac{3 a}{b n}} g^3 (d+e x) \left(c (d+e x)^n\right)^{3/n}$$

$$\text{ExpIntegralEi}\left[\frac{a+b \text{Log}\left[c (d+e x)^n\right]}{b n}\right]+6 a e^2 e^{\frac{2 a}{b n}} f^2 g (d+e x)^2 \left(c (d+e x)^n\right)^{2/n} \text{ExpIntegralEi}\left[\frac{2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{b n}\right]-$$

$$12 a d e e^{\frac{2 a}{b n}} f g^2 (d+e x)^2 \left(c (d+e x)^n\right)^{2/n} \text{ExpIntegralEi}\left[\frac{2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{b n}\right]+6 a d^2 e^{\frac{2 a}{b n}} g^3 (d+e x)^2 \left(c (d+e x)^n\right)^{2/n}$$

$$\text{ExpIntegralEi}\left[\frac{2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{b n}\right]+9 a e e^{\frac{a}{b n}} f g^2 (d+e x)^3 \left(c (d+e x)^n\right)^{\frac{1}{n}} \text{ExpIntegralEi}\left[\frac{3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{b n}\right]-$$

$$9 a d e^{\frac{a}{b n}} g^3 (d+e x)^3 \left(c (d+e x)^n\right)^{\frac{1}{n}} \text{ExpIntegralEi}\left[\frac{3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{b n}\right]+4 a g^3 (d+e x)^4 \text{ExpIntegralEi}\left[\frac{4 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{b n}\right]+$$

$$b e^3 e^{\frac{3 a}{b n}} f^3 (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{ExpIntegralEi}\left[\frac{a+b \text{Log}\left[c (d+e x)^n\right]}{b n}\right] \text{Log}\left[c (d+e x)^n\right]-$$

$$3 b d e^2 e^{\frac{3 a}{b n}} f^2 g (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{ExpIntegralEi}\left[\frac{a+b \text{Log}\left[c (d+e x)^n\right]}{b n}\right] \text{Log}\left[c (d+e x)^n\right]+$$

$$3\,b\,d^2\,e\,e^{\frac{3a}{bn}}\,f\,g^2\,(d+e\,x)\,\left(c\,(d+e\,x)^n\right)^{3/n}\,\text{ExpIntegralEi}\left[\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{b\,n}\right]\,\text{Log}\left[c\,(d+e\,x)^n\right]-$$

$$b\,d^3\,e^{\frac{3a}{bn}}\,g^3\,(d+e\,x)\,\left(c\,(d+e\,x)^n\right)^{3/n}\,\text{ExpIntegralEi}\left[\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{b\,n}\right]\,\text{Log}\left[c\,(d+e\,x)^n\right]+$$

$$6\,b\,e^2\,e^{\frac{2a}{bn}}\,f^2\,g\,(d+e\,x)^2\,\left(c\,(d+e\,x)^n\right)^{2/n}\,\text{ExpIntegralEi}\left[\frac{2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}\right]\,\text{Log}\left[c\,(d+e\,x)^n\right]-$$

$$12\,b\,d\,e\,e^{\frac{2a}{bn}}\,f\,g^2\,(d+e\,x)^2\,\left(c\,(d+e\,x)^n\right)^{2/n}\,\text{ExpIntegralEi}\left[\frac{2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}\right]\,\text{Log}\left[c\,(d+e\,x)^n\right]+$$

$$6\,b\,d^2\,e^{\frac{2a}{bn}}\,g^3\,(d+e\,x)^2\,\left(c\,(d+e\,x)^n\right)^{2/n}\,\text{ExpIntegralEi}\left[\frac{2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}\right]\,\text{Log}\left[c\,(d+e\,x)^n\right]+$$

$$9\,b\,e\,e^{\frac{a}{bn}}\,f\,g^2\,(d+e\,x)^3\,\left(c\,(d+e\,x)^n\right)^{\frac{1}{n}}\,\text{ExpIntegralEi}\left[\frac{3\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}\right]\,\text{Log}\left[c\,(d+e\,x)^n\right]-$$

$$9\,b\,d\,e^{\frac{a}{bn}}\,g^3\,(d+e\,x)^3\,\left(c\,(d+e\,x)^n\right)^{\frac{1}{n}}\,\text{ExpIntegralEi}\left[\frac{3\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}\right]\,\text{Log}\left[c\,(d+e\,x)^n\right]+$$

$$\left.4\,b\,g^3\,(d+e\,x)^4\,\text{ExpIntegralEi}\left[\frac{4\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}\right]\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)$$

Problem 95: Result more than twice size of optimal antiderivative.

$$\int\frac{(f+g\,x)^2}{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}\,dx$$

Optimal (type 4, 259 leaves, 20 steps):

$$\frac{e^{-\frac{a}{bn}}\,(e\,f-d\,g)^2\,(d+e\,x)\,\left(c\,(d+e\,x)^n\right)^{-1/n}\,\text{ExpIntegralEi}\left[\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{b\,n}\right]}{b^2\,e^3\,n^2}+$$

$$\frac{4\,e^{-\frac{2a}{bn}}\,g\,(e\,f-d\,g)\,(d+e\,x)^2\,\left(c\,(d+e\,x)^n\right)^{-2/n}\,\text{ExpIntegralEi}\left[\frac{2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}\right]}{b^2\,e^3\,n^2}+$$

$$\frac{3\,e^{-\frac{3a}{bn}}\,g^2\,(d+e\,x)^3\,\left(c\,(d+e\,x)^n\right)^{-3/n}\,\text{ExpIntegralEi}\left[\frac{3\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}\right]}{b^2\,e^3\,n^2}-\frac{(d+e\,x)\,(f+g\,x)^2}{b\,e\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}$$

Result (type 4, 1015 leaves):

$$\frac{1}{b^2 e^3 n^2 \left(a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]\right)} e^{-\frac{3 a}{b n}} \left(c \left(d+e x\right)^n\right)^{-3/n}$$

$$\left(-b d e^2 e^{\frac{3 a}{b n}} f^2 n \left(c \left(d+e x\right)^n\right)^{3/n}-b e^3 e^{\frac{3 a}{b n}} f^2 n x \left(c \left(d+e x\right)^n\right)^{3/n}-2 b d e^2 e^{\frac{3 a}{b n}} f g n x \left(c \left(d+e x\right)^n\right)^{3/n}-2 b e^3 e^{\frac{3 a}{b n}} f g n x^2 \left(c \left(d+e x\right)^n\right)^{3/n}-\right.$$

$$b d e^2 e^{\frac{3 a}{b n}} g^2 n x^2 \left(c \left(d+e x\right)^n\right)^{3/n}-b e^3 e^{\frac{3 a}{b n}} g^2 n x^3 \left(c \left(d+e x\right)^n\right)^{3/n}+a e^2 e^{\frac{2 a}{b n}} f^2 \left(d+e x\right) \left(c \left(d+e x\right)^n\right)^{2/n} \text{ExpIntegralEi}\left[\frac{a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]}{b n}\right]-$$

$$2 a d e e^{\frac{2 a}{b n}} f g \left(d+e x\right) \left(c \left(d+e x\right)^n\right)^{2/n} \text{ExpIntegralEi}\left[\frac{a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]}{b n}\right]+a d^2 e^{\frac{2 a}{b n}} g^2 \left(d+e x\right) \left(c \left(d+e x\right)^n\right)^{2/n}$$

$$\text{ExpIntegralEi}\left[\frac{a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]}{b n}\right]+4 a e e^{\frac{a}{b n}} f g \left(d+e x\right)^2 \left(c \left(d+e x\right)^n\right)^{\frac{1}{n}} \text{ExpIntegralEi}\left[\frac{2 \left(a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]\right)}{b n}\right]-$$

$$4 a d e^{\frac{a}{b n}} g^2 \left(d+e x\right)^2 \left(c \left(d+e x\right)^n\right)^{\frac{1}{n}} \text{ExpIntegralEi}\left[\frac{2 \left(a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]\right)}{b n}\right]+3 a g^2 \left(d+e x\right)^3 \text{ExpIntegralEi}\left[\frac{3 \left(a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]\right)}{b n}\right]+$$

$$b e^2 e^{\frac{2 a}{b n}} f^2 \left(d+e x\right) \left(c \left(d+e x\right)^n\right)^{2/n} \text{ExpIntegralEi}\left[\frac{a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]}{b n}\right] \text{Log}\left[c \left(d+e x\right)^n\right]-$$

$$2 b d e e^{\frac{2 a}{b n}} f g \left(d+e x\right) \left(c \left(d+e x\right)^n\right)^{2/n} \text{ExpIntegralEi}\left[\frac{a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]}{b n}\right] \text{Log}\left[c \left(d+e x\right)^n\right]+$$

$$b d^2 e^{\frac{2 a}{b n}} g^2 \left(d+e x\right) \left(c \left(d+e x\right)^n\right)^{2/n} \text{ExpIntegralEi}\left[\frac{a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]}{b n}\right] \text{Log}\left[c \left(d+e x\right)^n\right]+$$

$$4 b e e^{\frac{a}{b n}} f g \left(d+e x\right)^2 \left(c \left(d+e x\right)^n\right)^{\frac{1}{n}} \text{ExpIntegralEi}\left[\frac{2 \left(a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]\right)}{b n}\right] \text{Log}\left[c \left(d+e x\right)^n\right]-$$

$$4 b d e^{\frac{a}{b n}} g^2 \left(d+e x\right)^2 \left(c \left(d+e x\right)^n\right)^{\frac{1}{n}} \text{ExpIntegralEi}\left[\frac{2 \left(a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]\right)}{b n}\right] \text{Log}\left[c \left(d+e x\right)^n\right]+$$

$$\left.3 b g^2 \left(d+e x\right)^3 \text{ExpIntegralEi}\left[\frac{3 \left(a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]\right)}{b n}\right] \text{Log}\left[c \left(d+e x\right)^n\right]\right)$$

Problem 105: Unable to integrate problem.

$$\int \left(f+g x\right)^2 \sqrt{a+b \,\text{Log}\left[c \left(d+e x\right)^n\right]} \, dx$$

Optimal (type 4, 404 leaves, 17 steps):

$$-\frac{\sqrt{b}\, e^{-\frac{a}{b n}} (e f-d g)^2 \sqrt{n} \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{2 e^3}-\frac{\sqrt{b}\, e^{-\frac{2 a}{b n}} g (e f-d g) \sqrt{n} \sqrt{\frac{\pi}{2}} (d+e x)^2 \left(c (d+e x)^n\right)^{-2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{2 e^3}-\frac{\sqrt{b}\, e^{-\frac{3 a}{b n}} g^2 \sqrt{n} \sqrt{\frac{\pi}{3}} (d+e x)^3 \left(c (d+e x)^n\right)^{-3/n} \text{Erfi}\left[\frac{\sqrt{3} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{6 e^3}+\frac{(e f-d g)^2 (d+e x) \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{e^3}+\frac{g (e f-d g) (d+e x)^2 \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{e^3}+\frac{g^2 (d+e x)^3 \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{3 e^3}$$

Result (type 8, 28 leaves):

$$\int (f+g x)^2 \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}\, dx$$

Problem 106: Unable to integrate problem.

$$\int (f+g x) \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}\, dx$$

Optimal (type 4, 255 leaves, 12 steps):

$$-\frac{\sqrt{b}\, e^{-\frac{a}{b n}} (e f-d g) \sqrt{n} \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{2 e^2}-\frac{\sqrt{b}\, e^{-\frac{2 a}{b n}} g \sqrt{n} \sqrt{\frac{\pi}{2}} (d+e x)^2 \left(c (d+e x)^n\right)^{-2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{4 e^2}+\frac{(e f-d g) (d+e x) \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{e^2}+\frac{g (d+e x)^2 \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{2 e^2}$$

Result (type 8, 26 leaves):

$$\int (f+g x) \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}\, dx$$

Problem 107: Unable to integrate problem.

$$\int \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}\, dx$$

Optimal (type 4, 111 leaves, 5 steps):

$$-\frac{\sqrt{b}\, e^{-\frac{a}{b n}} \sqrt{n} \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{2 e}+\frac{(d+e x) \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{e}$$

Result (type 8, 20 leaves):

$$\int \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}\, dx$$

Problem 111: Unable to integrate problem.

$$\int (f+g x)^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2} dx$$

Optimal (type 4, 526 leaves, 20 steps):

$$\frac{3 b^{3/2} e^{-\frac{a}{b n}} (e f-d g)^2 n^{3/2} \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{4 e^3}+$$
$$\frac{3 b^{3/2} e^{-\frac{2 a}{b n}} g (e f-d g) n^{3/2} \sqrt{\frac{\pi}{2}} (d+e x)^2 \left(c (d+e x)^n\right)^{-2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{8 e^3}+$$
$$\frac{b^{3/2} e^{-\frac{3 a}{b n}} g^2 n^{3/2} \sqrt{\frac{\pi}{3}} (d+e x)^3 \left(c (d+e x)^n\right)^{-3/n} \text{Erfi}\left[\frac{\sqrt{3} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{12 e^3}-\frac{3 b (e f-d g)^2 n (d+e x) \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{2 e^3}-$$
$$\frac{3 b g (e f-d g) n (d+e x)^2 \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{4 e^3}-\frac{b g^2 n (d+e x)^3 \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{6 e^3}+$$
$$\frac{(e f-d g)^2 (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2}}{e^3}+\frac{g (e f-d g) (d+e x)^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2}}{e^3}+\frac{g^2 (d+e x)^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2}}{3 e^3}$$

Result (type 8, 28 leaves):

$$\int (f+g x)^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2} dx$$

Problem 112: Unable to integrate problem.

$$\int (f+g x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2} dx$$

Optimal (type 4, 330 leaves, 14 steps):

$$\frac{3\,b^{3/2}\,e^{-\frac{a}{b\,n}}\,(e\,f-d\,g)\,n^{3/2}\,\sqrt{\pi}\,(d+e\,x)\,\left(c\,(d+e\,x)^n\right)^{-1/n}\,\text{Erfi}\left[\frac{\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}}{\sqrt{b}\,\sqrt{n}}\right]}{4\,e^2}+$$

$$\frac{3\,b^{3/2}\,e^{-\frac{2\,a}{b\,n}}\,g\,n^{3/2}\,\sqrt{\frac{\pi}{2}}\,(d+e\,x)^2\,\left(c\,(d+e\,x)^n\right)^{-2/n}\,\text{Erfi}\left[\frac{\sqrt{2}\,\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}}{\sqrt{b}\,\sqrt{n}}\right]}{16\,e^2}-\frac{3\,b\,(e\,f-d\,g)\,n\,(d+e\,x)\,\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}}{2\,e^2}-$$

$$\frac{3\,b\,g\,n\,(d+e\,x)^2\,\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}}{8\,e^2}+\frac{(e\,f-d\,g)\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{3/2}}{e^2}+\frac{g\,(d+e\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{3/2}}{2\,e^2}$$

Result (type 8, 26 leaves) :

$$\int (f+g\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{3/2}\,dx$$

Problem 113: Unable to integrate problem.

$$\int \left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{3/2}\,dx$$

Optimal (type 4, 143 leaves, 6 steps) :

$$\frac{3\,b^{3/2}\,e^{-\frac{a}{b\,n}}\,n^{3/2}\,\sqrt{\pi}\,(d+e\,x)\,\left(c\,(d+e\,x)^n\right)^{-1/n}\,\text{Erfi}\left[\frac{\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}}{\sqrt{b}\,\sqrt{n}}\right]}{4\,e}-$$

$$\frac{3\,b\,n\,(d+e\,x)\,\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}}{2\,e}+\frac{(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{3/2}}{e}$$

Result (type 8, 20 leaves) :

$$\int \left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{3/2}\,dx$$

Problem 117: Unable to integrate problem.

$$\int (f+g\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{5/2}\,dx$$

Optimal (type 4, 660 leaves, 23 steps) :

$$-\frac{15\,b^{5/2}\,e^{-\frac{a}{b\,n}}\,(e\,f-d\,g)^2\,n^{5/2}\,\sqrt{\pi}\,(d+e\,x)\,\left(c\,(d+e\,x)^n\right)^{-1/n}\,\text{Erfi}\left[\frac{\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}}{\sqrt{b}\,\sqrt{n}}\right]}{8\,e^3}-$$

$$\frac{15\,b^{5/2}\,e^{-\frac{2a}{b\,n}}\,g\,(e\,f-d\,g)\,n^{5/2}\,\sqrt{\frac{\pi}{2}}\,(d+e\,x)^2\,\left(c\,(d+e\,x)^n\right)^{-2/n}\,\text{Erfi}\left[\frac{\sqrt{2}\,\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}}{\sqrt{b}\,\sqrt{n}}\right]}{32\,e^3}-$$

$$\frac{5\,b^{5/2}\,e^{-\frac{3a}{b\,n}}\,g^2\,n^{5/2}\,\sqrt{\frac{\pi}{3}}\,(d+e\,x)^3\,\left(c\,(d+e\,x)^n\right)^{-3/n}\,\text{Erfi}\left[\frac{\sqrt{3}\,\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}}{\sqrt{b}\,\sqrt{n}}\right]}{72\,e^3}+\frac{15\,b^2\,(e\,f-d\,g)^2\,n^2\,(d+e\,x)\,\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}}{4\,e^3}+$$

$$\frac{15\,b^2\,g\,(e\,f-d\,g)\,n^2\,(d+e\,x)^2\,\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}}{16\,e^3}+\frac{5\,b^2\,g^2\,n^2\,(d+e\,x)^3\,\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}}{36\,e^3}-$$

$$\frac{5\,b\,(e\,f-d\,g)^2\,n\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{3/2}}{2\,e^3}-\frac{5\,b\,g\,(e\,f-d\,g)\,n\,(d+e\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{3/2}}{4\,e^3}-$$

$$\frac{5\,b\,g^2\,n\,(d+e\,x)^3\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{3/2}}{18\,e^3}+\frac{(e\,f-d\,g)^2\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{5/2}}{e^3}+$$

$$\frac{g\,(e\,f-d\,g)\,(d+e\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{5/2}}{e^3}+\frac{g^2\,(d+e\,x)^3\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{5/2}}{3\,e^3}$$

Result (type 8, 28 leaves):

$$\int (f+g\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{5/2}\,dx$$

Problem 118: Unable to integrate problem.

$$\int (f+g\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^{5/2}\,dx$$

Optimal (type 4, 413 leaves, 16 steps):

$$-\frac{15\, b^{5/2}\, e^{-\frac{a}{b\, n}}\, (e\, f-d\, g)\, n^{5/2}\, \sqrt{\pi}\, (d+e\, x)\, \left(c\, (d+e\, x)^n\right)^{-1/n}\, \text{Erfi}\left[\frac{\sqrt{a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]}}{\sqrt{b}\, \sqrt{n}}\right]}{8\, e^2}-$$
$$\frac{15\, b^{5/2}\, e^{-\frac{2\, a}{b\, n}}\, g\, n^{5/2}\, \sqrt{\frac{\pi}{2}}\, (d+e\, x)^2\, \left(c\, (d+e\, x)^n\right)^{-2/n}\, \text{Erfi}\left[\frac{\sqrt{2}\, \sqrt{a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]}}{\sqrt{b}\, \sqrt{n}}\right]}{64\, e^2}+\frac{15\, b^2\, (e\, f-d\, g)\, n^2\, (d+e\, x)\, \sqrt{a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]}}{4\, e^2}+$$
$$\frac{15\, b^2\, g\, n^2\, (d+e\, x)^2\, \sqrt{a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]}}{32\, e^2}-\frac{5\, b\, (e\, f-d\, g)\, n\, (d+e\, x)\, \left(a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]\right)^{3/2}}{2\, e^2}-$$
$$\frac{5\, b\, g\, n\, (d+e\, x)^2\, \left(a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]\right)^{3/2}}{8\, e^2}+\frac{(e\, f-d\, g)\, (d+e\, x)\, \left(a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]\right)^{5/2}}{e^2}+\frac{g\, (d+e\, x)^2\, \left(a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]\right)^{5/2}}{2\, e^2}$$

Result (type 8, 26 leaves):

$$\int (f+g\, x)\, \left(a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]\right)^{5/2}\, dx$$

Problem 119: Unable to integrate problem.

$$\int \left(a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]\right)^{5/2}\, dx$$

Optimal (type 4, 179 leaves, 7 steps):

$$-\frac{15\, b^{5/2}\, e^{-\frac{a}{b\, n}}\, n^{5/2}\, \sqrt{\pi}\, (d+e\, x)\, \left(c\, (d+e\, x)^n\right)^{-1/n}\, \text{Erfi}\left[\frac{\sqrt{a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]}}{\sqrt{b}\, \sqrt{n}}\right]}{8\, e}+$$
$$\frac{15\, b^2\, n^2\, (d+e\, x)\, \sqrt{a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]}}{4\, e}-\frac{5\, b\, n\, (d+e\, x)\, \left(a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]\right)^{3/2}}{2\, e}+\frac{(d+e\, x)\, \left(a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]\right)^{5/2}}{e}$$

Result (type 8, 20 leaves):

$$\int \left(a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]\right)^{5/2}\, dx$$

Problem 123: Result more than twice size of optimal antiderivative.

$$\int \frac{(f+g\, x)^3}{\sqrt{a+b\, \text{Log}\left[c\, (d+e\, x)^n\right]}}\, dx$$

Optimal (type 4, 383 leaves, 18 steps):

$$\frac{e^{-\frac{a}{b n}} (e f-d g)^3 \sqrt{\pi}\,(d+e x) \left(c (d+e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}[c (d+e x)^n]}}{\sqrt{b} \sqrt{n}}\right]}{\sqrt{b}\, e^4 \sqrt{n}}+$$

$$\frac{e^{-\frac{4 a}{b n}} g^3 \sqrt{\pi}\,(d+e x)^4 \left(c (d+e x)^n\right)^{-4/n} \text{Erfi}\left[\frac{2 \sqrt{a+b \text{Log}[c (d+e x)^n]}}{\sqrt{b} \sqrt{n}}\right]}{2 \sqrt{b}\, e^4 \sqrt{n}}+\frac{3 e^{-\frac{2 a}{b n}} g (e f-d g)^2 \sqrt{\frac{\pi}{2}}\,(d+e x)^2 \left(c (d+e x)^n\right)^{-2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}[c (d+e x)^n]}}{\sqrt{b} \sqrt{n}}\right]}{\sqrt{b}\, e^4 \sqrt{n}}+$$

$$\frac{e^{-\frac{3 a}{b n}} g^2 (e f-d g) \sqrt{3 \pi}\,(d+e x)^3 \left(c (d+e x)^n\right)^{-3/n} \text{Erfi}\left[\frac{\sqrt{3} \sqrt{a+b \text{Log}[c (d+e x)^n]}}{\sqrt{b} \sqrt{n}}\right]}{\sqrt{b}\, e^4 \sqrt{n}}$$

Result (type 4, 1485 leaves) :

$$\left(e^{-\frac{a+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n])}{b n}} f^3 \sqrt{\pi}\, \text{Erfi}\left[\frac{\sqrt{a+b n \text{Log}[d+e x]+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n])}}{\sqrt{b} \sqrt{n}}\right] \sqrt{a+b \text{Log}[c (d+e x)^n]}\right)\Big/$$
$$\left(\sqrt{b}\, e \sqrt{n} \sqrt{a+b n \text{Log}[d+e x]+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n])}\right)+$$
$$\left(3 e^{-\frac{2 (a+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n]))}{b n}} f^2 g \sqrt{\pi} \left(-2 d e^{\frac{a+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n])}{b n}} \text{Erfi}\left[\frac{\sqrt{a+b n \text{Log}[d+e x]+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n])}}{\sqrt{b} \sqrt{n}}\right]+\right.\right.$$
$$\left.\left.\sqrt{2}\, \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b n \text{Log}[d+e x]+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n])}}{\sqrt{b} \sqrt{n}}\right]\right) \sqrt{a+b \text{Log}[c (d+e x)^n]}\right)\Big/$$
$$\left(2 \sqrt{b}\, e^2 \sqrt{n} \sqrt{a+b n \text{Log}[d+e x]+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n])}\right)+\frac{1}{e^3 \left(a+b n \text{Log}[d+e x]+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n])\right)}$$
$$e^{-\frac{3 (a+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n]))}{b n}} f g^2 \sqrt{\pi} \left(\sqrt{3}-3 \sqrt{2}\, d\, e^{\frac{a+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n])}{b n}}+3 d^2 e^{\frac{2 (a+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n]))}{b n}}-\right.$$
$$3 d^2 e^{\frac{2 (a+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n]))}{b n}} \text{Erf}\left[\sqrt{-\frac{a+b n \text{Log}[d+e x]+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n])}{b n}}\right]+$$
$$3 \sqrt{2}\, d\, e^{\frac{a+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n])}{b n}} \text{Erf}\left[\sqrt{2} \sqrt{-\frac{a+b n \text{Log}[d+e x]+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n])}{b n}}\right]-$$
$$\left.\sqrt{3}\, \text{Erf}\left[\sqrt{3} \sqrt{-\frac{a+b n \text{Log}[d+e x]+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n])}{b n}}\right]\right)$$

$$\sqrt{a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}\,\sqrt{-\frac{a+b\,n\,\mathrm{Log}[d+e\,x]+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}\;-$$

$$\frac{1}{2\,e^4\left(a+b\,n\,\mathrm{Log}[d+e\,x]+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}$$

$$e^{-\frac{4\left(a+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}\,g^3\,\sqrt{\pi}\,\Bigg(-1+2\,\sqrt{3}\,d\,e^{\frac{a+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}-3\,\sqrt{2}\,d^2\,e^{\frac{2\left(a+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}+$$

$$2\,d^3\,e^{\frac{3\left(a+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}-2\,d^3\,e^{\frac{3\left(a+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}\,\mathrm{Erf}\left[\sqrt{-\frac{a+b\,n\,\mathrm{Log}[d+e\,x]+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}\right]+$$

$$\mathrm{Erf}\left[2\,\sqrt{-\frac{a+b\,n\,\mathrm{Log}[d+e\,x]+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}\right]+$$

$$3\,\sqrt{2}\,d^2\,e^{\frac{2\left(a+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}\,\mathrm{Erf}\left[\sqrt{2}\,\sqrt{-\frac{a+b\,n\,\mathrm{Log}[d+e\,x]+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}\right]-$$

$$2\,\sqrt{3}\,d\,e^{\frac{a+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}\,\mathrm{Erf}\left[\sqrt{3}\,\sqrt{-\frac{a+b\,n\,\mathrm{Log}[d+e\,x]+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}\right]\Bigg)$$

$$\sqrt{a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}\,\sqrt{-\frac{a+b\,n\,\mathrm{Log}[d+e\,x]+b\left(-n\,\mathrm{Log}[d+e\,x]+\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}$$

Problem 124: Result more than twice size of optimal antiderivative.

$$\int\frac{(f+g\,x)^2}{\sqrt{a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}}\,dx$$

Optimal (type 4, 283 leaves, 14 steps):

$$\frac{e^{-\frac{a}{b n}} (e f-d g)^2 \sqrt{\pi}\, (d+e x) \left(c (d+e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{\sqrt{b}\, e^3 \sqrt{n}}+$$

$$\frac{e^{-\frac{2 a}{b n}} g (e f-d g) \sqrt{2 \pi}\, (d+e x)^2 \left(c (d+e x)^n\right)^{-2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{\sqrt{b}\, e^3 \sqrt{n}}+\frac{e^{-\frac{3 a}{b n}} g^2 \sqrt{\frac{\pi}{3}}\, (d+e x)^3 \left(c (d+e x)^n\right)^{-3/n} \text{Erfi}\left[\frac{\sqrt{3} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{\sqrt{b}\, e^3 \sqrt{n}}$$

Result (type 4, 573 leaves) :

$$\frac{1}{3 e^3} e^{-\frac{3 a}{b n}} \sqrt{\pi}\, (d+e x) \left(c (d+e x)^n\right)^{-3/n} \left(\frac{3 e^2 e^{\frac{2 a}{b n}} f^2 \left(c (d+e x)^n\right)^{2/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{\sqrt{b} \sqrt{n}}-\frac{1}{\sqrt{b} \sqrt{n}} 3 e\, e^{\frac{a}{b n}} f g \left(c (d+e x)^n\right)^{\frac{1}{n}}\right.$$

$$\left(2 d\, e^{\frac{a}{b n}} \left(c (d+e x)^n\right)^{\frac{1}{n}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]-\sqrt{2}\, (d+e x) \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]\right)+\frac{1}{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}$$

$$g^2 (d+e x)^2 \left(\sqrt{3}-\frac{3 \sqrt{2}\, d\, e^{\frac{a}{b n}} \left(c (d+e x)^n\right)^{\frac{1}{n}}}{d+e x}+\frac{3 d^2 e^{\frac{2 a}{b n}} \left(c (d+e x)^n\right)^{2/n}}{(d+e x)^2}-\frac{3 d^2 e^{\frac{2 a}{b n}} \left(c (d+e x)^n\right)^{2/n} \text{Erf}\left[\sqrt{-\frac{a+b \text{Log}\left[c (d+e x)^n\right]}{b n}}\right]}{(d+e x)^2}+\right.$$

$$\left.\left.\frac{3 \sqrt{2}\, d\, e^{\frac{a}{b n}} \left(c (d+e x)^n\right)^{\frac{1}{n}} \text{Erf}\left[\sqrt{2} \sqrt{-\frac{a+b \text{Log}\left[c (d+e x)^n\right]}{b n}}\right]}{d+e x}-\sqrt{3}\, \text{Erf}\left[\sqrt{3} \sqrt{-\frac{a+b \text{Log}\left[c (d+e x)^n\right]}{b n}}\right]\right) \sqrt{-\frac{a+b \text{Log}\left[c (d+e x)^n\right]}{b n}}\right)$$

Problem 128: Result more than twice size of optimal antiderivative.

$$\int \frac{(f+g x)^3}{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^{3/2}} \, dx$$

Optimal (type 4, 422 leaves, 33 steps) :

$$\frac{2 e^{-\frac{a}{b n}} (e f-d g)^3 \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{b^{3/2} e^4 n^{3/2}}+\frac{4 e^{-\frac{4 a}{b n}} g^3 \sqrt{\pi} (d+e x)^4 \left(c (d+e x)^n\right)^{-4/n} \text{Erfi}\left[\frac{2 \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{b^{3/2} e^4 n^{3/2}}+$$

$$\frac{6 e^{-\frac{2 a}{b n}} g (e f-d g)^2 \sqrt{2 \pi} (d+e x)^2 \left(c (d+e x)^n\right)^{-2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{b^{3/2} e^4 n^{3/2}}+$$

$$\frac{6 e^{-\frac{3 a}{b n}} g^2 (e f-d g) \sqrt{3 \pi} (d+e x)^3 \left(c (d+e x)^n\right)^{-3/n} \text{Erfi}\left[\frac{\sqrt{3} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{b^{3/2} e^4 n^{3/2}}-\frac{2 (d+e x) (f+g x)^3}{b e n \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}$$

Result (type 4, 2217 leaves) :

$$\frac{1}{b^{3/2} e^4 n^{3/2} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}$$

$$2 e^{-\frac{4 a}{b n}} \left(c (d+e x)^n\right)^{-4/n} \left(-\sqrt{b}\, d e^3 e^{\frac{4 a}{b n}} f^3 \sqrt{n} \left(c (d+e x)^n\right)^{4/n}-\sqrt{b}\, e^4 e^{\frac{4 a}{b n}} f^3 \sqrt{n}\, x \left(c (d+e x)^n\right)^{4/n}-3 \sqrt{b}\, d e^3 e^{\frac{4 a}{b n}} f^2 g \sqrt{n}\, x \left(c (d+e x)^n\right)^{4/n}-\right.$$

$$3 \sqrt{b}\, e^4 e^{\frac{4 a}{b n}} f^2 g \sqrt{n}\, x^2 \left(c (d+e x)^n\right)^{4/n}-3 \sqrt{b}\, d e^3 e^{\frac{4 a}{b n}} f g^2 \sqrt{n}\, x^2 \left(c (d+e x)^n\right)^{4/n}-$$

$$3 \sqrt{b}\, e^4 e^{\frac{4 a}{b n}} f g^2 \sqrt{n}\, x^3 \left(c (d+e x)^n\right)^{4/n}-\sqrt{b}\, d e^3 e^{\frac{4 a}{b n}} g^3 \sqrt{n}\, x^3 \left(c (d+e x)^n\right)^{4/n}-\sqrt{b}\, e^4 e^{\frac{4 a}{b n}} g^3 \sqrt{n}\, x^4 \left(c (d+e x)^n\right)^{4/n}+$$

$$e^3 e^{\frac{3 a}{b n}} f^3 \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right] \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}-$$

$$3 d e^2 e^{\frac{3 a}{b n}} f^2 g \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right] \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}-$$

$$6 d^2 e\, e^{\frac{3 a}{b n}} f g^2 \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{3/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right] \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}+$$

$$3 e^2 e^{\frac{2 a}{b n}} f^2 g \sqrt{2 \pi} (d+e x)^2 \left(c (d+e x)^n\right)^{2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right] \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}+$$

$$3 d e\, e^{\frac{2 a}{b n}} f g^2 \sqrt{2 \pi} (d+e x)^2 \left(c (d+e x)^n\right)^{2/n} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right] \sqrt{a+b \text{Log}\left[c (d+e x)^n\right]}+$$

$$2 \sqrt{b}\, g^3 \sqrt{n} \sqrt{\pi} (d+e x)^4 \sqrt{-\frac{a+b \text{Log}\left[c (d+e x)^n\right]}{b n}}+3 \sqrt{b}\, e\, e^{\frac{a}{b n}} f g^2 \sqrt{n} \sqrt{3 \pi} (d+e x)^3 \left(c (d+e x)^n\right)^{\frac{1}{n}} \sqrt{-\frac{a+b \text{Log}\left[c (d+e x)^n\right]}{b n}}-$$

$$3\sqrt{b}\ d\ e^{\frac{a}{b\,n}}\ g^3\ \sqrt{n}\ \sqrt{3\,\pi}\ (d+e\,x)^3\ \left(c\ (d+e\,x)^n\right)^{\frac{1}{n}}\ \sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\ -$$

$$9\sqrt{b}\ d\ e\ e^{\frac{2\,a}{b\,n}}\ f\ g^2\ \sqrt{n}\ \sqrt{2\,\pi}\ (d+e\,x)^2\ \left(c\ (d+e\,x)^n\right)^{2/n}\ \sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\ +$$

$$3\sqrt{b}\ d^2\ e^{\frac{2\,a}{b\,n}}\ g^3\ \sqrt{n}\ \sqrt{2\,\pi}\ (d+e\,x)^2\ \left(c\ (d+e\,x)^n\right)^{2/n}\ \sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\ +9\sqrt{b}\ d^2\ e\ e^{\frac{3\,a}{b\,n}}\ f\ g^2\ \sqrt{n}\ \sqrt{\pi}\ (d+e\,x)$$

$$\left(c\ (d+e\,x)^n\right)^{3/n}\ \sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\ -\sqrt{b}\ d^3\ e^{\frac{3\,a}{b\,n}}\ g^3\ \sqrt{n}\ \sqrt{\pi}\ (d+e\,x)\ \left(c\ (d+e\,x)^n\right)^{3/n}\ \sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\ -$$

$$9\sqrt{b}\ d^2\ e\ e^{\frac{3\,a}{b\,n}}\ f\ g^2\ \sqrt{n}\ \sqrt{\pi}\ (d+e\,x)\ \left(c\ (d+e\,x)^n\right)^{3/n}\ \text{Erf}\left[\sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\right]\ \sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\ +$$

$$\sqrt{b}\ d^3\ e^{\frac{3\,a}{b\,n}}\ g^3\ \sqrt{n}\ \sqrt{\pi}\ (d+e\,x)\ \left(c\ (d+e\,x)^n\right)^{3/n}\ \text{Erf}\left[\sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\right]\ \sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\ -$$

$$2\sqrt{b}\ g^3\ \sqrt{n}\ \sqrt{\pi}\ (d+e\,x)^4\ \text{Erf}\left[2\sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\right]\ \sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\ +$$

$$9\sqrt{b}\ d\ e\ e^{\frac{2\,a}{b\,n}}\ f\ g^2\ \sqrt{n}\ \sqrt{2\,\pi}\ (d+e\,x)^2\ \left(c\ (d+e\,x)^n\right)^{2/n}\ \text{Erf}\left[\sqrt{2}\sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\right]\ \sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\ -$$

$$3\sqrt{b}\ d^2\ e^{\frac{2\,a}{b\,n}}\ g^3\ \sqrt{n}\ \sqrt{2\,\pi}\ (d+e\,x)^2\ \left(c\ (d+e\,x)^n\right)^{2/n}\ \text{Erf}\left[\sqrt{2}\sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\right]\ \sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\ -$$

$$3\sqrt{b}\ e\ e^{\frac{a}{b\,n}}\ f\ g^2\ \sqrt{n}\ \sqrt{3\,\pi}\ (d+e\,x)^3\ \left(c\ (d+e\,x)^n\right)^{\frac{1}{n}}\ \text{Erf}\left[\sqrt{3}\sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\right]\ \sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\ +$$

$$3\sqrt{b}\ d\ e^{\frac{a}{b\,n}}\ g^3\ \sqrt{n}\ \sqrt{3\,\pi}\ (d+e\,x)^3\ \left(c\ (d+e\,x)^n\right)^{\frac{1}{n}}\ \text{Erf}\left[\sqrt{3}\sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\right]\ \sqrt{-\frac{a+b\,\text{Log}\left[c\ (d+e\,x)^n\right]}{b\,n}}\ \Bigg)$$

Problem 129: Result more than twice size of optimal antiderivative.

$$\int \frac{(f+g x)^2}{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^{3/2}} \, dx$$

Optimal (type 4, 325 leaves, 25 steps) :

$$\frac{2 e^{-\frac{a}{b n}} (e f-d g)^2 \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{-1/n} \operatorname{Erfi}\left[\frac{\sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{b^{3/2} e^3 n^{3/2}}+$$

$$\frac{4 e^{-\frac{2 a}{b n}} g (e f-d g) \sqrt{2 \pi} (d+e x)^2 \left(c (d+e x)^n\right)^{-2/n} \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{b^{3/2} e^3 n^{3/2}}+$$

$$\frac{2 e^{-\frac{3 a}{b n}} g^2 \sqrt{3 \pi} (d+e x)^3 \left(c (d+e x)^n\right)^{-3/n} \operatorname{Erfi}\left[\frac{\sqrt{3} \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{b^{3/2} e^3 n^{3/2}}-\frac{2 (d+e x) (f+g x)^2}{b e n \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}$$

Result (type 4, 1319 leaves) :

$$\frac{1}{b^{3/2} e^3 n^{3/2} \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}$$

$$2 e^{-\frac{3a}{bn}} \left(c (d+e x)^n\right)^{-3/n} \Bigg(-\sqrt{b}\, d e^2 e^{\frac{3a}{bn}} f^2 \sqrt{n} \left(c (d+e x)^n\right)^{3/n} - \sqrt{b}\, e^3 e^{\frac{3a}{bn}} f^2 \sqrt{n}\, x \left(c (d+e x)^n\right)^{3/n} - 2\sqrt{b}\, d e^2 e^{\frac{3a}{bn}} f g \sqrt{n}\, x \left(c (d+e x)^n\right)^{3/n} -$$

$$2\sqrt{b}\, e^3 e^{\frac{3a}{bn}} f g \sqrt{n}\, x^2 \left(c (d+e x)^n\right)^{3/n} - \sqrt{b}\, d e^2 e^{\frac{3a}{bn}} g^2 \sqrt{n}\, x^2 \left(c (d+e x)^n\right)^{3/n} - \sqrt{b}\, e^3 e^{\frac{3a}{bn}} g^2 \sqrt{n}\, x^3 \left(c (d+e x)^n\right)^{3/n} +$$

$$e^2 e^{\frac{2a}{bn}} f^2 \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{2/n} \operatorname{Erfi}\left[\frac{\sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}{\sqrt{b}\sqrt{n}}\right] \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]} -$$

$$2 d e\, e^{\frac{2a}{bn}} f g \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{2/n} \operatorname{Erfi}\left[\frac{\sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}{\sqrt{b}\sqrt{n}}\right] \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]} -$$

$$2 d^2 e^{\frac{2a}{bn}} g^2 \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{2/n} \operatorname{Erfi}\left[\frac{\sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}{\sqrt{b}\sqrt{n}}\right] \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]} +$$

$$2 e\, e^{\frac{a}{bn}} f g \sqrt{2\pi} (d+e x)^2 \left(c (d+e x)^n\right)^{\frac{1}{n}} \operatorname{Erfi}\left[\frac{\sqrt{2}\sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}{\sqrt{b}\sqrt{n}}\right] \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]} +$$

$$d\, e^{\frac{a}{bn}} g^2 \sqrt{2\pi} (d+e x)^2 \left(c (d+e x)^n\right)^{\frac{1}{n}} \operatorname{Erfi}\left[\frac{\sqrt{2}\sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}{\sqrt{b}\sqrt{n}}\right] \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]} +$$

$$\sqrt{b}\, g^2 \sqrt{n} \sqrt{3\pi} (d+e x)^3 \sqrt{-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{b n}} - 3\sqrt{b}\, d\, e^{\frac{a}{bn}} g^2 \sqrt{n} \sqrt{2\pi} (d+e x)^2 \left(c (d+e x)^n\right)^{\frac{1}{n}} \sqrt{-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{b n}} +$$

$$3\sqrt{b}\, d^2 e^{\frac{2a}{bn}} g^2 \sqrt{n} \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{2/n} \sqrt{-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{b n}} -$$

$$3\sqrt{b}\, d^2 e^{\frac{2a}{bn}} g^2 \sqrt{n} \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{2/n} \operatorname{Erf}\left[\sqrt{-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{b n}}\right] \sqrt{-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{b n}} +$$

$$3\sqrt{b}\, d\, e^{\frac{a}{bn}} g^2 \sqrt{n} \sqrt{2\pi} (d+e x)^2 \left(c (d+e x)^n\right)^{\frac{1}{n}} \operatorname{Erf}\left[\sqrt{2}\sqrt{-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{b n}}\right] \sqrt{-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{b n}} -$$

$$\sqrt{b}\, g^2 \sqrt{n} \sqrt{3\pi} (d+e x)^3 \operatorname{Erf}\left[\sqrt{3}\sqrt{-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{b n}}\right] \sqrt{-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{b n}}\Bigg)$$

Problem 133: Result more than twice size of optimal antiderivative.

$$\int \frac{(f+g x)^3}{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^{5/2}} \, dx$$

Optimal (type 4, 520 leaves, 59 steps):

$$\frac{4 e^{-\frac{a}{b n}} (e f-d g)^3 \sqrt{\pi} (d+e x) \left(c (d+e x)^n\right)^{-1/n} \operatorname{Erfi}\left[\frac{\sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{3 b^{5/2} e^4 n^{5/2}}+\frac{32 e^{-\frac{4 a}{b n}} g^3 \sqrt{\pi} (d+e x)^4 \left(c (d+e x)^n\right)^{-4/n} \operatorname{Erfi}\left[\frac{2 \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{3 b^{5/2} e^4 n^{5/2}}+$$

$$\frac{8 e^{-\frac{2 a}{b n}} g (e f-d g)^2 \sqrt{2 \pi} (d+e x)^2 \left(c (d+e x)^n\right)^{-2/n} \operatorname{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{b^{5/2} e^4 n^{5/2}}+$$

$$\frac{12 e^{-\frac{3 a}{b n}} g^2 (e f-d g) \sqrt{3 \pi} (d+e x)^3 \left(c (d+e x)^n\right)^{-3/n} \operatorname{Erfi}\left[\frac{\sqrt{3} \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}{\sqrt{b} \sqrt{n}}\right]}{b^{5/2} e^4 n^{5/2}}-$$

$$\frac{2 (d+e x) (f+g x)^3}{3 b e n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^{3/2}}+\frac{4 (e f-d g) (d+e x) (f+g x)^2}{b^2 e^2 n^2 \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}-\frac{16 (d+e x) (f+g x)^3}{3 b^2 e n^2 \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}}$$

Result (type 4, 2997 leaves):

$$\left(4 e^{-\frac{a+b \left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)}{b n}} f^3 \sqrt{\pi} \operatorname{Erfi}\left[\frac{\sqrt{a+b n \operatorname{Log}[d+e x]+b \left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)}}{\sqrt{b} \sqrt{n}}\right] \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}\right) \Big/$$

$$\left(3 b^{5/2} e n^{5/2} \sqrt{a+b n \operatorname{Log}[d+e x]+b \left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)}\right)+$$

$$\left(12 d e^{-\frac{a+b \left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)}{b n}} f^2 g \sqrt{\pi} \operatorname{Erfi}\left[\frac{\sqrt{a+b n \operatorname{Log}[d+e x]+b \left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)}}{\sqrt{b} \sqrt{n}}\right] \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}\right) \Big/$$

$$\left(b^{5/2} e^2 n^{5/2} \sqrt{a+b n \operatorname{Log}[d+e x]+b \left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)}\right)+$$

$$\left(8 d^2 e^{-\frac{a+b \left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)}{b n}} f g^2 \sqrt{\pi} \operatorname{Erfi}\left[\frac{\sqrt{a+b n \operatorname{Log}[d+e x]+b \left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)}}{\sqrt{b} \sqrt{n}}\right] \sqrt{a+b \operatorname{Log}\left[c (d+e x)^n\right]}\right) \Big/$$

$$\left(b^{5/2} e^3 n^{5/2} \sqrt{a+b n \operatorname{Log}[d+e x]+b \left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)}\right)+$$

$$\left(8 e^{-\frac{2 \left(a+b \left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)\right)}{b n}} f^2 g \sqrt{\pi} \left(-2 d e^{\frac{a+b \left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)}{b n}} \operatorname{Erfi}\left[\frac{\sqrt{a+b n \operatorname{Log}[d+e x]+b \left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)}}{\sqrt{b} \sqrt{n}}\right]+\right.\right.$$

$$\sqrt{2}\ \text{Erfi}\left[\frac{\sqrt{2}\ \sqrt{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}}{\sqrt{b}\ \sqrt{n}}\right]\Bigg)\ \sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}\ \Bigg)\Big/$$

$$\left(b^{5/2}\,e^2\,n^{5/2}\,\sqrt{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}\right)+$$

$$\Bigg(20\,d\,e^{-\frac{2\left(a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}\,f\,g^2\,\sqrt{\pi}\ \Bigg(-2\,d\,e^{\frac{a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}\,\text{Erfi}\left[\frac{\sqrt{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}}{\sqrt{b}\ \sqrt{n}}\right]+$$

$$\sqrt{2}\ \text{Erfi}\left[\frac{\sqrt{2}\ \sqrt{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}}{\sqrt{b}\ \sqrt{n}}\right]\Bigg)\ \sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}\ \Bigg)\Big/$$

$$\left(b^{5/2}\,e^3\,n^{5/2}\,\sqrt{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}\right)+$$

$$\Bigg(4\,d^2\,e^{-\frac{2\left(a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}\,g^3\,\sqrt{\pi}\ \Bigg(-2\,d\,e^{\frac{a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}\,\text{Erfi}\left[\frac{\sqrt{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}}{\sqrt{b}\ \sqrt{n}}\right]+$$

$$\sqrt{2}\ \text{Erfi}\left[\frac{\sqrt{2}\ \sqrt{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}}{\sqrt{b}\ \sqrt{n}}\right]\Bigg)\ \sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}\ \Bigg)\Big/$$

$$\left(b^{5/2}\,e^4\,n^{5/2}\,\sqrt{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}\right)+\frac{1}{b^2\,e^3\,n^2\,\left(a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}$$

$$12\,e^{-\frac{3\left(a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}\,f\,g^2\,\sqrt{\pi}\ \Bigg(\sqrt{3}-3\,\sqrt{2}\ d\,e^{\frac{a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}+3\,d^2\,e^{\frac{2\left(a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}-$$

$$3\,d^2\,e^{\frac{2\left(a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)}{b\,n}}\,\text{Erf}\left[\sqrt{-\frac{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}\ \right]+$$

$$3\,\sqrt{2}\ d\,e^{\frac{a+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}\,\text{Erf}\left[\sqrt{2}\ \sqrt{-\frac{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}\ \right]-$$

$$\sqrt{3}\ \text{Erf}\left[\sqrt{3}\ \sqrt{-\frac{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}\ \right]\Bigg)$$

$$\sqrt{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}\ \sqrt{-\frac{a+b\,n\,\text{Log}[d+e\,x]+b\left(-n\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{b\,n}}\ +$$

$$\left(28\, d\, e^{-\frac{3 \left(a+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{b n}} g^3 \sqrt{\pi} \left(\sqrt{3} - 3\sqrt{2}\, d\, e^{\frac{a+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}} + 3 d^2 e^{\frac{2 \left(a+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{b n}} - 3 d^2 e^{\frac{2 \left(a+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{b n}} \text{Erf}\left[\sqrt{-\frac{a+b n \,\text{Log}[d+e x]+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}}\right] + 3\sqrt{2}\, d\, e^{\frac{a+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}} \text{Erf}\left[\sqrt{2}\sqrt{-\frac{a+b n \,\text{Log}[d+e x]+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}}\right] - \sqrt{3}\, \text{Erf}\left[\sqrt{3}\sqrt{-\frac{a+b n \,\text{Log}[d+e x]+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}}\right]\right) \sqrt{a+b \,\text{Log}\left[c (d+e x)^n\right]} \sqrt{-\frac{a+b n \,\text{Log}[d+e x]+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}}\right) \Big/ \left(3 b^2 e^4 n^2 \left(a+b n \,\text{Log}[d+e x]+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)\right) -$$

$$\left(32\, e^{-\frac{4 \left(a+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{b n}} g^3 \sqrt{\pi} \left(-1 + 2\sqrt{3}\, d\, e^{\frac{a+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}} - 3\sqrt{2}\, d^2 e^{\frac{2 \left(a+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{b n}} + 2 d^3 e^{\frac{3 \left(a+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{b n}} - 2 d^3 e^{\frac{3 \left(a+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{b n}} \text{Erf}\left[\sqrt{-\frac{a+b n \,\text{Log}[d+e x]+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}}\right] + \text{Erf}\left[2\sqrt{-\frac{a+b n \,\text{Log}[d+e x]+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}}\right] + 3\sqrt{2}\, d^2 e^{\frac{2 \left(a+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{b n}} \text{Erf}\left[\sqrt{2}\sqrt{-\frac{a+b n \,\text{Log}[d+e x]+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}}\right] - 2\sqrt{3}\, d\, e^{\frac{a+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}} \text{Erf}\left[\sqrt{3}\sqrt{-\frac{a+b n \,\text{Log}[d+e x]+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}}\right]\right) \sqrt{a+b \,\text{Log}\left[c (d+e x)^n\right]} \sqrt{-\frac{a+b n \,\text{Log}[d+e x]+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)}{b n}}\right) \Big/ \left(3 b^2 e^4 n^2 \left(a+b n \,\text{Log}[d+e x]+b \left(-n \,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)\right) +$$

$$\sqrt{a+b\,n\,\text{Log}[d+e\,x]+b\,(-n\,\text{Log}[d+e\,x]+\text{Log}[c\,(d+e\,x)^n])}$$
$$\left(-\frac{2\,(d+e\,x)\,(f+g\,x)^3}{3\,b\,e\,n\,(a+b\,n\,\text{Log}[d+e\,x]+b\,(-n\,\text{Log}[d+e\,x]+\text{Log}[c\,(d+e\,x)^n]))^2}-\frac{4\,(d+e\,x)\,(f+g\,x)^2\,(e\,f+3\,d\,g+4\,e\,g\,x)}{3\,b^2\,e^2\,n^2\,(a+b\,n\,\text{Log}[d+e\,x]+b\,(-n\,\text{Log}[d+e\,x]+\text{Log}[c\,(d+e\,x)^n]))}\right)$$

Problem 134: Result more than twice size of optimal antiderivative.

$$\int\frac{(f+g\,x)^2}{(a+b\,\text{Log}[c\,(d+e\,x)^n])^{5/2}}\,dx$$

Optimal (type 4, 421 leaves, 41 steps):

$$\frac{4\,e^{-\frac{a}{b\,n}}\,(e\,f-d\,g)^2\,\sqrt{\pi}\,(d+e\,x)\,(c\,(d+e\,x)^n)^{-1/n}\,\text{Erfi}\left[\frac{\sqrt{a+b\,\text{Log}[c\,(d+e\,x)^n]}}{\sqrt{b}\,\sqrt{n}}\right]}{3\,b^{5/2}\,e^3\,n^{5/2}}+$$
$$\frac{16\,e^{-\frac{2a}{b\,n}}\,g\,(e\,f-d\,g)\,\sqrt{2\,\pi}\,(d+e\,x)^2\,(c\,(d+e\,x)^n)^{-2/n}\,\text{Erfi}\left[\frac{\sqrt{2}\,\sqrt{a+b\,\text{Log}[c\,(d+e\,x)^n]}}{\sqrt{b}\,\sqrt{n}}\right]}{3\,b^{5/2}\,e^3\,n^{5/2}}+$$
$$\frac{4\,e^{-\frac{3a}{b\,n}}\,g^2\,\sqrt{3\,\pi}\,(d+e\,x)^3\,(c\,(d+e\,x)^n)^{-3/n}\,\text{Erfi}\left[\frac{\sqrt{3}\,\sqrt{a+b\,\text{Log}[c\,(d+e\,x)^n]}}{\sqrt{b}\,\sqrt{n}}\right]}{b^{5/2}\,e^3\,n^{5/2}}-$$
$$\frac{2\,(d+e\,x)\,(f+g\,x)^2}{3\,b\,e\,n\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^{3/2}}+\frac{8\,(e\,f-d\,g)\,(d+e\,x)\,(f+g\,x)}{3\,b^2\,e^2\,n^2\,\sqrt{a+b\,\text{Log}[c\,(d+e\,x)^n]}}-\frac{4\,(d+e\,x)\,(f+g\,x)^2}{b^2\,e\,n^2\,\sqrt{a+b\,\text{Log}[c\,(d+e\,x)^n]}}$$

Result (type 4, 951 leaves):

$$\frac{1}{3 b^{5/2} e^3 n^{5/2}} 2 (d+e x) \Bigg(2 e^2 e^{-\frac{a}{b n}} f^2 \sqrt{\pi} \left(c (d+e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}[c (d+e x)^n]}}{\sqrt{b} \sqrt{n}}\right] + 12 d e e^{-\frac{a}{b n}} f g \sqrt{\pi} \left(c (d+e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}[c (d+e x)^n]}}{\sqrt{b} \sqrt{n}}\right] +$$

$$4 d^2 e^{-\frac{a}{b n}} g^2 \sqrt{\pi} \left(c (d+e x)^n\right)^{-1/n} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}[c (d+e x)^n]}}{\sqrt{b} \sqrt{n}}\right] - 10 d e^{-\frac{2 a}{b n}} g^2 \sqrt{\pi} \left(c (d+e x)^n\right)^{-2/n}$$

$$\left(2 d e^{\frac{a}{b n}} \left(c (d+e x)^n\right)^{\frac{1}{n}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}[c (d+e x)^n]}}{\sqrt{b} \sqrt{n}}\right] - \sqrt{2} (d+e x) \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}[c (d+e x)^n]}}{\sqrt{b} \sqrt{n}}\right]\right) + 8 e e^{-\frac{2 a}{b n}} f g \sqrt{\pi}$$

$$\left(c (d+e x)^n\right)^{-2/n} \left(-2 d e^{\frac{a}{b n}} \left(c (d+e x)^n\right)^{\frac{1}{n}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}[c (d+e x)^n]}}{\sqrt{b} \sqrt{n}}\right] + \sqrt{2} (d+e x) \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}[c (d+e x)^n]}}{\sqrt{b} \sqrt{n}}\right]\right) +$$

$$\frac{1}{\sqrt{a+b \text{Log}[c (d+e x)^n]}} 6 \sqrt{b} e^{-\frac{3 a}{b n}} g^2 \sqrt{n} \sqrt{\pi} (d+e x)^2 \left(c (d+e x)^n\right)^{-3/n}$$

$$\Bigg(\sqrt{3} - \frac{3 \sqrt{2} d e^{\frac{a}{b n}} \left(c (d+e x)^n\right)^{\frac{1}{n}}}{d+e x} + \frac{3 d^2 e^{\frac{2 a}{b n}} \left(c (d+e x)^n\right)^{2/n}}{(d+e x)^2} - \frac{3 d^2 e^{\frac{2 a}{b n}} \left(c (d+e x)^n\right)^{2/n} \text{Erf}\left[\sqrt{-\frac{a+b \text{Log}[c (d+e x)^n]}{b n}}\right]}{(d+e x)^2} +$$

$$\frac{3 \sqrt{2} d e^{\frac{a}{b n}} \left(c (d+e x)^n\right)^{\frac{1}{n}} \text{Erf}\left[\sqrt{2} \sqrt{-\frac{a+b \text{Log}[c (d+e x)^n]}{b n}}\right]}{d+e x} - \sqrt{3} \text{Erf}\left[\sqrt{3} \sqrt{-\frac{a+b \text{Log}[c (d+e x)^n]}{b n}}\right]\Bigg) \sqrt{-\frac{a+b \text{Log}[c (d+e x)^n]}{b n}} -$$

$$\left(\sqrt{b} e \sqrt{n} (f+g x) \left(b e n (f+g x) + 2 a (e f + 2 d g + 3 e g x) + 2 b (2 d g + e (f + 3 g x)) \text{Log}[c (d+e x)^n]\right)\right) \Big/ \left(a+b \text{Log}[c (d+e x)^n]\right)^{3/2} \Bigg)$$

Problem 145: Result unnecessarily involves higher level functions.

$$\int (f+g x)^{3/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 dx$$

Optimal (type 4, 590 leaves, 28 steps):

$$\frac{368 b^2 (e f-d g)^2 n^2 \sqrt{f+g x}}{75 e^2 g}+\frac{128 b^2 (e f-d g) n^2 (f+g x)^{3/2}}{225 e g}+\frac{16 b^2 n^2 (f+g x)^{5/2}}{125 g}-\frac{368 b^2 (e f-d g)^{5/2} n^2 \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]}{75 e^{5/2} g}-$$
$$\frac{8 b^2 (e f-d g)^{5/2} n^2 \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]^2}{5 e^{5/2} g}-\frac{8 b (e f-d g)^2 n \sqrt{f+g x} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{5 e^2 g}-$$
$$\frac{8 b (e f-d g) n (f+g x)^{3/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{15 e g}-\frac{8 b n (f+g x)^{5/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{25 g}+$$
$$\frac{8 b (e f-d g)^{5/2} n \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{5 e^{5/2} g}+\frac{2 (f+g x)^{5/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{5 g}+$$
$$\frac{16 b^2 (e f-d g)^{5/2} n^2 \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \operatorname{Log}\left[\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{5 e^{5/2} g}+\frac{8 b^2 (e f-d g)^{5/2} n^2 \operatorname{PolyLog}\left[2, 1-\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{5 e^{5/2} g}$$

Result (type 5, 1143 leaves):

$$\frac{1}{225 g} 2 \left(\frac{1}{e^2 \sqrt{\frac{e (f+g x)}{e f-d g}}} 15 b^2 n^2 \sqrt{f+g x} \left(10 g (-e f+d g) (d+e x) \operatorname{HypergeometricPFQ}\left[\left\{-\frac{3}{2}, 1, 1, 1\right\}, \{2, 2, 2\}, \frac{g (d+e x)}{-e f+d g}\right] - 15 d^2 g^2\right.\right.$$
$$\operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2}, 1, 1, 1\right\}, \{2, 2, 2\}, \frac{g (d+e x)}{-e f+d g}\right] - 15 d e g^2 x \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2}, 1, 1, 1\right\}, \{2, 2, 2\}, \frac{g (d+e x)}{-e f+d g}\right] +$$
$$4 e^2 f^2 \operatorname{Log}[d+e x] - 8 d e f g \operatorname{Log}[d+e x] + 4 d^2 g^2 \operatorname{Log}[d+e x] - 4 e^2 f^2 \sqrt{\frac{e (f+g x)}{e f-d g}} \operatorname{Log}[d+e x] - 8 e^2 f g x \sqrt{\frac{e (f+g x)}{e f-d g}} \operatorname{Log}[d+e x] -$$
$$4 e^2 g^2 x^2 \sqrt{\frac{e (f+g x)}{e f-d g}} \operatorname{Log}[d+e x] + 15 d^2 g^2 \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2}, 1, 1\right\}, \{2, 2\}, \frac{g (d+e x)}{-e f+d g}\right] \operatorname{Log}[d+e x] +$$

$$15\,d\,e\,g^2\,x\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\text{Log}[d+e\,x]+2\,e^2\,f^2\,\text{Log}[d+e\,x]^2+d\,e\,f\,g\,\text{Log}[d+e\,x]^2-$$

$$3\,d^2\,g^2\,\text{Log}[d+e\,x]^2-2\,e^2\,f^2\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}\,\text{Log}[d+e\,x]^2+e^2\,f\,g\,x\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}\,\text{Log}[d+e\,x]^2+3\,e^2\,g^2\,x^2\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}\,\text{Log}[d+e\,x]^2-$$

$$10\,g\,(-e\,f+d\,g)\,(d+e\,x)\,\text{HypergeometricPFQ}\left[\left\{-\frac{3}{2},1,1\right\},\{2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right](1+\text{Log}[d+e\,x])\Bigg)+\frac{1}{e\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}}$$

$$75\,b^2\,f\,n^2\sqrt{f+g\,x}\,\Bigg(3\,g\,(d+e\,x)\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1,1\right\},\{2,2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+\text{Log}[d+e\,x]\,\Bigg(-3\,g\,(d+e\,x)$$

$$\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+\left(d\,g+e\,g\,x\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}+e\,f\left(-1+\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}\right)\right)\text{Log}[d+e\,x]\Bigg)\Bigg)-$$

$$\frac{1}{e^{3/2}}50\,b\,f\,n\left(6\,(e\,f-d\,g)^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]+\sqrt{e}\,\sqrt{f+g\,x}\,(6\,d\,g-2\,e\,(4\,f+g\,x)+3\,e\,(f+g\,x)\,\text{Log}[d+e\,x])\right)$$

$$(-a+b\,n\,\text{Log}[d+e\,x]-b\,\text{Log}[c\,(d+e\,x)^n])+$$

$$\frac{1}{e^{5/2}}2\,b\,n\,\Bigg(30\sqrt{e\,f-d\,g}\,(2\,e^2\,f^2+d\,e\,f\,g-3\,d^2\,g^2)\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]+$$

$$\sqrt{e}\,\sqrt{f+g\,x}\,\left(90\,d^2\,g^2-30\,d\,e\,g\,(2\,f+g\,x)+2\,e^2\,(-31\,f^2+8\,f\,g\,x+9\,g^2\,x^2)+15\,e^2\,(2\,f^2-f\,g\,x-3\,g^2\,x^2)\,\text{Log}[d+e\,x]\right)\Bigg)$$

$$(-a+b\,n\,\text{Log}[d+e\,x]-b\,\text{Log}[c\,(d+e\,x)^n])+45\,(f+g\,x)^{5/2}\,(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}[c\,(d+e\,x)^n])^2\Bigg)$$

Problem 146: Result unnecessarily involves higher level functions.

$$\int\sqrt{f+g\,x}\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2\,dx$$

Optimal (type 4, 510 leaves, 21 steps):

$$\frac{64\,b^2\,(e\,f-d\,g)\,n^2\,\sqrt{f+g\,x}}{9\,e\,g}+\frac{16\,b^2\,n^2\,(f+g\,x)^{3/2}}{27\,g}-\frac{64\,b^2\,(e\,f-d\,g)^{3/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]}{9\,e^{3/2}\,g}-$$

$$\frac{8\,b^2\,(e\,f-d\,g)^{3/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]^2}{3\,e^{3/2}\,g}-\frac{8\,b\,(e\,f-d\,g)\,n\,\sqrt{f+g\,x}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{3\,e\,g}-\frac{8\,b\,n\,(f+g\,x)^{3/2}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{9\,g}+$$

$$\frac{8\,b\,(e\,f-d\,g)^{3/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{3\,e^{3/2}\,g}+\frac{2\,(f+g\,x)^{3/2}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{3\,g}+$$

$$\frac{16\,b^2\,(e\,f-d\,g)^{3/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{3\,e^{3/2}\,g}+\frac{8\,b^2\,(e\,f-d\,g)^{3/2}\,n^2\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{3\,e^{3/2}\,g}$$

Result (type 5, 351 leaves) :

$$\frac{1}{9\,g}2\left(\frac{1}{e\,\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}}\right.$$

$$3\,b^2\,n^2\,\sqrt{f+g\,x}\,\left(3\,g\,(d+e\,x)\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1,1\right\},\{2,2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+\text{Log}[d+e\,x]\,\left(-3\,g\,(d+e\,x)\,\text{HypergeometricPFQ}\left[\right.\right.\right.$$

$$\left.\left.\left.\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+\left(d\,g+e\,g\,x\,\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}+e\,f\,\left(-1+\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}\right)\right)\,\text{Log}[d+e\,x]\right)\right)-$$

$$\frac{1}{e^{3/2}}2\,b\,n\,\left(6\,(e\,f-d\,g)^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]+\sqrt{e}\,\sqrt{f+g\,x}\,\left(6\,d\,g-2\,e\,(4\,f+g\,x)+3\,e\,(f+g\,x)\,\text{Log}[d+e\,x]\right)\right)$$

$$\left.\left(-a+b\,n\,\text{Log}[d+e\,x]-b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)+3\,(f+g\,x)^{3/2}\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\right)$$

Problem 147: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b \operatorname{Log}\left[c\ (d+e\,x)^n\right]\right)^2}{\sqrt{f+g\,x}}\,dx$$

Optimal (type 4, 418 leaves, 15 steps):

$$\frac{16\,b^2 n^2 \sqrt{f+g\,x}}{g}-\frac{16\,b^2 \sqrt{e\,f-d\,g}\,n^2 \operatorname{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]}{\sqrt{e}\,g}-\frac{8\,b^2 \sqrt{e\,f-d\,g}\,n^2 \operatorname{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]^2}{\sqrt{e}\,g}-$$
$$\frac{8\,b\,n \sqrt{f+g\,x}\,\left(a+b \operatorname{Log}\left[c\ (d+e\,x)^n\right]\right)}{g}+\frac{8\,b \sqrt{e\,f-d\,g}\,n \operatorname{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\left(a+b \operatorname{Log}\left[c\ (d+e\,x)^n\right]\right)}{\sqrt{e}\,g}+$$
$$\frac{2 \sqrt{f+g\,x}\,\left(a+b \operatorname{Log}\left[c\ (d+e\,x)^n\right]\right)^2}{g}+\frac{16\,b^2 \sqrt{e\,f-d\,g}\,n^2 \operatorname{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right] \operatorname{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{\sqrt{e}\,g}+\frac{8\,b^2 \sqrt{e\,f-d\,g}\,n^2 \operatorname{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{\sqrt{e}\,g}$$

Result (type 5, 301 leaves):

$$\frac{1}{e\,g \sqrt{f+g\,x}}2\left(b^2 n^2 \sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}\left(g\,(d+e\,x) \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{2},1,1,1\right\},\{2,2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-\right.\right.$$
$$g\,(d+e\,x) \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{2},1,1\right\},\{2,2\},\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right] \operatorname{Log}[d+e\,x]+(e\,f-d\,g)\left(-1+\sqrt{\frac{e\,(f+g\,x)}{e\,f-d\,g}}\right) \operatorname{Log}[d+e\,x]^2\Bigg)+$$
$$2\,b\,n \sqrt{f+g\,x}\left(2 \sqrt{e}\,\sqrt{e\,f-d\,g} \operatorname{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]+e \sqrt{f+g\,x}\,(-2+\operatorname{Log}[d+e\,x])\right)\left(a-b\,n \operatorname{Log}[d+e\,x]+b \operatorname{Log}\left[c\ (d+e\,x)^n\right]\right)+$$
$$\left.e\,(f+g\,x)\left(a-b\,n \operatorname{Log}[d+e\,x]+b \operatorname{Log}\left[c\ (d+e\,x)^n\right]\right)^2\right)$$

Problem 148: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b \operatorname{Log}\left[c\ (d+e\,x)^n\right]\right)^2}{(f+g\,x)^{3/2}}\,dx$$

Optimal (type 4, 312 leaves, 10 steps):

$$\frac{8 b^2 \sqrt{e}\, n^2 \operatorname{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right]^2}{g \sqrt{e f-d g}}-\frac{8 b \sqrt{e}\, n \operatorname{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right] \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{g \sqrt{e f-d g}}-\frac{2 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{g \sqrt{f+g x}}-\frac{16 b^2 \sqrt{e}\, n^2 \operatorname{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right] \operatorname{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{g \sqrt{e f-d g}}-\frac{8 b^2 \sqrt{e}\, n^2 \operatorname{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{g \sqrt{e f-d g}}$$

Result (type 5, 342 leaves):

$$\frac{1}{g} 2 \left(\frac{1}{\sqrt{e f-d g}\,(f+g x)} 2 b n \left(2 \sqrt{e}\,(f+g x) \operatorname{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right]+\sqrt{e f-d g}\,\sqrt{f+g x}\,\operatorname{Log}[d+e x]\right) \left(-a+b n \operatorname{Log}[d+e x]-b \operatorname{Log}\left[c (d+e x)^n\right]\right)-\frac{\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{\sqrt{f+g x}}+\frac{1}{(e f-d g) \sqrt{f+g x}} b^2 n^2 \left(g (d+e x) \sqrt{\frac{e (f+g x)}{e f-d g}}\,\operatorname{HypergeometricPFQ}\left[\left\{1,1,1,\frac{3}{2}\right\},\{2,2,2\},\frac{g (d+e x)}{-e f+d g}\right]+(e f-d g) \operatorname{Log}[d+e x] \left(\left(-1+\sqrt{\frac{e (f+g x)}{e f-d g}}\right) \operatorname{Log}[d+e x]-4 \sqrt{\frac{e (f+g x)}{e f-d g}}\,\operatorname{Log}\left[\frac{1}{2}\left(1+\sqrt{\frac{e (f+g x)}{e f-d g}}\right)\right]\right)\right)\right)$$

Problem 149: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{(f+g x)^{5/2}}\, dx$$

Optimal (type 4, 423 leaves, 14 steps):

$$\frac{16 b^2 e^{3/2} n^2 \,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right]}{3 g \,(e f-d g)^{3/2}}+\frac{8 b^2 e^{3/2} n^2 \,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right]^2}{3 g \,(e f-d g)^{3/2}}+$$

$$\frac{8 b e n \left(a+b \,\text{Log}\left[c \,(d+e x)^n\right]\right)}{3 g \,(e f-d g)\,\sqrt{f+g x}}-\frac{8 b e^{3/2} n \,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right] \left(a+b \,\text{Log}\left[c \,(d+e x)^n\right]\right)}{3 g \,(e f-d g)^{3/2}}-$$

$$\frac{2 \left(a+b \,\text{Log}\left[c \,(d+e x)^n\right]\right)^2}{3 g \,(f+g x)^{3/2}}-\frac{16 b^2 e^{3/2} n^2 \,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right] \text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{3 g \,(e f-d g)^{3/2}}-\frac{8 b^2 e^{3/2} n^2 \,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{3 g \,(e f-d g)^{3/2}}$$

Result (type 5, 419 leaves):

$$\frac{1}{3 g \,(e f-d g)^2 \,(f+g x)^{3/2}}\,2 \left(-2 b \sqrt{e f-d g}\; n \left(2 e^{3/2} \,(f+g x)^{3/2} \,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right]-\sqrt{e f-d g}\,\left(2 e \,(f+g x)+(-e f+d g)\,\text{Log}[d+e x]\right)\right)\right.$$

$$\left(a-b n \,\text{Log}[d+e x]+b \,\text{Log}\left[c \,(d+e x)^n\right]\right)-(e f-d g)^2 \left(a-b n \,\text{Log}[d+e x]+b \,\text{Log}\left[c \,(d+e x)^n\right]\right)^2+$$

$$b^2 n^2 \left(3 e g \,(d+e x)\,(f+g x)\,\sqrt{\frac{e \,(f+g x)}{e f-d g}}\;\text{HypergeometricPFQ}\left[\left\{1,1,1,\frac{5}{2}\right\},\{2,2,2\},\frac{g \,(d+e x)}{-e f+d g}\right]+\right.$$

$$(e f-d g)\,\text{Log}[d+e x] \left(\left(d g+e g x\,\sqrt{\frac{e \,(f+g x)}{e f-d g}}+e f \left(-1+\sqrt{\frac{e \,(f+g x)}{e f-d g}}\right)\right)\text{Log}[d+e x]-\right.$$

$$\left.\left.\left.4 e \,(f+g x) \left(-1+\sqrt{\frac{e \,(f+g x)}{e f-d g}}+\sqrt{\frac{e \,(f+g x)}{e f-d g}}\;\text{Log}\left[\frac{1}{2}\left(1+\sqrt{\frac{e \,(f+g x)}{e f-d g}}\right)\right]\right)\right)\right)\right)$$

Problem 150: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b \,\text{Log}\left[c \,(d+e x)^n\right]\right)^2}{(f+g x)^{7/2}}\,dx$$

Optimal (type 4, 503 leaves, 19 steps):

$$-\frac{16\,b^2\,e^2\,n^2}{15\,g\,(e\,f-d\,g)^2\,\sqrt{f+g\,x}}+\frac{64\,b^2\,e^{5/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]}{15\,g\,(e\,f-d\,g)^{5/2}}+\frac{8\,b^2\,e^{5/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]^2}{5\,g\,(e\,f-d\,g)^{5/2}}+$$

$$\frac{8\,b\,e\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{15\,g\,(e\,f-d\,g)\,(f+g\,x)^{3/2}}+\frac{8\,b\,e^2\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{5\,g\,(e\,f-d\,g)^2\,\sqrt{f+g\,x}}-\frac{8\,b\,e^{5/2}\,n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{5\,g\,(e\,f-d\,g)^{5/2}}-$$

$$\frac{2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{5\,g\,(f+g\,x)^{5/2}}-\frac{16\,b^2\,e^{5/2}\,n^2\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{5\,g\,(e\,f-d\,g)^{5/2}}-\frac{8\,b^2\,e^{5/2}\,n^2\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{5\,g\,(e\,f-d\,g)^{5/2}}$$

Result (type 5, 705 leaves) :

$$\frac{1}{5 g (e f-d g)^3 (e f+e g x)^2 \sqrt{\frac{e f-d g+g (d+e x)}{e}}}$$

$$2 b^2 e^2 n^2 \left(5 g (d+e x) (e f+e g x)^2 \sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}} \text{HypergeometricPFQ}\left[\left\{1,1,1,\frac{7}{2}\right\},\{2,2,2\},\frac{g (d+e x)}{-e f+d g}\right]-\right.$$

$$5 g (d+e x) (e f+e g x)^2 \sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}} \text{HypergeometricPFQ}\left[\left\{1,1,\frac{7}{2}\right\},\{2,2\},\frac{g (d+e x)}{-e f+d g}\right] \text{Log}[d+e x]+$$

$$(e f-d g) \left(e^2 f^2 \left(-1+\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\right)-2 e f g \left(-(d+e x) \sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}+d \left(-1+\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\right)\right)+\right.$$

$$\left.\left.g^2 \left(-2 d (d+e x) \sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}+(d+e x)^2 \sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}+d^2 \left(-1+\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\right)\right)\right) \text{Log}[d+e x]^2\right)+\frac{1}{15 g}$$

$$4 b e^{5/2} n \left(-\frac{6 \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{\frac{e f-d g+g (d+e x)}{e}}}{\sqrt{e f-d g}}\right]}{(e f-d g)^{5/2}}+\frac{\sqrt{e} \sqrt{\frac{e f-d g+g (d+e x)}{e}} \left(2 (e f-d g) (e f+e g x)+6 (e f+e g x)^2-3 (e f-d g)^2 \text{Log}[d+e x]\right)}{(e f-d g)^2 (e f+e g x)^3}\right)$$

$$(a+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n]))-$$

$$\frac{2 (a+b (-n \text{Log}[d+e x]+\text{Log}[c (d+e x)^n]))^2}{5 g (f+g x)^{5/2}}$$

Problem 151: Result unnecessarily involves higher level functions.

$$\int \frac{(a+b \text{Log}[c (d+e x)^n])^2}{(f+g x)^{9/2}} \, dx$$

Optimal (type 4, 583 leaves, 25 steps):

$$-\frac{16 b^2 e^2 n^2}{105 g (e f-d g)^2 (f+g x)^{3/2}}-\frac{128 b^2 e^3 n^2}{105 g (e f-d g)^3 \sqrt{f+g x}}+\frac{368 b^2 e^{7/2} n^2 \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]}{105 g (e f-d g)^{7/2}}+$$

$$\frac{8 b^2 e^{7/2} n^2 \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]^2}{7 g (e f-d g)^{7/2}}+\frac{8 b e n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{35 g (e f-d g) (f+g x)^{5/2}}+\frac{8 b e^2 n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{21 g (e f-d g)^2 (f+g x)^{3/2}}+$$

$$\frac{8 b e^3 n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{7 g (e f-d g)^3 \sqrt{f+g x}}-\frac{8 b e^{7/2} n \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{7 g (e f-d g)^{7/2}}-$$

$$\frac{2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{7 g (f+g x)^{7/2}}-\frac{16 b^2 e^{7/2} n^2 \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \text{Log}\left[\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{7 g (e f-d g)^{7/2}}-\frac{8 b^2 e^{7/2} n^2 \text{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{7 g (e f-d g)^{7/2}}$$

Result (type 5, 894 leaves) :

$$\frac{1}{7 g (e f-d g)^4 (e f+e g x)^3 \sqrt{\frac{e f-d g+g (d+e x)}{e}}}$$

$$\left(2 b^2 e^3 n^2 \left(7 g (d+e x) (e f+e g x)^3 \sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}} \text{HypergeometricPFQ}\left[\left\{1,1,1,\frac{9}{2}\right\},\{2,2,2\},\frac{g (d+e x)}{-e f+d g}\right]-\right.\right.$$

$$7 g (d+e x) (e f+e g x)^3 \sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}} \text{HypergeometricPFQ}\left[\left\{1,1,\frac{9}{2}\right\},\{2,2\},\frac{g (d+e x)}{-e f+d g}\right] \text{Log}[d+e x]+$$

$$(e f-d g) \left(e^3 f^3 \left(-1+\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\right)-3 e^2 f^2 g \left(-(d+e x) \sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}+d \left(-1+\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\right)\right)+\right.$$

$$3 e f g^2 \left(-2 d (d+e x) \sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}+(d+e x)^2 \sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}+d^2 \left(-1+\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\right)\right)+$$

$$g^3 \left(3 d^2 (d+e x) \sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}-3 d (d+e x)^2 \sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}+\right.$$

$$\left.\left.\left.(d+e x)^3\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}-d^3\left(-1+\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\right)\right)\right)\text{Log}[d+e x]^2\right)+$$

$$\frac{1}{105 g}4 b e^{7/2} n\left(-\frac{30\,\text{ArcTanh}\left[\frac{\sqrt{e}\sqrt{\frac{e f-d g+g (d+e x)}{e}}}{\sqrt{e f-d g}}\right]}{(e f-d g)^{7/2}}+\frac{1}{(e f-d g)^3 (e f+e g x)^4}\sqrt{e}\sqrt{\frac{e f-d g+g (d+e x)}{e}}\right.$$

$$\left.\left(6 (e f-d g)^2 (e f+e g x)+10 (e f-d g) (e f+e g x)^2+30 (e f+e g x)^3-15 (e f-d g)^3\text{Log}[d+e x]\right)\right)$$

$$\left(a+b\left(-n\,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)-\frac{2\left(a+b\left(-n\,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)^2}{7 g (f+g x)^{7/2}}$$

Problem 187: Result more than twice size of optimal antiderivative.

$$\int\frac{(a+b\,\text{Log}[c (e+f x)])^2}{d e+d f x}\,dx$$

Optimal (type 3, 27 leaves, 4 steps):

$$\frac{(a+b\,\text{Log}[c (e+f x)])^3}{3 b d f}$$

Result (type 3, 61 leaves):

$$\frac{a^2\,\text{Log}[c (e+f x)]}{d f}+\frac{a b\,\text{Log}[c (e+f x)]^2}{d f}+\frac{b^2\,\text{Log}[c (e+f x)]^3}{3 d f}$$

Problem 198: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(f+g x)^{5/2}\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)}{d+e x}\,dx$$

Optimal (type 4, 485 leaves, 27 steps):

$$-\frac{92 b (e f-d g)^2 n \sqrt{f+g x}}{15 e^3}-\frac{32 b (e f-d g) n (f+g x)^{3/2}}{45 e^2}-\frac{4 b n (f+g x)^{5/2}}{25 e}+\frac{92 b (e f-d g)^{5/2} n \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]}{15 e^{7/2}}+$$
$$\frac{2 b (e f-d g)^{5/2} n \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]^2}{e^{7/2}}+\frac{2 (e f-d g)^2 \sqrt{f+g x} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{e^3}+\frac{2 (e f-d g) (f+g x)^{3/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{3 e^2}+$$
$$\frac{2 (f+g x)^{5/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{5 e}-\frac{2 (e f-d g)^{5/2} \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{e^{7/2}}-$$
$$\frac{4 b (e f-d g)^{5/2} n \operatorname{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \operatorname{Log}\left[\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{e^{7/2}}-\frac{2 b (e f-d g)^{5/2} n \operatorname{PolyLog}\left[2, 1-\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{e^{7/2}}$$

Result (type 5, 2046 leaves):

$$\frac{1}{e \sqrt{g} \sqrt{d+e x} \sqrt{\frac{e f+e g x}{g (d+e x)}}} 2 b f^2 n \sqrt{\frac{e f-d g+g (d+e x)}{e}}$$
$$\left(-2 \sqrt{g} \sqrt{d+e x} \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},\frac{-e f+d g}{g (d+e x)}\right]+\sqrt{g} \sqrt{d+e x} \sqrt{\frac{e f-d g+g (d+e x)}{g (d+e x)}} \operatorname{Log}[d+e x]-\right.$$
$$\left.\sqrt{e f-d g} \operatorname{ArcSinh}\left[\frac{\sqrt{e f-d g}}{\sqrt{g} \sqrt{d+e x}}\right] \operatorname{Log}[d+e x]\right)+\frac{1}{3 e^2 \sqrt{d+e x} \sqrt{\frac{e f+e g x}{g (d+e x)}} \sqrt{1+\frac{g (d+e x)}{e f-d g}}}$$
$$2 b f n \sqrt{\frac{e f-d g+g (d+e x)}{e}} \left(12 d g \sqrt{d+e x} \sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}} \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},\frac{-e f+d g}{g (d+e x)}\right]-\right.$$
$$3 g (d+e x)^{3/2} \sqrt{\frac{e f+e g x}{g (d+e x)}} \operatorname{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{g (d+e x)}{-e f+d g}\right]+$$

$$2\sqrt{d+e x}\sqrt{\frac{e f+e g x}{g (d+e x)}}\left(e f\left(-1+\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\right)+g\left(d-4 d\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}+(d+e x)\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\right)\right)$$

$$\text{Log}[d+e x]+6 d\sqrt{g}\sqrt{e f-d g}\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\,\text{ArcSinh}\left[\frac{\sqrt{e f-d g}}{\sqrt{g}\sqrt{d+e x}}\right]\text{Log}[d+e x]\Bigg)+$$

$$\frac{1}{e^3} b g^2 n\left(-\frac{1}{\sqrt{1+\frac{g (d+e x)}{e f-d g}}}2 d (d+e x)\sqrt{\frac{e f-d g}{e}+\frac{g (d+e x)}{e}}\left(-\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},-\frac{g (d+e x)}{e f-d g}\right]+\right.\right.$$

$$\frac{1}{3 g (d+e x)}2\left(-e f+d g+e f\sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}-d g\sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}+g (d+e x)\sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}\right)$$

$$\text{Log}[d+e x]\Bigg)+\frac{1}{\sqrt{1+\frac{g (d+e x)}{e f-d g}}}(d+e x)^2\sqrt{\frac{e f-d g}{e}+\frac{g (d+e x)}{e}}$$

$$\left(\frac{1}{4}\left(-\frac{1}{15 g^2 (d+e x)^2}16\left(-e^2 f^2+2 d e f g-d^2 g^2+e^2 f^2\sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}-2 d e f g\sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}+\right.\right.\right.$$

$$d^2 g^2\sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}+2 e f g (d+e x)\sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}-2 d g^2 (d+e x)\sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}+$$

$$g^2 (d+e x)^2\sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}\Bigg)-\frac{8 (-e f+d g)\,\text{HypergeometricPFQ}\left[\left\{-\frac{3}{2},1,1\right\},\{2,2\},-\frac{g (d+e x)}{e f-d g}\right]}{3 g (d+e x)}\Bigg)+\frac{1}{15 g^2 (d+e x)^2}$$

$$2\left(2 e^2 f^2-4 d e f g+2 d^2 g^2-2 e^2 f^2\sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}+4 d e f g\sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}-2 d^2 g^2\sqrt{\frac{-e f+d g-g (d+e x)}{-e f+d g}}+e f g\right.$$

$$(d+e x)\sqrt{\frac{-e f+d g-g(d+e x)}{-e f+d g}}-d g^2(d+e x)\sqrt{\frac{-e f+d g-g(d+e x)}{-e f+d g}}+3 g^2(d+e x)^2\sqrt{\frac{-e f+d g-g(d+e x)}{-e f+d g}}\Bigg)\text{Log}[d+e x]\Bigg)+$$

$$\frac{1}{\sqrt{1+\frac{e f-d g}{g(d+e x)}}}d^2\sqrt{\frac{e f-d g}{e}+\frac{g(d+e x)}{e}}\Bigg(-4\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},-\frac{e f-d g}{g(d+e x)}\right]-$$

$$\frac{2\left(1+\frac{e f-d g}{g(d+e x)}\right)^{3/2}\left(1-\frac{\sqrt{e f-d g}\,\text{ArcSinh}\left[\frac{\sqrt{e f-d g}}{\sqrt{g}\sqrt{d+e x}}\right]}{\sqrt{g}\sqrt{d+e x}\sqrt{1+\frac{e f-d g}{g(d+e x)}}}\right)\text{Log}[d+e x]}{-1-\frac{e f-d g}{g(d+e x)}}\Bigg)\Bigg)-$$

$$\frac{2(e f-d g)^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{e}\sqrt{f+g x}}{\sqrt{e f-d g}}\right]\left(a+b\left(-n\,\text{Log}[d+e x]+\text{Log}\left[c(d+e x)^n\right]\right)\right)}{e^{7/2}}+$$

$$\sqrt{f+g x}\left(\frac{2\left(23 e^2 f^2-35 d e f g+15 d^2 g^2\right)\left(a+b\left(-n\,\text{Log}[d+e x]+\text{Log}\left[c(d+e x)^n\right]\right)\right)}{15 e^3}+\right.$$

$$\frac{2 g(11 e f-5 d g)\,x\left(a+b\left(-n\,\text{Log}[d+e x]+\text{Log}\left[c(d+e x)^n\right]\right)\right)}{15 e^2}+$$

$$\left.\frac{2 g^2 x^2\left(a+b\left(-n\,\text{Log}[d+e x]+\text{Log}\left[c(d+e x)^n\right]\right)\right)}{5 e}\right)$$

Problem 199: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(f+g x)^{3/2}\left(a+b\,\text{Log}\left[c(d+e x)^n\right]\right)}{d+e x}\,dx$$

Optimal (type 4, 417 leaves, 20 steps):

$$-\frac{16\, b\, (e f-d g)\, n \sqrt{f+g x}}{3 e^2}-\frac{4\, b\, n\, (f+g x)^{3/2}}{9 e}+\frac{16\, b\, (e f-d g)^{3/2}\, n\, \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]}{3 e^{5/2}}+$$

$$\frac{2\, b\, (e f-d g)^{3/2}\, n\, \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right]^2}{e^{5/2}}+\frac{2\, (e f-d g) \sqrt{f+g x}\, \left(a+b \,\text{Log}\left[c\, (d+e x)^n\right]\right)}{e^2}+$$

$$\frac{2\, (f+g x)^{3/2}\, \left(a+b\, \text{Log}\left[c\, (d+e x)^n\right]\right)}{3 e}-\frac{2\, (e f-d g)^{3/2}\, \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \left(a+b\, \text{Log}\left[c\, (d+e x)^n\right]\right)}{e^{5/2}}-$$

$$\frac{4\, b\, (e f-d g)^{3/2}\, n\, \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \text{Log}\left[\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{e^{5/2}}-\frac{2\, b\, (e f-d g)^{3/2}\, n\, \text{PolyLog}\left[2, 1-\frac{2}{1-\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{e^{5/2}}$$

Result (type 5, 840 leaves) :

$$\frac{1}{e\sqrt{g}\sqrt{d+e x}\sqrt{\frac{e f+e g x}{g (d+e x)}}}2 b f n\sqrt{\frac{e f-d g+g (d+e x)}{e}}$$

$$\left(-2\sqrt{g}\sqrt{d+e x}\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},\frac{-e f+d g}{g (d+e x)}\right]+\sqrt{g}\sqrt{d+e x}\sqrt{\frac{e f-d g+g (d+e x)}{g (d+e x)}}\,\text{Log}[d+e x]-\right.$$

$$\left.\sqrt{e f-d g}\,\text{ArcSinh}\left[\frac{\sqrt{e f-d g}}{\sqrt{g}\sqrt{d+e x}}\right]\text{Log}[d+e x]\right)+\frac{1}{3 e^2\sqrt{d+e x}\sqrt{\frac{e f+e g x}{g (d+e x)}}\sqrt{1+\frac{g (d+e x)}{e f-d g}}}$$

$$b n\sqrt{\frac{e f-d g+g (d+e x)}{e}}\left(12 d g\sqrt{d+e x}\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},\frac{-e f+d g}{g (d+e x)}\right]-\right.$$

$$3 g (d+e x)^{3/2}\sqrt{\frac{e f+e g x}{g (d+e x)}}\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{g (d+e x)}{-e f+d g}\right]+$$

$$2\sqrt{d+e x}\sqrt{\frac{e f+e g x}{g (d+e x)}}\left(e f\left(-1+\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\right)+g\left(d-4 d\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}+(d+e x)\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\right)\right)$$

$$\left.\text{Log}[d+e x]+6 d\sqrt{g}\sqrt{e f-d g}\sqrt{\frac{e f-d g+g (d+e x)}{e f-d g}}\,\text{ArcSinh}\left[\frac{\sqrt{e f-d g}}{\sqrt{g}\sqrt{d+e x}}\right]\text{Log}[d+e x]\right)-$$

$$\frac{2 (e f-d g)^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{e}\sqrt{f+g x}}{\sqrt{e f-d g}}\right]\left(a+b\left(-n\,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{e^{5/2}}+$$

$$\sqrt{f+g x}\left(\frac{2 (4 e f-3 d g)\left(a+b\left(-n\,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{3 e^2}+\frac{2 g x\left(a+b\left(-n\,\text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{3 e}\right)$$

Problem 200: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{f+g x}\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)}{d+e x}\,dx$$

Optimal (type 4, 349 leaves, 14 steps):

$$-\frac{4\,b\,n\,\sqrt{f+g\,x}}{e}+\frac{4\,b\,\sqrt{e\,f-d\,g}\;n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]}{e^{3/2}}+\frac{2\,b\,\sqrt{e\,f-d\,g}\;n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]^2}{e^{3/2}}+$$

$$\frac{2\,\sqrt{f+g\,x}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{e}-\frac{2\,\sqrt{e\,f-d\,g}\;\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{e^{3/2}}-$$

$$\frac{4\,b\,\sqrt{e\,f-d\,g}\;n\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{e^{3/2}}-\frac{2\,b\,\sqrt{e\,f-d\,g}\;n\,\text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}}\right]}{e^{3/2}}$$

Result (type 5, 268 leaves) :

$$\frac{1}{e^2}2\left(-\frac{2\,b\,e\,n\,\sqrt{f+g\,x}\;\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},\frac{-e\,f+d\,g}{g\,(d+e\,x)}\right]}{\sqrt{\frac{e\,(f+g\,x)}{g\,(d+e\,x)}}}-\right.$$

$$\frac{b\,\sqrt{g}\;\sqrt{e\,f-d\,g}\;n\,\sqrt{d+e\,x}\;\sqrt{\frac{e\,(f+g\,x)}{g\,(d+e\,x)}}\;\text{ArcSinh}\left[\frac{\sqrt{e\,f-d\,g}}{\sqrt{g}\,\sqrt{d+e\,x}}\right]\,\text{Log}[d+e\,x]}{\sqrt{f+g\,x}}+e\,\sqrt{f+g\,x}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)-$$

$$\left.\sqrt{e}\;\sqrt{e\,f-d\,g}\;\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g\,x}}{\sqrt{e\,f-d\,g}}\right]\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right)$$

Problem 202: Result unnecessarily involves higher level functions.

$$\int\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{(d+e\,x)\,(f+g\,x)^{3/2}}\,dx$$

Optimal (type 4, 340 leaves, 13 steps) :

$$\frac{4 b \sqrt{e}\, n \,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right]}{(e f-d g)^{3/2}}+\frac{2 b \sqrt{e}\, n \,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right]^2}{(e f-d g)^{3/2}}+\frac{2 \left(a+b \,\text{Log}\left[c (d+e x)^n\right]\right)}{(e f-d g) \sqrt{f+g x}}-$$

$$\frac{2 \sqrt{e}\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right] \left(a+b \,\text{Log}\left[c (d+e x)^n\right]\right)}{(e f-d g)^{3/2}}-\frac{4 b \sqrt{e}\, n \,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right] \text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{(e f-d g)^{3/2}}-\frac{2 b \sqrt{e}\, n \,\text{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{(e f-d g)^{3/2}}$$

Result (type 5, 267 leaves) :

$$\frac{1}{9 (f+g x)^{3/2}}2 \left(-\frac{2 b n \left(\frac{e (f+g x)}{g (d+e x)}\right)^{3/2} \text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},\frac{-e f+d g}{g (d+e x)}\right]}{e}+\right.$$

$$\frac{1}{(e f-d g)^{3/2}}9 (f+g x) \left(-b \sqrt{g}\, n \sqrt{d+e x} \sqrt{\frac{e (f+g x)}{g (d+e x)}}\,\text{ArcSinh}\left[\frac{\sqrt{e f-d g}}{\sqrt{g}\,\sqrt{d+e x}}\right] \text{Log}[d+e x]+\right.$$

$$\left.\left.\sqrt{e f-d g}\,\left(a+b \,\text{Log}\left[c (d+e x)^n\right]\right)-\sqrt{e}\,\sqrt{f+g x}\,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right] \left(a-b n \,\text{Log}[d+e x]+b \,\text{Log}\left[c (d+e x)^n\right]\right)\right)\right)$$

Problem 203: Result unnecessarily involves higher level functions.

$$\int \frac{a+b \,\text{Log}\left[c (d+e x)^n\right]}{(d+e x) (f+g x)^{5/2}}\, dx$$

Optimal (type 4, 406 leaves, 18 steps) :

$$-\frac{4 b e n}{3 (e f-d g)^2 \sqrt{f+g x}}+\frac{16 b e^{3/2} n \,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right]}{3 (e f-d g)^{5/2}}+\frac{2 b e^{3/2} n \,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right]^2}{(e f-d g)^{5/2}}+$$

$$\frac{2 \left(a+b \,\text{Log}\left[c (d+e x)^n\right]\right)}{3 (e f-d g) (f+g x)^{3/2}}+\frac{2 e \left(a+b \,\text{Log}\left[c (d+e x)^n\right]\right)}{(e f-d g)^2 \sqrt{f+g x}}-\frac{2 e^{3/2} \text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right] \left(a+b \,\text{Log}\left[c (d+e x)^n\right]\right)}{(e f-d g)^{5/2}}-$$

$$\frac{4 b e^{3/2} n \,\text{ArcTanh}\left[\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}\right] \text{Log}\left[\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{(e f-d g)^{5/2}}-\frac{2 b e^{3/2} n \,\text{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{e}\,\sqrt{f+g x}}{\sqrt{e f-d g}}}\right]}{(e f-d g)^{5/2}}$$

Result (type 5, 487 leaves):

$$-\left(\left(2 b n (e f+e g x)\left(6 (e f-d g)^3 (e f+e g x)^2 \text{HypergeometricPFQ}\left[\left\{\frac{5}{2},\frac{5}{2},\frac{5}{2}\right\},\left\{\frac{7}{2},\frac{7}{2}\right\},\frac{-e f+d g}{g (d+e x)}\right]-25 g^3 (e f-d g)^2 (d+e x)^3 \sqrt{\frac{e f+e g x}{g (d+e x)}} \text{Log}[d+e x]+75 g^4 (-e f+d g) (d+e x)^4 \left(\frac{e f+e g x}{g (d+e x)}\right)^{3/2} \text{Log}[d+e x]+75 g^{5/2} \sqrt{e f-d g} (d+e x)^{5/2} (e f+e g x)^2 \text{ArcSinh}\left[\frac{\sqrt{e f-d g}}{\sqrt{g} \sqrt{d+e x}}\right] \text{Log}[d+e x]\right)\right)\Big/\left(75 e g^3 (e f-d g)^3 (d+e x)^3 \sqrt{\frac{e f+e g x}{g (d+e x)}} \left(\frac{e f-d g+g (d+e x)}{e}\right)^{5/2}\right)\right)-\frac{2 e^{3/2} \text{ArcTanh}\left[\frac{\sqrt{e} \sqrt{f+g x}}{\sqrt{e f-d g}}\right] \left(a+b \left(-n \text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{(e f-d g)^{5/2}}+\sqrt{f+g x} \left(-\frac{2 \left(a+b \left(-n \text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{3 (-e f+d g) (f+g x)^2}+\frac{2 e \left(a+b \left(-n \text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{(e f-d g)^2 (f+g x)}\right)$$

Problem 204: Result unnecessarily involves higher level functions.

$$\int \frac{(d+e x)^{3/2} \text{Log}[a+b x]}{a+b x} \, dx$$

Optimal (type 4, 381 leaves, 20 steps):

$$-\frac{16 (b d-a e) \sqrt{d+e x}}{3 b^2}-\frac{4 (d+e x)^{3/2}}{9 b}+\frac{16 (b d-a e)^{3/2} \text{ArcTanh}\left[\frac{\sqrt{b} \sqrt{d+e x}}{\sqrt{b d-a e}}\right]}{3 b^{5/2}}+\frac{2 (b d-a e)^{3/2} \text{ArcTanh}\left[\frac{\sqrt{b} \sqrt{d+e x}}{\sqrt{b d-a e}}\right]^2}{b^{5/2}}+\frac{2 (b d-a e) \sqrt{d+e x} \text{Log}[a+b x]}{b^2}+\frac{2 (d+e x)^{3/2} \text{Log}[a+b x]}{3 b}-\frac{2 (b d-a e)^{3/2} \text{ArcTanh}\left[\frac{\sqrt{b} \sqrt{d+e x}}{\sqrt{b d-a e}}\right] \text{Log}[a+b x]}{b^{5/2}}-\frac{4 (b d-a e)^{3/2} \text{ArcTanh}\left[\frac{\sqrt{b} \sqrt{d+e x}}{\sqrt{b d-a e}}\right] \text{Log}\left[\frac{2}{1-\frac{\sqrt{b} \sqrt{d+e x}}{\sqrt{b d-a e}}}\right]}{b^{5/2}}-\frac{2 (b d-a e)^{3/2} \text{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{b} \sqrt{d+e x}}{\sqrt{b d-a e}}}\right]}{b^{5/2}}$$

Result (type 5, 407 leaves):

$$\frac{1}{3 b^3 \sqrt{d+e x}\,\sqrt{\frac{b (d+e x)}{b d-a e}}}\sqrt{e}\,\sqrt{a+b x}\,\sqrt{\frac{b (d+e x)}{e (a+b x)}}\left(-\frac{12 b \sqrt{e}\,\sqrt{a+b x}\,(d+e x)\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},\frac{-b d+a e}{e (a+b x)}\right]}{\sqrt{\frac{b (d+e x)}{b d-a e}}}-\right.$$

$$3 e^{3/2}\,(a+b x)^{3/2}\sqrt{\frac{b (d+e x)}{e (a+b x)}}\;\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{e (a+b x)}{-b d+a e}\right]+$$

$$2\left(\sqrt{e}\,\sqrt{a+b x}\,\sqrt{\frac{b (d+e x)}{e (a+b x)}}\left(b e x\sqrt{\frac{b (d+e x)}{b d-a e}}+a e\left(1-3\sqrt{\frac{b (d+e x)}{b d-a e}}\right)+b d\left(-1+4\sqrt{\frac{b (d+e x)}{b d-a e}}\right)\right)-\right.$$

$$\left.\left.3 (b d-a e)^{3/2}\sqrt{\frac{b (d+e x)}{b d-a e}}\;\text{ArcSinh}\left[\frac{\sqrt{b d-a e}}{\sqrt{e}\,\sqrt{a+b x}}\right]\right)\text{Log}[a+b x]\right)$$

Problem 205: Result unnecessarily involves higher level functions.

$$\int\frac{\sqrt{d+e x}\;\text{Log}[a+b x]}{a+b x}\,dx$$

Optimal (type 4, 323 leaves, 14 steps):

$$-\frac{4\sqrt{d+e x}}{b}+\frac{4\sqrt{b d-a e}\;\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}\right]}{b^{3/2}}+\frac{2\sqrt{b d-a e}\;\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}\right]^2}{b^{3/2}}+\frac{2\sqrt{d+e x}\;\text{Log}[a+b x]}{b}-$$

$$\frac{2\sqrt{b d-a e}\;\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}\right]\text{Log}[a+b x]}{b^{3/2}}-\frac{4\sqrt{b d-a e}\;\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}\right]\text{Log}\left[\frac{2}{1-\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}}\right]}{b^{3/2}}-\frac{2\sqrt{b d-a e}\;\text{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}}\right]}{b^{3/2}}$$

Result (type 5, 186 leaves):

$$-\left(\left(2 (d+e x)^{3/2}\left(2\sqrt{e}\,\sqrt{a+b x}\;\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\right\},\left\{\frac{1}{2},\frac{1}{2}\right\},\frac{-b d+a e}{e (a+b x)}\right]+\right.\right.\right.$$

$$\left.\left.\left.\left(-\sqrt{e}\,\sqrt{a+b x}\,\sqrt{\frac{b (d+e x)}{e (a+b x)}}+\sqrt{b d-a e}\;\text{ArcSinh}\left[\frac{\sqrt{b d-a e}}{\sqrt{e}\,\sqrt{a+b x}}\right]\right)\text{Log}[a+b x]\right)\right)\Big/\left(e^{3/2}\,(a+b x)^{3/2}\left(\frac{b (d+e x)}{e (a+b x)}\right)^{3/2}\right)\right)$$

Problem 207: Result unnecessarily involves higher level functions.

$$\int \frac{\text{Log}[a+b x]}{(a+b x)\,(d+e x)^{3/2}}\,dx$$

Optimal (type 4, 316 leaves, 13 steps):

$$\frac{4\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}\right]}{(b d-a e)^{3/2}}+\frac{2\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}\right]^2}{(b d-a e)^{3/2}}+\frac{2\,\text{Log}[a+b x]}{(b d-a e)\,\sqrt{d+e x}}-\frac{2\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}\right]\text{Log}[a+b x]}{(b d-a e)^{3/2}}-\frac{4\sqrt{b}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}\right]\text{Log}\left[\frac{2}{1-\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}}\right]}{(b d-a e)^{3/2}}-\frac{2\sqrt{b}\,\text{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}}\right]}{(b d-a e)^{3/2}}$$

Result (type 5, 183 leaves):

$$\frac{1}{9\sqrt{d+e x}}\,2\left(-\frac{2\sqrt{\frac{b\,(d+e x)}{e\,(a+b x)}}\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\},\left\{\frac{5}{2},\frac{5}{2}\right\},-\frac{b d-a e}{a e+b e x}\right]}{a e+b e x}+\frac{9\left(\sqrt{b d-a e}-\sqrt{e}\,\sqrt{a+b x}\,\sqrt{\frac{b\,(d+e x)}{e\,(a+b x)}}\,\text{ArcSinh}\left[\frac{\sqrt{b d-a e}}{\sqrt{e}\,\sqrt{a+b x}}\right]\right)\text{Log}[a+b x]}{(b d-a e)^{3/2}}\right)$$

Problem 208: Result unnecessarily involves higher level functions.

$$\int \frac{\text{Log}[a+b x]}{(a+b x)\,(d+e x)^{5/2}}\,dx$$

Optimal (type 4, 372 leaves, 18 steps):

$$-\frac{4 b}{3\,(b d-a e)^2\,\sqrt{d+e x}}+\frac{16\,b^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}\right]}{3\,(b d-a e)^{5/2}}+\frac{2\,b^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}\right]^2}{(b d-a e)^{5/2}}+\frac{2\,\text{Log}[a+b x]}{3\,(b d-a e)\,(d+e x)^{3/2}}+\frac{2\,b\,\text{Log}[a+b x]}{(b d-a e)^2\,\sqrt{d+e x}}-\frac{2\,b^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}\right]\text{Log}[a+b x]}{(b d-a e)^{5/2}}-\frac{4\,b^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}\right]\text{Log}\left[\frac{2}{1-\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}}\right]}{(b d-a e)^{5/2}}-\frac{2\,b^{3/2}\,\text{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{b}\,\sqrt{d+e x}}{\sqrt{b d-a e}}}\right]}{(b d-a e)^{5/2}}$$

Result (type 5, 197 leaves):

$$\frac{1}{75\,(d+e\,x)^{3/2}}2\left(-\frac{6\left(\frac{b\,(d+e\,x)}{e\,(a+b\,x)}\right)^{3/2}\text{HypergeometricPFQ}\left[\left\{\frac{5}{2},\frac{5}{2},\frac{5}{2}\right\},\left\{\frac{7}{2},\frac{7}{2}\right\},\frac{-b\,d+a\,e}{e\,(a+b\,x)}\right]}{e\,(a+b\,x)}+\frac{25\left(\sqrt{b\,d-a\,e}\,(4\,b\,d-a\,e+3\,b\,e\,x)-3\,e^{3/2}\,(a+b\,x)^{3/2}\left(\frac{b\,(d+e\,x)}{e\,(a+b\,x)}\right)^{3/2}\text{ArcSinh}\left[\frac{\sqrt{b\,d-a\,e}}{\sqrt{e}\,\sqrt{a+b\,x}}\right]\right)\text{Log}[a+b\,x]}{(b\,d-a\,e)^{5/2}}\right)$$

Problem 225: Result more than twice size of optimal antiderivative.

$$\int\frac{(h+i\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{f+g\,x}\,dx$$

Optimal (type 4, 215 leaves, 10 steps):

$$-\frac{2\,a\,b\,i\,n\,x}{g}+\frac{2\,b^2\,i\,n^2\,x}{g}-\frac{2\,b^2\,i\,n\,(d+e\,x)\,\text{Log}\left[c\,(d+e\,x)^n\right]}{e\,g}+\frac{i\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{e\,g}+\frac{(g\,h-f\,i)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]}{g^2}+\frac{2\,b\,(g\,h-f\,i)\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g^2}-\frac{2\,b^2\,(g\,h-f\,i)\,n^2\,\text{PolyLog}\left[3,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g^2}$$

Result (type 4, 451 leaves):

$$\frac{1}{e\,g^2}\Bigg(e\,g\,i\,x\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2+e\,(g\,h-f\,i)\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}[f+g\,x]+2\,b\,e\,g\,h\,n\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\left(\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)-2\,b\,i\,n\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\left(-g\,(d+e\,x)\,(-1+\text{Log}[d+e\,x])+e\,f\left(\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)\right)+b^2\,i\,n^2\left(g\,(d+e\,x)\,\left(2-2\,\text{Log}[d+e\,x]+\text{Log}[d+e\,x]^2\right)-e\,f\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-2\,\text{PolyLog}\left[3,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)\right)+b^2\,e\,g\,h\,n^2\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-2\,\text{PolyLog}\left[3,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)\Bigg)$$

Problem 229: Result more than twice size of optimal antiderivative.

$$\int \frac{(h+i x)^2 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3}{f+g x} \, dx$$

Optimal (type 4, 660 leaves, 23 steps):

$$\frac{6 a b^2 i (e h-d i) n^2 x}{e g}+\frac{6 a b^2 i (g h-f i) n^2 x}{g^2}-\frac{6 b^3 i (e h-d i) n^3 x}{e g}-\frac{6 b^3 i (g h-f i) n^3 x}{g^2}-\frac{3 b^3 i^2 n^3 (d+e x)^2}{8 e^2 g}+\frac{6 b^3 i (e h-d i) n^2 (d+e x) \operatorname{Log}\left[c (d+e x)^n\right]}{e^2 g}+\frac{6 b^3 i (g h-f i) n^2 (d+e x) \operatorname{Log}\left[c (d+e x)^n\right]}{e g^2}+\frac{3 b^2 i^2 n^2 (d+e x)^2 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{4 e^2 g}-\frac{3 b i (e h-d i) n (d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{e^2 g}-\frac{3 b i (g h-f i) n (d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{e g^2}-\frac{3 b i^2 n (d+e x)^2 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{4 e^2 g}+\frac{i (e h-d i) (d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3}{e^2 g}+\frac{i (g h-f i) (d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3}{e g^2}+\frac{i^2 (d+e x)^2 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3}{2 e^2 g}+\frac{(g h-f i)^2 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3 \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]}{g^3}+\frac{3 b (g h-f i)^2 n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{PolyLog}\left[2,-\frac{g (d+e x)}{e f-d g}\right]}{g^3}-\frac{6 b^2 (g h-f i)^2 n^2 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[3,-\frac{g (d+e x)}{e f-d g}\right]}{g^3}+\frac{6 b^3 (g h-f i)^2 n^3 \operatorname{PolyLog}\left[4,-\frac{g (d+e x)}{e f-d g}\right]}{g^3}$$

Result (type 4, 1474 leaves):

$$\frac{1}{8 e^2 g^3}\Big(8 e^2 g i (2 g h - f i) x (a - b n \text{Log}[d + e x] + b \text{Log}[c (d + e x)^n])^3 + 4 e^2 g^2 i^2 x^2 (a - b n \text{Log}[d + e x] + b \text{Log}[c (d + e x)^n])^3 +$$

$$8 e^2 (g h - f i)^2 (a - b n \text{Log}[d + e x] + b \text{Log}[c (d + e x)^n])^3 \text{Log}[f + g x] + 24 b e^2 g^2 h^2 n (a - b n \text{Log}[d + e x] + b \text{Log}[c (d + e x)^n])^2$$

$$\left(\text{Log}[d + e x] \text{Log}\left[\frac{e (f + g x)}{e f - d g}\right] + \text{PolyLog}\left[2, \frac{g (d + e x)}{-e f + d g}\right]\right) + 6 b i^2 n (a - b n \text{Log}[d + e x] + b \text{Log}[c (d + e x)^n])^2$$

$$\left(e g (e x (4 f - g x) + 2 d (2 f + g x)) - 2 \text{Log}[d + e x] \left(g (d + e x) (2 e f + d g - e g x) - 2 e^2 f^2 \text{Log}\left[\frac{e (f + g x)}{e f - d g}\right]\right) + 4 e^2 f^2 \text{PolyLog}\left[2, \frac{g (d + e x)}{-e f + d g}\right]\right) -$$

$$48 b e g h i n (a - b n \text{Log}[d + e x] + b \text{Log}[c (d + e x)^n])^2$$

$$\left(-g (d + e x) (-1 + \text{Log}[d + e x]) + e f \left(\text{Log}[d + e x] \text{Log}\left[\frac{e (f + g x)}{e f - d g}\right] + \text{PolyLog}\left[2, \frac{g (d + e x)}{-e f + d g}\right]\right)\right) +$$

$$48 b^2 e g h i n^2 (a - b n \text{Log}[d + e x] + b \text{Log}[c (d + e x)^n]) \Big(g (d + e x) (2 - 2 \text{Log}[d + e x] + \text{Log}[d + e x]^2) -$$

$$e f \left(\text{Log}[d + e x]^2 \text{Log}\left[\frac{e (f + g x)}{e f - d g}\right] + 2 \text{Log}[d + e x] \text{PolyLog}\left[2, \frac{g (d + e x)}{-e f + d g}\right] - 2 \text{PolyLog}\left[3, \frac{g (d + e x)}{-e f + d g}\right]\right)\Big) -$$

$$6 b^2 i^2 n^2 (a - b n \text{Log}[d + e x] + b \text{Log}[c (d + e x)^n]) \Big(4 e f g (d + e x) (2 - 2 \text{Log}[d + e x] + \text{Log}[d + e x]^2) -$$

$$g^2 (e x (-6 d + e x) + (6 d^2 + 4 d e x - 2 e^2 x^2) \text{Log}[d + e x] - 2 (d^2 - e^2 x^2) \text{Log}[d + e x]^2) -$$

$$4 e^2 f^2 \left(\text{Log}[d + e x]^2 \text{Log}\left[\frac{e (f + g x)}{e f - d g}\right] + 2 \text{Log}[d + e x] \text{PolyLog}\left[2, \frac{g (d + e x)}{-e f + d g}\right] - 2 \text{PolyLog}\left[3, \frac{g (d + e x)}{-e f + d g}\right]\right)\Big) +$$

$$48 b^2 e^2 g^2 h^2 n^2 (a - b n \text{Log}[d + e x] + b \text{Log}[c (d + e x)^n])$$

$$\left(\frac{1}{2} \text{Log}[d + e x]^2 \text{Log}\left[\frac{e (f + g x)}{e f - d g}\right] + \text{Log}[d + e x] \text{PolyLog}\left[2, \frac{g (d + e x)}{-e f + d g}\right] - \text{PolyLog}\left[3, \frac{g (d + e x)}{-e f + d g}\right]\right) + 8 b^3 e^2 g^2 h^2 n^3$$

$$\left(\text{Log}[d + e x]^3 \text{Log}\left[\frac{e (f + g x)}{e f - d g}\right] + 3 \text{Log}[d + e x]^2 \text{PolyLog}\left[2, \frac{g (d + e x)}{-e f + d g}\right] - 6 \text{Log}[d + e x] \text{PolyLog}\left[3, \frac{g (d + e x)}{-e f + d g}\right] + 6 \text{PolyLog}\left[4, \frac{g (d + e x)}{-e f + d g}\right]\right) -$$

$$16 b^3 e g h i n^3 \Big(-g (d + e x) (-6 + 6 \text{Log}[d + e x] - 3 \text{Log}[d + e x]^2 + \text{Log}[d + e x]^3) + e f \Big(\text{Log}[d + e x]^3 \text{Log}\left[\frac{e (f + g x)}{e f - d g}\right] +$$

$$3 \text{Log}[d + e x]^2 \text{PolyLog}\left[2, \frac{g (d + e x)}{-e f + d g}\right] - 6 \text{Log}[d + e x] \text{PolyLog}\left[3, \frac{g (d + e x)}{-e f + d g}\right] + 6 \text{PolyLog}\left[4, \frac{g (d + e x)}{-e f + d g}\right]\Big)\Big) +$$

$$b^3 i^2 n^3 \Big(-8 e f g (d + e x) (-6 + 6 \text{Log}[d + e x] - 3 \text{Log}[d + e x]^2 + \text{Log}[d + e x]^3) - g^2 (3 e x (-14 d + e x) + 6 (7 d^2 + 6 d e x - e^2 x^2) \text{Log}[d + e x] -$$

$$6 (3 d^2 + 2 d e x - e^2 x^2) \text{Log}[d + e x]^2 + 4 (d^2 - e^2 x^2) \text{Log}[d + e x]^3) + 8 e^2 f^2 \Big(\text{Log}[d + e x]^3 \text{Log}\left[\frac{e (f + g x)}{e f - d g}\right] +$$

$$3 \text{Log}[d + e x]^2 \text{PolyLog}\left[2, \frac{g (d + e x)}{-e f + d g}\right] - 6 \text{Log}[d + e x] \text{PolyLog}\left[3, \frac{g (d + e x)}{-e f + d g}\right] + 6 \text{PolyLog}\left[4, \frac{g (d + e x)}{-e f + d g}\right]\Big)\Big)\Big)$$

Problem 230: Result more than twice size of optimal antiderivative.

$$\int \frac{(h+i x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3}{f+g x} \, dx$$

Optimal (type 4, 308 leaves, 12 steps):

$$\frac{6 a b^2 i n^2 x}{g}-\frac{6 b^3 i n^3 x}{g}+\frac{6 b^3 i n^2 (d+e x) \operatorname{Log}\left[c (d+e x)^n\right]}{e g}-\frac{3 b i n (d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{e g}+\frac{i (d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3}{e g}+$$
$$\frac{(g h-f i) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3 \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]}{g^2}+\frac{3 b (g h-f i) n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{PolyLog}\left[2,-\frac{g (d+e x)}{e f-d g}\right]}{g^2}-$$
$$\frac{6 b^2 (g h-f i) n^2 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[3,-\frac{g (d+e x)}{e f-d g}\right]}{g^2}+\frac{6 b^3 (g h-f i) n^3 \operatorname{PolyLog}\left[4,-\frac{g (d+e x)}{e f-d g}\right]}{g^2}$$

Result (type 4, 776 leaves):

$$\frac{1}{e g^2}\left(e g i x \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3+e (g h-f i) \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3 \operatorname{Log}[f+g x]+\right.$$
$$3 b e g h n \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+\operatorname{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]\right)-3 b i n$$
$$\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \left(-g (d+e x) (-1+\operatorname{Log}[d+e x])+e f \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+\operatorname{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]\right)\right)+$$
$$3 b^2 i n^2 \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \left(g (d+e x) \left(2-2 \operatorname{Log}[d+e x]+\operatorname{Log}[d+e x]^2\right)-\right.$$
$$\left.e f \left(\operatorname{Log}[d+e x]^2 \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+2 \operatorname{Log}[d+e x] \operatorname{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]-2 \operatorname{PolyLog}\left[3,\frac{g (d+e x)}{-e f+d g}\right]\right)\right)+6 b^2 e g h n^2$$
$$\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \left(\frac{1}{2} \operatorname{Log}[d+e x]^2 \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+\operatorname{Log}[d+e x] \operatorname{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]-\operatorname{PolyLog}\left[3,\frac{g (d+e x)}{-e f+d g}\right]\right)+$$
$$b^3 e g h n^3 \left(\operatorname{Log}[d+e x]^3 \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+3 \operatorname{Log}[d+e x]^2 \operatorname{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]-6 \operatorname{Log}[d+e x] \operatorname{PolyLog}\left[3,\frac{g (d+e x)}{-e f+d g}\right]+\right.$$
$$\left.6 \operatorname{PolyLog}\left[4,\frac{g (d+e x)}{-e f+d g}\right]\right)-b^3 i n^3 \left(-g (d+e x) \left(-6+6 \operatorname{Log}[d+e x]-3 \operatorname{Log}[d+e x]^2+\operatorname{Log}[d+e x]^3\right)+e f \left(\operatorname{Log}[d+e x]^3 \operatorname{Log}\left[\frac{e (f+g x)}{e f-d g}\right]+\right.\right.$$
$$\left.\left.\left.3 \operatorname{Log}[d+e x]^2 \operatorname{PolyLog}\left[2,\frac{g (d+e x)}{-e f+d g}\right]-6 \operatorname{Log}[d+e x] \operatorname{PolyLog}\left[3,\frac{g (d+e x)}{-e f+d g}\right]+6 \operatorname{PolyLog}\left[4,\frac{g (d+e x)}{-e f+d g}\right]\right)\right)\right)$$

Problem 231: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3}{f+g\,x}\,dx$$

Optimal (type 4, 158 leaves, 5 steps):

$$\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]}{g}+\frac{3\,b\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{PolyLog}\left[2,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g}-\frac{6\,b^2\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[3,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g}+\frac{6\,b^3\,n^3\,\text{PolyLog}\left[4,-\frac{g\,(d+e\,x)}{e\,f-d\,g}\right]}{g}$$

Result (type 4, 335 leaves):

$$\frac{1}{g}\left(\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\,\text{Log}[f+g\,x]+3\,b\,n\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\left(\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)+6\,b^2\,n^2\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\left(\frac{1}{2}\,\text{Log}[d+e\,x]^2\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-\text{PolyLog}\left[3,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)+b^3\,n^3\left(\text{Log}[d+e\,x]^3\,\text{Log}\left[\frac{e\,(f+g\,x)}{e\,f-d\,g}\right]+3\,\text{Log}[d+e\,x]^2\,\text{PolyLog}\left[2,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]-6\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[3,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]+6\,\text{PolyLog}\left[4,\frac{g\,(d+e\,x)}{-e\,f+d\,g}\right]\right)\right)$$

Problem 256: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^5\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{f+g\,x^2}\,dx$$

Optimal (type 4, 397 leaves, 16 steps):

$$-\frac{b\,d\,f\,n\,x}{2\,e\,g^2}+\frac{b\,d^3\,n\,x}{4\,e^3\,g}+\frac{b\,f\,n\,x^2}{4\,g^2}-\frac{b\,d^2\,n\,x^2}{8\,e^2\,g}+\frac{b\,d\,n\,x^3}{12\,e\,g}-\frac{b\,n\,x^4}{16\,g}+\frac{b\,d^2\,f\,n\,\text{Log}[d+e\,x]}{2\,e^2\,g^2}-\frac{b\,d^4\,n\,\text{Log}[d+e\,x]}{4\,e^4\,g}-\frac{f\,x^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,g^2}+\frac{x^4\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{4\,g}+\frac{f^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g^3}+\frac{f^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g^3}+\frac{b\,f^2\,n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g^3}+\frac{b\,f^2\,n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g^3}$$

Result (type 4, 373 leaves):

$$\frac{1}{48 g^3}\left(-24 f g x^2 \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)+12 g^2 x^4 \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)+24 f^2 \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[f+g x^2\right]+b n \left(\frac{12 f g \left(e x (-2 d+e x)+2 \left(d^2-e^2 x^2\right) \text{Log}[d+e x]\right)}{e^2}+\frac{g^2 \left(e x \left(12 d^3-6 d^2 e x+4 d e^2 x^2-3 e^3 x^3\right)-12 \left(d^4-e^4 x^4\right) \text{Log}[d+e x]\right)}{e^4}+24 f^2 \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]\right)+24 f^2 \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\right)$$

Problem 257: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^3 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{f+g x^2} \, dx$$

Optimal (type 4, 278 leaves, 13 steps):

$$\frac{b d n x}{2 e g}-\frac{b n x^2}{4 g}-\frac{b d^2 n \text{Log}[d+e x]}{2 e^2 g}+\frac{x^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{2 g}-\frac{f \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 g^2}-\frac{f \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 g^2}-\frac{b f n \text{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 g^2}-\frac{b f n \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 g^2}$$

Result (type 4, 283 leaves):

$$\frac{1}{4 e^2 g^2}\left(2 e^2 g x^2 \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)-2 e^2 f \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[f+g x^2\right]+b n \left(e g x (2 d-e x)-2 g \left(d^2-e^2 x^2\right) \text{Log}[d+e x]-2 e^2 f \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]\right)-2 e^2 f \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\right)$$

Problem 258: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x\,(a+b\,\text{Log}[c\,(d+e\,x)^n])}{f+g\,x^2}\,dx$$

Optimal (type 4, 203 leaves, 8 steps):

$$\frac{(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}\left[\frac{e\,(\sqrt{-f}-\sqrt{g}\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g}+\frac{(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}\left[\frac{e\,(\sqrt{-f}+\sqrt{g}\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g}+\frac{b\,n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g}+\frac{b\,n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g}$$

Result (type 4, 189 leaves):

$$\frac{1}{2\,g}\left((a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}[f+g\,x^2]+b\,n\left(\text{Log}[d+e\,x]\left(\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)$$

Problem 259: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{a+b\,\text{Log}[c\,(d+e\,x)^n]}{x\,(f+g\,x^2)}\,dx$$

Optimal (type 4, 245 leaves, 12 steps):

$$\frac{\text{Log}\left[-\frac{e\,x}{d}\right]\,(a+b\,\text{Log}[c\,(d+e\,x)^n])}{f}-\frac{(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}\left[\frac{e\,(\sqrt{-f}-\sqrt{g}\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,f}-\frac{(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}\left[\frac{e\,(\sqrt{-f}+\sqrt{g}\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,f}-\frac{b\,n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,f}-\frac{b\,n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,f}+\frac{b\,n\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{f}$$

Result (type 4, 264 leaves):

$$-\frac{1}{2 f}\left(-2 a \operatorname{Log}[x]-2 b \operatorname{Log}[x] \operatorname{Log}\left[c (d+e x)^n\right]+2 b n \operatorname{Log}[x] \operatorname{Log}\left[1+\frac{e x}{d}\right]+a \operatorname{Log}\left[f+g x^2\right]-\right.$$
$$b n \operatorname{Log}[d+e x] \operatorname{Log}\left[f+g x^2\right]+b \operatorname{Log}\left[c (d+e x)^n\right] \operatorname{Log}\left[f+g x^2\right]+b n \operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+$$
$$\left.b n \operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+2 b n \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]+b n \operatorname{PolyLog}\left[2, \frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+b n \operatorname{PolyLog}\left[2, \frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]\right)$$

Problem 260: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{x^3 \left(f+g x^2\right)} \, dx$$

Optimal (type 4, 331 leaves, 15 steps):

$$-\frac{b e n}{2 d f x}-\frac{b e^2 n \operatorname{Log}[x]}{2 d^2 f}+\frac{b e^2 n \operatorname{Log}[d+e x]}{2 d^2 f}-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{2 f x^2}-\frac{g \operatorname{Log}\left[-\frac{e x}{d}\right] \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{f^2}+$$
$$\frac{g \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f^2}+\frac{g \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 f^2}+$$
$$\frac{b g n \operatorname{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 f^2}+\frac{b g n \operatorname{PolyLog}\left[2, \frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f^2}-\frac{b g n \operatorname{PolyLog}\left[2,1+\frac{e x}{d}\right]}{f^2}$$

Result (type 4, 340 leaves):

$$\frac{1}{2 f^2}\left(-\frac{a f}{x^2}-\frac{b e f n}{d x}-2 a g \operatorname{Log}[x]-\frac{b e^2 f n \operatorname{Log}[x]}{d^2}+\frac{b e^2 f n \operatorname{Log}[d+e x]}{d^2}-\frac{b f \operatorname{Log}\left[c (d+e x)^n\right]}{x^2}-\right.$$
$$2 b g \operatorname{Log}[x] \operatorname{Log}\left[c (d+e x)^n\right]+2 b g n \operatorname{Log}[x] \operatorname{Log}\left[1+\frac{e x}{d}\right]+a g \operatorname{Log}\left[f+g x^2\right]-b g n \operatorname{Log}[d+e x] \operatorname{Log}\left[f+g x^2\right]+$$
$$b g \operatorname{Log}\left[c (d+e x)^n\right] \operatorname{Log}\left[f+g x^2\right]+b g n \operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+b g n \operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+$$
$$\left.2 b g n \operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]+b g n \operatorname{PolyLog}\left[2, \frac{\sqrt{g} (d+e x)}{-\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]+b g n \operatorname{PolyLog}\left[2, \frac{\sqrt{g} (d+e x)}{\mathrm{i} e \sqrt{f}+d \sqrt{g}}\right]\right)$$

Problem 261: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^4 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{f+g x^2} \, dx$$

Optimal (type 4, 369 leaves, 16 steps):

$$-\frac{a f x}{g^2}+\frac{b f n x}{g^2}-\frac{b d^2 n x}{3 e^2 g}+\frac{b d n x^2}{6 e g}-\frac{b n x^3}{9 g}+\frac{b d^3 n \operatorname{Log}[d+e x]}{3 e^3 g}-\frac{b f (d+e x) \operatorname{Log}\left[c (d+e x)^n\right]}{e g^2}+\frac{x^3 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{3 g}+\frac{(-f)^{3/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 g^{5/2}}-\frac{(-f)^{3/2} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 g^{5/2}}-\frac{b (-f)^{3/2} n \operatorname{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 g^{5/2}}+\frac{b (-f)^{3/2} n \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 g^{5/2}}$$

Result (type 4, 374 leaves):

$$\frac{1}{6 g^{5/2}}\left(-6 f \sqrt{g} x \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)+2 g^{3/2} x^3 \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)+6 f^{3/2} \operatorname{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right] \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)+3 b n \left(-\frac{2 f \sqrt{g} (d+e x) (-1+\operatorname{Log}[d+e x])}{e}+\frac{g^{3/2} \left(e x \left(-6 d^2+3 d e x-2 e^2 x^2\right)+6 \left(d^3+e^3 x^3\right) \operatorname{Log}[d+e x]\right)}{9 e^3}+i f^{3/2} \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)-i f^{3/2} \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\right)$$

Problem 262: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^2 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{f+g x^2} \, dx$$

Optimal (type 4, 276 leaves, 13 steps):

$$\frac{a x}{g}-\frac{b n x}{g}+\frac{b (d+e x) \text{Log}\left[c (d+e x)^n\right]}{e g}+\frac{\sqrt{-f} \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 g^{3/2}}-$$
$$\frac{\sqrt{-f} \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 g^{3/2}}-\frac{b \sqrt{-f}\, n\, \text{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 g^{3/2}}+\frac{b \sqrt{-f}\, n\, \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 g^{3/2}}$$

Result (type 4, 287 leaves):

$$\frac{x \left(a+b \left(-n \text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{g}-\frac{\sqrt{f} \text{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right] \left(a+b \left(-n \text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)}{g^{3/2}}+$$
$$b n \left(\frac{(d+e x) (-1+\text{Log}[d+e x])}{e g}-\frac{i \sqrt{f} \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)}{2 g^{3/2}}+\right.$$
$$\left.\frac{i \sqrt{f} \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)}{2 g^{3/2}}\right)$$

Problem 263: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{a+b \text{Log}\left[c (d+e x)^n\right]}{f+g x^2} \, dx$$

Optimal (type 4, 239 leaves, 8 steps):

$$\frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 \sqrt{-f} \sqrt{g}}-$$
$$\frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 \sqrt{-f} \sqrt{g}}-\frac{b n \text{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 \sqrt{-f} \sqrt{g}}+\frac{b n \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 \sqrt{-f} \sqrt{g}}$$

Result (type 4, 209 leaves):

$$\frac{1}{2 \sqrt{f} \sqrt{g}}\left(2 \text{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right] \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)+\right.$$
$$\left.i b n \left(\text{Log}[d+e x] \left(\text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]-\text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]-\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)$$

Problem 264: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}{x^2\,(f+g\,x^2)}\,dx$$

Optimal (type 4, 290 leaves, 14 steps):

$$\frac{b\,e\,n\,\mathrm{Log}[x]}{d\,f}-\frac{b\,e\,n\,\mathrm{Log}[d+e\,x]}{d\,f}-\frac{a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}{f\,x}+\frac{\sqrt{g}\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\,\mathrm{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,(-f)^{3/2}}-$$
$$\frac{\sqrt{g}\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)\,\mathrm{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,(-f)^{3/2}}-\frac{b\,\sqrt{g}\,n\,\mathrm{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,(-f)^{3/2}}+\frac{b\,\sqrt{g}\,n\,\mathrm{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,(-f)^{3/2}}$$

Result (type 4, 298 leaves):

$$\frac{1}{2\,d\,f^{3/2}\,x}\left(-2\,d\,\sqrt{f}\,\left(a-b\,n\,\mathrm{Log}[d+e\,x]+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)-2\,d\,\sqrt{g}\,x\,\mathrm{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\,\left(a-b\,n\,\mathrm{Log}[d+e\,x]+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)+\right.$$
$$b\,n\left(2\,\sqrt{f}\,\left(e\,x\,\mathrm{Log}[x]-(d+e\,x)\,\mathrm{Log}[d+e\,x]\right)-i\,d\,\sqrt{g}\,x\,\left(\mathrm{Log}[d+e\,x]\,\mathrm{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\mathrm{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)+\right.$$
$$\left.\left.i\,d\,\sqrt{g}\,x\,\left(\mathrm{Log}[d+e\,x]\,\mathrm{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\mathrm{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)\right)$$

Problem 265: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}{x^4\,(f+g\,x^2)}\,dx$$

Optimal (type 4, 388 leaves, 17 steps):

$$-\frac{b\,e\,n}{6\,d\,f\,x^2}+\frac{b\,e^2\,n}{3\,d^2\,f\,x}+\frac{b\,e^3\,n\,\text{Log}[x]}{3\,d^3\,f}-\frac{b\,e\,g\,n\,\text{Log}[x]}{d\,f^2}-\frac{b\,e^3\,n\,\text{Log}[d+e\,x]}{3\,d^3\,f}+\frac{b\,e\,g\,n\,\text{Log}[d+e\,x]}{d\,f^2}-$$
$$\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{3\,f\,x^3}+\frac{g\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{f^2\,x}+\frac{g^{3/2}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,(-f)^{5/2}}-$$
$$\frac{g^{3/2}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,(-f)^{5/2}}-\frac{b\,g^{3/2}\,n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,(-f)^{5/2}}+\frac{b\,g^{3/2}\,n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,(-f)^{5/2}}$$

Result (type 4, 383 leaves) :

$$\frac{1}{6\,f^{5/2}}\left(-\frac{2\,f^{3/2}\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{x^3}+\right.$$
$$\frac{6\,\sqrt{f}\,g\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{x}+6\,g^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)+$$
$$b\,n\left(-\frac{6\,\sqrt{f}\,g\,\left(e\,x\,\text{Log}[x]-(d+e\,x)\,\text{Log}[d+e\,x]\right)}{d\,x}+\frac{f^{3/2}\,\left(-d\,e\,x\,(d-2\,e\,x)+2\,e^3\,x^3\,\text{Log}[x]-2\,\left(d^3+e^3\,x^3\right)\,\text{Log}[d+e\,x]\right)}{d^3\,x^3}+\right.$$
$$3\,i\,g^{3/2}\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-$$
$$\left.\left.3\,i\,g^{3/2}\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)\right)$$

Problem 266: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^5\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{\left(f+g\,x^2\right)^2}\,dx$$

Optimal (type 4, 417 leaves, 19 steps) :

$$\frac{b\,d\,n\,x}{2\,e\,g^2}-\frac{b\,n\,x^2}{4\,g^2}+\frac{b\,d\,e\,f^{3/2}\,n\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]}{2\,g^{5/2}\,\left(e^2\,f+d^2\,g\right)}-\frac{b\,d^2\,n\,\text{Log}[d+e\,x]}{2\,e^2\,g^2}+\frac{b\,e^2\,f^2\,n\,\text{Log}[d+e\,x]}{2\,g^3\,\left(e^2\,f+d^2\,g\right)}+$$

$$\frac{x^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,g^2}-\frac{f^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,g^3\,\left(f+g\,x^2\right)}-\frac{f\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^3}-$$

$$\frac{f\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^3}-\frac{b\,e^2\,f^2\,n\,\text{Log}\left[f+g\,x^2\right]}{4\,g^3\,\left(e^2\,f+d^2\,g\right)}-\frac{b\,f\,n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^3}-\frac{b\,f\,n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^3}$$

Result (type 4, 560 leaves):

$$\frac{1}{8\,g^3}\left(4\,g\,x^2\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)-\frac{4\,f^2\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{f+g\,x^2}-\right.$$

$$8\,f\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[f+g\,x^2\right]+b\,n\,\left(-\frac{2\,g\,\left(e\,x\,(-2\,d+e\,x)+2\,\left(d^2-e^2\,x^2\right)\,\text{Log}[d+e\,x]\right)}{e^2}+\right.$$

$$\left(f^{3/2}\left(2\,e\,\left(-i\,\sqrt{f}+\sqrt{g}\,x\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]+2\,i\,\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]-e\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\,\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\,\sqrt{f}-i\,d\,\sqrt{g}\right)\right.$$

$$\left.\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\right)+\left(i\,f^{3/2}\left(2\,e\,\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\,\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+e\,\left(i\,\sqrt{f}+\sqrt{g}\,x\right)\,\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/$$

$$\left(\left(e\,\sqrt{f}+i\,d\,\sqrt{g}\right)\,\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\right)-8\,f\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-$$

$$\left.\left.8\,f\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)\right)$$

Problem 267: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^3\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{\left(f+g\,x^2\right)^2}\,dx$$

Optimal (type 4, 344 leaves, 16 steps):

$$-\frac{b\,d\,e\,\sqrt{f}\,n\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]}{2\,g^{3/2}\,(e^2 f+d^2 g)}-\frac{b\,e^2\,f\,n\,\text{Log}[d+e\,x]}{2\,g^2\,(e^2 f+d^2 g)}+\frac{f\,(a+b\,\text{Log}[c\,(d+e\,x)^n])}{2\,g^2\,(f+g\,x^2)}+\frac{(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}\left[\frac{e\,(\sqrt{-f}-\sqrt{g}\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g^2}+\frac{(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}\left[\frac{e\,(\sqrt{-f}+\sqrt{g}\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g^2}+\frac{b\,e^2\,f\,n\,\text{Log}[f+g\,x^2]}{4\,g^2\,(e^2 f+d^2 g)}+\frac{b\,n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g^2}+\frac{b\,n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g^2}$$

Result (type 4, 488 leaves):

$$\frac{1}{8\,g^2}\left(\frac{4\,f\,(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}[c\,(d+e\,x)^n])}{f+g\,x^2}+4\,(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}[f+g\,x^2]+b\,n\left(\left(\sqrt{f}\left(2\,i\,e\,(\sqrt{f}+i\,\sqrt{g}\,x)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\,i\,\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+e\,(\sqrt{f}+i\,\sqrt{g}\,x)\,\text{Log}[f+g\,x^2]\right)\right)\Big/\left((e\,\sqrt{f}-i\,d\,\sqrt{g})\,(\sqrt{f}+i\,\sqrt{g}\,x)\right)-\left(i\,\sqrt{f}\left(2\,e\,(\sqrt{f}-i\,\sqrt{g}\,x)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\,\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+e\,(i\,\sqrt{f}+\sqrt{g}\,x)\,\text{Log}[f+g\,x^2]\right)\right)\Big/\left((e\,\sqrt{f}+i\,d\,\sqrt{g})\,(\sqrt{f}-i\,\sqrt{g}\,x)\right)+4\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)+4\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)\right)$$

Problem 269: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{a+b\,\text{Log}[c\,(d+e\,x)^n]}{x\,(f+g\,x^2)^2}\,dx$$

Optimal (type 4, 383 leaves, 18 steps):

$$-\frac{b\,d\,e\,\sqrt{g}\,n\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]}{2\,f^{3/2}\,(e^2 f+d^2 g)}-\frac{b\,e^2\,n\,\text{Log}[d+e\,x]}{2\,f\,(e^2 f+d^2 g)}+\frac{a+b\,\text{Log}[c\,(d+e\,x)^n]}{2\,f\,(f+g\,x^2)}+\frac{\text{Log}\left[-\frac{e\,x}{d}\right]\,(a+b\,\text{Log}[c\,(d+e\,x)^n])}{f^2}-\frac{(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}\left[\frac{e\,(\sqrt{-f}-\sqrt{g}\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,f^2}-\frac{(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}\left[\frac{e\,(\sqrt{-f}+\sqrt{g}\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,f^2}+\frac{b\,e^2\,n\,\text{Log}[f+g\,x^2]}{4\,f\,(e^2 f+d^2 g)}-\frac{b\,n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,f^2}-\frac{b\,n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,f^2}+\frac{b\,n\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{f^2}$$

Result (type 4, 559 leaves):

$$\frac{a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{2\,f^2+2\,f\,g\,x^2}+\frac{\text{Log}[x]\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{f^2}-\frac{\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[f+g\,x^2\right]}{2\,f^2}+\frac{1}{8\,f^2}\,b\,n\,\left(8\,\text{Log}[x]\,\left(\text{Log}[d+e\,x]-\text{Log}\left[1+\frac{e\,x}{d}\right]\right)+\left(\sqrt{f}\,\left(2\,i\,e\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\,i\,\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+e\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\,\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\,\sqrt{f}-i\,d\,\sqrt{g}\right)\,\left(\sqrt{f}+i\,\sqrt{g}\,x\right)\right)-\left(i\,\sqrt{f}\,\left(2\,e\,\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\,\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+e\,\left(i\,\sqrt{f}+\sqrt{g}\,x\right)\,\text{Log}\left[f+g\,x^2\right]\right)\right)\Big/\left(\left(e\,\sqrt{f}+i\,d\,\sqrt{g}\right)\,\left(\sqrt{f}-i\,\sqrt{g}\,x\right)\right)-8\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]-4\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-4\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)$$

Problem 270: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{x^3\,\left(f+g\,x^2\right)^2}\,dx$$

Optimal (type 4, 460 leaves, 21 steps):

$$-\frac{b\,e\,n}{2\,d\,f^2\,x}+\frac{b\,d\,e\,g^{3/2}\,n\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]}{2\,f^{5/2}\,\left(e^2\,f+d^2\,g\right)}-\frac{b\,e^2\,n\,\text{Log}[x]}{2\,d^2\,f^2}+\frac{b\,e^2\,n\,\text{Log}[d+e\,x]}{2\,d^2\,f^2}+\frac{b\,e^2\,g\,n\,\text{Log}[d+e\,x]}{2\,f^2\,\left(e^2\,f+d^2\,g\right)}-\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{2\,f^2\,x^2}-\frac{g\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,f^2\,\left(f+g\,x^2\right)}-\frac{2\,g\,\text{Log}\left[-\frac{e\,x}{d}\right]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{f^3}+\frac{g\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{f^3}+\frac{g\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{f^3}-\frac{b\,e^2\,g\,n\,\text{Log}\left[f+g\,x^2\right]}{4\,f^2\,\left(e^2\,f+d^2\,g\right)}+\frac{b\,g\,n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{f^3}+\frac{b\,g\,n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{f^3}-\frac{2\,b\,g\,n\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{f^3}$$

Result (type 4, 631 leaves):

$$\frac{1}{8 f^3}\left(-\frac{4 f \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{x^2}-\frac{4 f g \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{f+g x^2}-16 g \operatorname{Log}[x] \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)+8 g \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[f+g x^2\right]+b n \left(-\frac{4 f \left(d e x+e^2 x^2 \operatorname{Log}[x]+\left(d^2-e^2 x^2\right) \operatorname{Log}[d+e x]\right)}{d^2 x^2}+\left(\sqrt{f} g \left(2 e \left(-i \sqrt{f}+\sqrt{g} x\right) \operatorname{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]+2 i \sqrt{g} (d+e x) \operatorname{Log}[d+e x]-e \left(\sqrt{f}+i \sqrt{g} x\right) \operatorname{Log}\left[f+g x^2\right]\right)\right) \Big/ \left(\left(e \sqrt{f}-i d \sqrt{g}\right) \left(\sqrt{f}+i \sqrt{g} x\right)\right)+\left(i \sqrt{f} g \left(2 e \left(\sqrt{f}-i \sqrt{g} x\right) \operatorname{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]-2 \sqrt{g} (d+e x) \operatorname{Log}[d+e x]+e \left(i \sqrt{f}+\sqrt{g} x\right) \operatorname{Log}\left[f+g x^2\right]\right)\right) \Big/ \left(\left(e \sqrt{f}+i d \sqrt{g}\right) \left(\sqrt{f}-i \sqrt{g} x\right)\right)-16 g \left(\operatorname{Log}[x] \left(\operatorname{Log}[d+e x]-\operatorname{Log}\left[1+\frac{e x}{d}\right]\right)-\operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]\right)+8 g \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)+8 g \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\right)$$

Problem 271: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^4 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{\left(f+g x^2\right)^2} \, dx$$

Optimal (type 4, 534 leaves, 31 steps):

$$\frac{a x}{g^2}-\frac{b n x}{g^2}-\frac{b e f n \operatorname{Log}[d+e x]}{4 \left(e \sqrt{-f}-d \sqrt{g}\right) g^{5/2}}+\frac{b e f n \operatorname{Log}[d+e x]}{4 \left(e \sqrt{-f}+d \sqrt{g}\right) g^{5/2}}+\frac{b (d+e x) \operatorname{Log}\left[c (d+e x)^n\right]}{e g^2}-\frac{f \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{4 g^{5/2} \left(\sqrt{-f}-\sqrt{g} x\right)}+\frac{f \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{4 g^{5/2} \left(\sqrt{-f}+\sqrt{g} x\right)}-\frac{b e f n \operatorname{Log}\left[\sqrt{-f}-\sqrt{g} x\right]}{4 \left(e \sqrt{-f}+d \sqrt{g}\right) g^{5/2}}+\frac{3 \sqrt{-f} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{4 g^{5/2}}+\frac{b e f n \operatorname{Log}\left[\sqrt{-f}+\sqrt{g} x\right]}{4 \left(e \sqrt{-f}-d \sqrt{g}\right) g^{5/2}}-\frac{3 \sqrt{-f} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{4 g^{5/2}}-\frac{3 b \sqrt{-f} n \operatorname{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{4 g^{5/2}}+\frac{3 b \sqrt{-f} n \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{4 g^{5/2}}$$

Result (type 4, 564 leaves):

$$\frac{1}{8 g^{5/2}}\left(8\sqrt{g}\,x\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)+\frac{4 f\sqrt{g}\,x\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{f+g x^2}-\right.$$
$$12\sqrt{f}\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)+b\,n\left(\frac{8\sqrt{g}\,(d+e\,x)\,(-1+\text{Log}[d+e\,x])}{e}+\right.$$
$$\left(f\left(-2 e\left(\sqrt{f}+i\sqrt{g}\,x\right)\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]+2\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+i\,e\left(\sqrt{f}+i\sqrt{g}\,x\right)\text{Log}\left[f+g x^2\right]\right)\right)\Big/\left(\left(e\sqrt{f}-i\,d\sqrt{g}\right)\right.$$
$$\left.\left(\sqrt{f}+i\sqrt{g}\,x\right)\right)-\left(f\left(2 e\left(\sqrt{f}-i\sqrt{g}\,x\right)\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]-2\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+e\left(i\sqrt{f}+\sqrt{g}\,x\right)\text{Log}\left[f+g x^2\right]\right)\right)\Big/$$
$$\left(\left(e\sqrt{f}+i\,d\sqrt{g}\right)\left(\sqrt{f}-i\sqrt{g}\,x\right)\right)-6\,i\sqrt{f}\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]\right)+$$
$$\left.\left.6\,i\sqrt{f}\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]\right)\right)\right)$$

Problem 272: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^2\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{\left(f+g x^2\right)^2}\,dx$$

Optimal (type 4, 491 leaves, 28 steps):

$$\frac{b\,e\,n\,\text{Log}[d+e\,x]}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}}-\frac{b\,e\,n\,\text{Log}[d+e\,x]}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{3/2}}+\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{4 g^{3/2}\left(\sqrt{-f}-\sqrt{g}\,x\right)}-\frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{4 g^{3/2}\left(\sqrt{-f}+\sqrt{g}\,x\right)}+$$
$$\frac{b\,e\,n\,\text{Log}\left[\sqrt{-f}-\sqrt{g}\,x\right]}{4\left(e\sqrt{-f}+d\sqrt{g}\right)g^{3/2}}+\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\text{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right]}{4\sqrt{-f}\,g^{3/2}}-\frac{b\,e\,n\,\text{Log}\left[\sqrt{-f}+\sqrt{g}\,x\right]}{4\left(e\sqrt{-f}-d\sqrt{g}\right)g^{3/2}}-$$
$$\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right]}{4\sqrt{-f}\,g^{3/2}}-\frac{b\,n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\sqrt{-f}-d\sqrt{g}}\right]}{4\sqrt{-f}\,g^{3/2}}+\frac{b\,n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\sqrt{-f}+d\sqrt{g}}\right]}{4\sqrt{-f}\,g^{3/2}}$$

Result (type 4, 503 leaves):

$$\frac{1}{8 g^{3/2}}\left(-\frac{4 \sqrt{g}\, x \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{f+g x^2}+\frac{4 \operatorname{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{\sqrt{f}}+\right.$$

$$b n\left(\frac{2 e \left(\sqrt{f}+i \sqrt{g}\, x\right) \operatorname{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]-2 \sqrt{g}\, (d+e x) \operatorname{Log}[d+e x]+e \left(-i \sqrt{f}+\sqrt{g}\, x\right) \operatorname{Log}\left[f+g x^2\right]}{\left(e \sqrt{f}-i d \sqrt{g}\right)\left(\sqrt{f}+i \sqrt{g}\, x\right)}+\right.$$

$$\frac{2 e \left(\sqrt{f}-i \sqrt{g}\, x\right) \operatorname{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]-2 \sqrt{g}\, (d+e x) \operatorname{Log}[d+e x]+e \left(i \sqrt{f}+\sqrt{g}\, x\right) \operatorname{Log}\left[f+g x^2\right]}{\left(e \sqrt{f}+i d \sqrt{g}\right)\left(\sqrt{f}-i \sqrt{g}\, x\right)}+$$

$$\left.\left.\frac{2 i \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g}\, (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2, \frac{\sqrt{g}\, (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)}{\sqrt{f}}-\frac{2 i \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g}\, (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2, \frac{\sqrt{g}\, (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)}{\sqrt{f}}\right)\right)$$

Problem 273: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{\left(f+g x^2\right)^2}\, dx$$

Optimal (type 4, 503 leaves, 18 steps):

$$\frac{b e n \operatorname{Log}[d+e x]}{4 f \left(e \sqrt{-f}+d \sqrt{g}\right) \sqrt{g}}+\frac{b e n \operatorname{Log}[d+e x]}{4 \left(e (-f)^{3/2}+d f \sqrt{g}\right) \sqrt{g}}-\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{4 f \sqrt{g} \left(\sqrt{-f}-\sqrt{g}\, x\right)}+\frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{4 f \sqrt{g} \left(\sqrt{-f}+\sqrt{g}\, x\right)}-$$

$$\frac{b e n \operatorname{Log}\left[\sqrt{-f}-\sqrt{g}\, x\right]}{4 f \left(e \sqrt{-f}+d \sqrt{g}\right) \sqrt{g}}-\frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g}\, x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{4 (-f)^{3/2} \sqrt{g}}-\frac{b e n \operatorname{Log}\left[\sqrt{-f}+\sqrt{g}\, x\right]}{4 \left(e (-f)^{3/2}+d f \sqrt{g}\right) \sqrt{g}}+$$

$$\frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g}\, x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{4 (-f)^{3/2} \sqrt{g}}+\frac{b n \operatorname{PolyLog}\left[2, -\frac{\sqrt{g}\, (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{4 (-f)^{3/2} \sqrt{g}}-\frac{b n \operatorname{PolyLog}\left[2, \frac{\sqrt{g}\, (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{4 (-f)^{3/2} \sqrt{g}}$$

Result (type 4, 511 leaves):

$$\frac{1}{8 f^{3/2}}\left(\frac{4\sqrt{f}\, x\,(a-b\, n\, \text{Log}[d+e x]+b\, \text{Log}[c\,(d+e x)^n])}{f+g x^2}+\frac{4\, \text{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right](a-b\, n\, \text{Log}[d+e x]+b\, \text{Log}[c\,(d+e x)^n])}{\sqrt{g}}+\right.$$

$$\frac{1}{\sqrt{g}} b\, n\left(\left(\sqrt{f}\left(-2 e\left(\sqrt{f}+i\sqrt{g}\, x\right)\text{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]+2\sqrt{g}\,(d+e x)\,\text{Log}[d+e x]+i\, e\left(\sqrt{f}+i\sqrt{g}\, x\right)\text{Log}[f+g x^2]\right)\right)\Big/\left(\left(e\sqrt{f}-i\, d\sqrt{g}\right)\right.\right.$$

$$\left.\left(\sqrt{f}+i\sqrt{g}\, x\right)\right)-\left(\sqrt{f}\left(2 e\left(\sqrt{f}-i\sqrt{g}\, x\right)\text{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]-2\sqrt{g}\,(d+e x)\,\text{Log}[d+e x]+e\left(i\sqrt{f}+\sqrt{g}\, x\right)\text{Log}[f+g x^2]\right)\right)\Big/$$

$$\left(\left(e\sqrt{f}+i\, d\sqrt{g}\right)\left(\sqrt{f}-i\sqrt{g}\, x\right)\right)+2 i\left(\text{Log}[d+e x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e x)}{-i\, e\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e x)}{-i\, e\sqrt{f}+d\sqrt{g}}\right]\right)-$$

$$\left.\left. 2 i\left(\text{Log}[d+e x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e x)}{i\, e\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e x)}{i\, e\sqrt{f}+d\sqrt{g}}\right]\right)\right)\right)$$

Problem 274: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{a+b\,\text{Log}[c\,(d+e x)^n]}{x^2\,(f+g x^2)^2}\,dx$$

Optimal (type 4, 560 leaves, 32 steps):

$$\frac{b\, e\, n\,\text{Log}[x]}{d f^2}-\frac{b\, e\, n\,\text{Log}[d+e x]}{d f^2}-\frac{b\, e\sqrt{g}\, n\,\text{Log}[d+e x]}{4 f^2\left(e\sqrt{-f}+d\sqrt{g}\right)}-\frac{b\, e\sqrt{g}\, n\,\text{Log}[d+e x]}{4 f\left(e\,(-f)^{3/2}+d f\sqrt{g}\right)}-\frac{a+b\,\text{Log}[c\,(d+e x)^n]}{f^2 x}+\frac{\sqrt{g}\,(a+b\,\text{Log}[c\,(d+e x)^n])}{4 f^2\left(\sqrt{-f}-\sqrt{g}\, x\right)}-$$

$$\frac{\sqrt{g}\,(a+b\,\text{Log}[c\,(d+e x)^n])}{4 f^2\left(\sqrt{-f}+\sqrt{g}\, x\right)}+\frac{b\, e\sqrt{g}\, n\,\text{Log}\left[\sqrt{-f}-\sqrt{g}\, x\right]}{4 f^2\left(e\sqrt{-f}+d\sqrt{g}\right)}-\frac{3\sqrt{g}\,(a+b\,\text{Log}[c\,(d+e x)^n])\,\text{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g}\, x\right)}{e\sqrt{-f}+d\sqrt{g}}\right]}{4\,(-f)^{5/2}}+\frac{b\, e\sqrt{g}\, n\,\text{Log}\left[\sqrt{-f}+\sqrt{g}\, x\right]}{4 f\left(e\,(-f)^{3/2}+d f\sqrt{g}\right)}+$$

$$\frac{3\sqrt{g}\,(a+b\,\text{Log}[c\,(d+e x)^n])\,\text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g}\, x\right)}{e\sqrt{-f}-d\sqrt{g}}\right]}{4\,(-f)^{5/2}}+\frac{3 b\sqrt{g}\, n\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e x)}{e\sqrt{-f}-d\sqrt{g}}\right]}{4\,(-f)^{5/2}}-\frac{3 b\sqrt{g}\, n\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e x)}{e\sqrt{-f}+d\sqrt{g}}\right]}{4\,(-f)^{5/2}}$$

Result (type 4, 593 leaves):

$$\frac{1}{8 f^{5/2}}\left(-\frac{8\sqrt{f}\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{x}-\frac{4\sqrt{f}\, g x\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{f+g x^2}-12\sqrt{g}\operatorname{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]\left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)+b n\left(\frac{8\sqrt{f}\left(e x \operatorname{Log}[x]-(d+e x)\operatorname{Log}[d+e x]\right)}{d x}-\left(\sqrt{f}\sqrt{g}\left(-2 e\left(\sqrt{f}+i\sqrt{g}\, x\right)\operatorname{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]+2\sqrt{g}(d+e x)\operatorname{Log}[d+e x]+i e\left(\sqrt{f}+i\sqrt{g}\, x\right)\operatorname{Log}\left[f+g x^2\right]\right)\right)\Big/\left(\left(e\sqrt{f}-i d\sqrt{g}\right)\left(\sqrt{f}+i\sqrt{g}\, x\right)\right)+\left(\sqrt{f}\sqrt{g}\left(2 e\left(\sqrt{f}-i\sqrt{g}\, x\right)\operatorname{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right]-2\sqrt{g}(d+e x)\operatorname{Log}[d+e x]+e\left(i\sqrt{f}+\sqrt{g}\, x\right)\operatorname{Log}\left[f+g x^2\right]\right)\right)\Big/\left(\left(e\sqrt{f}+i d\sqrt{g}\right)\left(\sqrt{f}-i\sqrt{g}\, x\right)\right)-6 i\sqrt{g}\left(\operatorname{Log}[d+e x]\operatorname{Log}\left[1-\frac{\sqrt{g}(d+e x)}{-i e\sqrt{f}+d\sqrt{g}}\right]+\operatorname{PolyLog}\left[2,\frac{\sqrt{g}(d+e x)}{-i e\sqrt{f}+d\sqrt{g}}\right]\right)+6 i\sqrt{g}\left(\operatorname{Log}[d+e x]\operatorname{Log}\left[1-\frac{\sqrt{g}(d+e x)}{i e\sqrt{f}+d\sqrt{g}}\right]+\operatorname{PolyLog}\left[2,\frac{\sqrt{g}(d+e x)}{i e\sqrt{f}+d\sqrt{g}}\right]\right)\right)\right)$$

Problem 275: Attempted integration timed out after 120 seconds.

$$\int \frac{a+b \operatorname{Log}\left[c (d+e x)^n\right]}{\sqrt{2+g x^2}}\, dx$$

Optimal (type 4, 326 leaves, 10 steps):

$$\frac{b n \operatorname{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{2}}\right]^2}{2\sqrt{g}}-\frac{b n \operatorname{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{2}}\right]\operatorname{Log}\left[1+\frac{\sqrt{2}\, e\, e^{\operatorname{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{2}}\right]}}{d\sqrt{g}-\sqrt{2 e^2+d^2 g}}\right]}{\sqrt{g}}-\frac{b n \operatorname{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{2}}\right]\operatorname{Log}\left[1+\frac{\sqrt{2}\, e\, e^{\operatorname{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{2}}\right]}}{d\sqrt{g}+\sqrt{2 e^2+d^2 g}}\right]}{\sqrt{g}}+\frac{\operatorname{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{2}}\right]\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{\sqrt{g}}-\frac{b n \operatorname{PolyLog}\left[2,-\frac{\sqrt{2}\, e\, e^{\operatorname{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{2}}\right]}}{d\sqrt{g}-\sqrt{2 e^2+d^2 g}}\right]}{\sqrt{g}}-\frac{b n \operatorname{PolyLog}\left[2,-\frac{\sqrt{2}\, e\, e^{\operatorname{ArcSinh}\left[\frac{\sqrt{g}\, x}{\sqrt{2}}\right]}}{d\sqrt{g}+\sqrt{2 e^2+d^2 g}}\right]}{\sqrt{g}}$$

Result (type 1, 1 leaves):

???

Problem 276: Attempted integration timed out after 120 seconds.

$$\int \frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{\sqrt{f+g\,x^2}}\,dx$$

Optimal (type 4, 506 leaves, 11 steps):

$$\frac{b\sqrt{f}\,n\sqrt{1+\frac{g x^2}{f}}\,\text{ArcSinh}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]^2}{2\sqrt{g}\,\sqrt{f+g x^2}}-\frac{b\sqrt{f}\,n\sqrt{1+\frac{g x^2}{f}}\,\text{ArcSinh}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\text{Log}\left[1+\frac{e\,e^{\text{ArcSinh}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]}\sqrt{f}}{d\sqrt{g}-\sqrt{e^2 f+d^2 g}}\right]}{\sqrt{g}\,\sqrt{f+g x^2}}-$$

$$\frac{b\sqrt{f}\,n\sqrt{1+\frac{g x^2}{f}}\,\text{ArcSinh}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\text{Log}\left[1+\frac{e\,e^{\text{ArcSinh}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]}\sqrt{f}}{d\sqrt{g}+\sqrt{e^2 f+d^2 g}}\right]}{\sqrt{g}\,\sqrt{f+g x^2}}+\frac{\sqrt{f}\sqrt{1+\frac{g x^2}{f}}\,\text{ArcSinh}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{\sqrt{g}\,\sqrt{f+g x^2}}-$$

$$\frac{b\sqrt{f}\,n\sqrt{1+\frac{g x^2}{f}}\,\text{PolyLog}\left[2,-\frac{e\,e^{\text{ArcSinh}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]}\sqrt{f}}{d\sqrt{g}-\sqrt{e^2 f+d^2 g}}\right]}{\sqrt{g}\,\sqrt{f+g x^2}}-\frac{b\sqrt{f}\,n\sqrt{1+\frac{g x^2}{f}}\,\text{PolyLog}\left[2,-\frac{e\,e^{\text{ArcSinh}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]}\sqrt{f}}{d\sqrt{g}+\sqrt{e^2 f+d^2 g}}\right]}{\sqrt{g}\,\sqrt{f+g x^2}}$$

Result (type 1, 1 leaves):

???

Problem 277: Attempted integration timed out after 120 seconds.

$$\int \frac{a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]}{\sqrt{2-g\,x}\,\sqrt{2+g\,x}}\,dx$$

Optimal (type 4, 278 leaves, 9 steps):

$$\frac{i\,b\,n\,\text{ArcSin}\left[\frac{g x}{2}\right]^2}{2 g}-\frac{b\,n\,\text{ArcSin}\left[\frac{g x}{2}\right]\text{Log}\left[1+\frac{2\,e\,e^{i\,\text{ArcSin}\left[\frac{g x}{2}\right]}}{i\,d\,g-\sqrt{4 e^2-d^2 g^2}}\right]}{g}-\frac{b\,n\,\text{ArcSin}\left[\frac{g x}{2}\right]\text{Log}\left[1+\frac{2\,e\,e^{i\,\text{ArcSin}\left[\frac{g x}{2}\right]}}{i\,d\,g+\sqrt{4 e^2-d^2 g^2}}\right]}{g}+$$

$$\frac{\text{ArcSin}\left[\frac{g x}{2}\right]\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{g}+\frac{i\,b\,n\,\text{PolyLog}\left[2,-\frac{2\,e\,e^{i\,\text{ArcSin}\left[\frac{g x}{2}\right]}}{i\,d\,g-\sqrt{4 e^2-d^2 g^2}}\right]}{g}+\frac{i\,b\,n\,\text{PolyLog}\left[2,-\frac{2\,e\,e^{i\,\text{ArcSin}\left[\frac{g x}{2}\right]}}{i\,d\,g+\sqrt{4 e^2-d^2 g^2}}\right]}{g}$$

Result (type 1, 1 leaves):

???

Problem 278: Attempted integration timed out after 120 seconds.

$$\int \frac{a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]}{\sqrt{f-g\,x}\,\sqrt{f+g\,x}}\,dx$$

Optimal (type 4, 510 leaves, 11 steps):

$$\frac{i\,b\,f\,n\,\sqrt{1-\frac{g^2x^2}{f^2}}\,\mathrm{ArcSin}\left[\frac{g\,x}{f}\right]^2}{2\,g\,\sqrt{f-g\,x}\,\sqrt{f+g\,x}}-\frac{b\,f\,n\,\sqrt{1-\frac{g^2x^2}{f^2}}\,\mathrm{ArcSin}\left[\frac{g\,x}{f}\right]\,\mathrm{Log}\left[1+\frac{e\,e^{i\,\mathrm{ArcSin}\left[\frac{g\,x}{f}\right]}\,f}{i\,d\,g-\sqrt{e^2f^2-d^2g^2}}\right]}{g\,\sqrt{f-g\,x}\,\sqrt{f+g\,x}}-$$

$$\frac{b\,f\,n\,\sqrt{1-\frac{g^2x^2}{f^2}}\,\mathrm{ArcSin}\left[\frac{g\,x}{f}\right]\,\mathrm{Log}\left[1+\frac{e\,e^{i\,\mathrm{ArcSin}\left[\frac{g\,x}{f}\right]}\,f}{i\,d\,g+\sqrt{e^2f^2-d^2g^2}}\right]}{g\,\sqrt{f-g\,x}\,\sqrt{f+g\,x}}+\frac{f\,\sqrt{1-\frac{g^2x^2}{f^2}}\,\mathrm{ArcSin}\left[\frac{g\,x}{f}\right]\,\left(a+b\,\mathrm{Log}\left[c\,(d+e\,x)^n\right]\right)}{g\,\sqrt{f-g\,x}\,\sqrt{f+g\,x}}+$$

$$\frac{i\,b\,f\,n\,\sqrt{1-\frac{g^2x^2}{f^2}}\,\mathrm{PolyLog}\left[2,-\frac{e\,e^{i\,\mathrm{ArcSin}\left[\frac{g\,x}{f}\right]}\,f}{i\,d\,g-\sqrt{e^2f^2-d^2g^2}}\right]}{g\,\sqrt{f-g\,x}\,\sqrt{f+g\,x}}+\frac{i\,b\,f\,n\,\sqrt{1-\frac{g^2x^2}{f^2}}\,\mathrm{PolyLog}\left[2,-\frac{e\,e^{i\,\mathrm{ArcSin}\left[\frac{g\,x}{f}\right]}\,f}{i\,d\,g+\sqrt{e^2f^2-d^2g^2}}\right]}{g\,\sqrt{f-g\,x}\,\sqrt{f+g\,x}}$$

Result (type 1, 1 leaves):

???

Problem 279: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Log}\left[\frac{2\,e}{e+f\,x}\right]}{e^2-f^2x^2}\,dx$$

Optimal (type 4, 24 leaves, 2 steps):

$$\frac{\mathrm{PolyLog}\left[2,1-\frac{2\,e}{e+f\,x}\right]}{2\,e\,f}$$

Result (type 4, 89 leaves):

$$\frac{1}{4\,e\,f}\left(4\,\mathrm{ArcTanh}\left[\frac{f\,x}{e}\right]\left(\mathrm{Log}\left[\frac{e}{f}+x\right]+\mathrm{Log}\left[\frac{2\,e}{e+f\,x}\right]\right)-\mathrm{Log}\left[\frac{e}{f}+x\right]\left(\mathrm{Log}[4]+\mathrm{Log}\left[\frac{e}{f}+x\right]-2\,\mathrm{Log}\left[1-\frac{f\,x}{e}\right]\right)+2\,\mathrm{PolyLog}\left[2,\frac{e+f\,x}{2\,e}\right]\right)$$

Problem 280: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{e}{e+f x}\right]}{e^2-f^2 x^2}\,dx$$

Optimal (type 4, 42 leaves, 4 steps):

$$-\frac{\text{ArcTanh}\left[\frac{f x}{e}\right]\text{Log}[2]}{e f}+\frac{\text{PolyLog}\left[2,1-\frac{2 e}{e+f x}\right]}{2 e f}$$

Result (type 4, 88 leaves):

$$\frac{1}{4 e f}\left(4\,\text{ArcTanh}\left[\frac{f x}{e}\right]\left(\text{Log}\left[\frac{e}{f}+x\right]+\text{Log}\left[\frac{e}{e+f x}\right]\right)-\text{Log}\left[\frac{e}{f}+x\right]\left(\text{Log}[4]+\text{Log}\left[\frac{e}{f}+x\right]-2\,\text{Log}\left[1-\frac{f x}{e}\right]\right)+2\,\text{PolyLog}\left[2,\frac{e+f x}{2 e}\right]\right)$$

Problem 281: Result more than twice size of optimal antiderivative.

$$\int \frac{a+b\,\text{Log}\left[\frac{2 e}{e+f x}\right]}{e^2-f^2 x^2}\,dx$$

Optimal (type 4, 41 leaves, 4 steps):

$$\frac{a\,\text{ArcTanh}\left[\frac{f x}{e}\right]}{e f}+\frac{b\,\text{PolyLog}\left[2,1-\frac{2 e}{e+f x}\right]}{2 e f}$$

Result (type 4, 115 leaves):

$$\frac{1}{4 e f}\left(-b\,\text{Log}\left[\frac{e}{f}+x\right]^2-2 a\,\text{Log}[e-f x]+2 b\,\text{Log}\left[\frac{e}{f}+x\right]\text{Log}\left[\frac{e-f x}{2 e}\right]+4 b\,\text{ArcTanh}\left[\frac{f x}{e}\right]\left(\text{Log}\left[\frac{e}{f}+x\right]+\text{Log}\left[\frac{2 e}{e+f x}\right]\right)+2 a\,\text{Log}[e+f x]+2 b\,\text{PolyLog}\left[2,\frac{e+f x}{2 e}\right]\right)$$

Problem 282: Result more than twice size of optimal antiderivative.

$$\int \frac{a+b\,\text{Log}\left[\frac{e}{e+f x}\right]}{e^2-f^2 x^2}\,dx$$

Optimal (type 4, 47 leaves, 4 steps):

$$\frac{\text{ArcTanh}\left[\frac{f x}{e}\right]\left(a-b\,\text{Log}[2]\right)}{e f}+\frac{b\,\text{PolyLog}\left[2,1-\frac{2 e}{e+f x}\right]}{2 e f}$$

Result (type 4, 114 leaves):

$$\frac{1}{4\,e\,f}\left(-b\,\text{Log}\left[\frac{e}{f}+x\right]^2-2\,a\,\text{Log}[e-f\,x]+2\,b\,\text{Log}\left[\frac{e}{f}+x\right]\text{Log}\left[\frac{e-f\,x}{2\,e}\right]+4\,b\,\text{ArcTanh}\left[\frac{f\,x}{e}\right]\left(\text{Log}\left[\frac{e}{f}+x\right]+\text{Log}\left[\frac{e}{e+f\,x}\right]\right)+2\,a\,\text{Log}[e+f\,x]+2\,b\,\text{PolyLog}\left[2,\frac{e+f\,x}{2\,e}\right]\right)$$

Problem 293: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^7\,\text{Log}[c+d\,x]}{a+b\,x^4}\,dx$$

Optimal (type 4, 498 leaves, 23 steps):

$$\frac{c^3\,x}{4\,b\,d^3}-\frac{c^2\,x^2}{8\,b\,d^2}+\frac{c\,x^3}{12\,b\,d}-\frac{x^4}{16\,b}-\frac{c^4\,\text{Log}[c+d\,x]}{4\,b\,d^4}+\frac{x^4\,\text{Log}[c+d\,x]}{4\,b}-\frac{a\,\text{Log}\left[\frac{d\left(\sqrt{-\sqrt{-a}}-b^{1/4}\,x\right)}{b^{1/4}\,c+\sqrt{-\sqrt{-a}}\,d}\right]\text{Log}[c+d\,x]}{4\,b^2}-$$
$$\frac{a\,\text{Log}\left[\frac{d\left((-a)^{1/4}-b^{1/4}\,x\right)}{b^{1/4}\,c+(-a)^{1/4}\,d}\right]\text{Log}[c+d\,x]}{4\,b^2}-\frac{a\,\text{Log}\left[-\frac{d\left(\sqrt{-\sqrt{-a}}+b^{1/4}\,x\right)}{b^{1/4}\,c-\sqrt{-\sqrt{-a}}\,d}\right]\text{Log}[c+d\,x]}{4\,b^2}-\frac{a\,\text{Log}\left[-\frac{d\left((-a)^{1/4}+b^{1/4}\,x\right)}{b^{1/4}\,c-(-a)^{1/4}\,d}\right]\text{Log}[c+d\,x]}{4\,b^2}-$$
$$\frac{a\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-\sqrt{-\sqrt{-a}}\,d}\right]}{4\,b^2}-\frac{a\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+\sqrt{-\sqrt{-a}}\,d}\right]}{4\,b^2}-\frac{a\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-a)^{1/4}\,d}\right]}{4\,b^2}-\frac{a\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-a)^{1/4}\,d}\right]}{4\,b^2}$$

Result (type 4, 441 leaves):

$$-\frac{1}{48\,b^2\,d^4}\left(-12\,b\,c^3\,d\,x+6\,b\,c^2\,d^2\,x^2-4\,b\,c\,d^3\,x^3+3\,b\,d^4\,x^4+12\,b\,c^4\,\text{Log}[c+d\,x]-12\,b\,d^4\,x^4\,\text{Log}[c+d\,x]+12\,a\,d^4\,\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{1/4}\,a^{1/4}\,d}\right]+\right.$$
$$12\,a\,d^4\,\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{1/4}\,a^{1/4}\,d}\right]+12\,a\,d^4\,\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{3/4}\,a^{1/4}\,d}\right]+$$
$$12\,a\,d^4\,\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{3/4}\,a^{1/4}\,d}\right]+12\,a\,d^4\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{1/4}\,a^{1/4}\,d}\right]+$$
$$\left.12\,a\,d^4\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{1/4}\,a^{1/4}\,d}\right]+12\,a\,d^4\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{3/4}\,a^{1/4}\,d}\right]+12\,a\,d^4\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{3/4}\,a^{1/4}\,d}\right]\right)$$

Problem 294: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^3 \operatorname{Log}[c + d x]}{a + b x^4} \, dx$$

Optimal (type 4, 401 leaves, 18 steps):

$$\frac{\operatorname{Log}\left[\frac{d\left(\sqrt{-\sqrt{-a}}-b^{1/4} x\right)}{b^{1/4} c+\sqrt{-\sqrt{-a}}\, d}\right] \operatorname{Log}[c+d x]}{4 b}+\frac{\operatorname{Log}\left[\frac{d\left((-a)^{1/4}-b^{1/4} x\right)}{b^{1/4} c+(-a)^{1/4} d}\right] \operatorname{Log}[c+d x]}{4 b}+\frac{\operatorname{Log}\left[-\frac{d\left(\sqrt{-\sqrt{-a}}+b^{1/4} x\right)}{b^{1/4} c-\sqrt{-\sqrt{-a}}\, d}\right] \operatorname{Log}[c+d x]}{4 b}+\frac{\operatorname{Log}\left[-\frac{d\left((-a)^{1/4}+b^{1/4} x\right)}{b^{1/4} c-(-a)^{1/4} d}\right] \operatorname{Log}[c+d x]}{4 b}+$$

$$\frac{\operatorname{PolyLog}\left[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c-\sqrt{-\sqrt{-a}}\, d}\right]}{4 b}+\frac{\operatorname{PolyLog}\left[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c+\sqrt{-\sqrt{-a}}\, d}\right]}{4 b}+\frac{\operatorname{PolyLog}\left[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c-(-a)^{1/4} d}\right]}{4 b}+\frac{\operatorname{PolyLog}\left[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c+(-a)^{1/4} d}\right]}{4 b}$$

Result (type 4, 328 leaves):

$$\frac{1}{4 b}\left(\operatorname{Log}[c+d x] \operatorname{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{1/4} a^{1/4} d}\right]+\operatorname{Log}[c+d x] \operatorname{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{1/4} a^{1/4} d}\right]+\right.$$

$$\operatorname{Log}[c+d x] \operatorname{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{3/4} a^{1/4} d}\right]+\operatorname{Log}[c+d x] \operatorname{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{3/4} a^{1/4} d}\right]+\operatorname{PolyLog}\left[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{1/4} a^{1/4} d}\right]+$$

$$\left.\operatorname{PolyLog}\left[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{1/4} a^{1/4} d}\right]+\operatorname{PolyLog}\left[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{3/4} a^{1/4} d}\right]+\operatorname{PolyLog}\left[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{3/4} a^{1/4} d}\right]\right)$$

Problem 295: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\operatorname{Log}[c + d x]}{x \left(a + b x^4\right)} \, dx$$

Optimal (type 4, 433 leaves, 22 steps):

$$\frac{\text{Log}\left[-\frac{d x}{c}\right] \text{Log}[c+d x]}{a}-\frac{\text{Log}\left[\frac{d\left(\sqrt{-\sqrt{-a}}-b^{1/4} x\right)}{b^{1/4} c+\sqrt{-\sqrt{-a}}\, d}\right] \text{Log}[c+d x]}{4 a}-\frac{\text{Log}\left[\frac{d\left((-a)^{1/4}-b^{1/4} x\right)}{b^{1/4} c+(-a)^{1/4} d}\right] \text{Log}[c+d x]}{4 a}-$$

$$\frac{\text{Log}\left[-\frac{d\left(\sqrt{-\sqrt{-a}}+b^{1/4} x\right)}{b^{1/4} c-\sqrt{-\sqrt{-a}}\, d}\right] \text{Log}[c+d x]}{4 a}-\frac{\text{Log}\left[-\frac{d\left((-a)^{1/4}+b^{1/4} x\right)}{b^{1/4} c-(-a)^{1/4} d}\right] \text{Log}[c+d x]}{4 a}-\frac{\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c-\sqrt{-\sqrt{-a}}\, d}\right]}{4 a}-$$

$$\frac{\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c+\sqrt{-\sqrt{-a}}\, d}\right]}{4 a}-\frac{\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-a)^{1/4} d}\right]}{4 a}-\frac{\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-a)^{1/4} d}\right]}{4 a}+\frac{\text{PolyLog}\left[2,1+\frac{d x}{c}\right]}{a}$$

Result (type 4, 362 leaves):

$$-\frac{1}{4 a}\left(-4 \text{Log}[x] \text{Log}[c+d x]+4 \text{Log}[x] \text{Log}\left[1+\frac{d x}{c}\right]+\text{Log}[c+d x] \text{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{1/4} a^{1/4} d}\right]+\right.$$

$$\text{Log}[c+d x] \text{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{1/4} a^{1/4} d}\right]+\text{Log}[c+d x] \text{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{3/4} a^{1/4} d}\right]+$$

$$\text{Log}[c+d x] \text{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{3/4} a^{1/4} d}\right]+4 \text{PolyLog}\left[2,-\frac{d x}{c}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{1/4} a^{1/4} d}\right]+$$

$$\left.\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{1/4} a^{1/4} d}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{3/4} a^{1/4} d}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{3/4} a^{1/4} d}\right]\right)$$

Problem 296: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^5 \text{Log}[c+d x]}{a+b x^4}\, dx$$

Optimal (type 4, 530 leaves, 23 steps):

$$\frac{c\,x}{2\,b\,d}-\frac{x^2}{4\,b}-\frac{c^2\,\text{Log}[c+d\,x]}{2\,b\,d^2}+\frac{x^2\,\text{Log}[c+d\,x]}{2\,b}-\frac{\sqrt{-a}\,\text{Log}\left[\frac{d\left(\sqrt{-\sqrt{-a}}-b^{1/4}\,x\right)}{b^{1/4}\,c+\sqrt{-\sqrt{-a}}\,d}\right]\text{Log}[c+d\,x]}{4\,b^{3/2}}+\frac{\sqrt{-a}\,\text{Log}\left[\frac{d\left((-a)^{1/4}-b^{1/4}\,x\right)}{b^{1/4}\,c+(-a)^{1/4}\,d}\right]\text{Log}[c+d\,x]}{4\,b^{3/2}}-\frac{\sqrt{-a}\,\text{Log}\left[-\frac{d\left(\sqrt{-\sqrt{-a}}+b^{1/4}\,x\right)}{b^{1/4}\,c-\sqrt{-\sqrt{-a}}\,d}\right]\text{Log}[c+d\,x]}{4\,b^{3/2}}+\frac{\sqrt{-a}\,\text{Log}\left[-\frac{d\left((-a)^{1/4}+b^{1/4}\,x\right)}{b^{1/4}\,c-(-a)^{1/4}\,d}\right]\text{Log}[c+d\,x]}{4\,b^{3/2}}-\frac{\sqrt{-a}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-\sqrt{-\sqrt{-a}}\,d}\right]}{4\,b^{3/2}}-\frac{\sqrt{-a}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+\sqrt{-\sqrt{-a}}\,d}\right]}{4\,b^{3/2}}+\frac{\sqrt{-a}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-a)^{1/4}\,d}\right]}{4\,b^{3/2}}+\frac{\sqrt{-a}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-a)^{1/4}\,d}\right]}{4\,b^{3/2}}$$

Result (type 4, 473 leaves) :

$$-\frac{1}{4\,b^{3/2}\,d^2}\,\mathrm{i}\left(2\,\mathrm{i}\,\sqrt{b}\,c\,d\,x-\mathrm{i}\,\sqrt{b}\,d^2\,x^2-2\,\mathrm{i}\,\sqrt{b}\,c^2\,\text{Log}[c+d\,x]+2\,\mathrm{i}\,\sqrt{b}\,d^2\,x^2\,\text{Log}[c+d\,x]-\sqrt{a}\,d^2\,\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{1/4}\,a^{1/4}\,d}\right]-\sqrt{a}\,d^2\,\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{1/4}\,a^{1/4}\,d}\right]+\sqrt{a}\,d^2\,\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{3/4}\,a^{1/4}\,d}\right]+\sqrt{a}\,d^2\,\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{3/4}\,a^{1/4}\,d}\right]-\sqrt{a}\,d^2\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{1/4}\,a^{1/4}\,d}\right]-\sqrt{a}\,d^2\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{1/4}\,a^{1/4}\,d}\right]+\sqrt{a}\,d^2\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{3/4}\,a^{1/4}\,d}\right]+\sqrt{a}\,d^2\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{3/4}\,a^{1/4}\,d}\right]\right)$$

Problem 297: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x\,\text{Log}[c+d\,x]}{a+b\,x^4}\,dx$$

Optimal (type 4, 473 leaves, 18 steps) :

$$-\frac{\text{Log}\left[\frac{d\left(\sqrt{-\sqrt{-a}}-b^{1/4}\,x\right)}{b^{1/4}\,c+\sqrt{-\sqrt{-a}}\,d}\right]\text{Log}[c+d\,x]}{4\,\sqrt{-a}\,\sqrt{b}}+\frac{\text{Log}\left[\frac{d\left((-a)^{1/4}-b^{1/4}\,x\right)}{b^{1/4}\,c+(-a)^{1/4}\,d}\right]\text{Log}[c+d\,x]}{4\,\sqrt{-a}\,\sqrt{b}}-\frac{\text{Log}\left[-\frac{d\left(\sqrt{-\sqrt{-a}}+b^{1/4}\,x\right)}{b^{1/4}\,c-\sqrt{-\sqrt{-a}}\,d}\right]\text{Log}[c+d\,x]}{4\,\sqrt{-a}\,\sqrt{b}}+\frac{\text{Log}\left[-\frac{d\left((-a)^{1/4}+b^{1/4}\,x\right)}{b^{1/4}\,c-(-a)^{1/4}\,d}\right]\text{Log}[c+d\,x]}{4\,\sqrt{-a}\,\sqrt{b}}-\frac{\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-\sqrt{-\sqrt{-a}}\,d}\right]}{4\,\sqrt{-a}\,\sqrt{b}}-\frac{\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+\sqrt{-\sqrt{-a}}\,d}\right]}{4\,\sqrt{-a}\,\sqrt{b}}+\frac{\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-a)^{1/4}\,d}\right]}{4\,\sqrt{-a}\,\sqrt{b}}+\frac{\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-a)^{1/4}\,d}\right]}{4\,\sqrt{-a}\,\sqrt{b}}$$

Result (type 4, 343 leaves) :

$$-\frac{1}{4\sqrt{a}\,\sqrt{b}}\,i\left(\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{1/4}\,a^{1/4}\,d}\right]+\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{1/4}\,a^{1/4}\,d}\right]-\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{3/4}\,a^{1/4}\,d}\right]-\right.$$
$$\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{3/4}\,a^{1/4}\,d}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{1/4}\,a^{1/4}\,d}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{1/4}\,a^{1/4}\,d}\right]-$$
$$\left.\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{3/4}\,a^{1/4}\,d}\right]-\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{3/4}\,a^{1/4}\,d}\right]\right)$$

Problem 298: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}[c+d\,x]}{x^3\,(a+b\,x^4)}\,dx$$

Optimal (type 4, 537 leaves, 23 steps):

$$-\frac{d}{2\,a\,c\,x}-\frac{d^2\,\text{Log}[x]}{2\,a\,c^2}+\frac{d^2\,\text{Log}[c+d\,x]}{2\,a\,c^2}-\frac{\text{Log}[c+d\,x]}{2\,a\,x^2}-\frac{\sqrt{b}\,\text{Log}\left[\frac{d\left(\sqrt{-\sqrt{-a}}-b^{1/4}\,x\right)}{b^{1/4}\,c+\sqrt{-\sqrt{-a}}\,d}\right]\,\text{Log}[c+d\,x]}{4\,(-a)^{3/2}}+$$
$$\frac{\sqrt{b}\,\text{Log}\left[\frac{d\left((-a)^{1/4}-b^{1/4}\,x\right)}{b^{1/4}\,c+(-a)^{1/4}\,d}\right]\,\text{Log}[c+d\,x]}{4\,(-a)^{3/2}}-\frac{\sqrt{b}\,\text{Log}\left[-\frac{d\left(\sqrt{-\sqrt{-a}}+b^{1/4}\,x\right)}{b^{1/4}\,c-\sqrt{-\sqrt{-a}}\,d}\right]\,\text{Log}[c+d\,x]}{4\,(-a)^{3/2}}+\frac{\sqrt{b}\,\text{Log}\left[-\frac{d\left((-a)^{1/4}+b^{1/4}\,x\right)}{b^{1/4}\,c-(-a)^{1/4}\,d}\right]\,\text{Log}[c+d\,x]}{4\,(-a)^{3/2}}-$$
$$\frac{\sqrt{b}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-\sqrt{-\sqrt{-a}}\,d}\right]}{4\,(-a)^{3/2}}-\frac{\sqrt{b}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+\sqrt{-\sqrt{-a}}\,d}\right]}{4\,(-a)^{3/2}}+\frac{\sqrt{b}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-a)^{1/4}\,d}\right]}{4\,(-a)^{3/2}}+\frac{\sqrt{b}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-a)^{1/4}\,d}\right]}{4\,(-a)^{3/2}}$$

Result (type 4, 416 leaves):

$$\frac{1}{4 a^{3/2}}\left(-\frac{2\sqrt{a}\left(c d x+d^2 x^2 \text{Log}[x]+\left(c^2-d^2 x^2\right) \text{Log}[c+d x]\right)}{c^2 x^2}+i\sqrt{b}\left(\text{Log}[c+d x]\,\text{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{1/4} a^{1/4} d}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{1/4} a^{1/4} d}\right]\right)+\right.$$
$$i\sqrt{b}\left(\text{Log}[c+d x]\,\text{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{1/4} a^{1/4} d}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{1/4} a^{1/4} d}\right]\right)-$$
$$i\sqrt{b}\left(\text{Log}[c+d x]\,\text{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{3/4} a^{1/4} d}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{3/4} a^{1/4} d}\right]\right)-$$
$$\left.i\sqrt{b}\left(\text{Log}[c+d x]\,\text{Log}\left[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{3/4} a^{1/4} d}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{3/4} a^{1/4} d}\right]\right)\right)$$

Problem 299: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^4 \text{Log}[c+d x]}{a+b x^4}\, dx$$

Optimal (type 4, 521 leaves, 22 steps):

$$-\frac{x}{b}+\frac{(c+d x)\,\text{Log}[c+d x]}{b d}+\frac{\sqrt{-\sqrt{-a}}\,\text{Log}\left[\frac{d\left(\sqrt{-\sqrt{-a}}-b^{1/4} x\right)}{b^{1/4} c+\sqrt{-\sqrt{-a}}\, d}\right]\text{Log}[c+d x]}{4 b^{5/4}}+\frac{(-a)^{1/4}\,\text{Log}\left[\frac{d\left((-a)^{1/4}-b^{1/4} x\right)}{b^{1/4} c+(-a)^{1/4} d}\right]\text{Log}[c+d x]}{4 b^{5/4}}-$$
$$\frac{\sqrt{-\sqrt{-a}}\,\text{Log}\left[-\frac{d\left(\sqrt{-\sqrt{-a}}+b^{1/4} x\right)}{b^{1/4} c-\sqrt{-\sqrt{-a}}\, d}\right]\text{Log}[c+d x]}{4 b^{5/4}}-\frac{(-a)^{1/4}\,\text{Log}\left[-\frac{d\left((-a)^{1/4}+b^{1/4} x\right)}{b^{1/4} c-(-a)^{1/4} d}\right]\text{Log}[c+d x]}{4 b^{5/4}}-\frac{\sqrt{-\sqrt{-a}}\,\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c-\sqrt{-\sqrt{-a}}\, d}\right]}{4 b^{5/4}}+$$
$$\frac{\sqrt{-\sqrt{-a}}\,\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c+\sqrt{-\sqrt{-a}}\, d}\right]}{4 b^{5/4}}-\frac{(-a)^{1/4}\,\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-a)^{1/4} d}\right]}{4 b^{5/4}}+\frac{(-a)^{1/4}\,\text{PolyLog}\left[2,\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-a)^{1/4} d}\right]}{4 b^{5/4}}$$

Result (type 4, 470 leaves):

$$\frac{1}{4 b^{5/4} d}(-1)^{3/4}\Big(4(-1)^{1/4} b^{1/4} c+4(-1)^{1/4} b^{1/4} d x-4(-1)^{1/4} b^{1/4} c \operatorname{Log}[c+d x]-4(-1)^{1/4} b^{1/4} d x \operatorname{Log}[c+d x]+$$
$$i a^{1/4} d \operatorname{Log}[c+d x] \operatorname{Log}\Big[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{1/4} a^{1/4} d}\Big]-i a^{1/4} d \operatorname{Log}[c+d x] \operatorname{Log}\Big[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{1/4} a^{1/4} d}\Big]-$$
$$a^{1/4} d \operatorname{Log}[c+d x] \operatorname{Log}\Big[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{3/4} a^{1/4} d}\Big]+a^{1/4} d \operatorname{Log}[c+d x] \operatorname{Log}\Big[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{3/4} a^{1/4} d}\Big]+$$
$$i a^{1/4} d \operatorname{PolyLog}\Big[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{1/4} a^{1/4} d}\Big]-i a^{1/4} d \operatorname{PolyLog}\Big[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{1/4} a^{1/4} d}\Big]-$$
$$a^{1/4} d \operatorname{PolyLog}\Big[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{3/4} a^{1/4} d}\Big]+a^{1/4} d \operatorname{PolyLog}\Big[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{3/4} a^{1/4} d}\Big]\Big)$$

Problem 300: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^2 \operatorname{Log}[c+d x]}{a+b x^4} dx$$

Optimal (type 4, 497 leaves, 18 steps):

$$\frac{\operatorname{Log}\Big[\frac{d\left(\sqrt{-\sqrt{-a}}-b^{1/4} x\right)}{b^{1/4} c+\sqrt{-\sqrt{-a}}\, d}\Big] \operatorname{Log}[c+d x]}{4 \sqrt{-\sqrt{-a}}\, b^{3/4}}+\frac{\operatorname{Log}\Big[\frac{d\left((-a)^{1/4}-b^{1/4} x\right)}{b^{1/4} c+(-a)^{1/4} d}\Big] \operatorname{Log}[c+d x]}{4(-a)^{1/4} b^{3/4}}-\frac{\operatorname{Log}\Big[-\frac{d\left(\sqrt{-\sqrt{-a}}+b^{1/4} x\right)}{b^{1/4} c-\sqrt{-\sqrt{-a}}\, d}\Big] \operatorname{Log}[c+d x]}{4 \sqrt{-\sqrt{-a}}\, b^{3/4}}-\frac{\operatorname{Log}\Big[-\frac{d\left((-a)^{1/4}+b^{1/4} x\right)}{b^{1/4} c-(-a)^{1/4} d}\Big] \operatorname{Log}[c+d x]}{4(-a)^{1/4} b^{3/4}}-$$
$$\frac{\operatorname{PolyLog}\Big[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c-\sqrt{-\sqrt{-a}}\, d}\Big]}{4 \sqrt{-\sqrt{-a}}\, b^{3/4}}+\frac{\operatorname{PolyLog}\Big[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c+\sqrt{-\sqrt{-a}}\, d}\Big]}{4 \sqrt{-\sqrt{-a}}\, b^{3/4}}-\frac{\operatorname{PolyLog}\Big[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c-(-a)^{1/4} d}\Big]}{4(-a)^{1/4} b^{3/4}}+\frac{\operatorname{PolyLog}\Big[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c+(-a)^{1/4} d}\Big]}{4(-a)^{1/4} b^{3/4}}$$

Result (type 4, 357 leaves):

$$\frac{1}{4 a^{1/4} b^{3/4}}$$
$$(-1)^{3/4}\Big(\operatorname{Log}[c+d x] \operatorname{Log}\Big[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{1/4} a^{1/4} d}\Big]-\operatorname{Log}[c+d x] \operatorname{Log}\Big[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{1/4} a^{1/4} d}\Big]-i \operatorname{Log}[c+d x] \operatorname{Log}\Big[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{3/4} a^{1/4} d}\Big]+$$
$$i \operatorname{Log}[c+d x] \operatorname{Log}\Big[1-\frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{3/4} a^{1/4} d}\Big]+\operatorname{PolyLog}\Big[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{1/4} a^{1/4} d}\Big]-\operatorname{PolyLog}\Big[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{1/4} a^{1/4} d}\Big]-$$
$$i \operatorname{PolyLog}\Big[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c-(-1)^{3/4} a^{1/4} d}\Big]+i \operatorname{PolyLog}\Big[2, \frac{b^{1/4}(c+d x)}{b^{1/4} c+(-1)^{3/4} a^{1/4} d}\Big]\Big)$$

Problem 301: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Log}[c+d\,x]}{a+b\,x^4}\,dx$$

Optimal (type 4, 497 leaves, 18 steps):

$$\frac{\text{Log}\left[\frac{d\left(\sqrt{-\sqrt{-a}}-b^{1/4}x\right)}{b^{1/4}c+\sqrt{-\sqrt{-a}}\,d}\right]\text{Log}[c+d\,x]}{4\left(-\sqrt{-a}\right)^{3/2}b^{1/4}}+\frac{\text{Log}\left[\frac{d\left((-a)^{1/4}-b^{1/4}x\right)}{b^{1/4}c+(-a)^{1/4}d}\right]\text{Log}[c+d\,x]}{4\,(-a)^{3/4}b^{1/4}}-\frac{\text{Log}\left[-\frac{d\left(\sqrt{-\sqrt{-a}}+b^{1/4}x\right)}{b^{1/4}c-\sqrt{-\sqrt{-a}}\,d}\right]\text{Log}[c+d\,x]}{4\left(-\sqrt{-a}\right)^{3/2}b^{1/4}}-\frac{\text{Log}\left[-\frac{d\left((-a)^{1/4}+b^{1/4}x\right)}{b^{1/4}c-(-a)^{1/4}d}\right]\text{Log}[c+d\,x]}{4\,(-a)^{3/4}b^{1/4}}-$$
$$\frac{\text{PolyLog}\left[2,\frac{b^{1/4}(c+d\,x)}{b^{1/4}c-\sqrt{-\sqrt{-a}}\,d}\right]}{4\left(-\sqrt{-a}\right)^{3/2}b^{1/4}}+\frac{\text{PolyLog}\left[2,\frac{b^{1/4}(c+d\,x)}{b^{1/4}c+\sqrt{-\sqrt{-a}}\,d}\right]}{4\left(-\sqrt{-a}\right)^{3/2}b^{1/4}}-\frac{\text{PolyLog}\left[2,\frac{b^{1/4}(c+d\,x)}{b^{1/4}c-(-a)^{1/4}d}\right]}{4\,(-a)^{3/4}b^{1/4}}+\frac{\text{PolyLog}\left[2,\frac{b^{1/4}(c+d\,x)}{b^{1/4}c+(-a)^{1/4}d}\right]}{4\,(-a)^{3/4}b^{1/4}}$$

Result (type 4, 357 leaves):

$$\frac{1}{4\,a^{3/4}b^{1/4}}(-1)^{3/4}\left(-i\,\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}(c+d\,x)}{b^{1/4}c-(-1)^{1/4}a^{1/4}d}\right]+i\,\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}(c+d\,x)}{b^{1/4}c+(-1)^{1/4}a^{1/4}d}\right]+\right.$$
$$\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}(c+d\,x)}{b^{1/4}c-(-1)^{3/4}a^{1/4}d}\right]-\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}(c+d\,x)}{b^{1/4}c+(-1)^{3/4}a^{1/4}d}\right]-i\,\text{PolyLog}\left[2,\frac{b^{1/4}(c+d\,x)}{b^{1/4}c-(-1)^{1/4}a^{1/4}d}\right]+$$
$$\left.i\,\text{PolyLog}\left[2,\frac{b^{1/4}(c+d\,x)}{b^{1/4}c+(-1)^{1/4}a^{1/4}d}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}(c+d\,x)}{b^{1/4}c-(-1)^{3/4}a^{1/4}d}\right]-\text{PolyLog}\left[2,\frac{b^{1/4}(c+d\,x)}{b^{1/4}c+(-1)^{3/4}a^{1/4}d}\right]\right)$$

Problem 302: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Log}[c+d\,x]}{x^2\left(a+b\,x^4\right)}\,dx$$

Optimal (type 4, 536 leaves, 24 steps):

$$\frac{d\,\text{Log}[x]}{a\,c}-\frac{d\,\text{Log}[c+d\,x]}{a\,c}-\frac{\text{Log}[c+d\,x]}{a\,x}+\frac{b^{1/4}\,\text{Log}\left[\frac{d\left(\sqrt{-\sqrt{-a}}-b^{1/4}\,x\right)}{b^{1/4}\,c+\sqrt{-\sqrt{-a}}\,d}\right]\,\text{Log}[c+d\,x]}{4\left(-\sqrt{-a}\right)^{5/2}}+\frac{b^{1/4}\,\text{Log}\left[\frac{d\left((-a)^{1/4}-b^{1/4}\,x\right)}{b^{1/4}\,c+(-a)^{1/4}\,d}\right]\,\text{Log}[c+d\,x]}{4\,(-a)^{5/4}}-$$

$$\frac{b^{1/4}\,\text{Log}\left[-\frac{d\left(\sqrt{-\sqrt{-a}}+b^{1/4}\,x\right)}{b^{1/4}\,c-\sqrt{-\sqrt{-a}}\,d}\right]\,\text{Log}[c+d\,x]}{4\left(-\sqrt{-a}\right)^{5/2}}-\frac{b^{1/4}\,\text{Log}\left[-\frac{d\left((-a)^{1/4}+b^{1/4}\,x\right)}{b^{1/4}\,c-(-a)^{1/4}\,d}\right]\,\text{Log}[c+d\,x]}{4\,(-a)^{5/4}}-\frac{b^{1/4}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-\sqrt{-\sqrt{-a}}\,d}\right]}{4\left(-\sqrt{-a}\right)^{5/2}}+$$

$$\frac{b^{1/4}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+\sqrt{-\sqrt{-a}}\,d}\right]}{4\left(-\sqrt{-a}\right)^{5/2}}-\frac{b^{1/4}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-a)^{1/4}\,d}\right]}{4\,(-a)^{5/4}}+\frac{b^{1/4}\,\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-a)^{1/4}\,d}\right]}{4\,(-a)^{5/4}}$$

Result (type 4, 412 leaves) :

$$\frac{1}{4\,a^{5/4}}\left(\frac{4\,a^{1/4}\,(d\,x\,\text{Log}[x]-(c+d\,x)\,\text{Log}[c+d\,x])}{c\,x}-(-1)^{3/4}\,b^{1/4}\left(\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{1/4}\,a^{1/4}\,d}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{1/4}\,a^{1/4}\,d}\right]\right)+\right.$$

$$(-1)^{3/4}\,b^{1/4}\left(\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{1/4}\,a^{1/4}\,d}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{1/4}\,a^{1/4}\,d}\right]\right)-$$

$$(-1)^{1/4}\,b^{1/4}\left(\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{3/4}\,a^{1/4}\,d}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c-(-1)^{3/4}\,a^{1/4}\,d}\right]\right)+$$

$$\left.(-1)^{1/4}\,b^{1/4}\left(\text{Log}[c+d\,x]\,\text{Log}\left[1-\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{3/4}\,a^{1/4}\,d}\right]+\text{PolyLog}\left[2,\frac{b^{1/4}\,(c+d\,x)}{b^{1/4}\,c+(-1)^{3/4}\,a^{1/4}\,d}\right]\right)\right)$$

Problem 309: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}[a+b\,x]}{c+\frac{d}{x^2}}\,dx$$

Optimal (type 4, 247 leaves, 12 steps) :

$$-\frac{x}{c}+\frac{(a+b\,x)\,\text{Log}[a+b\,x]}{b\,c}-\frac{\sqrt{d}\,\text{Log}[a+b\,x]\,\text{Log}\left[\frac{b\left(\sqrt{d}-\sqrt{-c}\,x\right)}{a\sqrt{-c}+b\sqrt{d}}\right]}{2\,(-c)^{3/2}}+$$

$$\frac{\sqrt{d}\,\text{Log}[a+b\,x]\,\text{Log}\left[-\frac{b\left(\sqrt{d}+\sqrt{-c}\,x\right)}{a\sqrt{-c}-b\sqrt{d}}\right]}{2\,(-c)^{3/2}}+\frac{\sqrt{d}\,\text{PolyLog}\left[2,\frac{\sqrt{-c}\,(a+b\,x)}{a\sqrt{-c}-b\sqrt{d}}\right]}{2\,(-c)^{3/2}}-\frac{\sqrt{d}\,\text{PolyLog}\left[2,\frac{\sqrt{-c}\,(a+b\,x)}{a\sqrt{-c}+b\sqrt{d}}\right]}{2\,(-c)^{3/2}}$$

Result (type 4, 205 leaves):

$$\frac{(a+b x)\,(-1+\text{Log}[a+b x])}{b\,c}-\frac{i\sqrt{d}\left(\text{Log}[a+b x]\,\text{Log}\left[1-\frac{\sqrt{c}\,(a+b x)}{a\sqrt{c}-i b\sqrt{d}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{c}\,(a+b x)}{a\sqrt{c}-i b\sqrt{d}}\right]\right)}{2\,c^{3/2}}+\frac{i\sqrt{d}\left(\text{Log}[a+b x]\,\text{Log}\left[1-\frac{\sqrt{c}\,(a+b x)}{a\sqrt{c}+i b\sqrt{d}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{c}\,(a+b x)}{a\sqrt{c}+i b\sqrt{d}}\right]\right)}{2\,c^{3/2}}$$

Problem 310: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^5\,\left(a+b\,\text{Log}\left[c\,(d+e x)^n\right]\right)^2}{f+g x^2}\,dx$$

Optimal (type 4, 831 leaves, 28 steps):

$$-\frac{2 a b d f n x}{e g^2}+\frac{2 b^2 d f n^2 x}{e g^2}-\frac{2 b^2 d^3 n^2 x}{e^3 g}-\frac{b^2 f n^2 (d+e x)^2}{4 e^2 g^2}+\frac{3 b^2 d^2 n^2 (d+e x)^2}{4 e^4 g}-\frac{2 b^2 d n^2 (d+e x)^3}{9 e^4 g}+\frac{b^2 n^2 (d+e x)^4}{32 e^4 g}+\frac{b^2 d^4 n^2\,\text{Log}[d+e x]^2}{4 e^4 g}-\frac{2 b^2 d f n (d+e x)\,\text{Log}\left[c (d+e x)^n\right]}{e^2 g^2}+\frac{2 b d^3 n (d+e x)\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)}{e^4 g}+\frac{b f n (d+e x)^2\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)}{2 e^2 g^2}-\frac{3 b d^2 n (d+e x)^2\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)}{2 e^4 g}+\frac{2 b d n (d+e x)^3\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)}{3 e^4 g}-\frac{b n (d+e x)^4\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)}{8 e^4 g}-\frac{b d^4 n\,\text{Log}[d+e x]\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)}{2 e^4 g}+\frac{x^4\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)^2}{4 g}+\frac{d f (d+e x)\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)^2}{e^2 g^2}-\frac{f (d+e x)^2\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)^2}{2 e^2 g^2}+\frac{f^2\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)^2\,\text{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right]}{2 g^3}+\frac{f^2\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)^2\,\text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right]}{2 g^3}+\frac{b f^2 n\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e x)}{e\sqrt{-f}-d\sqrt{g}}\right]}{g^3}+\frac{b f^2 n\left(a+b\,\text{Log}\left[c (d+e x)^n\right]\right)\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e x)}{e\sqrt{-f}+d\sqrt{g}}\right]}{g^3}-\frac{b^2 f^2 n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,(d+e x)}{e\sqrt{-f}-d\sqrt{g}}\right]}{g^3}-\frac{b^2 f^2 n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e x)}{e\sqrt{-f}+d\sqrt{g}}\right]}{g^3}$$

Result (type 4, 861 leaves):

$$-\frac{1}{288 e^4 g^3}\Big(144 e^4 f g x^2 (a - b n \text{Log}[d + e x] + b \text{Log}[c (d + e x)^n])^2 - 72 e^4 g^2 x^4 (a - b n \text{Log}[d + e x] + b \text{Log}[c (d + e x)^n])^2 -$$
$$144 e^4 f^2 (a - b n \text{Log}[d + e x] + b \text{Log}[c (d + e x)^n])^2 \text{Log}[f + g x^2] + 12 b n (a - b n \text{Log}[d + e x] + b \text{Log}[c (d + e x)^n])$$
$$\Big(12 e^2 f g (e x (2 d - e x) - 2 (d^2 - e^2 x^2) \text{Log}[d + e x]) + g^2 (e x (-12 d^3 + 6 d^2 e x - 4 d e^2 x^2 + 3 e^3 x^3) + 12 (d^4 - e^4 x^4) \text{Log}[d + e x]) -$$
$$24 e^4 f^2 \left(\text{Log}[d + e x] \text{Log}\left[1 - \frac{\sqrt{g} (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] + \text{PolyLog}\left[2, \frac{\sqrt{g} (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right]\right) -$$
$$24 e^4 f^2 \left(\text{Log}[d + e x] \text{Log}\left[1 - \frac{\sqrt{g} (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right] + \text{PolyLog}\left[2, \frac{\sqrt{g} (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right]\right)\Big) +$$
$$b^2 n^2 \Big(72 e^2 f g (e x (-6 d + e x) + (6 d^2 + 4 d e x - 2 e^2 x^2) \text{Log}[d + e x] - 2 (d^2 - e^2 x^2) \text{Log}[d + e x]^2) +$$
$$g^2 (e x (300 d^3 - 78 d^2 e x + 28 d e^2 x^2 - 9 e^3 x^3) - 12 (25 d^4 + 12 d^3 e x - 6 d^2 e^2 x^2 + 4 d e^3 x^3 - 3 e^4 x^4) \text{Log}[d + e x] + 72 (d^4 - e^4 x^4) \text{Log}[d + e x]^2) -$$
$$144 e^4 f^2 \left(\text{Log}[d + e x]^2 \text{Log}\left[1 - \frac{\sqrt{g} (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] + 2 \text{Log}[d + e x] \text{PolyLog}\left[2, \frac{\sqrt{g} (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] - 2 \text{PolyLog}\left[3, \frac{\sqrt{g} (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right]\right) -$$
$$144 e^4 f^2 \left(\text{Log}[d + e x]^2 \text{Log}\left[1 - \frac{\sqrt{g} (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right] + 2 \text{Log}[d + e x] \text{PolyLog}\left[2, \frac{\sqrt{g} (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right] - 2 \text{PolyLog}\left[3, \frac{\sqrt{g} (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right]\right)\Big)\Big)$$

Problem 311: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^3 (a + b \text{Log}[c (d + e x)^n])^2}{f + g x^2} \, dx$$

Optimal (type 4, 499 leaves, 21 steps) :

$$\frac{2\,a\,b\,d\,n\,x}{e\,g}-\frac{2\,b^2\,d\,n^2\,x}{e\,g}+\frac{b^2\,n^2\,(d+e\,x)^2}{4\,e^2\,g}+\frac{2\,b^2\,d\,n\,(d+e\,x)\,\text{Log}\left[c\,(d+e\,x)^n\right]}{e^2\,g}-\frac{b\,n\,(d+e\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,e^2\,g}-$$
$$\frac{d\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{e^2\,g}+\frac{(d+e\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2\,e^2\,g}-\frac{f\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g^2}-$$
$$\frac{f\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g^2}-\frac{b\,f\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^2}-$$
$$\frac{b\,f\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^2}+\frac{b^2\,f\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^2}+\frac{b^2\,f\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^2}$$

Result (type 4, 635 leaves) :

$$\frac{1}{4\,e^2\,g^2}\Bigg(2\,e^2\,g\,x^2\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2-$$
$$2\,e^2\,f\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[f+g\,x^2\right]+2\,b\,n\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)$$
$$\left(e\,g\,x\,(2\,d-e\,x)-2\,g\,\left(d^2-e^2\,x^2\right)\,\text{Log}[d+e\,x]-2\,e^2\,f\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-\right.$$
$$\left.2\,e^2\,f\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)+$$
$$b^2\,n^2\,\Bigg(g\,\left(e\,x\,(-6\,d+e\,x)+\left(6\,d^2+4\,d\,e\,x-2\,e^2\,x^2\right)\,\text{Log}[d+e\,x]-2\,\left(d^2-e^2\,x^2\right)\,\text{Log}[d+e\,x]^2\right)-$$
$$2\,e^2\,f\,\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-$$
$$2\,e^2\,f\,\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\Bigg)\Bigg)$$

Problem 312: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{f+g\,x^2}\,dx$$

Optimal (type 4, 317 leaves, 10 steps) :

$$\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g}+\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g}+\frac{b\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g}+$$
$$\frac{b\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g}-\frac{b^2\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g}-\frac{b^2\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g}$$

Result (type 4, 464 leaves):

$$\frac{1}{2\,g}\left(\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[f+g\,x^2\right]+2\,b\,n\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\right.$$
$$\left(\text{Log}[d+e\,x]\,\left(\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)+$$
$$b^2\,n^2\,\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\right.$$
$$\left.\left.2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)$$

Problem 313: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{x\,\left(f+g\,x^2\right)}\,dx$$

Optimal (type 4, 397 leaves, 16 steps):

$$\frac{\text{Log}\left[-\frac{e\,x}{d}\right]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{f}-\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,f}-\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,f}-$$
$$\frac{b\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{f}-\frac{b\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{f}+$$
$$\frac{2\,b\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{f}+\frac{b^2\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{f}+\frac{b^2\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{f}-\frac{2\,b^2\,n^2\,\text{PolyLog}\left[3,1+\frac{e\,x}{d}\right]}{f}$$

Result (type 4, 584 leaves):

$$-\frac{1}{2 f}\Bigg(-2\,\text{Log}[x]\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2+\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[f+g\,x^2\right]-$$

$$2\,b\,n\,\left(-a+b\,n\,\text{Log}[d+e\,x]-b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\Bigg(-2\,\text{Log}[x]\,\text{Log}[d+e\,x]+2\,\text{Log}[x]\,\text{Log}\left[1+\frac{e\,x}{d}\right]+\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+$$

$$\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\Bigg)+$$

$$b^2\,n^2\,\Bigg(-2\,\text{Log}\left[-\frac{e\,x}{d}\right]\,\text{Log}[d+e\,x]^2+\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+$$

$$2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-$$

$$4\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+4\,\text{PolyLog}\left[3,1+\frac{e\,x}{d}\right]\Bigg)\Bigg)$$

Problem 314: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{x^3\,\left(f+g\,x^2\right)}\,dx$$

Optimal (type 4, 551 leaves, 23 steps):

$$\frac{b^2\,e^2\,n^2\,\text{Log}[x]}{d^2\,f}-\frac{b\,e\,n\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{d^2\,f\,x}-\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2\,f\,x^2}-\frac{g\,\text{Log}\left[-\frac{e\,x}{d}\right]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{f^2}+$$

$$\frac{g\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,f^2}+\frac{g\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,f^2}-$$

$$\frac{b\,e^2\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[1-\frac{d}{d+e\,x}\right]}{d^2\,f}+\frac{b^2\,e^2\,n^2\,\text{PolyLog}\left[2,\frac{d}{d+e\,x}\right]}{d^2\,f}+\frac{b\,g\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{f^2}+$$

$$\frac{b\,g\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{f^2}-\frac{2\,b\,g\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{f^2}-$$

$$\frac{b^2\,g\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{f^2}-\frac{b^2\,g\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{f^2}+\frac{2\,b^2\,g\,n^2\,\text{PolyLog}\left[3,1+\frac{e\,x}{d}\right]}{f^2}$$

Result (type 4, 801 leaves):

$$-\frac{1}{2 d^2 f^2 x^2}\left(d^2 f\,(a-b n \text{Log}[d+e x]+b \text{Log}[c (d+e x)^n])^2+2 d^2 g x^2 \text{Log}[x]\,(a-b n \text{Log}[d+e x]+b \text{Log}[c (d+e x)^n])^2-\right.$$
$$d^2 g x^2 (a-b n \text{Log}[d+e x]+b \text{Log}[c (d+e x)^n])^2 \text{Log}[f+g x^2]+2 b n (a-b n \text{Log}[d+e x]+b \text{Log}[c (d+e x)^n])$$
$$\left(f \left(d e x+e^2 x^2 \text{Log}[x]+(d^2-e^2 x^2) \text{Log}[d+e x]\right)+2 d^2 g x^2 \left(\text{Log}[x]\left(\text{Log}[d+e x]-\text{Log}\left[1+\frac{e x}{d}\right]\right)-\text{PolyLog}\left[2,-\frac{e x}{d}\right]\right)-\right.$$
$$d^2 g x^2 \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)-$$
$$\left.d^2 g x^2 \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)+$$
$$b^2 n^2 \left(f \left(2 e^2 x^2 \text{Log}\left[-\frac{e x}{d}\right](-1+\text{Log}[d+e x])+(d+e x) \text{Log}[d+e x]\,(2 e x+(d-e x) \text{Log}[d+e x])+2 e^2 x^2 \text{PolyLog}\left[2,1+\frac{e x}{d}\right]\right)-\right.$$
$$d^2 g x^2 \left(\text{Log}[d+e x]^2 \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+2 \text{Log}[d+e x] \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]-2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)-$$
$$d^2 g x^2 \left(\text{Log}[d+e x]^2 \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+2 \text{Log}[d+e x] \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]-2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)+$$
$$\left.\left.2 d^2 g x^2 \left(\text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]^2+2 \text{Log}[d+e x] \text{PolyLog}\left[2,1+\frac{e x}{d}\right]-2 \text{PolyLog}\left[3,1+\frac{e x}{d}\right]\right)\right)\right)$$

Problem 315: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^4 (a+b \text{Log}[c (d+e x)^n])^2}{f+g x^2}\,dx$$

Optimal (type 4, 701 leaves, 23 steps):

$$\frac{2\,a\,b\,f\,n\,x}{g^2}-\frac{2\,b^2\,f\,n^2\,x}{g^2}+\frac{2\,b^2\,d^2\,n^2\,x}{e^2\,g}-\frac{b^2\,d\,n^2\,(d+e\,x)^2}{2\,e^3\,g}+\frac{2\,b^2\,n^2\,(d+e\,x)^3}{27\,e^3\,g}-\frac{b^2\,d^3\,n^2\,\text{Log}[d+e\,x]^2}{3\,e^3\,g}+$$
$$\frac{2\,b^2\,f\,n\,(d+e\,x)\,\text{Log}\left[c\,(d+e\,x)^n\right]}{e\,g^2}-\frac{2\,b\,d^2\,n\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{e^3\,g}+\frac{b\,d\,n\,(d+e\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{e^3\,g}-$$
$$\frac{2\,b\,n\,(d+e\,x)^3\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{9\,e^3\,g}+\frac{2\,b\,d^3\,n\,\text{Log}[d+e\,x]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{3\,e^3\,g}+\frac{x^3\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{3\,g}-$$
$$\frac{f\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{e\,g^2}+\frac{(-f)^{3/2}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g^{5/2}}-$$
$$\frac{(-f)^{3/2}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g^{5/2}}-\frac{b\,(-f)^{3/2}\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^{5/2}}+$$
$$\frac{b\,(-f)^{3/2}\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^{5/2}}+\frac{b^2\,(-f)^{3/2}\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^{5/2}}-\frac{b^2\,(-f)^{3/2}\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^{5/2}}$$

Result (type 4, 816 leaves):

$$\frac{1}{54\,e^3\,g^{5/2}}\Bigg(-54\,e^3\,f\,\sqrt{g}\,x\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2+18\,e^3\,g^{3/2}\,x^3\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2+$$
$$54\,e^3\,f^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2+6\,b\,n\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)$$
$$\Bigg(-18\,e^2\,f\,\sqrt{g}\,(d+e\,x)\,(-1+\text{Log}[d+e\,x])+g^{3/2}\,\left(e\,x\,\left(-6\,d^2+3\,d\,e\,x-2\,e^2\,x^2\right)+6\,\left(d^3+e^3\,x^3\right)\,\text{Log}[d+e\,x]\right)+$$
$$9\,i\,e^3\,f^{3/2}\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-9\,i\,e^3\,f^{3/2}$$
$$\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\Bigg)+i\,b^2\,n^2\,\Bigg(54\,i\,e^2\,f\,\sqrt{g}\,(d+e\,x)\,\left(2-2\,\text{Log}[d+e\,x]+\text{Log}[d+e\,x]^2\right)+$$
$$i\,g^{3/2}\,\left(e\,x\,\left(-66\,d^2+15\,d\,e\,x-4\,e^2\,x^2\right)+6\,\left(11\,d^3+6\,d^2\,e\,x-3\,d\,e^2\,x^2+2\,e^3\,x^3\right)\,\text{Log}[d+e\,x]-18\,\left(d^3+e^3\,x^3\right)\,\text{Log}[d+e\,x]^2\right)+$$
$$27\,e^3\,f^{3/2}\,\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)-$$
$$27\,e^3\,f^{3/2}\,\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\Bigg)\Bigg)$$

Problem 316: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{f+g x^2} \, dx$$

Optimal (type 4, 447 leaves, 16 steps) :

$$-\frac{2 a b n x}{g}+\frac{2 b^2 n^2 x}{g}-\frac{2 b^2 n (d+e x) \text{Log}\left[c (d+e x)^n\right]}{e g}+\frac{(d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{e g}+\frac{\sqrt{-f} \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 g^{3/2}}-$$

$$\frac{\sqrt{-f} \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 g^{3/2}}-\frac{b \sqrt{-f} n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{g^{3/2}}+$$

$$\frac{b \sqrt{-f} n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{g^{3/2}}+\frac{b^2 \sqrt{-f} n^2 \text{PolyLog}\left[3,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{g^{3/2}}-\frac{b^2 \sqrt{-f} n^2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{g^{3/2}}$$

Result (type 4, 614 leaves) :

$$\frac{1}{e g^{3/2}} \left(e \sqrt{g} x \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2-\right.$$

$$e \sqrt{f} \text{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right] \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2+i b n \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)$$

$$\left(-2 i \sqrt{g} (d+e x) (-1+\text{Log}[d+e x])-e \sqrt{f} \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)+\right.$$

$$\left.e \sqrt{f} \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)+b^2 n^2 \left(\sqrt{g} (d+e x) \left(2-2 \text{Log}[d+e x]+\text{Log}[d+e x]^2\right)-\right.$$

$$\frac{1}{2} i e \sqrt{f} \left(\text{Log}[d+e x]^2 \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+2 \text{Log}[d+e x] \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]-2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)+$$

$$\left.\left.\frac{1}{2} i e \sqrt{f} \left(\text{Log}[d+e x]^2 \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+2 \text{Log}[d+e x] \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]-2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\right)$$

Problem 317: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{f+g x^2} \, dx$$

Optimal (type 4, 371 leaves, 10 steps):

$$\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\sqrt{-f}+d\sqrt{g}}\right]}{2\sqrt{-f}\,\sqrt{g}}-\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\sqrt{-f}-d\sqrt{g}}\right]}{2\sqrt{-f}\,\sqrt{g}}-\frac{b\,n\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\sqrt{-f}-d\sqrt{g}}\right]}{\sqrt{-f}\,\sqrt{g}}+\frac{b\,n\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\sqrt{-f}+d\sqrt{g}}\right]}{\sqrt{-f}\,\sqrt{g}}+\frac{b^2\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,(d+e\,x)}{e\sqrt{-f}-d\sqrt{g}}\right]}{\sqrt{-f}\,\sqrt{g}}-\frac{b^2\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{e\sqrt{-f}+d\sqrt{g}}\right]}{\sqrt{-f}\,\sqrt{g}}$$

Result (type 4, 485 leaves):

$$\frac{1}{\sqrt{f}\,\sqrt{g}}\Bigg(\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2+i\,b\,n\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\left(\text{Log}[d+e\,x]\left(\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]-\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]\right)+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]-\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]\right)+\frac{1}{2}\,i\,b^2\,n^2\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]-\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]-2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]+2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]\right)\Bigg)$$

Problem 318: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{x^2\,\left(f+g\,x^2\right)}\,dx$$

Optimal (type 4, 461 leaves, 15 steps):

$$\frac{2\,b\,e\,n\,\text{Log}\left[-\frac{e\,x}{d}\right]\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)}{d\,f}-\frac{\left(d+e\,x\right)\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)^2}{d\,f\,x}+$$
$$\frac{\sqrt{g}\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,\left(-f\right)^{3/2}}-\frac{\sqrt{g}\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,\left(-f\right)^{3/2}}-$$
$$\frac{b\,\sqrt{g}\,n\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,\left(d+e\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{\left(-f\right)^{3/2}}+\frac{b\,\sqrt{g}\,n\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,\left(d+e\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{\left(-f\right)^{3/2}}+$$
$$\frac{2\,b^2\,e\,n^2\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{d\,f}+\frac{b^2\,\sqrt{g}\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,\left(d+e\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{\left(-f\right)^{3/2}}-\frac{b^2\,\sqrt{g}\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,\left(d+e\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{\left(-f\right)^{3/2}}$$

Result (type 4, 654 leaves) :

$$\frac{1}{2\,d\,f^{3/2}\,x}\left(-2\,d\,\sqrt{f}\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)^2-\right.$$
$$2\,d\,\sqrt{g}\,x\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)^2+2\,b\,n\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)$$
$$\left(2\,\sqrt{f}\,\left(e\,x\,\text{Log}[x]-\left(d+e\,x\right)\,\text{Log}[d+e\,x]\right)-i\,d\,\sqrt{g}\,x\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,\left(d+e\,x\right)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,\left(d+e\,x\right)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)+\right.$$
$$\left.i\,d\,\sqrt{g}\,x\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,\left(d+e\,x\right)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,\left(d+e\,x\right)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)+$$
$$b^2\,n^2\,\left(2\,\sqrt{f}\,\left(2\,e\,x\,\text{Log}\left[-\frac{e\,x}{d}\right]\,\text{Log}[d+e\,x]-\left(d+e\,x\right)\,\text{Log}[d+e\,x]^2+2\,e\,x\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]\right)-\right.$$
$$i\,d\,\sqrt{g}\,x\,\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,\left(d+e\,x\right)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,\left(d+e\,x\right)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,\left(d+e\,x\right)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)+$$
$$\left.\left.i\,d\,\sqrt{g}\,x\,\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,\left(d+e\,x\right)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,\left(d+e\,x\right)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,\left(d+e\,x\right)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\right)\right)$$

Problem 319: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,\left(d+e\,x\right)^n\right]\right)^2}{x^4\,\left(f+g\,x^2\right)}\,dx$$

Optimal (type 4, 694 leaves, 26 steps) :

$$-\frac{b^2 e^2 n^2}{3 d^2 f x}-\frac{b^2 e^3 n^2 \text{Log}[x]}{d^3 f}+\frac{b^2 e^3 n^2 \text{Log}[d+e x]}{3 d^3 f}-\frac{b e n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{3 d f x^2}+\frac{2 b e^2 n (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{3 d^3 f x}-\frac{2 b e g n \text{Log}\left[-\frac{e x}{d}\right] \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)}{d f^2}-\frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{3 f x^3}+\frac{g (d+e x) \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{d f^2 x}+\frac{g^{3/2} \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 (-f)^{5/2}}-\frac{g^{3/2} \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 (-f)^{5/2}}+\frac{2 b e^3 n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[1-\frac{d}{d+e x}\right]}{3 d^3 f}-\frac{2 b^2 e^3 n^2 \text{PolyLog}\left[2,\frac{d}{d+e x}\right]}{3 d^3 f}-\frac{b g^{3/2} n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{(-f)^{5/2}}+\frac{b g^{3/2} n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{(-f)^{5/2}}-\frac{2 b^2 e g n^2 \text{PolyLog}\left[2,1+\frac{e x}{d}\right]}{d f^2}+\frac{b^2 g^{3/2} n^2 \text{PolyLog}\left[3,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{(-f)^{5/2}}-\frac{b^2 g^{3/2} n^2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{(-f)^{5/2}}$$

Result (type 4, 886 leaves) :

$$\frac{1}{6 d^3 f^{5/2} x^3}\Big(-2 d^3 f^{3/2} \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2+6 d^3 \sqrt{f} g x^2 \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2+$$
$$6 d^3 g^{3/2} x^3 \text{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right] \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2+2 i b n \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)$$
$$\Big(6 i d^2 \sqrt{f} g x^2 \left(e x \text{Log}[x]-(d+e x) \text{Log}[d+e x]\right)+i f^{3/2} \left(d e x (d-2 e x)-2 e^3 x^3 \text{Log}[x]+2 \left(d^3+e^3 x^3\right) \text{Log}[d+e x]\right)+$$
$$3 d^3 g^{3/2} x^3 \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)-$$
$$3 d^3 g^{3/2} x^3 \left(\text{Log}[d+e x] \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\Big)-$$
$$b^2 n^2 \Big(6 d^2 \sqrt{f} g x^2 \left(2 e x \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]-(d+e x) \text{Log}[d+e x]^2+2 e x \text{PolyLog}\left[2,1+\frac{e x}{d}\right]\right)-2 f^{3/2} \Big(e^3 x^3 \text{Log}\left[-\frac{e x}{d}\right]$$
$$(-3+2 \text{Log}[d+e x])-(d+e x) \left(e^2 x^2+e x (d-3 e x) \text{Log}[d+e x]+\left(d^2-d e x+e^2 x^2\right) \text{Log}[d+e x]^2\right)+2 e^3 x^3 \text{PolyLog}\left[2,1+\frac{e x}{d}\right]\Big)-$$
$$3 i d^3 g^{3/2} x^3 \left(\text{Log}[d+e x]^2 \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+2 \text{Log}[d+e x] \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]-2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)+$$
$$3 i d^3 g^{3/2} x^3 \left(\text{Log}[d+e x]^2 \text{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+2 \text{Log}[d+e x] \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]-2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\Big)\Big)$$

Problem 320: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^5 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{\left(f+g x^2\right)^2} \, dx$$

Optimal (type 4, 936 leaves, 34 steps):

$$\frac{2\,a\,b\,d\,n\,x}{e\,g^2}-\frac{2\,b^2\,d\,n^2\,x}{e\,g^2}+\frac{b^2\,n^2\,(d+e\,x)^2}{4\,e^2\,g^2}+\frac{2\,b^2\,d\,n\,(d+e\,x)\,\text{Log}\left[c\,(d+e\,x)^n\right]}{e^2\,g^2}-\frac{b\,n\,(d+e\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{2\,e^2\,g^2}+$$

$$\frac{e^2\,f^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2\,g^3\,(e^2\,f+d^2\,g)}-\frac{d\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{e^2\,g^2}+\frac{(d+e\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2\,e^2\,g^2}-$$

$$\frac{f^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2\,g^3\,(f+g\,x^2)}-\frac{b\,e\,f\,\left(e\,f+d\,\sqrt{-f}\,\sqrt{g}\right)\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,(\sqrt{-f}-\sqrt{g}\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g^3\,(e^2\,f+d^2\,g)}-$$

$$\frac{f\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,(\sqrt{-f}-\sqrt{g}\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^3}-\frac{b\,e\,(-f)^{3/2}\,\left(e\,\sqrt{-f}+d\,\sqrt{g}\right)\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,(\sqrt{-f}+\sqrt{g}\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g^3\,(e^2\,f+d^2\,g)}-$$

$$\frac{f\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,(\sqrt{-f}+\sqrt{g}\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^3}-\frac{b^2\,e\,(-f)^{3/2}\,\left(e\,\sqrt{-f}+d\,\sqrt{g}\right)\,n^2\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,g^3\,(e^2\,f+d^2\,g)}-$$

$$\frac{2\,b\,f\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^3}-\frac{b^2\,e\,(-f)^{3/2}\,\left(e\,\sqrt{-f}-d\,\sqrt{g}\right)\,n^2\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,g^3\,(e^2\,f+d^2\,g)}-$$

$$\frac{2\,b\,f\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^3}+\frac{2\,b^2\,f\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{g^3}+\frac{2\,b^2\,f\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{g^3}$$

Result (type 4, 1272 leaves) :

$$\frac{1}{4 g^3}\Bigg(2 g x^2 \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2-\frac{2 f^2 \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{f+g x^2}-4 f \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[f+g x^2\right]+$$

$$b n \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)\Bigg(-\frac{2 g \left(e x (-2 d+e x)+2 \left(d^2-e^2 x^2\right) \operatorname{Log}[d+e x]\right)}{e^2}+$$

$$\left(f^{3/2} \left(2 e \left(-i \sqrt{f}+\sqrt{g} x\right) \operatorname{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]+2 i \sqrt{g} (d+e x) \operatorname{Log}[d+e x]-e \left(\sqrt{f}+i \sqrt{g} x\right) \operatorname{Log}\left[f+g x^2\right]\right)\right)\Big/\left(\left(e \sqrt{f}-i d \sqrt{g}\right)\right.$$

$$\left.\left(\sqrt{f}+i \sqrt{g} x\right)\right)+\left(i f^{3/2} \left(2 e \left(\sqrt{f}-i \sqrt{g} x\right) \operatorname{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]-2 \sqrt{g} (d+e x) \operatorname{Log}[d+e x]+e \left(i \sqrt{f}+\sqrt{g} x\right) \operatorname{Log}\left[f+g x^2\right]\right)\right)\Big/$$

$$\left(\left(e \sqrt{f}+i d \sqrt{g}\right) \left(\sqrt{f}-i \sqrt{g} x\right)\right)-8 f \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)-$$

$$8 f \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\Bigg)+$$

$$b^2 n^2 \Bigg(\frac{g \left(e x (-6 d+e x)+\left(6 d^2+4 d e x-2 e^2 x^2\right) \operatorname{Log}[d+e x]-2 \left(d^2-e^2 x^2\right) \operatorname{Log}[d+e x]^2\right)}{e^2}+\Bigg(i f^{3/2} \Bigg(-\sqrt{g} (d+e x) \operatorname{Log}[d+e x]^2+$$

$$2 e \left(i \sqrt{f}+\sqrt{g} x\right) \operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+2 e \left(i \sqrt{f}+\sqrt{g} x\right) \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\Bigg)\Bigg)\Big/$$

$$\left(\left(e \sqrt{f}+i d \sqrt{g}\right) \left(\sqrt{f}-i \sqrt{g} x\right)\right)-\Bigg(f^{3/2} \Bigg(\operatorname{Log}[d+e x] \left(-i \sqrt{g} (d+e x) \operatorname{Log}[d+e x]+2 e \left(\sqrt{f}+i \sqrt{g} x\right) \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)+$$

$$2 e \left(\sqrt{f}+i \sqrt{g} x\right) \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\Bigg)\Bigg)\Big/\left(\left(e \sqrt{f}-i d \sqrt{g}\right) \left(\sqrt{f}+i \sqrt{g} x\right)\right)-$$

$$4 f \left(\operatorname{Log}[d+e x]^2 \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+2 \operatorname{Log}[d+e x] \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]-2 \operatorname{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)-$$

$$4 f \left(\operatorname{Log}[d+e x]^2 \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+2 \operatorname{Log}[d+e x] \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]-2 \operatorname{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\Bigg)\Bigg)$$

Problem 321: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^3 \left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right)^2}{\left(f + g x^2\right)^2} \, dx$$

Optimal (type 4, 739 leaves, 25 steps):

$$-\frac{e^2 f \left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right)^2}{2 g^2 \left(e^2 f + d^2 g\right)} + \frac{f \left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right)^2}{2 g^2 \left(f + g x^2\right)} + \frac{b e \left(e f + d \sqrt{-f} \sqrt{g}\right) n \left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f} - \sqrt{g} x\right)}{e \sqrt{-f} + d \sqrt{g}}\right]}{2 g^2 \left(e^2 f + d^2 g\right)} +$$

$$\frac{\left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right)^2 \operatorname{Log}\left[\frac{e \left(\sqrt{-f} - \sqrt{g} x\right)}{e \sqrt{-f} + d \sqrt{g}}\right]}{2 g^2} + \frac{b e \left(e f - d \sqrt{-f} \sqrt{g}\right) n \left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f} + \sqrt{g} x\right)}{e \sqrt{-f} - d \sqrt{g}}\right]}{2 g^2 \left(e^2 f + d^2 g\right)} +$$

$$\frac{\left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right)^2 \operatorname{Log}\left[\frac{e \left(\sqrt{-f} + \sqrt{g} x\right)}{e \sqrt{-f} - d \sqrt{g}}\right]}{2 g^2} - \frac{b^2 e \sqrt{-f} \left(e \sqrt{-f} + d \sqrt{g}\right) n^2 \operatorname{PolyLog}\left[2, -\frac{\sqrt{g} \left(d + e x\right)}{e \sqrt{-f} - d \sqrt{g}}\right]}{2 g^2 \left(e^2 f + d^2 g\right)} +$$

$$\frac{b n \left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right) \operatorname{PolyLog}\left[2, -\frac{\sqrt{g} \left(d + e x\right)}{e \sqrt{-f} - d \sqrt{g}}\right]}{g^2} + \frac{b^2 e \left(e f + d \sqrt{-f} \sqrt{g}\right) n^2 \operatorname{PolyLog}\left[2, \frac{\sqrt{g} \left(d + e x\right)}{e \sqrt{-f} + d \sqrt{g}}\right]}{2 g^2 \left(e^2 f + d^2 g\right)} +$$

$$\frac{b n \left(a + b \operatorname{Log}\left[c \left(d + e x\right)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{\sqrt{g} \left(d + e x\right)}{e \sqrt{-f} + d \sqrt{g}}\right]}{g^2} - \frac{b^2 n^2 \operatorname{PolyLog}\left[3, -\frac{\sqrt{g} \left(d + e x\right)}{e \sqrt{-f} - d \sqrt{g}}\right]}{g^2} - \frac{b^2 n^2 \operatorname{PolyLog}\left[3, \frac{\sqrt{g} \left(d + e x\right)}{e \sqrt{-f} + d \sqrt{g}}\right]}{g^2}$$

Result (type 4, 1124 leaves):

$$\frac{1}{4 g^2}\left(\frac{2 f \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{f+g x^2}+\right.$$
$$2 \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[f+g x^2\right]+b n \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)$$
$$\left(\left(\sqrt{f} \left(2 i e \left(\sqrt{f}+i \sqrt{g} x\right) \operatorname{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]-2 i \sqrt{g} (d+e x) \operatorname{Log}[d+e x]+e \left(\sqrt{f}+i \sqrt{g} x\right) \operatorname{Log}\left[f+g x^2\right]\right)\right)\Big/ \left(\left(e \sqrt{f}-i d \sqrt{g}\right)\right.\right.$$
$$\left.\left(\sqrt{f}+i \sqrt{g} x\right)\right)-\left(i \sqrt{f} \left(2 e \left(\sqrt{f}-i \sqrt{g} x\right) \operatorname{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]-2 \sqrt{g} (d+e x) \operatorname{Log}[d+e x]+e \left(i \sqrt{f}+\sqrt{g} x\right) \operatorname{Log}\left[f+g x^2\right]\right)\right)\Big/$$
$$\left(\left(e \sqrt{f}+i d \sqrt{g}\right) \left(\sqrt{f}-i \sqrt{g} x\right)\right)+4 \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)+$$
$$\left.4 \left(\operatorname{Log}[d+e x] \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+\operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)+$$
$$b^2 n^2 \left(2 \operatorname{Log}[d+e x]^2 \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+2 \operatorname{Log}[d+e x]^2 \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+4 \operatorname{Log}[d+e x] \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]+\right.$$
$$\left(\sqrt{f} \left(\operatorname{Log}[d+e x] \left(i \sqrt{g} (d+e x) \operatorname{Log}[d+e x]+2 e \left(\sqrt{f}-i \sqrt{g} x\right) \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)+2 e \left(\sqrt{f}-i \sqrt{g} x\right)\right.\right.$$
$$\left.\left.\operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\Big/ \left(\left(e \sqrt{f}+i d \sqrt{g}\right) \left(\sqrt{f}-i \sqrt{g} x\right)\right)+4 \operatorname{Log}[d+e x] \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]+$$
$$\left(\sqrt{f} \left(\operatorname{Log}[d+e x] \left(-i \sqrt{g} (d+e x) \operatorname{Log}[d+e x]+2 e \left(\sqrt{f}+i \sqrt{g} x\right) \operatorname{Log}\left[1-\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)+2 e \left(\sqrt{f}+i \sqrt{g} x\right) \operatorname{PolyLog}\left[\right.\right.\right.$$
$$\left.\left.\left.2,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\right)\right)\Big/ \left(\left(e \sqrt{f}-i d \sqrt{g}\right) \left(\sqrt{f}+i \sqrt{g} x\right)\right)-4 \operatorname{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{-i e \sqrt{f}+d \sqrt{g}}\right]-4 \operatorname{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{i e \sqrt{f}+d \sqrt{g}}\right]\left.\right)\left.\right)$$

Problem 322: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{\left(f+g x^2\right)^2}\, dx$$

Optimal (type 4, 430 leaves, 13 steps) :

$$\frac{e^2\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2\,g\,\left(e^2\,f+d^2\,g\right)}-\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{2\,g\,\left(f+g\,x^2\right)}-$$

$$\frac{b\,e\,\left(e\,f+d\,\sqrt{-f}\,\sqrt{g}\right)\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,f\,g\,\left(e^2\,f+d^2\,g\right)}-\frac{b\,e\,\left(e\,f-d\,\sqrt{-f}\,\sqrt{g}\right)\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,f\,g\,\left(e^2\,f+d^2\,g\right)}-$$

$$\frac{b^2\,e\,\left(e\,\sqrt{-f}+d\,\sqrt{g}\right)\,n^2\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,\sqrt{-f}\,g\,\left(e^2\,f+d^2\,g\right)}-\frac{b^2\,e\,\left(e\,f+d\,\sqrt{-f}\,\sqrt{g}\right)\,n^2\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,f\,g\,\left(e^2\,f+d^2\,g\right)}$$

Result (type 4, 544 leaves):

$$\frac{1}{4\,g}\left(-\frac{2\,\left(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{f+g\,x^2}+\left(2\,b\,n\,\left(-a+b\,n\,\text{Log}[d+e\,x]-b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\left(-2\,d\,e\,\sqrt{g}\,\left(f+g\,x^2\right)\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]+\right.\right.\right.$$

$$\left.\left.\sqrt{f}\,\left(2\,g\,\left(d^2-e^2\,x^2\right)\,\text{Log}[d+e\,x]+e^2\,\left(f+g\,x^2\right)\,\text{Log}\left[f+g\,x^2\right]\right)\right)\right)\Big/\left(\sqrt{f}\,\left(e^2\,f+d^2\,g\right)\,\left(f+g\,x^2\right)\right)+\frac{1}{\sqrt{f}}\,\mathrm{i}\,b^2\,n^2$$

$$\left(\left(\left(-\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]^2+2\,e\,\left(\mathrm{i}\,\sqrt{f}+\sqrt{g}\,x\right)\,\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-\mathrm{i}\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+2\,e\,\left(\mathrm{i}\,\sqrt{f}+\sqrt{g}\,x\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-\mathrm{i}\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\Big/\right.\right.$$

$$\left(\left(e\,\sqrt{f}+\mathrm{i}\,d\,\sqrt{g}\right)\,\left(\sqrt{f}-\mathrm{i}\,\sqrt{g}\,x\right)\right)+\left(\text{Log}[d+e\,x]\,\left(\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+2\,\mathrm{i}\,e\,\left(\sqrt{f}+\mathrm{i}\,\sqrt{g}\,x\right)\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{\mathrm{i}\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)+\right.$$

$$\left.\left.\left.2\,\mathrm{i}\,e\,\left(\sqrt{f}+\mathrm{i}\,\sqrt{g}\,x\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{\mathrm{i}\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)\Big/\left(\left(e\,\sqrt{f}-\mathrm{i}\,d\,\sqrt{g}\right)\,\left(\sqrt{f}+\mathrm{i}\,\sqrt{g}\,x\right)\right)\right)\right)$$

Problem 323: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{x\,\left(f+g\,x^2\right)^2}\,dx$$

Optimal (type 4, 814 leaves, 29 steps):

$$-\frac{e^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{2 f \left(e^2 f+d^2 g\right)}+\frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{2 f \left(f+g x^2\right)}+\frac{\text{Log}\left[-\frac{e x}{d}\right] \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2}{f^2}+$$

$$\frac{b e \left(e f+d \sqrt{-f} \sqrt{g}\right) n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f^2 \left(e^2 f+d^2 g\right)}-\frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f^2}+$$

$$\frac{b e \left(e f-d \sqrt{-f} \sqrt{g}\right) n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 f^2 \left(e^2 f+d^2 g\right)}-\frac{\left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \text{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 f^2}-$$

$$\frac{b^2 e \left(e \sqrt{-f}+d \sqrt{g}\right) n^2 \text{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 (-f)^{3/2} \left(e^2 f+d^2 g\right)}-\frac{b n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^2}+$$

$$\frac{b^2 e \left(e f+d \sqrt{-f} \sqrt{g}\right) n^2 \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f^2 \left(e^2 f+d^2 g\right)}-\frac{b n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^2}+$$

$$\frac{2 b n \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[2,1+\frac{e x}{d}\right]}{f^2}+\frac{b^2 n^2 \text{PolyLog}\left[3,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^2}+\frac{b^2 n^2 \text{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^2}-\frac{2 b^2 n^2 \text{PolyLog}\left[3,1+\frac{e x}{d}\right]}{f^2}$$

Result (type 4, 1235 leaves) :

$$\frac{1}{4 f^2} \Bigg(\frac{2 f \,(a - b\, n \,\text{Log}[d + e\, x] + b \,\text{Log}[c\, (d + e\, x)^n])^2}{f + g\, x^2} + 4 \,\text{Log}[x] \,(a - b\, n \,\text{Log}[d + e\, x] + b \,\text{Log}[c\, (d + e\, x)^n])^2 -$$

$$2\, (a - b\, n\, \text{Log}[d + e\, x] + b\, \text{Log}[c\, (d + e\, x)^n])^2 \,\text{Log}[f + g\, x^2] + b\, n\, (a - b\, n\, \text{Log}[d + e\, x] + b\, \text{Log}[c\, (d + e\, x)^n]) \Bigg(8\, \text{Log}[x] \left(\text{Log}[d + e\, x] - \text{Log}\left[1 + \frac{e\, x}{d}\right]\right) +$$

$$\Bigg(\sqrt{f} \left(2\, \mathrm{i}\, e \,(\sqrt{f} + \mathrm{i} \sqrt{g}\, x)\, \text{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] - 2\, \mathrm{i} \sqrt{g}\, (d + e\, x)\, \text{Log}[d + e\, x] + e\, (\sqrt{f} + \mathrm{i} \sqrt{g}\, x)\, \text{Log}[f + g\, x^2]\right)\Bigg) \Big/ \Big((e \sqrt{f} - \mathrm{i}\, d \sqrt{g})$$

$$(\sqrt{f} + \mathrm{i} \sqrt{g}\, x)\Big) - \Bigg(\mathrm{i} \sqrt{f} \left(2\, e\, (\sqrt{f} - \mathrm{i} \sqrt{g}\, x)\, \text{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] - 2 \sqrt{g}\, (d + e\, x)\, \text{Log}[d + e\, x] + e\, (\mathrm{i} \sqrt{f} + \sqrt{g}\, x)\, \text{Log}[f + g\, x^2]\right)\Bigg) \Big/$$

$$\Big((e \sqrt{f} + \mathrm{i}\, d \sqrt{g})\, (\sqrt{f} - \mathrm{i} \sqrt{g}\, x)\Big) - 8\, \text{PolyLog}\left[2, -\frac{e\, x}{d}\right] - 4 \left(\text{Log}[d + e\, x]\, \text{Log}\left[1 - \frac{\sqrt{g}\, (d + e\, x)}{-\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right] + \text{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e\, x)}{-\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right]\right) -$$

$$4 \left(\text{Log}[d + e\, x]\, \text{Log}\left[1 - \frac{\sqrt{g}\, (d + e\, x)}{\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right] + \text{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e\, x)}{\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right]\right)\Bigg) +$$

$$b^2 n^2 \Bigg(4\, \text{Log}\left[-\frac{e\, x}{d}\right] \text{Log}[d + e\, x]^2 - 2\, \text{Log}[d + e\, x]^2\, \text{Log}\left[1 - \frac{\sqrt{g}\, (d + e\, x)}{-\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right] - 2\, \text{Log}[d + e\, x]^2\, \text{Log}\left[1 - \frac{\sqrt{g}\, (d + e\, x)}{\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right] - 4\, \text{Log}[d + e\, x]$$

$$\text{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e\, x)}{-\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right] + \Bigg(\sqrt{f} \Bigg(\text{Log}[d + e\, x] \left(\mathrm{i} \sqrt{g}\, (d + e\, x)\, \text{Log}[d + e\, x] + 2\, e\, (\sqrt{f} - \mathrm{i} \sqrt{g}\, x)\, \text{Log}\left[1 - \frac{\sqrt{g}\, (d + e\, x)}{-\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right]\right) +$$

$$2\, e\, (\sqrt{f} - \mathrm{i} \sqrt{g}\, x)\, \text{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e\, x)}{-\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right]\Bigg)\Bigg) \Big/ \Big((e \sqrt{f} + \mathrm{i}\, d \sqrt{g})\, (\sqrt{f} - \mathrm{i} \sqrt{g}\, x)\Big) - 4\, \text{Log}[d + e\, x]$$

$$\text{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e\, x)}{\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right] + \Bigg(\sqrt{f} \Bigg(\text{Log}[d + e\, x] \left(-\mathrm{i} \sqrt{g}\, (d + e\, x)\, \text{Log}[d + e\, x] + 2\, e\, (\sqrt{f} + \mathrm{i} \sqrt{g}\, x)\, \text{Log}\left[1 - \frac{\sqrt{g}\, (d + e\, x)}{\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right]\right) +$$

$$2\, e\, (\sqrt{f} + \mathrm{i} \sqrt{g}\, x)\, \text{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e\, x)}{\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right]\Bigg)\Bigg) \Big/ \Big((e \sqrt{f} - \mathrm{i}\, d \sqrt{g})\, (\sqrt{f} + \mathrm{i} \sqrt{g}\, x)\Big) +$$

$$8\, \text{Log}[d + e\, x]\, \text{PolyLog}\left[2, 1 + \frac{e\, x}{d}\right] + 4\, \text{PolyLog}\left[3, \frac{\sqrt{g}\, (d + e\, x)}{-\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right] + 4\, \text{PolyLog}\left[3, \frac{\sqrt{g}\, (d + e\, x)}{\mathrm{i}\, e \sqrt{f} + d \sqrt{g}}\right] - 8\, \text{PolyLog}\left[3, 1 + \frac{e\, x}{d}\right]\Bigg)\Bigg)$$

Problem 324: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a + b\, \text{Log}[c\, (d + e\, x)^n])^2}{x^3\, (f + g\, x^2)^2}\, dx$$

Optimal (type 4, 970 leaves, 36 steps):

$$\frac{b^2 e^2 n^2 \operatorname{Log}[x]}{d^2 f^2}-\frac{b e n (d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)}{d^2 f^2 x}+\frac{e^2 g \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{2 f^2 \left(e^2 f+d^2 g\right)}-$$

$$\frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{2 f^2 x^2}-\frac{g \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{2 f^2 \left(f+g x^2\right)}-\frac{2 g \operatorname{Log}\left[-\frac{e x}{d}\right] \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{f^3}-$$

$$\frac{b e \left(e f+d \sqrt{-f} \sqrt{g}\right) g n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f^3 \left(e^2 f+d^2 g\right)}+\frac{g \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^3}-$$

$$\frac{b e \left(e f-d \sqrt{-f} \sqrt{g}\right) g n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 f^3 \left(e^2 f+d^2 g\right)}+\frac{g \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^3}-$$

$$\frac{b e^2 n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[1-\frac{d}{d+e x}\right]}{d^2 f^2}+\frac{b^2 e^2 n^2 \operatorname{PolyLog}\left[2,\frac{d}{d+e x}\right]}{d^2 f^2}-\frac{b^2 e \left(e \sqrt{-f}+d \sqrt{g}\right) g n^2 \operatorname{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 (-f)^{5/2} \left(e^2 f+d^2 g\right)}+$$

$$\frac{2 b g n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^3}-\frac{b^2 e \left(e f+d \sqrt{-f} \sqrt{g}\right) g n^2 \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f^3 \left(e^2 f+d^2 g\right)}+$$

$$\frac{2 b g n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^3}-\frac{4 b g n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[2,1+\frac{e x}{d}\right]}{f^3}-$$

$$\frac{2 b^2 g n^2 \operatorname{PolyLog}\left[3,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{f^3}-\frac{2 b^2 g n^2 \operatorname{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{f^3}+\frac{4 b^2 g n^2 \operatorname{PolyLog}\left[3,1+\frac{e x}{d}\right]}{f^3}$$

Result (type 4, 1416 leaves) :

$$\frac{1}{4 f^3}\Bigg(-\frac{2 f \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{x^2}-\frac{2 f g \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{f+g x^2}-$$

$$8 g \operatorname{Log}[x] \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2+4 g \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[f+g x^2\right]+$$

$$b n \left(a-b n \operatorname{Log}[d+e x]+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \Bigg(-\frac{4 f \left(d e x+e^2 x^2 \operatorname{Log}[x]+\left(d^2-e^2 x^2\right) \operatorname{Log}[d+e x]\right)}{d^2 x^2}+$$

$$\left(\sqrt{f} g \left(2 e \left(-i \sqrt{f}+\sqrt{g} x\right) \operatorname{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]+2 i \sqrt{g} (d+e x) \operatorname{Log}[d+e x]-e \left(\sqrt{f}+i \sqrt{g} x\right) \operatorname{Log}\left[f+g x^2\right]\right)\right) \Big/ \Big(\left(e \sqrt{f}-i d \sqrt{g}\right)$$

$$\left(\sqrt{f}+i \sqrt{g} x\right)\Big)+\left(i \sqrt{f} g \left(2 e \left(\sqrt{f}-i \sqrt{g} x\right) \operatorname{ArcTan}\left[\frac{\sqrt{g} x}{\sqrt{f}}\right]-2 \sqrt{g} (d+e x) \operatorname{Log}[d+e x]+e \left(i \sqrt{f}+\sqrt{g} x\right) \operatorname{Log}\left[f+g x^2\right]\right)\right) \Big/$$

$$\left(\left(e \sqrt{f}+i d \sqrt{g}\right) \left(\sqrt{f}-i \sqrt{g} x\right)\right)-16 g \left(\operatorname{Log}[x] \left(\operatorname{Log}[d+e x]-\operatorname{Log}\left[1+\frac{e x}{d}\right]\right)-\operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]\right)+$$

$$8\,g\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]\right)+$$

$$8\,g\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]\right)\Bigg)\Bigg)+$$

$$b^2 n^2\Bigg(\Bigg(\Bigg(i\sqrt{f}\,g\Bigg(-\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]^2+2\,e\left(i\sqrt{f}+\sqrt{g}\,x\right)\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]+$$

$$2\,e\left(i\sqrt{f}+\sqrt{g}\,x\right)\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]\Bigg)\Bigg)\Bigg/\left(\left(e\sqrt{f}+i\,d\sqrt{g}\right)\left(\sqrt{f}-i\sqrt{g}\,x\right)\right)-$$

$$\Bigg(\sqrt{f}\,g\Bigg(\text{Log}[d+e\,x]\Bigg(-i\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+2\,e\left(\sqrt{f}+i\sqrt{g}\,x\right)\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]\Bigg)+$$

$$2\,e\left(\sqrt{f}+i\sqrt{g}\,x\right)\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]\Bigg)\Bigg)\Bigg/\left(\left(e\sqrt{f}-i\,d\sqrt{g}\right)\left(\sqrt{f}+i\sqrt{g}\,x\right)\right)-\frac{1}{d^2\,x^2}$$

$$2\,f\left(2\,e^2x^2\,\text{Log}\left[-\frac{e\,x}{d}\right](-1+\text{Log}[d+e\,x])+(d+e\,x)\,\text{Log}[d+e\,x]\,(2\,e\,x+(d-e\,x)\,\text{Log}[d+e\,x])+2\,e^2x^2\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]\right)+$$

$$4\,g\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\right]\right)+$$

$$4\,g\left(\text{Log}[d+e\,x]^2\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]-2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\right]\right)-$$

$$8\,g\left(\text{Log}\left[-\frac{e\,x}{d}\right]\text{Log}[d+e\,x]^2+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]-2\,\text{PolyLog}\left[3,1+\frac{e\,x}{d}\right]\right)\Bigg)\Bigg)$$

Problem 325: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^4\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{(f+g\,x^2)^2}\,dx$$

Optimal (type 4, 897 leaves, 36 steps):

$$-\frac{2 a b n x}{g^2}+\frac{2 b^2 n^2 x}{g^2}-\frac{2 b^2 n (d+e x) \operatorname{Log}\left[c (d+e x)^n\right]}{e g^2}+\frac{(d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{e g^2}-\frac{f (d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{4 \left(e \sqrt{-f}+d \sqrt{g}\right) g^2 \left(\sqrt{-f}-\sqrt{g} x\right)}-$$

$$\frac{f (d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{4 \left(e \sqrt{-f}-d \sqrt{g}\right) g^2 \left(\sqrt{-f}+\sqrt{g} x\right)}-\frac{b e f n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 \left(e \sqrt{-f}+d \sqrt{g}\right) g^{5/2}}+\frac{3 \sqrt{-f} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{4 g^{5/2}}+$$

$$\frac{b e f n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 \left(e \sqrt{-f}-d \sqrt{g}\right) g^{5/2}}-\frac{3 \sqrt{-f} \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{4 g^{5/2}}+$$

$$\frac{b^2 e f n^2 \operatorname{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 \left(e \sqrt{-f}-d \sqrt{g}\right) g^{5/2}}-\frac{3 b \sqrt{-f} n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 g^{5/2}}-\frac{b^2 e f n^2 \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 \left(e \sqrt{-f}+d \sqrt{g}\right) g^{5/2}}+$$

$$\frac{3 b \sqrt{-f} n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 g^{5/2}}+\frac{3 b^2 \sqrt{-f} n^2 \operatorname{PolyLog}\left[3,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 g^{5/2}}-\frac{3 b^2 \sqrt{-f} n^2 \operatorname{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 g^{5/2}}$$

Result (type 4, 1247 leaves) :

$$\frac{1}{4\,g^{5/2}}\Bigg(4\sqrt{g}\,x\,\big(a-b\,n\,\mathrm{Log}[d+e\,x]+b\,\mathrm{Log}[c\,(d+e\,x)^n]\big)^2+$$

$$\frac{2\,f\sqrt{g}\,x\,\big(a-b\,n\,\mathrm{Log}[d+e\,x]+b\,\mathrm{Log}[c\,(d+e\,x)^n]\big)^2}{f+g\,x^2}-6\sqrt{f}\,\mathrm{ArcTan}\Big[\frac{\sqrt{g}\,x}{\sqrt{f}}\Big]\,\big(a-b\,n\,\mathrm{Log}[d+e\,x]+b\,\mathrm{Log}[c\,(d+e\,x)^n]\big)^2+$$

$$b\,n\,\big(a-b\,n\,\mathrm{Log}[d+e\,x]+b\,\mathrm{Log}[c\,(d+e\,x)^n]\big)\,\Bigg(\frac{8\sqrt{g}\,(d+e\,x)\,(-1+\mathrm{Log}[d+e\,x])}{e}+$$

$$\Big(f\Big(-2\,e\,(\sqrt{f}+i\sqrt{g}\,x)\,\mathrm{ArcTan}\Big[\frac{\sqrt{g}\,x}{\sqrt{f}}\Big]+2\sqrt{g}\,(d+e\,x)\,\mathrm{Log}[d+e\,x]+i\,e\,(\sqrt{f}+i\sqrt{g}\,x)\,\mathrm{Log}[f+g\,x^2]\Big)\Big)\Big/\Big((e\sqrt{f}-i\,d\sqrt{g})$$

$$(\sqrt{f}+i\sqrt{g}\,x)\Big)-\Big(f\Big(2\,e\,(\sqrt{f}-i\sqrt{g}\,x)\,\mathrm{ArcTan}\Big[\frac{\sqrt{g}\,x}{\sqrt{f}}\Big]-2\sqrt{g}\,(d+e\,x)\,\mathrm{Log}[d+e\,x]+e\,(i\sqrt{f}+\sqrt{g}\,x)\,\mathrm{Log}[f+g\,x^2]\Big)\Big)\Big/$$

$$\Big((e\sqrt{f}+i\,d\sqrt{g})\,(\sqrt{f}-i\sqrt{g}\,x)\Big)-6\,i\sqrt{f}\,\Big(\mathrm{Log}[d+e\,x]\,\mathrm{Log}\Big[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]+\mathrm{PolyLog}\Big[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)+$$

$$6\,i\sqrt{f}\,\Big(\mathrm{Log}[d+e\,x]\,\mathrm{Log}\Big[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]+\mathrm{PolyLog}\Big[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)\Bigg)+$$

$$b^2\,n^2\,\Bigg(\frac{4\sqrt{g}\,(d+e\,x)\,(2-2\,\mathrm{Log}[d+e\,x]+\mathrm{Log}[d+e\,x]^2)}{e}-\Big(f\Big(-\sqrt{g}\,(d+e\,x)\,\mathrm{Log}[d+e\,x]^2+$$

$$2\,e\,(i\sqrt{f}+\sqrt{g}\,x)\,\mathrm{Log}[d+e\,x]\,\mathrm{Log}\Big[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]+2\,e\,(i\sqrt{f}+\sqrt{g}\,x)\,\mathrm{PolyLog}\Big[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)\Big)\Big/$$

$$\Big((e\sqrt{f}+i\,d\sqrt{g})\,(\sqrt{f}-i\sqrt{g}\,x)\Big)+\Big(f\Big(\mathrm{Log}[d+e\,x]\,\Big(\sqrt{g}\,(d+e\,x)\,\mathrm{Log}[d+e\,x]+2\,i\,e\,(\sqrt{f}+i\sqrt{g}\,x)\,\mathrm{Log}\Big[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)+$$

$$2\,i\,e\,(\sqrt{f}+i\sqrt{g}\,x)\,\mathrm{PolyLog}\Big[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)\Big)\Big/\Big((e\sqrt{f}-i\,d\sqrt{g})\,(\sqrt{f}+i\sqrt{g}\,x)\Big)-$$

$$3\,i\sqrt{f}\,\Big(\mathrm{Log}[d+e\,x]^2\,\mathrm{Log}\Big[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]+2\,\mathrm{Log}[d+e\,x]\,\mathrm{PolyLog}\Big[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]-2\,\mathrm{PolyLog}\Big[3,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)+$$

$$3\,i\sqrt{f}\,\Big(\mathrm{Log}[d+e\,x]^2\,\mathrm{Log}\Big[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]+2\,\mathrm{Log}[d+e\,x]\,\mathrm{PolyLog}\Big[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]-2\,\mathrm{PolyLog}\Big[3,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)\Bigg)\Bigg)$$

Problem 326: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^2 \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{\left(f+g x^2\right)^2} \, dx$$

Optimal (type 4, 815 leaves, 32 steps):

$$\frac{(d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{4 \left(e \sqrt{-f}+d \sqrt{g}\right) g \left(\sqrt{-f}-\sqrt{g} x\right)}+\frac{(d+e x) \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{4 \left(e \sqrt{-f}-d \sqrt{g}\right) g \left(\sqrt{-f}+\sqrt{g} x\right)}+\frac{b e n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 \left(e \sqrt{-f}+d \sqrt{g}\right) g^{3/2}}+$$

$$\frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[\frac{e \left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{4 \sqrt{-f} g^{3/2}}-\frac{b e n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 \left(e \sqrt{-f}-d \sqrt{g}\right) g^{3/2}}-\frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[\frac{e \left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{4 \sqrt{-f} g^{3/2}}-$$

$$\frac{b^2 e n^2 \operatorname{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 \left(e \sqrt{-f}-d \sqrt{g}\right) g^{3/2}}-\frac{b n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 \sqrt{-f} g^{3/2}}+\frac{b^2 e n^2 \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 \left(e \sqrt{-f}+d \sqrt{g}\right) g^{3/2}}+$$

$$\frac{b n \left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[2,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 \sqrt{-f} g^{3/2}}+\frac{b^2 n^2 \operatorname{PolyLog}\left[3,-\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2 \sqrt{-f} g^{3/2}}-\frac{b^2 n^2 \operatorname{PolyLog}\left[3,\frac{\sqrt{g} (d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 \sqrt{-f} g^{3/2}}$$

Result (type 4, 1149 leaves):

$$\frac{1}{4 g^{3/2}} \Bigg(-\frac{2 \sqrt{g}\, x \,(a - b n \,\mathrm{Log}[d + e x] + b \,\mathrm{Log}[c \,(d + e x)^n])^2}{f + g x^2} + \frac{2 \,\mathrm{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] (a - b n \,\mathrm{Log}[d + e x] + b \,\mathrm{Log}[c \,(d + e x)^n])^2}{\sqrt{f}} +$$

$$b n \,(a - b n \,\mathrm{Log}[d + e x] + b \,\mathrm{Log}[c \,(d + e x)^n]) \Bigg(\frac{2 e \,(\sqrt{f} + i \sqrt{g}\, x) \,\mathrm{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] - 2 \sqrt{g}\, (d + e x) \,\mathrm{Log}[d + e x] + e \,(-i \sqrt{f} + \sqrt{g}\, x) \,\mathrm{Log}[f + g x^2]}{(e \sqrt{f} - i d \sqrt{g}) \,(\sqrt{f} + i \sqrt{g}\, x)} +$$

$$\frac{2 e \,(\sqrt{f} - i \sqrt{g}\, x) \,\mathrm{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] - 2 \sqrt{g}\, (d + e x) \,\mathrm{Log}[d + e x] + e \,(i \sqrt{f} + \sqrt{g}\, x) \,\mathrm{Log}[f + g x^2]}{(e \sqrt{f} + i d \sqrt{g}) \,(\sqrt{f} - i \sqrt{g}\, x)} +$$

$$\frac{2 i \left(\mathrm{Log}[d + e x] \,\mathrm{Log}\left[1 - \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] + \mathrm{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right]\right)}{\sqrt{f}} -$$

$$\frac{2 i \left(\mathrm{Log}[d + e x] \,\mathrm{Log}\left[1 - \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right] + \mathrm{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right]\right)}{\sqrt{f}} \Bigg) + b^2 n^2$$

$$\Bigg(\Bigg(-\sqrt{g}\, (d + e x) \,\mathrm{Log}[d + e x]^2 + 2 e \,(i \sqrt{f} + \sqrt{g}\, x) \,\mathrm{Log}[d + e x] \,\mathrm{Log}\left[1 - \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] + 2 e \,(i \sqrt{f} + \sqrt{g}\, x) \,\mathrm{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] \Bigg) \Big/$$

$$\left((e \sqrt{f} + i d \sqrt{g}) \,(\sqrt{f} - i \sqrt{g}\, x) \right) - \Bigg(\mathrm{Log}[d + e x] \left(\sqrt{g}\, (d + e x) \,\mathrm{Log}[d + e x] + 2 i e \,(\sqrt{f} + i \sqrt{g}\, x) \,\mathrm{Log}\left[1 - \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right] \right) +$$

$$2 i e \,(\sqrt{f} + i \sqrt{g}\, x) \,\mathrm{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right] \Bigg) \Big/ \left((e \sqrt{f} - i d \sqrt{g}) \,(\sqrt{f} + i \sqrt{g}\, x) \right) + \frac{1}{\sqrt{f}}$$

$$i \left(\mathrm{Log}[d + e x]^2 \,\mathrm{Log}\left[1 - \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] + 2 \,\mathrm{Log}[d + e x] \,\mathrm{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] - 2 \,\mathrm{PolyLog}\left[3, \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] \right) -$$

$$\frac{1}{\sqrt{f}} i \left(\mathrm{Log}[d + e x]^2 \,\mathrm{Log}\left[1 - \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right] + 2 \,\mathrm{Log}[d + e x] \,\mathrm{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right] - 2 \,\mathrm{PolyLog}\left[3, \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right] \right) \Bigg) \Bigg)$$

Problem 327: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(a + b \,\mathrm{Log}[c \,(d + e x)^n])^2}{(f + g x^2)^2} \, dx$$

Optimal (type 4, 821 leaves, 20 steps) :

$$-\frac{(d+e x)\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{4 f\left(e \sqrt{-f}+d \sqrt{g}\right)\left(\sqrt{-f}-\sqrt{g} x\right)}-\frac{(d+e x)\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2}{4 f\left(e \sqrt{-f}-d \sqrt{g}\right)\left(\sqrt{-f}+\sqrt{g} x\right)}-\frac{b e n\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f\left(e \sqrt{-f}+d \sqrt{g}\right) \sqrt{g}}-$$

$$\frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g} x\right)}{e \sqrt{-f}+d \sqrt{g}}\right]}{4(-f)^{3/2} \sqrt{g}}-\frac{b e n\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2\left(e(-f)^{3/2}+d f \sqrt{g}\right) \sqrt{g}}+\frac{\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^2 \operatorname{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g} x\right)}{e \sqrt{-f}-d \sqrt{g}}\right]}{4(-f)^{3/2} \sqrt{g}}-$$

$$\frac{b^2 e n^2 \operatorname{PolyLog}\left[2,-\frac{\sqrt{g}(d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2\left(e(-f)^{3/2}+d f \sqrt{g}\right) \sqrt{g}}+\frac{b n\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[2,-\frac{\sqrt{g}(d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2(-f)^{3/2} \sqrt{g}}-\frac{b^2 e n^2 \operatorname{PolyLog}\left[2, \frac{\sqrt{g}(d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2 f\left(e \sqrt{-f}+d \sqrt{g}\right) \sqrt{g}}-$$

$$\frac{b n\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right) \operatorname{PolyLog}\left[2, \frac{\sqrt{g}(d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2(-f)^{3/2} \sqrt{g}}-\frac{b^2 n^2 \operatorname{PolyLog}\left[3,-\frac{\sqrt{g}(d+e x)}{e \sqrt{-f}-d \sqrt{g}}\right]}{2(-f)^{3/2} \sqrt{g}}+\frac{b^2 n^2 \operatorname{PolyLog}\left[3, \frac{\sqrt{g}(d+e x)}{e \sqrt{-f}+d \sqrt{g}}\right]}{2(-f)^{3/2} \sqrt{g}}$$

Result (type 4, 1162 leaves) :

$$
\begin{aligned}
&\frac{1}{4\,f^{3/2}}\Bigg(\frac{2\sqrt{f}\,x\,(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}[c\,(d+e\,x)^n])^2}{f+g\,x^2}+\\
&\frac{2\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\,(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}[c\,(d+e\,x)^n])^2}{\sqrt{g}}+\frac{1}{\sqrt{g}}\,b\,n\,(a-b\,n\,\text{Log}[d+e\,x]+b\,\text{Log}[c\,(d+e\,x)^n])\\
&\Bigg(\Bigg(\sqrt{f}\,\Big(-2\,e\,(\sqrt{f}+i\sqrt{g}\,x)\,\text{ArcTan}\Big[\frac{\sqrt{g}\,x}{\sqrt{f}}\Big]+2\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+i\,e\,(\sqrt{f}+i\sqrt{g}\,x)\,\text{Log}[f+g\,x^2]\Big)\Bigg)\Big/\Big((e\sqrt{f}-i\,d\sqrt{g})\\
&(\sqrt{f}+i\sqrt{g}\,x)\Big)-\Bigg(\sqrt{f}\,\Big(2\,e\,(\sqrt{f}-i\sqrt{g}\,x)\,\text{ArcTan}\Big[\frac{\sqrt{g}\,x}{\sqrt{f}}\Big]-2\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+e\,(i\sqrt{f}+\sqrt{g}\,x)\,\text{Log}[f+g\,x^2]\Big)\Bigg)\Big/\\
&\Big((e\sqrt{f}+i\,d\sqrt{g})\,(\sqrt{f}-i\sqrt{g}\,x)\Big)+2\,i\,\Big(\text{Log}[d+e\,x]\,\text{Log}\Big[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]+\text{PolyLog}\Big[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)-\\
&2\,i\,\Big(\text{Log}[d+e\,x]\,\text{Log}\Big[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]+\text{PolyLog}\Big[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)\Bigg)+\\
&\frac{1}{\sqrt{g}}\,b^2\,n^2\,\Bigg(-\Bigg(\Bigg(\sqrt{f}\,\Big(-\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]^2+2\,e\,(i\sqrt{f}+\sqrt{g}\,x)\,\text{Log}[d+e\,x]\,\text{Log}\Big[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]+\\
&2\,e\,(i\sqrt{f}+\sqrt{g}\,x)\,\text{PolyLog}\Big[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)\Bigg)\Big/\Big((e\sqrt{f}+i\,d\sqrt{g})\,(\sqrt{f}-i\sqrt{g}\,x)\Big)\Bigg)+\\
&\Bigg(\sqrt{f}\,\Big(\text{Log}[d+e\,x]\,\Big(\sqrt{g}\,(d+e\,x)\,\text{Log}[d+e\,x]+2\,i\,e\,(\sqrt{f}+i\sqrt{g}\,x)\,\text{Log}\Big[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)+\\
&2\,i\,e\,(\sqrt{f}+i\sqrt{g}\,x)\,\text{PolyLog}\Big[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)\Bigg)\Big/\Big((e\sqrt{f}-i\,d\sqrt{g})\,(\sqrt{f}+i\sqrt{g}\,x)\Big)+\\
&i\,\Big(\text{Log}[d+e\,x]^2\,\text{Log}\Big[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\Big[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]-2\,\text{PolyLog}\Big[3,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)-\\
&i\,\Big(\text{Log}[d+e\,x]^2\,\text{Log}\Big[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]+2\,\text{Log}[d+e\,x]\,\text{PolyLog}\Big[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]-2\,\text{PolyLog}\Big[3,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\sqrt{f}+d\sqrt{g}}\Big]\Big)\Bigg)\Bigg)
\end{aligned}
$$

Problem 328: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{x^2\,\left(f+g\,x^2\right)^2}\,dx$$

Optimal (type 4, 919 leaves, 35 steps):

$$\frac{2\,b\,e\,n\,\text{Log}\left[-\frac{e\,x}{d}\right]\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{d\,f^2}-\frac{(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{d\,f^2\,x}+\frac{g\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{4\,f^2\,\left(e\,\sqrt{-f}+d\,\sqrt{g}\right)\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}+$$

$$\frac{g\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{4\,f^2\,\left(e\,\sqrt{-f}-d\,\sqrt{g}\right)\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}+\frac{b\,e\,\sqrt{g}\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,f^2\,\left(e\,\sqrt{-f}+d\,\sqrt{g}\right)}-\frac{3\,\sqrt{g}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{4\,(-f)^{5/2}}+$$

$$\frac{b\,e\,\sqrt{g}\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,f\,\left(e\,(-f)^{3/2}+d\,f\,\sqrt{g}\right)}+\frac{3\,\sqrt{g}\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{4\,(-f)^{5/2}}+$$

$$\frac{b^2\,e\,\sqrt{g}\,n^2\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,f\,\left(e\,(-f)^{3/2}+d\,f\,\sqrt{g}\right)}+\frac{3\,b\,\sqrt{g}\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,(-f)^{5/2}}+$$

$$\frac{b^2\,e\,\sqrt{g}\,n^2\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,f^2\,\left(e\,\sqrt{-f}+d\,\sqrt{g}\right)}-\frac{3\,b\,\sqrt{g}\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,(-f)^{5/2}}+$$

$$\frac{2\,b^2\,e\,n^2\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{d\,f^2}-\frac{3\,b^2\,\sqrt{g}\,n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,(-f)^{5/2}}+\frac{3\,b^2\,\sqrt{g}\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,(-f)^{5/2}}$$

Result (type 4, 1322 leaves):

$$
\begin{aligned}
&\frac{1}{4 f^{5/2}} \Bigg(-\frac{4 \sqrt{f}\, \left(a - b n \,\mathrm{Log}[d + e x] + b \,\mathrm{Log}\left[c\, (d + e x)^n\right]\right)^2}{x} - \\
&\quad \frac{2 \sqrt{f}\, g x \left(a - b n \,\mathrm{Log}[d + e x] + b \,\mathrm{Log}\left[c\, (d + e x)^n\right]\right)^2}{f + g x^2} - 6 \sqrt{g}\, \mathrm{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] \left(a - b n \,\mathrm{Log}[d + e x] + b \,\mathrm{Log}\left[c\, (d + e x)^n\right]\right)^2 + \\
&\quad b n \left(a - b n \,\mathrm{Log}[d + e x] + b \,\mathrm{Log}\left[c\, (d + e x)^n\right]\right) \Bigg(\frac{8 \sqrt{f}\, \left(e x \,\mathrm{Log}[x] - (d + e x) \,\mathrm{Log}[d + e x]\right)}{d x} - \\
&\quad\quad \Big(\sqrt{f} \sqrt{g} \Big(-2 e \left(\sqrt{f} + i \sqrt{g}\, x\right) \mathrm{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] + 2 \sqrt{g}\, (d + e x) \,\mathrm{Log}[d + e x] + i e \left(\sqrt{f} + i \sqrt{g}\, x\right) \mathrm{Log}\left[f + g x^2\right]\Big)\Big) \Big/ \Big(\left(e \sqrt{f} - i d \sqrt{g}\right) \\
&\quad\quad\quad \left(\sqrt{f} + i \sqrt{g}\, x\right)\Big) + \Big(\sqrt{f} \sqrt{g} \Big(2 e \left(\sqrt{f} - i \sqrt{g}\, x\right) \mathrm{ArcTan}\left[\frac{\sqrt{g}\, x}{\sqrt{f}}\right] - 2 \sqrt{g}\, (d + e x) \,\mathrm{Log}[d + e x] + e \left(i \sqrt{f} + \sqrt{g}\, x\right) \mathrm{Log}\left[f + g x^2\right]\Big)\Big) \Big/ \\
&\quad\quad \Big(\left(e \sqrt{f} + i d \sqrt{g}\right) \left(\sqrt{f} - i \sqrt{g}\, x\right)\Big) - 6 i \sqrt{g} \left(\mathrm{Log}[d + e x] \,\mathrm{Log}\left[1 - \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] + \mathrm{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right]\right) + \\
&\quad\quad 6 i \sqrt{g} \left(\mathrm{Log}[d + e x] \,\mathrm{Log}\left[1 - \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right] + \mathrm{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right]\right)\Bigg) + \\
&\quad b^2 n^2 \Bigg(\Big(\sqrt{f} \sqrt{g} \Big(-\sqrt{g}\, (d + e x) \,\mathrm{Log}[d + e x]^2 + 2 e \left(i \sqrt{f} + \sqrt{g}\, x\right) \mathrm{Log}[d + e x] \,\mathrm{Log}\left[1 - \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] + \\
&\quad\quad\quad 2 e \left(i \sqrt{f} + \sqrt{g}\, x\right) \mathrm{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right]\Big)\Big) \Big/ \Big(\left(e \sqrt{f} + i d \sqrt{g}\right) \left(\sqrt{f} - i \sqrt{g}\, x\right)\Big) - \\
&\quad\quad \Big(\sqrt{f} \sqrt{g} \Big(\mathrm{Log}[d + e x] \left(\sqrt{g}\, (d + e x) \,\mathrm{Log}[d + e x] + 2 i e \left(\sqrt{f} + i \sqrt{g}\, x\right) \mathrm{Log}\left[1 - \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right]\right) + \\
&\quad\quad\quad 2 i e \left(\sqrt{f} + i \sqrt{g}\, x\right) \mathrm{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right]\Big)\Big) \Big/ \Big(\left(e \sqrt{f} - i d \sqrt{g}\right) \left(\sqrt{f} + i \sqrt{g}\, x\right)\Big) + \\
&\quad\quad \frac{4 \sqrt{f}\, \left(2 e x \,\mathrm{Log}\left[-\frac{e x}{d}\right] \mathrm{Log}[d + e x] - (d + e x) \,\mathrm{Log}[d + e x]^2 + 2 e x \,\mathrm{PolyLog}\left[2, 1 + \frac{e x}{d}\right]\right)}{d x} - \\
&\quad\quad 3 i \sqrt{g} \left(\mathrm{Log}[d + e x]^2 \,\mathrm{Log}\left[1 - \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] + 2 \,\mathrm{Log}[d + e x] \,\mathrm{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right] - 2 \,\mathrm{PolyLog}\left[3, \frac{\sqrt{g}\, (d + e x)}{-i e \sqrt{f} + d \sqrt{g}}\right]\right) + \\
&\quad\quad 3 i \sqrt{g} \left(\mathrm{Log}[d + e x]^2 \,\mathrm{Log}\left[1 - \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right] + 2 \,\mathrm{Log}[d + e x] \,\mathrm{PolyLog}\left[2, \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right] - 2 \,\mathrm{PolyLog}\left[3, \frac{\sqrt{g}\, (d + e x)}{i e \sqrt{f} + d \sqrt{g}}\right]\right)\Bigg)\Bigg)
\end{aligned}
$$

Problem 329: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Log}\left[c\,(a+b\,x)^n\right]^3}{d+e\,x^2}\,dx$$

Optimal (type 4, 477 leaves, 12 steps):

$$\frac{\text{Log}\left[c\,(a+b\,x)^n\right]^3\,\text{Log}\left[\frac{b\,\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\,\sqrt{-d}+a\,\sqrt{e}}\right]}{2\,\sqrt{-d}\,\sqrt{e}}-\frac{\text{Log}\left[c\,(a+b\,x)^n\right]^3\,\text{Log}\left[\frac{b\,\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\,\sqrt{-d}-a\,\sqrt{e}}\right]}{2\,\sqrt{-d}\,\sqrt{e}}-\frac{3\,n\,\text{Log}\left[c\,(a+b\,x)^n\right]^2\,\text{PolyLog}\left[2,-\frac{\sqrt{e}\,(a+b\,x)}{b\,\sqrt{-d}-a\,\sqrt{e}}\right]}{2\,\sqrt{-d}\,\sqrt{e}}+$$
$$\frac{3\,n\,\text{Log}\left[c\,(a+b\,x)^n\right]^2\,\text{PolyLog}\left[2,\frac{\sqrt{e}\,(a+b\,x)}{b\,\sqrt{-d}+a\,\sqrt{e}}\right]}{2\,\sqrt{-d}\,\sqrt{e}}+\frac{3\,n^2\,\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{PolyLog}\left[3,-\frac{\sqrt{e}\,(a+b\,x)}{b\,\sqrt{-d}-a\,\sqrt{e}}\right]}{\sqrt{-d}\,\sqrt{e}}-$$
$$\frac{3\,n^2\,\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{PolyLog}\left[3,\frac{\sqrt{e}\,(a+b\,x)}{b\,\sqrt{-d}+a\,\sqrt{e}}\right]}{\sqrt{-d}\,\sqrt{e}}-\frac{3\,n^3\,\text{PolyLog}\left[4,-\frac{\sqrt{e}\,(a+b\,x)}{b\,\sqrt{-d}-a\,\sqrt{e}}\right]}{\sqrt{-d}\,\sqrt{e}}+\frac{3\,n^3\,\text{PolyLog}\left[4,\frac{\sqrt{e}\,(a+b\,x)}{b\,\sqrt{-d}+a\,\sqrt{e}}\right]}{\sqrt{-d}\,\sqrt{e}}$$

Result (type 4, 754 leaves):

$$\frac{1}{2\,\sqrt{d}\,\sqrt{e}}\left(-2\,n^3\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}[a+b\,x]^3+6\,n^2\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}[a+b\,x]^2\,\text{Log}\left[c\,(a+b\,x)^n\right]-\right.$$
$$6\,n\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}[a+b\,x]\,\text{Log}\left[c\,(a+b\,x)^n\right]^2+2\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}\left[c\,(a+b\,x)^n\right]^3+i\,n^3\,\text{Log}[a+b\,x]^3\,\text{Log}\left[1-\frac{\sqrt{e}\,(a+b\,x)}{-i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]-$$
$$3\,i\,n^2\,\text{Log}[a+b\,x]^2\,\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{Log}\left[1-\frac{\sqrt{e}\,(a+b\,x)}{-i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]+3\,i\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[c\,(a+b\,x)^n\right]^2\,\text{Log}\left[1-\frac{\sqrt{e}\,(a+b\,x)}{-i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]-$$
$$i\,n^3\,\text{Log}[a+b\,x]^3\,\text{Log}\left[1-\frac{\sqrt{e}\,(a+b\,x)}{i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]+3\,i\,n^2\,\text{Log}[a+b\,x]^2\,\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{Log}\left[1-\frac{\sqrt{e}\,(a+b\,x)}{i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]-$$
$$3\,i\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[c\,(a+b\,x)^n\right]^2\,\text{Log}\left[1-\frac{\sqrt{e}\,(a+b\,x)}{i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]+3\,i\,n\,\text{Log}\left[c\,(a+b\,x)^n\right]^2\,\text{PolyLog}\left[2,\frac{\sqrt{e}\,(a+b\,x)}{-i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]-$$
$$3\,i\,n\,\text{Log}\left[c\,(a+b\,x)^n\right]^2\,\text{PolyLog}\left[2,\frac{\sqrt{e}\,(a+b\,x)}{i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]-6\,i\,n^2\,\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{PolyLog}\left[3,\frac{\sqrt{e}\,(a+b\,x)}{-i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]+$$
$$\left.6\,i\,n^2\,\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{PolyLog}\left[3,\frac{\sqrt{e}\,(a+b\,x)}{i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]+6\,i\,n^3\,\text{PolyLog}\left[4,\frac{\sqrt{e}\,(a+b\,x)}{-i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]-6\,i\,n^3\,\text{PolyLog}\left[4,\frac{\sqrt{e}\,(a+b\,x)}{i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]\right)$$

Problem 330: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Log}\left[c\,(a+b\,x)^n\right]^2}{d+e\,x^2}\,dx$$

Optimal (type 4, 347 leaves, 10 steps):

$$\frac{\text{Log}\left[c\,(a+b\,x)^n\right]^2\,\text{Log}\left[\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right]}{2\sqrt{-d}\,\sqrt{e}}-\frac{\text{Log}\left[c\,(a+b\,x)^n\right]^2\,\text{Log}\left[\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right]}{2\sqrt{-d}\,\sqrt{e}}-\frac{n\,\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{PolyLog}\left[2,-\frac{\sqrt{e}\,(a+b\,x)}{b\sqrt{-d}-a\sqrt{e}}\right]}{\sqrt{-d}\,\sqrt{e}}+$$
$$\frac{n\,\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{PolyLog}\left[2,\frac{\sqrt{e}\,(a+b\,x)}{b\sqrt{-d}+a\sqrt{e}}\right]}{\sqrt{-d}\,\sqrt{e}}+\frac{n^2\,\text{PolyLog}\left[3,-\frac{\sqrt{e}\,(a+b\,x)}{b\sqrt{-d}-a\sqrt{e}}\right]}{\sqrt{-d}\,\sqrt{e}}-\frac{n^2\,\text{PolyLog}\left[3,\frac{\sqrt{e}\,(a+b\,x)}{b\sqrt{-d}+a\sqrt{e}}\right]}{\sqrt{-d}\,\sqrt{e}}$$

Result (type 4, 488 leaves):

$$\frac{1}{2\sqrt{d}\,\sqrt{e}}$$
$$\left(2\,n^2\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}[a+b\,x]^2-4\,n\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}[a+b\,x]\,\text{Log}\left[c\,(a+b\,x)^n\right]+2\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}\left[c\,(a+b\,x)^n\right]^2-i\,n^2\,\text{Log}[a+b\,x]^2\right.$$
$$\text{Log}\left[1-\frac{\sqrt{e}\,(a+b\,x)}{-i\,b\sqrt{d}+a\sqrt{e}}\right]+2\,i\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{Log}\left[1-\frac{\sqrt{e}\,(a+b\,x)}{-i\,b\sqrt{d}+a\sqrt{e}}\right]+i\,n^2\,\text{Log}[a+b\,x]^2\,\text{Log}\left[1-\frac{\sqrt{e}\,(a+b\,x)}{i\,b\sqrt{d}+a\sqrt{e}}\right]-$$
$$2\,i\,n\,\text{Log}[a+b\,x]\,\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{Log}\left[1-\frac{\sqrt{e}\,(a+b\,x)}{i\,b\sqrt{d}+a\sqrt{e}}\right]+2\,i\,n\,\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{PolyLog}\left[2,\frac{\sqrt{e}\,(a+b\,x)}{-i\,b\sqrt{d}+a\sqrt{e}}\right]-$$
$$\left.2\,i\,n\,\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{PolyLog}\left[2,\frac{\sqrt{e}\,(a+b\,x)}{i\,b\sqrt{d}+a\sqrt{e}}\right]-2\,i\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{e}\,(a+b\,x)}{-i\,b\sqrt{d}+a\sqrt{e}}\right]+2\,i\,n^2\,\text{PolyLog}\left[3,\frac{\sqrt{e}\,(a+b\,x)}{i\,b\sqrt{d}+a\sqrt{e}}\right]\right)$$

Problem 331: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Log}\left[c\,(a+b\,x)^n\right]}{d+e\,x^2}\,dx$$

Optimal (type 4, 229 leaves, 8 steps):

$$\frac{\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{Log}\left[\frac{b\left(\sqrt{-d}-\sqrt{e}\,x\right)}{b\sqrt{-d}+a\sqrt{e}}\right]}{2\sqrt{-d}\,\sqrt{e}}-\frac{\text{Log}\left[c\,(a+b\,x)^n\right]\,\text{Log}\left[\frac{b\left(\sqrt{-d}+\sqrt{e}\,x\right)}{b\sqrt{-d}-a\sqrt{e}}\right]}{2\sqrt{-d}\,\sqrt{e}}-\frac{n\,\text{PolyLog}\left[2,-\frac{\sqrt{e}\,(a+b\,x)}{b\sqrt{-d}-a\sqrt{e}}\right]}{2\sqrt{-d}\,\sqrt{e}}+\frac{n\,\text{PolyLog}\left[2,\frac{\sqrt{e}\,(a+b\,x)}{b\sqrt{-d}+a\sqrt{e}}\right]}{2\sqrt{-d}\,\sqrt{e}}$$

Result (type 4, 232 leaves):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\left(-n\,\text{Log}[a+b\,x]+\text{Log}\left[c\,(a+b\,x)^n\right]\right)}{\sqrt{d}\,\sqrt{e}}+$$

$$n\left(\frac{i\left(\text{Log}[a+b\,x]\,\text{Log}\left[1-\frac{\sqrt{e}\,(a+b\,x)}{-i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{e}\,(a+b\,x)}{-i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]\right)}{2\,\sqrt{d}\,\sqrt{e}}-\frac{i\left(\text{Log}[a+b\,x]\,\text{Log}\left[1-\frac{\sqrt{e}\,(a+b\,x)}{i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{e}\,(a+b\,x)}{i\,b\,\sqrt{d}+a\,\sqrt{e}}\right]\right)}{2\,\sqrt{d}\,\sqrt{e}}\right)$$

Problem 333: Unable to integrate problem.

$$\int \frac{\text{Log}\left[c-\frac{a\,(1-c)\,x^{-m}}{b}\right]}{x\,(a+b\,x^m)}\,dx$$

Optimal (type 4, 27 leaves, 4 steps):

$$\frac{\text{PolyLog}\left[2,\frac{(1-c)\,(b+a\,x^{-m})}{b}\right]}{a\,m}$$

Result (type 8, 34 leaves):

$$\int \frac{\text{Log}\left[c-\frac{a\,(1-c)\,x^{-m}}{b}\right]}{x\,(a+b\,x^m)}\,dx$$

Problem 334: Unable to integrate problem.

$$\int \frac{\text{Log}\left[\frac{x^{-m}\,(-a+a\,c+b\,c\,x^m)}{b}\right]}{x\,(a+b\,x^m)}\,dx$$

Optimal (type 4, 27 leaves, 5 steps):

$$\frac{\text{PolyLog}\left[2,\frac{(1-c)\,(b+a\,x^{-m})}{b}\right]}{a\,m}$$

Result (type 8, 38 leaves):

$$\int \frac{\text{Log}\left[\frac{x^{-m}\,(-a+a\,c+b\,c\,x^m)}{b}\right]}{x\,(a+b\,x^m)}\,dx$$

Problem 335: Unable to integrate problem.

$$\int \frac{\text{Log}\left[c\left(a-\frac{(d-a\,c\,d)\,x^{-m}}{c\,e}\right)\right]}{x\left(d+e\,x^m\right)}\,dx$$

Optimal (type 4, 28 leaves, 4 steps):

$$\frac{\text{PolyLog}\left[2,\frac{(1-a\,c)\left(e+d\,x^{-m}\right)}{e}\right]}{d\,m}$$

Result (type 8, 40 leaves):

$$\int \frac{\text{Log}\left[c\left(a-\frac{(d-a\,c\,d)\,x^{-m}}{c\,e}\right)\right]}{x\left(d+e\,x^m\right)}\,dx$$

Problem 336: Unable to integrate problem.

$$\int \frac{\text{Log}\left[\frac{x^{-m}\left(-d+a\,c\,d+a\,c\,e\,x^m\right)}{e}\right]}{x\left(d+e\,x^m\right)}\,dx$$

Optimal (type 4, 28 leaves, 5 steps):

$$\frac{\text{PolyLog}\left[2,\frac{(1-a\,c)\left(e+d\,x^{-m}\right)}{e}\right]}{d\,m}$$

Result (type 8, 40 leaves):

$$\int \frac{\text{Log}\left[\frac{x^{-m}\left(-d+a\,c\,d+a\,c\,e\,x^m\right)}{e}\right]}{x\left(d+e\,x^m\right)}\,dx$$

Problem 337: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{2\,a}{a+b\,x}\right]}{a^2-b^2\,x^2}\,dx$$

Optimal (type 4, 24 leaves, 2 steps):

$$\frac{\text{PolyLog}\left[2,1-\frac{2\,a}{a+b\,x}\right]}{2\,a\,b}$$

Result (type 4, 89 leaves) :

$$\frac{1}{4\,a\,b}\left(4\,\text{ArcTanh}\left[\frac{b\,x}{a}\right]\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{2\,a}{a+b\,x}\right]\right)-\text{Log}\left[\frac{a}{b}+x\right]\left(\text{Log}[4]+\text{Log}\left[\frac{a}{b}+x\right]-2\,\text{Log}\left[1-\frac{b\,x}{a}\right]\right)+2\,\text{PolyLog}\left[2,\frac{a+b\,x}{2\,a}\right]\right)$$

Problem 338: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[\frac{2\,a}{a+b\,x}\right]}{(a-b\,x)\,(a+b\,x)}\,dx$$

Optimal (type 4, 24 leaves, 4 steps) :

$$\frac{\text{PolyLog}\left[2,1-\frac{2\,a}{a+b\,x}\right]}{2\,a\,b}$$

Result (type 4, 89 leaves) :

$$\frac{1}{4\,a\,b}\left(4\,\text{ArcTanh}\left[\frac{b\,x}{a}\right]\left(\text{Log}\left[\frac{a}{b}+x\right]+\text{Log}\left[\frac{2\,a}{a+b\,x}\right]\right)-\text{Log}\left[\frac{a}{b}+x\right]\left(\text{Log}[4]+\text{Log}\left[\frac{a}{b}+x\right]-2\,\text{Log}\left[1-\frac{b\,x}{a}\right]\right)+2\,\text{PolyLog}\left[2,\frac{a+b\,x}{2\,a}\right]\right)$$

Problem 339: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[\frac{a\,(1-c)+b\,(1+c)\,x}{a+b\,x}\right]}{a^2-b^2\,x^2}\,dx$$

Optimal (type 4, 37 leaves, 1 step) :

$$\frac{\text{PolyLog}\left[2,1-\frac{a\,(1-c)+b\,(1+c)\,x}{a+b\,x}\right]}{2\,a\,b}$$

Result (type 4, 259 leaves) :

$$\frac{1}{4\,a\,b}\left(4\,\text{ArcTanh}\left[\frac{b\,x}{a}\right]\text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{a}{b}+x\right]^2-4\,\text{ArcTanh}\left[\frac{b\,x}{a}\right]\text{Log}\left[\frac{a-a\,c}{b+b\,c}+x\right]+2\,\text{Log}\left[\frac{a}{b}+x\right]\text{Log}\left[\frac{a-b\,x}{2\,a}\right]-\right.$$
$$2\,\text{Log}\left[\frac{a-a\,c}{b+b\,c}+x\right]\text{Log}\left[\frac{(1+c)\,(a-b\,x)}{2\,a}\right]+2\,\text{Log}\left[\frac{a-a\,c}{b+b\,c}+x\right]\text{Log}\left[\frac{(1+c)\,(a+b\,x)}{2\,a\,c}\right]+4\,\text{ArcTanh}\left[\frac{b\,x}{a}\right]\text{Log}\left[\frac{a-a\,c+b\,(1+c)\,x}{a+b\,x}\right]+$$
$$\left.2\,\text{PolyLog}\left[2,\frac{a+b\,x}{2\,a}\right]-2\,\text{PolyLog}\left[2,\frac{a-a\,c+b\,(1+c)\,x}{2\,a}\right]+2\,\text{PolyLog}\left[2,-\frac{a-a\,c+b\,(1+c)\,x}{2\,a\,c}\right]\right)$$

Problem 340: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{a (1-c)+b (1+c) x}{a+b x}\right]}{(a-b x) (a+b x)} \, dx$$

Optimal (type 4, 27 leaves, 2 steps):

$$\frac{\text{PolyLog}\left[2, \frac{c (a-b x)}{a+b x}\right]}{2 a b}$$

Result (type 4, 259 leaves):

$$\frac{1}{4 a b}\left(4 \text{ArcTanh}\left[\frac{b x}{a}\right] \text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{a}{b}+x\right]^2-4 \text{ArcTanh}\left[\frac{b x}{a}\right] \text{Log}\left[\frac{a-a c}{b+b c}+x\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{a-b x}{2 a}\right]-\right.$$
$$2 \text{Log}\left[\frac{a-a c}{b+b c}+x\right] \text{Log}\left[\frac{(1+c) (a-b x)}{2 a}\right]+2 \text{Log}\left[\frac{a-a c}{b+b c}+x\right] \text{Log}\left[\frac{(1+c) (a+b x)}{2 a c}\right]+4 \text{ArcTanh}\left[\frac{b x}{a}\right] \text{Log}\left[\frac{a-a c+b (1+c) x}{a+b x}\right]+$$
$$\left.2 \text{PolyLog}\left[2, \frac{a+b x}{2 a}\right]-2 \text{PolyLog}\left[2, \frac{a-a c+b (1+c) x}{2 a}\right]+2 \text{PolyLog}\left[2, -\frac{a-a c+b (1+c) x}{2 a c}\right]\right)$$

Problem 341: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[1-\frac{c (a-b x)}{a+b x}\right]}{a^2-b^2 x^2} \, dx$$

Optimal (type 4, 27 leaves, 1 step):

$$\frac{\text{PolyLog}\left[2, \frac{c (a-b x)}{a+b x}\right]}{2 a b}$$

Result (type 4, 259 leaves):

$$\frac{1}{4 a b}\left(4 \text{ArcTanh}\left[\frac{b x}{a}\right] \text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{a}{b}+x\right]^2-4 \text{ArcTanh}\left[\frac{b x}{a}\right] \text{Log}\left[\frac{a-a c}{b+b c}+x\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{a-b x}{2 a}\right]-\right.$$
$$2 \text{Log}\left[\frac{a-a c}{b+b c}+x\right] \text{Log}\left[\frac{(1+c) (a-b x)}{2 a}\right]+2 \text{Log}\left[\frac{a-a c}{b+b c}+x\right] \text{Log}\left[\frac{(1+c) (a+b x)}{2 a c}\right]+4 \text{ArcTanh}\left[\frac{b x}{a}\right] \text{Log}\left[\frac{a-a c+b (1+c) x}{a+b x}\right]+$$
$$\left.2 \text{PolyLog}\left[2, \frac{a+b x}{2 a}\right]-2 \text{PolyLog}\left[2, \frac{a-a c+b (1+c) x}{2 a}\right]+2 \text{PolyLog}\left[2, -\frac{a-a c+b (1+c) x}{2 a c}\right]\right)$$

Problem 342: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[1-\frac{c (a-b x)}{a+b x}\right]}{(a-b x) (a+b x)} \, dx$$

Optimal (type 4, 27 leaves, 3 steps):

$$\frac{\text{PolyLog}\left[2,\frac{c (a-b x)}{a+b x}\right]}{2 a b}$$

Result (type 4, 259 leaves):

$$\frac{1}{4 a b}\left(4 \text{ArcTanh}\left[\frac{b x}{a}\right] \text{Log}\left[\frac{a}{b}+x\right]-\text{Log}\left[\frac{a}{b}+x\right]^2-4 \text{ArcTanh}\left[\frac{b x}{a}\right] \text{Log}\left[\frac{a-a c}{b+b c}+x\right]+2 \text{Log}\left[\frac{a}{b}+x\right] \text{Log}\left[\frac{a-b x}{2 a}\right]-2 \text{Log}\left[\frac{a-a c}{b+b c}+x\right] \text{Log}\left[\frac{(1+c) (a-b x)}{2 a}\right]+2 \text{Log}\left[\frac{a-a c}{b+b c}+x\right] \text{Log}\left[\frac{(1+c) (a+b x)}{2 a c}\right]+4 \text{ArcTanh}\left[\frac{b x}{a}\right] \text{Log}\left[\frac{a-a c+b (1+c) x}{a+b x}\right]+2 \text{PolyLog}\left[2,\frac{a+b x}{2 a}\right]-2 \text{PolyLog}\left[2,\frac{a-a c+b (1+c) x}{2 a}\right]+2 \text{PolyLog}\left[2,-\frac{a-a c+b (1+c) x}{2 a c}\right]\right)$$

Problem 343: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[c (a+b x)^n\right]^3}{d x+e x^2} \, dx$$

Optimal (type 4, 238 leaves, 13 steps):

$$\frac{\text{Log}\left[-\frac{b x}{a}\right] \text{Log}\left[c (a+b x)^n\right]^3}{d}-\frac{\text{Log}\left[c (a+b x)^n\right]^3 \text{Log}\left[\frac{b (d+e x)}{b d-a e}\right]}{d}-\frac{3 n \text{Log}\left[c (a+b x)^n\right]^2 \text{PolyLog}\left[2,-\frac{e (a+b x)}{b d-a e}\right]}{d}+\frac{3 n \text{Log}\left[c (a+b x)^n\right]^2 \text{PolyLog}\left[2,1+\frac{b x}{a}\right]}{d}+\frac{6 n^2 \text{Log}\left[c (a+b x)^n\right] \text{PolyLog}\left[3,-\frac{e (a+b x)}{b d-a e}\right]}{d}-\frac{6 n^2 \text{Log}\left[c (a+b x)^n\right] \text{PolyLog}\left[3,1+\frac{b x}{a}\right]}{d}-\frac{6 n^3 \text{PolyLog}\left[4,-\frac{e (a+b x)}{b d-a e}\right]}{d}+\frac{6 n^3 \text{PolyLog}\left[4,1+\frac{b x}{a}\right]}{d}$$

Result (type 4, 494 leaves):

$$\frac{1}{d}\Big(-\text{Log}[x]\,(n\,\text{Log}[a+b\,x]-\text{Log}[c\,(a+b\,x)^n])^3+(n\,\text{Log}[a+b\,x]-\text{Log}[c\,(a+b\,x)^n])^3\,\text{Log}[d+e\,x]+3\,n\,(-n\,\text{Log}[a+b\,x]+\text{Log}[c\,(a+b\,x)^n])^2$$
$$\Big(\text{Log}[x]\,\Big(\text{Log}[a+b\,x]-\text{Log}\Big[1+\frac{b\,x}{a}\Big]\Big)-\text{Log}[a+b\,x]\,\text{Log}\Big[\frac{b\,(d+e\,x)}{b\,d-a\,e}\Big]-\text{PolyLog}\Big[2,-\frac{b\,x}{a}\Big]-\text{PolyLog}\Big[2,\frac{e\,(a+b\,x)}{-b\,d+a\,e}\Big]\Big)-$$
$$3\,n^2\,(n\,\text{Log}[a+b\,x]-\text{Log}[c\,(a+b\,x)^n])\,\Big(\text{Log}\Big[-\frac{b\,x}{a}\Big]\,\text{Log}[a+b\,x]^2-\text{Log}[a+b\,x]^2\,\text{Log}\Big[\frac{b\,(d+e\,x)}{b\,d-a\,e}\Big]-$$
$$2\,\text{Log}[a+b\,x]\,\text{PolyLog}\Big[2,\frac{e\,(a+b\,x)}{-b\,d+a\,e}\Big]+2\,\text{Log}[a+b\,x]\,\text{PolyLog}\Big[2,1+\frac{b\,x}{a}\Big]+2\,\text{PolyLog}\Big[3,\frac{e\,(a+b\,x)}{-b\,d+a\,e}\Big]-2\,\text{PolyLog}\Big[3,1+\frac{b\,x}{a}\Big]\Big)+$$
$$n^3\,\Big(\text{Log}\Big[-\frac{b\,x}{a}\Big]\,\text{Log}[a+b\,x]^3-\text{Log}[a+b\,x]^3\,\text{Log}\Big[\frac{b\,(d+e\,x)}{b\,d-a\,e}\Big]-3\,\text{Log}[a+b\,x]^2\,\text{PolyLog}\Big[2,\frac{e\,(a+b\,x)}{-b\,d+a\,e}\Big]+3\,\text{Log}[a+b\,x]^2\,\text{PolyLog}\Big[2,1+\frac{b\,x}{a}\Big]+$$
$$6\,\text{Log}[a+b\,x]\,\text{PolyLog}\Big[3,\frac{e\,(a+b\,x)}{-b\,d+a\,e}\Big]-6\,\text{Log}[a+b\,x]\,\text{PolyLog}\Big[3,1+\frac{b\,x}{a}\Big]-6\,\text{PolyLog}\Big[4,\frac{e\,(a+b\,x)}{-b\,d+a\,e}\Big]+6\,\text{PolyLog}\Big[4,1+\frac{b\,x}{a}\Big]\Big)\Big)$$

Problem 369: Result more than twice size of optimal antiderivative.

$$\int \text{Log}[f\,x^m]\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2\,dx$$

Optimal (type 4, 309 leaves, 17 steps):

$$2\,a\,b\,m\,n\,x-4\,b^2\,m\,n^2\,x+2\,b\,m\,n\,(a-b\,n)\,x-2\,a\,b\,n\,x\,\text{Log}[f\,x^m]+2\,b^2\,n^2\,x\,\text{Log}[f\,x^m]+$$
$$\frac{4\,b^2\,m\,n\,(d+e\,x)\,\text{Log}[c\,(d+e\,x)^n]}{e}+\frac{2\,b^2\,d\,m\,n\,\text{Log}\big[-\frac{e\,x}{d}\big]\,\text{Log}[c\,(d+e\,x)^n]}{e}-\frac{2\,b^2\,n\,(d+e\,x)\,\text{Log}[f\,x^m]\,\text{Log}[c\,(d+e\,x)^n]}{e}-$$
$$\frac{m\,(d+e\,x)\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{e}-\frac{d\,m\,\text{Log}\big[-\frac{e\,x}{d}\big]\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{e}+\frac{(d+e\,x)\,\text{Log}[f\,x^m]\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{e}+$$
$$\frac{2\,b^2\,d\,m\,n^2\,\text{PolyLog}\big[2,1+\frac{e\,x}{d}\big]}{e}-\frac{2\,b\,d\,m\,n\,(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{PolyLog}\big[2,1+\frac{e\,x}{d}\big]}{e}+\frac{2\,b^2\,d\,m\,n^2\,\text{PolyLog}\big[3,1+\frac{e\,x}{d}\big]}{e}$$

Result (type 4, 655 leaves):

$$b^2 n^2 \left(-m \operatorname{Log}[x]+\operatorname{Log}\left[f x^m\right]\right)\left(x \operatorname{Log}[d+e x]^2-2 e\left(-\frac{x}{e}+\frac{d \operatorname{Log}[d+e x]}{e^2}+\frac{x \operatorname{Log}[d+e x]}{e}-\frac{d \operatorname{Log}[d+e x]^2}{2 e^2}\right)\right)+$$

$$2 b n \left(-m \operatorname{Log}[x]+\operatorname{Log}\left[f x^m\right]\right)\left(x \operatorname{Log}[d+e x]-e\left(\frac{x}{e}-\frac{d \operatorname{Log}[d+e x]}{e^2}\right)\right)\left(a+b\left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)\right)+$$

$$m x \operatorname{Log}[x]\left(a+b\left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)\right)^2+x\left(-a^2 m+a^2\left(-m \operatorname{Log}[x]+\operatorname{Log}\left[f x^m\right]\right)-2 a b m\left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)+\right.$$

$$2 a b\left(-m \operatorname{Log}[x]+\operatorname{Log}\left[f x^m\right]\right)\left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)-b^2 m\left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)^2+$$

$$\left.b^2\left(-m \operatorname{Log}[x]+\operatorname{Log}\left[f x^m\right]\right)\left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)^2\right)+2 b m n\left(a+b\left(-n \operatorname{Log}[d+e x]+\operatorname{Log}\left[c (d+e x)^n\right]\right)\right)$$

$$\left(x \operatorname{Log}[x] \operatorname{Log}[d+e x]-\frac{-d-e x+(d+e x) \operatorname{Log}[d+e x]}{e}-e\left(\frac{x(-1+\operatorname{Log}[x])}{e}-\frac{d\left(\operatorname{Log}[x] \operatorname{Log}\left[1+\frac{e x}{d}\right]+\operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]\right)}{e^2}\right)\right)+$$

$$b^2 m n^2\left(-x \operatorname{Log}[d+e x]^2+x \operatorname{Log}[x] \operatorname{Log}[d+e x]^2+2 e\left(-\frac{x}{e}+\frac{d \operatorname{Log}[d+e x]}{e^2}+\frac{x \operatorname{Log}[d+e x]}{e}-\frac{d \operatorname{Log}[d+e x]^2}{2 e^2}\right)-\right.$$

$$2 e\left(\frac{x-\frac{d \operatorname{Log}[d+e x]}{e}+x(-1+\operatorname{Log}[x]) \operatorname{Log}[d+e x]-e\left(\frac{x(-1+\operatorname{Log}[x])}{e}-\frac{d\left(\operatorname{Log}[x] \operatorname{Log}\left[1+\frac{e x}{d}\right]+\operatorname{PolyLog}\left[2,-\frac{e x}{d}\right]\right)}{e^2}\right)}{e}-\right.$$

$$\left.\left.\frac{d\left(\frac{1}{2}\left(\operatorname{Log}[x]-\operatorname{Log}\left[-\frac{e x}{d}\right]\right) \operatorname{Log}[d+e x]^2-\operatorname{Log}[d+e x] \operatorname{PolyLog}\left[2, \frac{d+e x}{d}\right]+\operatorname{PolyLog}\left[3, \frac{d+e x}{d}\right]\right)}{e^2}\right)\right)$$

Problem 373: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Log}\left[f x^m\right]\left(a+b \operatorname{Log}\left[c (d+e x)^n\right]\right)^3 \, dx$$

Optimal (type 4, 522 leaves, 28 steps) :

$$-12\,a\,b^2\,m\,n^2\,x+18\,b^3\,m\,n^3\,x-6\,b^2\,m\,n^2\,(a-b\,n)\,x+6\,a\,b^2\,n^2\,x\,\text{Log}[f\,x^m]-6\,b^3\,n^3\,x\,\text{Log}[f\,x^m]-\frac{18\,b^3\,m\,n^2\,(d+e\,x)\,\text{Log}[c\,(d+e\,x)^n]}{e}-$$
$$\frac{6\,b^3\,d\,m\,n^2\,\text{Log}[-\frac{e\,x}{d}]\,\text{Log}[c\,(d+e\,x)^n]}{e}+\frac{6\,b^3\,n^2\,(d+e\,x)\,\text{Log}[f\,x^m]\,\text{Log}[c\,(d+e\,x)^n]}{e}+\frac{6\,b\,m\,n\,(d+e\,x)\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{e}+$$
$$\frac{3\,b\,d\,m\,n\,\text{Log}[-\frac{e\,x}{d}]\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{e}-\frac{3\,b\,n\,(d+e\,x)\,\text{Log}[f\,x^m]\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{e}-\frac{m\,(d+e\,x)\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^3}{e}-$$
$$\frac{d\,m\,\text{Log}[-\frac{e\,x}{d}]\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^3}{e}+\frac{(d+e\,x)\,\text{Log}[f\,x^m]\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^3}{e}-\frac{6\,b^3\,d\,m\,n^3\,\text{PolyLog}[2,1+\frac{e\,x}{d}]}{e}+$$
$$\frac{6\,b^2\,d\,m\,n^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{PolyLog}[2,1+\frac{e\,x}{d}]}{e}-\frac{3\,b\,d\,m\,n\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2\,\text{PolyLog}[2,1+\frac{e\,x}{d}]}{e}-$$
$$\frac{6\,b^3\,d\,m\,n^3\,\text{PolyLog}[3,1+\frac{e\,x}{d}]}{e}+\frac{6\,b^2\,d\,m\,n^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{PolyLog}[3,1+\frac{e\,x}{d}]}{e}-\frac{6\,b^3\,d\,m\,n^3\,\text{PolyLog}[4,1+\frac{e\,x}{d}]}{e}$$

Result (type 4, 1163 leaves) :

$$\frac{1}{e}\left(-b^3 n^3 (d+e x) \left(m \text{Log}[x]-\text{Log}\left[f x^m\right]\right) \left(-6+6 \text{Log}[d+e x]-3 \text{Log}[d+e x]^2+\text{Log}[d+e x]^3\right)-\right.$$

$$3 b^2 n^2 \left(m \text{Log}[x]-\text{Log}\left[f x^m\right]\right) \left(2 e x-2 (d+e x) \text{Log}[d+e x]+(d+e x) \text{Log}[d+e x]^2\right) \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)-$$

$$3 b e n x \left(m-\text{Log}\left[f x^m\right]\right) \text{Log}[d+e x] \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2-$$

$$3 b d n \left(m+m \text{Log}[x]-\text{Log}\left[f x^m\right]\right) \text{Log}[d+e x] \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2+e x \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2$$

$$\left(3 b m n+3 b n \left(m \text{Log}[x]-\text{Log}\left[f x^m\right]\right)+a \left(-m \text{Log}[x]+\text{Log}\left[f x^m\right]\right)+b \left(-m \text{Log}[x]+\text{Log}\left[f x^m\right]\right) \left(-n \text{Log}[d+e x]+\text{Log}\left[c (d+e x)^n\right]\right)\right)+$$

$$a d m \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \left(\text{Log}[x] \text{Log}\left[1+\frac{e x}{d}\right]+\text{PolyLog}\left[2,-\frac{e x}{d}\right]\right)-$$

$$b d m \left(n \text{Log}[d+e x]-\text{Log}\left[c (d+e x)^n\right]\right) \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \left(\text{Log}[x] \text{Log}\left[1+\frac{e x}{d}\right]+\text{PolyLog}\left[2,-\frac{e x}{d}\right]\right)-$$

$$a m \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \left(e x+\text{Log}[x] \left(-e x+d \text{Log}\left[1+\frac{e x}{d}\right]\right)+d \text{PolyLog}\left[2,-\frac{e x}{d}\right]\right)+$$

$$3 b m n \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \left(e x+\text{Log}[x] \left(-e x+d \text{Log}\left[1+\frac{e x}{d}\right]\right)+d \text{PolyLog}\left[2,-\frac{e x}{d}\right]\right)+$$

$$b m \left(n \text{Log}[d+e x]-\text{Log}\left[c (d+e x)^n\right]\right) \left(a-b n \text{Log}[d+e x]+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \left(e x+\text{Log}[x] \left(-e x+d \text{Log}\left[1+\frac{e x}{d}\right]\right)+d \text{PolyLog}\left[2,-\frac{e x}{d}\right]\right)-$$

$$3 b^2 m n^2 \left(-a+b n \text{Log}[d+e x]-b \text{Log}\left[c (d+e x)^n\right]\right) \left(-6 e x+2 e x \text{Log}[x]+4 d \text{Log}[d+e x]+4 e x \text{Log}[d+e x]-2 e x \text{Log}[x] \text{Log}[d+e x]-\right.$$

$$d \text{Log}[d+e x]^2-e x \text{Log}[d+e x]^2+d \text{Log}[x] \text{Log}[d+e x]^2+e x \text{Log}[x] \text{Log}[d+e x]^2-d \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]^2-$$

$$\left.2 d \text{Log}[x] \text{Log}\left[1+\frac{e x}{d}\right]-2 d \text{PolyLog}\left[2,-\frac{e x}{d}\right]-2 d \text{Log}[d+e x] \text{PolyLog}\left[2,1+\frac{e x}{d}\right]+2 d \text{PolyLog}\left[3,1+\frac{e x}{d}\right]\right)+$$

$$b^3 m n^3 \left(6 d+24 e x-6 e x \text{Log}[x]-18 d \text{Log}[d+e x]-18 e x \text{Log}[d+e x]+6 e x \text{Log}[x] \text{Log}[d+e x]+6 d \text{Log}[d+e x]^2+6 e x \text{Log}[d+e x]^2-\right.$$

$$3 d \text{Log}[x] \text{Log}[d+e x]^2-3 e x \text{Log}[x] \text{Log}[d+e x]^2+3 d \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]^2-d \text{Log}[d+e x]^3-e x \text{Log}[d+e x]^3+d \text{Log}[x] \text{Log}[d+e x]^3+$$

$$e x \text{Log}[x] \text{Log}[d+e x]^3-d \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]^3+6 d \text{Log}[x] \text{Log}\left[1+\frac{e x}{d}\right]+6 d \text{PolyLog}\left[2,-\frac{e x}{d}\right]-3 d (-2+\text{Log}[d+e x])$$

$$\left.\left.\text{Log}[d+e x] \text{PolyLog}\left[2,1+\frac{e x}{d}\right]-6 d \text{PolyLog}\left[3,1+\frac{e x}{d}\right]+6 d \text{Log}[d+e x] \text{PolyLog}\left[3,1+\frac{e x}{d}\right]-6 d \text{PolyLog}\left[4,1+\frac{e x}{d}\right]\right)\right)$$

Problem 394: Result more than twice size of optimal antiderivative.

$$\int \left(a+b \text{Log}\left[c (d+e x)^n\right]\right)^2 \left(f+g \text{Log}\left[h (i+j x)^m\right]\right) dx$$

Optimal (type 4, 649 leaves, 41 steps) :

$$-2abfnx+4abgmnx+2b^2fn^2x-6b^2gmn^2x-\frac{2b^2fn(d+ex)\text{Log}[c(d+ex)^n]}{e}+\frac{4b^2gmn(d+ex)\text{Log}[c(d+ex)^n]}{e}+$$
$$\frac{df(a+b\text{Log}[c(d+ex)^n])^2}{e}-\frac{gm(d+ex)(a+b\text{Log}[c(d+ex)^n])^2}{e}-\frac{2bgimn(a+b\text{Log}[c(d+ex)^n])\text{Log}\left[\frac{e(i+jx)}{ei-dj}\right]}{j}-$$
$$\frac{dgm(a+b\text{Log}[c(d+ex)^n])^2\text{Log}\left[\frac{e(i+jx)}{ei-dj}\right]}{e}+\frac{gim(a+b\text{Log}[c(d+ex)^n])^2\text{Log}\left[\frac{e(i+jx)}{ei-dj}\right]}{j}+\frac{2b^2gn^2(i+jx)\text{Log}[h(i+jx)^m]}{j}-$$
$$\frac{2b^2dgn^2\text{Log}\left[-\frac{j(d+ex)}{ei-dj}\right]\text{Log}[h(i+jx)^m]}{e}-2bgnx(a+b\text{Log}[c(d+ex)^n])\text{Log}[h(i+jx)^m]+$$
$$\frac{dg(a+b\text{Log}[c(d+ex)^n])^2\text{Log}[h(i+jx)^m]}{e}+x(a+b\text{Log}[c(d+ex)^n])^2(f+g\text{Log}[h(i+jx)^m])-\frac{2b^2gimn^2\text{PolyLog}\left[2,-\frac{j(d+ex)}{ei-dj}\right]}{j}-$$
$$\frac{2bdgmn(a+b\text{Log}[c(d+ex)^n])\text{PolyLog}\left[2,-\frac{j(d+ex)}{ei-dj}\right]}{e}+\frac{2bgimn(a+b\text{Log}[c(d+ex)^n])\text{PolyLog}\left[2,-\frac{j(d+ex)}{ei-dj}\right]}{j}-$$
$$\frac{2b^2dgmn^2\text{PolyLog}\left[2,\frac{e(i+jx)}{ei-dj}\right]}{e}+\frac{2b^2dgmn^2\text{PolyLog}\left[3,-\frac{j(d+ex)}{ei-dj}\right]}{e}-\frac{2b^2gimn^2\text{PolyLog}\left[3,-\frac{j(d+ex)}{ei-dj}\right]}{j}$$

Result (type 4, 1405 leaves) :

$$\frac{1}{e\,j}\Big(-2\,a\,b\,d\,f\,j\,n+2\,a\,b\,d\,g\,j\,m\,n+2\,b^2\,d\,f\,j\,n^2-4\,b^2\,d\,g\,j\,m\,n^2+a^2\,e\,f\,j\,x-a^2\,e\,g\,j\,m\,x-2\,a\,b\,e\,f\,j\,n\,x+4\,a\,b\,e\,g\,j\,m\,n\,x+2\,b^2\,e\,f\,j\,n^2\,x-$$
$$6\,b^2\,e\,g\,j\,m\,n^2\,x+2\,a\,b\,d\,f\,j\,n\,\text{Log}[d+e\,x]-2\,a\,b\,d\,g\,j\,m\,n\,\text{Log}[d+e\,x]+2\,b^2\,d\,g\,j\,m\,n^2\,\text{Log}[d+e\,x]-b^2\,d\,f\,j\,n^2\,\text{Log}[d+e\,x]^2+$$
$$b^2\,d\,g\,j\,m\,n^2\,\text{Log}[d+e\,x]^2-2\,b^2\,d\,f\,j\,n\,\text{Log}\left[c\,(d+e\,x)^n\right]+2\,b^2\,d\,g\,j\,m\,n\,\text{Log}\left[c\,(d+e\,x)^n\right]+2\,a\,b\,e\,f\,j\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]-$$
$$2\,a\,b\,e\,g\,j\,m\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]-2\,b^2\,e\,f\,j\,n\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]+4\,b^2\,e\,g\,j\,m\,n\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]+2\,b^2\,d\,f\,j\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]-$$
$$2\,b^2\,d\,g\,j\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]+b^2\,e\,f\,j\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]^2-b^2\,e\,g\,j\,m\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]^2+a^2\,e\,g\,i\,m\,\text{Log}[i+j\,x]-$$
$$2\,a\,b\,e\,g\,i\,m\,n\,\text{Log}[i+j\,x]+2\,a\,b\,d\,g\,j\,m\,n\,\text{Log}[i+j\,x]+2\,b^2\,e\,g\,i\,m\,n^2\,\text{Log}[i+j\,x]-2\,b^2\,d\,g\,j\,m\,n^2\,\text{Log}[i+j\,x]-$$
$$2\,a\,b\,e\,g\,i\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}[i+j\,x]+2\,b^2\,e\,g\,i\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}[i+j\,x]-2\,b^2\,d\,g\,j\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}[i+j\,x]+$$
$$b^2\,e\,g\,i\,m\,n^2\,\text{Log}[d+e\,x]^2\,\text{Log}[i+j\,x]+2\,a\,b\,e\,g\,i\,m\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}[i+j\,x]-2\,b^2\,e\,g\,i\,m\,n\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}[i+j\,x]+$$
$$2\,b^2\,d\,g\,j\,m\,n\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}[i+j\,x]-2\,b^2\,e\,g\,i\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}[i+j\,x]+b^2\,e\,g\,i\,m\,\text{Log}\left[c\,(d+e\,x)^n\right]^2\,\text{Log}[i+j\,x]+$$
$$2\,a\,b\,e\,g\,i\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]-2\,a\,b\,d\,g\,j\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]-2\,b^2\,e\,g\,i\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]+$$
$$2\,b^2\,d\,g\,j\,m\,n^2\,\text{Log}[d+e\,x]\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]-b^2\,e\,g\,i\,m\,n^2\,\text{Log}[d+e\,x]^2\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]+b^2\,d\,g\,j\,m\,n^2\,\text{Log}[d+e\,x]^2\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]+$$
$$2\,b^2\,e\,g\,i\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]-2\,b^2\,d\,g\,j\,m\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]-$$
$$2\,a\,b\,d\,g\,j\,n\,\text{Log}\left[h\,(i+j\,x)^m\right]+2\,b^2\,d\,g\,j\,n^2\,\text{Log}\left[h\,(i+j\,x)^m\right]+a^2\,e\,g\,j\,x\,\text{Log}\left[h\,(i+j\,x)^m\right]-2\,a\,b\,e\,g\,j\,n\,x\,\text{Log}\left[h\,(i+j\,x)^m\right]+$$
$$2\,b^2\,e\,g\,j\,n^2\,x\,\text{Log}\left[h\,(i+j\,x)^m\right]+2\,a\,b\,d\,g\,j\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[h\,(i+j\,x)^m\right]-b^2\,d\,g\,j\,n^2\,\text{Log}[d+e\,x]^2\,\text{Log}\left[h\,(i+j\,x)^m\right]-$$
$$2\,b^2\,d\,g\,j\,n\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}\left[h\,(i+j\,x)^m\right]+2\,a\,b\,e\,g\,j\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}\left[h\,(i+j\,x)^m\right]-2\,b^2\,e\,g\,j\,n\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}\left[h\,(i+j\,x)^m\right]+$$
$$2\,b^2\,d\,g\,j\,n\,\text{Log}[d+e\,x]\,\text{Log}\left[c\,(d+e\,x)^n\right]\,\text{Log}\left[h\,(i+j\,x)^m\right]+b^2\,e\,g\,j\,x\,\text{Log}\left[c\,(d+e\,x)^n\right]^2\,\text{Log}\left[h\,(i+j\,x)^m\right]+$$
$$2\,b\,g\,(e\,i-d\,j)\,m\,n\,\left(a-b\,n+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,\frac{j\,(d+e\,x)}{-e\,i+d\,j}\right]+2\,b^2\,g\,(-e\,i+d\,j)\,m\,n^2\,\text{PolyLog}\left[3,\frac{j\,(d+e\,x)}{-e\,i+d\,j}\right]\Big)$$

Problem 397: Result more than twice size of optimal antiderivative.

$$\int x\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\,\left(f+g\,\text{Log}\left[h\,(i+j\,x)^m\right]\right)\,dx$$

Optimal (type 4, 2050 leaves, 148 steps):

$$-\frac{6\,a\,b^2\,d\,f\,n^2\,x}{e}+\frac{12\,a\,b^2\,d\,g\,m\,n^2\,x}{e}+\frac{21\,a\,b^2\,g\,i\,m\,n^2\,x}{4\,j}+\frac{6\,b^3\,d\,f\,n^3\,x}{e}-\frac{141\,b^3\,d\,g\,m\,n^3\,x}{8\,e}-\frac{45\,b^3\,g\,i\,m\,n^3\,x}{8\,j}+$$
$$\frac{3}{8}\,b^3\,g\,m\,n^3\,x^2-\frac{3\,b^3\,f\,n^3\,(d+e\,x)^2}{8\,e^2}+\frac{3\,b^3\,g\,m\,n^3\,(d+e\,x)^2}{8\,e^2}+\frac{3\,b^3\,d^2\,g\,m\,n^3\,\text{Log}[d+e\,x]}{8\,e^2}-\frac{6\,b^3\,d\,f\,n^2\,(d+e\,x)\,\text{Log}\left[c\,(d+e\,x)^n\right]}{e^2}+$$
$$\frac{12\,b^3\,d\,g\,m\,n^2\,(d+e\,x)\,\text{Log}\left[c\,(d+e\,x)^n\right]}{e^2}+\frac{21\,b^3\,g\,i\,m\,n^2\,(d+e\,x)\,\text{Log}\left[c\,(d+e\,x)^n\right]}{4\,e\,j}-\frac{3}{8}\,b^2\,g\,m\,n^2\,x^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)+$$
$$\frac{3\,b^2\,f\,n^2\,(d+e\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{4\,e^2}-\frac{3\,b^2\,g\,m\,n^2\,(d+e\,x)^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)}{4\,e^2}+\frac{3\,b\,d\,f\,n\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{e^2}-$$

$$\frac{15\,b\,d\,g\,m\,n\,(d+e\,x)\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{4\,e^2}-\frac{9\,b\,g\,i\,m\,n\,(d+e\,x)\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{4\,e\,j}-\frac{3\,b\,f\,n\,(d+e\,x)^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{4\,e^2}+$$

$$\frac{3\,b\,g\,m\,n\,(d+e\,x)^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2}{4\,e^2}-\frac{d^2\,f\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^3}{2\,e^2}+\frac{d\,g\,m\,(d+e\,x)\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^3}{2\,e^2}+$$

$$\frac{g\,i\,m\,(d+e\,x)\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^3}{2\,e\,j}-\frac{g\,m\,(d+e\,x)^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^3}{4\,e^2}+\frac{3\,b^3\,g\,i^2\,m\,n^3\,\text{Log}[i+j\,x]}{8\,j^2}-$$

$$\frac{3\,b^2\,g\,i^2\,m\,n^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{4\,j^2}-\frac{9\,b^2\,d\,g\,i\,m\,n^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{2\,e\,j}-$$

$$\frac{9\,b\,d^2\,g\,m\,n\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{4\,e^2}+\frac{3\,b\,g\,i^2\,m\,n\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{4\,j^2}+$$

$$\frac{3\,b\,d\,g\,i\,m\,n\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{2\,e\,j}+\frac{d^2\,g\,m\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^3\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{2\,e^2}-\frac{g\,i^2\,m\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^3\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{2\,j^2}-$$

$$\frac{3}{8}\,b^3\,g\,n^3\,x^2\,\text{Log}[h\,(i+j\,x)^m]+\frac{21\,b^3\,d\,g\,n^3\,(i+j\,x)\,\text{Log}[h\,(i+j\,x)^m]}{4\,e\,j}-\frac{21\,b^3\,d^2\,g\,n^3\,\text{Log}\left[-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]\,\text{Log}[h\,(i+j\,x)^m]}{4\,e^2}-$$

$$\frac{9\,b^2\,d\,g\,n^2\,x\,(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}[h\,(i+j\,x)^m]}{2\,e}+\frac{3}{4}\,b^2\,g\,n^2\,x^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{Log}[h\,(i+j\,x)^m]+$$

$$\frac{9\,b\,d^2\,g\,n\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2\,\text{Log}[h\,(i+j\,x)^m]}{4\,e^2}+\frac{3\,b\,d\,g\,n\,x\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2\,\text{Log}[h\,(i+j\,x)^m]}{2\,e}-$$

$$\frac{3}{4}\,b\,g\,n\,x^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2\,\text{Log}[h\,(i+j\,x)^m]-\frac{d^2\,g\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^3\,\text{Log}[h\,(i+j\,x)^m]}{2\,e^2}+$$

$$\frac{1}{2}\,x^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^3\,(f+g\,\text{Log}[h\,(i+j\,x)^m])-\frac{3\,b^3\,g\,i^2\,m\,n^3\,\text{PolyLog}\left[2,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{4\,j^2}-\frac{9\,b^3\,d\,g\,i\,m\,n^3\,\text{PolyLog}\left[2,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{2\,e\,j}-$$

$$\frac{9\,b^2\,d^2\,g\,m\,n^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{PolyLog}\left[2,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{2\,e^2}+\frac{3\,b^2\,g\,i^2\,m\,n^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{PolyLog}\left[2,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{2\,j^2}+$$

$$\frac{3\,b^2\,d\,g\,i\,m\,n^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{PolyLog}\left[2,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{e\,j}+\frac{3\,b\,d^2\,g\,m\,n\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2\,\text{PolyLog}\left[2,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{2\,e^2}-$$

$$\frac{3\,b\,g\,i^2\,m\,n\,(a+b\,\text{Log}[c\,(d+e\,x)^n])^2\,\text{PolyLog}\left[2,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{2\,j^2}-\frac{21\,b^3\,d^2\,g\,m\,n^3\,\text{PolyLog}\left[2,\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{4\,e^2}+\frac{9\,b^3\,d^2\,g\,m\,n^3\,\text{PolyLog}\left[3,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{2\,e^2}-$$

$$\frac{3\,b^3\,g\,i^2\,m\,n^3\,\text{PolyLog}\left[3,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{2\,j^2}-\frac{3\,b^3\,d\,g\,i\,m\,n^3\,\text{PolyLog}\left[3,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{e\,j}-\frac{3\,b^2\,d^2\,g\,m\,n^2\,(a+b\,\text{Log}[c\,(d+e\,x)^n])\,\text{PolyLog}\left[3,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{e^2}+$$

$$\frac{3 b^2 g i^2 m n^2 \left(a+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[3,-\frac{j (d+e x)}{e i-d j}\right]}{j^2}+\frac{3 b^3 d^2 g m n^3 \text{PolyLog}\left[4,-\frac{j (d+e x)}{e i-d j}\right]}{e^2}-\frac{3 b^3 g i^2 m n^3 \text{PolyLog}\left[4,-\frac{j (d+e x)}{e i-d j}\right]}{j^2}$$

Result (type 4, 4971 leaves):

$$\frac{1}{8 e^2 j^2}\Big(-12 a^2 b d e g i j m n+36 a b^2 d e g i j m n^2+24 a b^2 d^2 g j^2 m n^2-42 b^3 d e g i j m n^3-60 b^3 d^2 g j^2 m n^3+4 a^3 e^2 g i j m x+12 a^2 b d e f j^2 n x-$$
$$18 a^2 b e^2 g i j m n x-18 a^2 b d e g j^2 m n x-36 a b^2 d e f j^2 n^2 x+42 a b^2 e^2 g i j m n^2 x+84 a b^2 d e g j^2 m n^2 x+42 b^3 d e f j^2 n^3 x-$$
$$45 b^3 e^2 g i j m n^3 x-135 b^3 d e g j^2 m n^3 x+4 a^3 e^2 f j^2 x^2-2 a^3 e^2 g j^2 m x^2-6 a^2 b e^2 f j^2 n x^2+6 a^2 b e^2 g j^2 m n x^2+6 a b^2 e^2 f j^2 n^2 x^2-$$
$$9 a b^2 e^2 g j^2 m n^2 x^2-3 b^3 e^2 f j^2 n^3 x^2+6 b^3 e^2 g j^2 m n^3 x^2-12 a^2 b d^2 f j^2 n \text{Log}[d+e x]+12 a^2 b d e g i j m n \text{Log}[d+e x]+$$
$$6 a^2 b d^2 g j^2 m n \text{Log}[d+e x]+36 a b^2 d^2 f j^2 n^2 \text{Log}[d+e x]-12 a b^2 d e g i j m n^2 \text{Log}[d+e x]-48 a b^2 d^2 g j^2 m n^2 \text{Log}[d+e x]-$$
$$42 b^3 d^2 f j^2 n^3 \text{Log}[d+e x]+6 b^3 d e g i j m n^3 \text{Log}[d+e x]+69 b^3 d^2 g j^2 m n^3 \text{Log}[d+e x]+12 a b^2 d^2 f j^2 n^2 \text{Log}[d+e x]^2-$$
$$12 a b^2 d e g i j m n^2 \text{Log}[d+e x]^2-6 a b^2 d^2 g j^2 m n^2 \text{Log}[d+e x]^2-18 b^3 d^2 f j^2 n^3 \text{Log}[d+e x]^2+6 b^3 d e g i j m n^3 \text{Log}[d+e x]^2+$$
$$24 b^3 d^2 g j^2 m n^3 \text{Log}[d+e x]^2-4 b^3 d^2 f j^2 n^3 \text{Log}[d+e x]^3+4 b^3 d e g i j m n^3 \text{Log}[d+e x]^3+2 b^3 d^2 g j^2 m n^3 \text{Log}[d+e x]^3-$$
$$24 a b^2 d e g i j m n \text{Log}\left[c (d+e x)^n\right]+36 b^3 d e g i j m n^2 \text{Log}\left[c (d+e x)^n\right]+24 b^3 d^2 g j^2 m n^2 \text{Log}\left[c (d+e x)^n\right]+12 a^2 b e^2 g i j m x \text{Log}\left[c (d+e x)^n\right]+$$
$$24 a b^2 d e f j^2 n x \text{Log}\left[c (d+e x)^n\right]-36 a b^2 e^2 g i j m n x \text{Log}\left[c (d+e x)^n\right]-36 a b^2 d e g j^2 m n x \text{Log}\left[c (d+e x)^n\right]-$$
$$36 b^3 d e f j^2 n^2 x \text{Log}\left[c (d+e x)^n\right]+42 b^3 e^2 g i j m n^2 x \text{Log}\left[c (d+e x)^n\right]+84 b^3 d e g j^2 m n^2 x \text{Log}\left[c (d+e x)^n\right]+$$
$$12 a^2 b e^2 f j^2 x^2 \text{Log}\left[c (d+e x)^n\right]-6 a^2 b e^2 g j^2 m x^2 \text{Log}\left[c (d+e x)^n\right]-12 a b^2 e^2 f j^2 n x^2 \text{Log}\left[c (d+e x)^n\right]+12 a b^2 e^2 g j^2 m n x^2 \text{Log}\left[c (d+e x)^n\right]+$$
$$6 b^3 e^2 f j^2 n^2 x^2 \text{Log}\left[c (d+e x)^n\right]-9 b^3 e^2 g j^2 m n^2 x^2 \text{Log}\left[c (d+e x)^n\right]-24 a b^2 d^2 f j^2 n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]+$$
$$24 a b^2 d e g i j m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]+12 a b^2 d^2 g j^2 m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]+36 b^3 d^2 f j^2 n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]-$$
$$12 b^3 d e g i j m n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]-48 b^3 d^2 g j^2 m n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]+12 b^3 d^2 f j^2 n^2 \text{Log}[d+e x]^2 \text{Log}\left[c (d+e x)^n\right]-$$
$$12 b^3 d e g i j m n^2 \text{Log}[d+e x]^2 \text{Log}\left[c (d+e x)^n\right]-6 b^3 d^2 g j^2 m n^2 \text{Log}[d+e x]^2 \text{Log}\left[c (d+e x)^n\right]-12 b^3 d e g i j m n \text{Log}\left[c (d+e x)^n\right]^2+$$
$$12 a b^2 e^2 g i j m x \text{Log}\left[c (d+e x)^n\right]^2+12 b^3 d e f j^2 n x \text{Log}\left[c (d+e x)^n\right]^2-18 b^3 e^2 g i j m n x \text{Log}\left[c (d+e x)^n\right]^2-$$
$$18 b^3 d e g j^2 m n x \text{Log}\left[c (d+e x)^n\right]^2+12 a b^2 e^2 f j^2 x^2 \text{Log}\left[c (d+e x)^n\right]^2-6 a b^2 e^2 g j^2 m x^2 \text{Log}\left[c (d+e x)^n\right]^2-$$
$$6 b^3 e^2 f j^2 n x^2 \text{Log}\left[c (d+e x)^n\right]^2+6 b^3 e^2 g j^2 m n x^2 \text{Log}\left[c (d+e x)^n\right]^2-12 b^3 d^2 f j^2 n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]^2+$$
$$12 b^3 d e g i j m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]^2+6 b^3 d^2 g j^2 m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]^2+4 b^3 e^2 g i j m x \text{Log}\left[c (d+e x)^n\right]^3+$$
$$4 b^3 e^2 f j^2 x^2 \text{Log}\left[c (d+e x)^n\right]^3-2 b^3 e^2 g j^2 m x^2 \text{Log}\left[c (d+e x)^n\right]^3-4 a^3 e^2 g i^2 m \text{Log}[i+j x]+6 a^2 b e^2 g i^2 m n \text{Log}[i+j x]+$$
$$12 a^2 b d e g i j m n \text{Log}[i+j x]-6 a b^2 e^2 g i^2 m n^2 \text{Log}[i+j x]-36 a b^2 d e g i j m n^2 \text{Log}[i+j x]+3 b^3 e^2 g i^2 m n^3 \text{Log}[i+j x]+$$
$$42 b^3 d e g i j m n^3 \text{Log}[i+j x]+12 a^2 b e^2 g i^2 m n \text{Log}[d+e x] \text{Log}[i+j x]-12 a b^2 e^2 g i^2 m n^2 \text{Log}[d+e x] \text{Log}[i+j x]-$$
$$24 a b^2 d e g i j m n^2 \text{Log}[d+e x] \text{Log}[i+j x]+6 b^3 e^2 g i^2 m n^3 \text{Log}[d+e x] \text{Log}[i+j x]+36 b^3 d e g i j m n^3 \text{Log}[d+e x] \text{Log}[i+j x]-$$
$$12 a b^2 e^2 g i^2 m n^2 \text{Log}[d+e x]^2 \text{Log}[i+j x]+6 b^3 e^2 g i^2 m n^3 \text{Log}[d+e x]^2 \text{Log}[i+j x]+12 b^3 d e g i j m n^3 \text{Log}[d+e x]^2 \text{Log}[i+j x]+$$
$$4 b^3 e^2 g i^2 m n^3 \text{Log}[d+e x]^3 \text{Log}[i+j x]-12 a^2 b e^2 g i^2 m \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]+12 a b^2 e^2 g i^2 m n \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]+$$
$$24 a b^2 d e g i j m n \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]-6 b^3 e^2 g i^2 m n^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]-36 b^3 d e g i j m n^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]+$$
$$24 a b^2 e^2 g i^2 m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]-12 b^3 e^2 g i^2 m n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]-$$
$$24 b^3 d e g i j m n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]-12 b^3 e^2 g i^2 m n^2 \text{Log}[d+e x]^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]-$$
$$12 a b^2 e^2 g i^2 m \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}[i+j x]+6 b^3 e^2 g i^2 m n \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}[i+j x]+12 b^3 d e g i j m n \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}[i+j x]+$$
$$12 b^3 e^2 g i^2 m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}[i+j x]-4 b^3 e^2 g i^2 m \text{Log}\left[c (d+e x)^n\right]^3 \text{Log}[i+j x]-$$
$$12 a^2 b e^2 g i^2 m n \text{Log}[d+e x] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+12 a^2 b d^2 g j^2 m n \text{Log}[d+e x] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+12 a b^2 e^2 g i^2 m n^2 \text{Log}[d+e x] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+$$

$$24\, a\, b^2\, d\, e\, g\, i\, j\, m\, n^2\, \text{Log}[d+e\,x]\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] - 36\, a\, b^2\, d^2\, g\, j^2\, m\, n^2\, \text{Log}[d+e\,x]\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] - 6\, b^3\, e^2\, g\, i^2\, m\, n^3\, \text{Log}[d+e\,x]\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] -$$

$$36\, b^3\, d\, e\, g\, i\, j\, m\, n^3\, \text{Log}[d+e\,x]\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] + 42\, b^3\, d^2\, g\, j^2\, m\, n^3\, \text{Log}[d+e\,x]\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] + 12\, a\, b^2\, e^2\, g\, i^2\, m\, n^2\, \text{Log}[d+e\,x]^2\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] -$$

$$12\, a\, b^2\, d^2\, g\, j^2\, m\, n^2\, \text{Log}[d+e\,x]^2\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] - 6\, b^3\, e^2\, g\, i^2\, m\, n^3\, \text{Log}[d+e\,x]^2\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] -$$

$$12\, b^3\, d\, e\, g\, i\, j\, m\, n^3\, \text{Log}[d+e\,x]^2\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] + 18\, b^3\, d^2\, g\, j^2\, m\, n^3\, \text{Log}[d+e\,x]^2\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] - 4\, b^3\, e^2\, g\, i^2\, m\, n^3\, \text{Log}[d+e\,x]^3\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] +$$

$$4\, b^3\, d^2\, g\, j^2\, m\, n^3\, \text{Log}[d+e\,x]^3\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] - 24\, a\, b^2\, e^2\, g\, i^2\, m\, n\, \text{Log}[d+e\,x]\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] +$$

$$24\, a\, b^2\, d^2\, g\, j^2\, m\, n\, \text{Log}[d+e\,x]\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] + 12\, b^3\, e^2\, g\, i^2\, m\, n^2\, \text{Log}[d+e\,x]\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] +$$

$$24\, b^3\, d\, e\, g\, i\, j\, m\, n^2\, \text{Log}[d+e\,x]\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] - 36\, b^3\, d^2\, g\, j^2\, m\, n^2\, \text{Log}[d+e\,x]\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] +$$

$$12\, b^3\, e^2\, g\, i^2\, m\, n^2\, \text{Log}[d+e\,x]^2\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] - 12\, b^3\, d^2\, g\, j^2\, m\, n^2\, \text{Log}[d+e\,x]^2\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] -$$

$$12\, b^3\, e^2\, g\, i^2\, m\, n\, \text{Log}[d+e\,x]\, \text{Log}\left[c\,(d+e\,x)^n\right]^2\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] + 12\, b^3\, d^2\, g\, j^2\, m\, n\, \text{Log}[d+e\,x]\, \text{Log}\left[c\,(d+e\,x)^n\right]^2\, \text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right] +$$

$$12\, a^2\, b\, d\, e\, g\, j^2\, n\, x\, \text{Log}\left[h\,(i+j\,x)^m\right] - 36\, a\, b^2\, d\, e\, g\, j^2\, n^2\, x\, \text{Log}\left[h\,(i+j\,x)^m\right] + 42\, b^3\, d\, e\, g\, j^2\, n^3\, x\, \text{Log}\left[h\,(i+j\,x)^m\right] +$$

$$4\, a^3\, e^2\, g\, j^2\, x^2\, \text{Log}\left[h\,(i+j\,x)^m\right] - 6\, a^2\, b\, e^2\, g\, j^2\, n\, x^2\, \text{Log}\left[h\,(i+j\,x)^m\right] + 6\, a\, b^2\, e^2\, g\, j^2\, n^2\, x^2\, \text{Log}\left[h\,(i+j\,x)^m\right] - 3\, b^3\, e^2\, g\, j^2\, n^3\, x^2\, \text{Log}\left[h\,(i+j\,x)^m\right] -$$

$$12\, a^2\, b\, d^2\, g\, j^2\, n\, \text{Log}[d+e\,x]\, \text{Log}\left[h\,(i+j\,x)^m\right] + 36\, a\, b^2\, d^2\, g\, j^2\, n^2\, \text{Log}[d+e\,x]\, \text{Log}\left[h\,(i+j\,x)^m\right] - 42\, b^3\, d^2\, g\, j^2\, n^3\, \text{Log}[d+e\,x]\, \text{Log}\left[h\,(i+j\,x)^m\right] +$$

$$12\, a\, b^2\, d^2\, g\, j^2\, n^2\, \text{Log}[d+e\,x]^2\, \text{Log}\left[h\,(i+j\,x)^m\right] - 18\, b^3\, d^2\, g\, j^2\, n^3\, \text{Log}[d+e\,x]^2\, \text{Log}\left[h\,(i+j\,x)^m\right] - 4\, b^3\, d^2\, g\, j^2\, n^3\, \text{Log}[d+e\,x]^3\, \text{Log}\left[h\,(i+j\,x)^m\right] +$$

$$24\, a\, b^2\, d\, e\, g\, j^2\, n\, x\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[h\,(i+j\,x)^m\right] - 36\, b^3\, d\, e\, g\, j^2\, n^2\, x\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[h\,(i+j\,x)^m\right] +$$

$$12\, a^2\, b\, e^2\, g\, j^2\, x^2\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[h\,(i+j\,x)^m\right] - 12\, a\, b^2\, e^2\, g\, j^2\, n\, x^2\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[h\,(i+j\,x)^m\right] +$$

$$6\, b^3\, e^2\, g\, j^2\, n^2\, x^2\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[h\,(i+j\,x)^m\right] - 24\, a\, b^2\, d^2\, g\, j^2\, n\, \text{Log}[d+e\,x]\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[h\,(i+j\,x)^m\right] +$$

$$36\, b^3\, d^2\, g\, j^2\, n^2\, \text{Log}[d+e\,x]\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[h\,(i+j\,x)^m\right] + 12\, b^3\, d^2\, g\, j^2\, n^2\, \text{Log}[d+e\,x]^2\, \text{Log}\left[c\,(d+e\,x)^n\right]\, \text{Log}\left[h\,(i+j\,x)^m\right] +$$

$$12\, b^3\, d\, e\, g\, j^2\, n\, x\, \text{Log}\left[c\,(d+e\,x)^n\right]^2\, \text{Log}\left[h\,(i+j\,x)^m\right] + 12\, a\, b^2\, e^2\, g\, j^2\, x^2\, \text{Log}\left[c\,(d+e\,x)^n\right]^2\, \text{Log}\left[h\,(i+j\,x)^m\right] -$$

$$6\, b^3\, e^2\, g\, j^2\, n\, x^2\, \text{Log}\left[c\,(d+e\,x)^n\right]^2\, \text{Log}\left[h\,(i+j\,x)^m\right] - 12\, b^3\, d^2\, g\, j^2\, n\, \text{Log}[d+e\,x]\, \text{Log}\left[c\,(d+e\,x)^n\right]^2\, \text{Log}\left[h\,(i+j\,x)^m\right] +$$

$$4\, b^3\, e^2\, g\, j^2\, x^2\, \text{Log}\left[c\,(d+e\,x)^n\right]^3\, \text{Log}\left[h\,(i+j\,x)^m\right] - 6\, b\, g\, (e\,i-d\,j)\, m\, n\, \Big(2\, a^2\, (e\,i+d\,j) - 2\, a\, b\, (e\,i+3\,d\,j)\, n + b^2\, (e\,i+7\,d\,j)\, n^2 -$$

$$2\, b\, \left(-2\, a\, (e\,i+d\,j) + b\, (e\,i+3\,d\,j)\, n\right)\, \text{Log}\left[c\,(d+e\,x)^n\right] + 2\, b^2\, (e\,i+d\,j)\, \text{Log}\left[c\,(d+e\,x)^n\right]^2\Big)\, \text{PolyLog}\left[2, \frac{j\,(d+e\,x)}{-e\,i+d\,j}\right] +$$

$$12\, b^2\, g\, (e\,i-d\,j)\, m\, n^2\, \left(2\, a\, (e\,i+d\,j) - b\, (e\,i+3\,d\,j)\, n + 2\, b\, (e\,i+d\,j)\, \text{Log}\left[c\,(d+e\,x)^n\right]\right)\, \text{PolyLog}\left[3, \frac{j\,(d+e\,x)}{-e\,i+d\,j}\right] -$$

$$24\, b^3\, e^2\, g\, i^2\, m\, n^3\, \text{PolyLog}\left[4, \frac{j\,(d+e\,x)}{-e\,i+d\,j}\right] + 24\, b^3\, d^2\, g\, j^2\, m\, n^3\, \text{PolyLog}\left[4, \frac{j\,(d+e\,x)}{-e\,i+d\,j}\right]\Big)\Big)$$

Problem 398: Result more than twice size of optimal antiderivative.

$$\int \left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\,\left(f+g\,\text{Log}\left[h\,(i+j\,x)^m\right]\right)\,dx$$

Optimal (type 4, 1147 leaves, 64 steps):

$$6\,a\,b^2\,f\,n^2\,x-18\,a\,b^2\,g\,m\,n^2\,x-6\,b^3\,f\,n^3\,x+24\,b^3\,g\,m\,n^3\,x+\frac{6\,b^3\,f\,n^2\,(d+e\,x)\,\text{Log}\left[c\,(d+e\,x)^n\right]}{e}-\frac{18\,b^3\,g\,m\,n^2\,(d+e\,x)\,\text{Log}\left[c\,(d+e\,x)^n\right]}{e}-$$

$$\frac{3\,b\,f\,n\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{e}+\frac{6\,b\,g\,m\,n\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2}{e}+\frac{d\,f\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3}{e}-$$

$$\frac{g\,m\,(d+e\,x)\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3}{e}+\frac{6\,b^2\,g\,i\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{j}+\frac{3\,b\,d\,g\,m\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{e}-$$

$$\frac{3\,b\,g\,i\,m\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{j}-\frac{d\,g\,m\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{e}+\frac{g\,i\,m\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\,\text{Log}\left[\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{j}-$$

$$\frac{6\,b^3\,g\,n^3\,(i+j\,x)\,\text{Log}\left[h\,(i+j\,x)^m\right]}{j}+\frac{6\,b^3\,d\,g\,n^3\,\text{Log}\left[-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]\,\text{Log}\left[h\,(i+j\,x)^m\right]}{e}+6\,b^2\,g\,n^2\,x\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{Log}\left[h\,(i+j\,x)^m\right]-$$

$$\frac{3\,b\,d\,g\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[h\,(i+j\,x)^m\right]}{e}-3\,b\,g\,n\,x\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{Log}\left[h\,(i+j\,x)^m\right]+$$

$$\frac{d\,g\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\,\text{Log}\left[h\,(i+j\,x)^m\right]}{e}+x\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^3\,\left(f+g\,\text{Log}\left[h\,(i+j\,x)^m\right]\right)+$$

$$\frac{6\,b^3\,g\,i\,m\,n^3\,\text{PolyLog}\left[2,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{j}+\frac{6\,b^2\,d\,g\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{e}-$$

$$\frac{6\,b^2\,g\,i\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[2,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{j}-\frac{3\,b\,d\,g\,m\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{PolyLog}\left[2,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{e}+$$

$$\frac{3\,b\,g\,i\,m\,n\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)^2\,\text{PolyLog}\left[2,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{j}+\frac{6\,b^3\,d\,g\,m\,n^3\,\text{PolyLog}\left[2,\frac{e\,(i+j\,x)}{e\,i-d\,j}\right]}{e}-\frac{6\,b^3\,d\,g\,m\,n^3\,\text{PolyLog}\left[3,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{e}+$$

$$\frac{6\,b^3\,g\,i\,m\,n^3\,\text{PolyLog}\left[3,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{j}+\frac{6\,b^2\,d\,g\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[3,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{e}-$$

$$\frac{6\,b^2\,g\,i\,m\,n^2\,\left(a+b\,\text{Log}\left[c\,(d+e\,x)^n\right]\right)\,\text{PolyLog}\left[3,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{j}-\frac{6\,b^3\,d\,g\,m\,n^3\,\text{PolyLog}\left[4,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{e}+\frac{6\,b^3\,g\,i\,m\,n^3\,\text{PolyLog}\left[4,-\frac{j\,(d+e\,x)}{e\,i-d\,j}\right]}{j}$$

Result (type 4, 3326 leaves):

$$\frac{1}{e\,j}\Big(-3 a^2 b d f j n+3 a^2 b d g j m n+6 a b^2 d f j n^2-12 a b^2 d g j m n^2-6 b^3 d f j n^3+18 b^3 d g j m n^3+a^3 e f j x-a^3 e g j m x-$$

$$3 a^2 b e f j n x+6 a^2 b e g j m n x+6 a b^2 e f j n^2 x-18 a b^2 e g j m n^2 x-6 b^3 e f j n^3 x+24 b^3 e g j m n^3 x+3 a^2 b d f j n \text{Log}[d+e x]-$$

$$3 a^2 b d g j m n \text{Log}[d+e x]+6 a b^2 d g j m n^2 \text{Log}[d+e x]-6 b^3 d g j m n^3 \text{Log}[d+e x]-3 a b^2 d f j n^2 \text{Log}[d+e x]^2+$$

$$3 a b^2 d g j m n^2 \text{Log}[d+e x]^2-3 b^3 d g j m n^3 \text{Log}[d+e x]^2+b^3 d f j n^3 \text{Log}[d+e x]^3-b^3 d g j m n^3 \text{Log}[d+e x]^3-$$

$$6 a b^2 d f j n \text{Log}\left[c (d+e x)^n\right]+6 a b^2 d g j m n \text{Log}\left[c (d+e x)^n\right]+6 b^3 d f j n^2 \text{Log}\left[c (d+e x)^n\right]-12 b^3 d g j m n^2 \text{Log}\left[c (d+e x)^n\right]+$$

$$3 a^2 b e f j x \text{Log}\left[c (d+e x)^n\right]-3 a^2 b e g j m x \text{Log}\left[c (d+e x)^n\right]-6 a b^2 e f j n x \text{Log}\left[c (d+e x)^n\right]+12 a b^2 e g j m n x \text{Log}\left[c (d+e x)^n\right]+$$

$$6 b^3 e f j n^2 x \text{Log}\left[c (d+e x)^n\right]-18 b^3 e g j m n^2 x \text{Log}\left[c (d+e x)^n\right]+6 a b^2 d f j n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]-$$

$$6 a b^2 d g j m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]+6 b^3 d g j m n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]-3 b^3 d f j n^2 \text{Log}[d+e x]^2 \text{Log}\left[c (d+e x)^n\right]+$$

$$3 b^3 d g j m n^2 \text{Log}[d+e x]^2 \text{Log}\left[c (d+e x)^n\right]-3 b^3 d f j n \text{Log}\left[c (d+e x)^n\right]^2+3 b^3 d g j m n \text{Log}\left[c (d+e x)^n\right]^2+$$

$$3 a b^2 e f j x \text{Log}\left[c (d+e x)^n\right]^2-3 a b^2 e g j m x \text{Log}\left[c (d+e x)^n\right]^2-3 b^3 e f j n x \text{Log}\left[c (d+e x)^n\right]^2+6 b^3 e g j m n x \text{Log}\left[c (d+e x)^n\right]^2+$$

$$3 b^3 d f j n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]^2-3 b^3 d g j m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]^2+b^3 e f j x \text{Log}\left[c (d+e x)^n\right]^3-$$

$$b^3 e g j m x \text{Log}\left[c (d+e x)^n\right]^3+a^3 e g i m \text{Log}[i+j x]-3 a^2 b e g i m n \text{Log}[i+j x]+3 a^2 b d g j m n \text{Log}[i+j x]+6 a b^2 e g i m n^2 \text{Log}[i+j x]-$$

$$6 a b^2 d g j m n^2 \text{Log}[i+j x]-6 b^3 e g i m n^3 \text{Log}[i+j x]+6 b^3 d g j m n^3 \text{Log}[i+j x]-3 a^2 b e g i m n \text{Log}[d+e x] \text{Log}[i+j x]+$$

$$6 a b^2 e g i m n^2 \text{Log}[d+e x] \text{Log}[i+j x]-6 a b^2 d g j m n^2 \text{Log}[d+e x] \text{Log}[i+j x]-6 b^3 e g i m n^3 \text{Log}[d+e x] \text{Log}[i+j x]+$$

$$6 b^3 d g j m n^3 \text{Log}[d+e x] \text{Log}[i+j x]+3 a b^2 e g i m n^2 \text{Log}[d+e x]^2 \text{Log}[i+j x]-3 b^3 e g i m n^3 \text{Log}[d+e x]^2 \text{Log}[i+j x]+$$

$$3 b^3 d g j m n^3 \text{Log}[d+e x]^2 \text{Log}[i+j x]-b^3 e g i m n^3 \text{Log}[d+e x]^3 \text{Log}[i+j x]+3 a^2 b e g i m \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]-$$

$$6 a b^2 e g i m n \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]+6 a b^2 d g j m n \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]+6 b^3 e g i m n^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]-$$

$$6 b^3 d g j m n^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]-6 a b^2 e g i m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]+$$

$$6 b^3 e g i m n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]-6 b^3 d g j m n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]+$$

$$3 b^3 e g i m n^2 \text{Log}[d+e x]^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}[i+j x]+3 a b^2 e g i m \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}[i+j x]-$$

$$3 b^3 e g i m n \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}[i+j x]+3 b^3 d g j m n \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}[i+j x]-3 b^3 e g i m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}[i+j x]+$$

$$b^3 e g i m \text{Log}\left[c (d+e x)^n\right]^3 \text{Log}[i+j x]+3 a^2 b e g i m n \text{Log}[d+e x] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-3 a^2 b d g j m n \text{Log}[d+e x] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-$$

$$6 a b^2 e g i m n^2 \text{Log}[d+e x] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+6 a b^2 d g j m n^2 \text{Log}[d+e x] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+6 b^3 e g i m n^3 \text{Log}[d+e x] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-$$

$$6 b^3 d g j m n^3 \text{Log}[d+e x] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-3 a b^2 e g i m n^2 \text{Log}[d+e x]^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+3 a b^2 d g j m n^2 \text{Log}[d+e x]^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+$$

$$3 b^3 e g i m n^3 \text{Log}[d+e x]^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-3 b^3 d g j m n^3 \text{Log}[d+e x]^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+b^3 e g i m n^3 \text{Log}[d+e x]^3 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-$$

$$b^3 d g j m n^3 \text{Log}[d+e x]^3 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+6 a b^2 e g i m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-$$

$$6 a b^2 d g j m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-6 b^3 e g i m n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+$$

$$6 b^3 d g j m n^2 \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-3 b^3 e g i m n^2 \text{Log}[d+e x]^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+$$

$$3 b^3 d g j m n^2 \text{Log}[d+e x]^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]+3 b^3 e g i m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-$$
$$3 b^3 d g j m n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}\left[\frac{e (i+j x)}{e i-d j}\right]-3 a^2 b d g j n \text{Log}\left[h (i+j x)^m\right]+6 a b^2 d g j n^2 \text{Log}\left[h (i+j x)^m\right]-$$
$$6 b^3 d g j n^3 \text{Log}\left[h (i+j x)^m\right]+a^3 e g j x \text{Log}\left[h (i+j x)^m\right]-3 a^2 b e g j n x \text{Log}\left[h (i+j x)^m\right]+6 a b^2 e g j n^2 x \text{Log}\left[h (i+j x)^m\right]-$$
$$6 b^3 e g j n^3 x \text{Log}\left[h (i+j x)^m\right]+3 a^2 b d g j n \text{Log}[d+e x] \text{Log}\left[h (i+j x)^m\right]-3 a b^2 d g j n^2 \text{Log}[d+e x]^2 \text{Log}\left[h (i+j x)^m\right]+$$
$$b^3 d g j n^3 \text{Log}[d+e x]^3 \text{Log}\left[h (i+j x)^m\right]-6 a b^2 d g j n \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[h (i+j x)^m\right]+6 b^3 d g j n^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[h (i+j x)^m\right]+$$
$$3 a^2 b e g j x \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[h (i+j x)^m\right]-6 a b^2 e g j n x \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[h (i+j x)^m\right]+$$
$$6 b^3 e g j n^2 x \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[h (i+j x)^m\right]+6 a b^2 d g j n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[h (i+j x)^m\right]-$$
$$3 b^3 d g j n^2 \text{Log}[d+e x]^2 \text{Log}\left[c (d+e x)^n\right] \text{Log}\left[h (i+j x)^m\right]-3 b^3 d g j n \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}\left[h (i+j x)^m\right]+$$
$$3 a b^2 e g j x \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}\left[h (i+j x)^m\right]-3 b^3 e g j n x \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}\left[h (i+j x)^m\right]+$$
$$3 b^3 d g j n \text{Log}[d+e x] \text{Log}\left[c (d+e x)^n\right]^2 \text{Log}\left[h (i+j x)^m\right]+b^3 e g j x \text{Log}\left[c (d+e x)^n\right]^3 \text{Log}\left[h (i+j x)^m\right]+$$
$$3 b g (e i-d j) m n \left(a^2-2 a b n+2 b^2 n^2+2 b (a-b n) \text{Log}\left[c (d+e x)^n\right]+b^2 \text{Log}\left[c (d+e x)^n\right]^2\right) \text{PolyLog}\left[2,\frac{j (d+e x)}{-e i+d j}\right]-$$
$$6 b^2 g (e i-d j) m n^2 \left(a-b n+b \text{Log}\left[c (d+e x)^n\right]\right) \text{PolyLog}\left[3,\frac{j (d+e x)}{-e i+d j}\right]+$$
$$\left.6 b^3 e g i m n^3 \text{PolyLog}\left[4,\frac{j (d+e x)}{-e i+d j}\right]-6 b^3 d g j m n^3 \text{PolyLog}\left[4,\frac{j (d+e x)}{-e i+d j}\right]\right)$$

Problem 404: Result more than twice size of optimal antiderivative.

$$\int \left(a+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^4 dx$$

Optimal (type 3, 160 leaves, 7 steps):

$$-24 a b^3 m^3 n^3 x+24 b^4 m^4 n^4 x-\frac{24 b^4 m^3 n^3 (e+f x) \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]}{f}+\frac{12 b^2 m^2 n^2 (e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^2}{f}-$$
$$\frac{4 b m n (e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^3}{f}+\frac{(e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^4}{f}$$

Result (type 3, 480 leaves):

$$\frac{1}{f}\Big(-b^4 e m^4 n^4 \text{Log}[e+f x]^4+4 b^3 e m^3 n^3 \text{Log}[e+f x]^3 \left(a-b m n+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)-6 b^2 e m^2 n^2 \text{Log}[e+f x]^2 \left(a^2-2 a b m n+2 b^2 m^2 n^2+2 b (a-b m n) \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]+b^2 \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]^2\right)+4 b e m n \text{Log}[e+f x] \left(a^3-3 a^2 b m n+6 a b^2 m^2 n^2-6 b^3 m^3 n^3+3 b \left(a^2-2 a b m n+2 b^2 m^2 n^2\right) \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]+3 b^2 (a-b m n) \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]^2+b^3 \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]^3\right)+f x \left(a^4-4 a^3 b m n+12 a^2 b^2 m^2 n^2-24 a b^3 m^3 n^3+24 b^4 m^4 n^4+4 b \left(a^3-3 a^2 b m n+6 a b^2 m^2 n^2-6 b^3 m^3 n^3\right) \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]+6 b^2 \left(a^2-2 a b m n+2 b^2 m^2 n^2\right) \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]^2+4 b^3 (a-b m n) \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]^3+b^4 \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]^4\right)\Big)$$

Problem 405: Result more than twice size of optimal antiderivative.

$$\int \left(a+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^3 \, dx$$

Optimal (type 3, 121 leaves, 6 steps):

$$6 a b^2 m^2 n^2 x-6 b^3 m^3 n^3 x+\frac{6 b^3 m^2 n^2 (e+f x) \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]}{f}-\frac{3 b m n (e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^2}{f}+\frac{(e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^3}{f}$$

Result (type 3, 268 leaves):

$$\frac{1}{f}\Big(b^3 e m^3 n^3 \text{Log}[e+f x]^3-3 b^2 e m^2 n^2 \text{Log}[e+f x]^2 \left(a-b m n+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)+3 b e m n \text{Log}[e+f x] \left(a^2-2 a b m n+2 b^2 m^2 n^2+2 b (a-b m n) \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]+b^2 \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]^2\right)+f x \left(a^3-3 a^2 b m n+6 a b^2 m^2 n^2-6 b^3 m^3 n^3+3 b \left(a^2-2 a b m n+2 b^2 m^2 n^2\right) \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]+3 b^2 (a-b m n) \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]^2+b^3 \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]^3\right)\Big)$$

Problem 411: Unable to integrate problem.

$$\int \left(a+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^{5/2} \, dx$$

Optimal (type 4, 219 leaves, 8 steps):

$$-\frac{15 b^{5/2} e^{-\frac{a}{b m n}} m^{5/2} n^{5/2} \sqrt{\pi} (e+f x) \left(c \left(d (e+f x)^m\right)^n\right)^{-\frac{1}{m n}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]}}{\sqrt{b} \sqrt{m} \sqrt{n}}\right]}{8 f}+\frac{15 b^2 m^2 n^2 (e+f x) \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]}}{4 f}-\frac{5 b m n (e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^{3/2}}{2 f}+\frac{(e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^{5/2}}{f}$$

Result (type 8, 24 leaves):

$$\int \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^{5/2} dx$$

Problem 412: Unable to integrate problem.

$$\int \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^{3/2} dx$$

Optimal (type 4, 176 leaves, 7 steps):

$$\frac{3 b^{3/2} e^{-\frac{a}{b m n}} m^{3/2} n^{3/2} \sqrt{\pi} (e+f x) \left(c \left(d (e+f x)^m\right)^n\right)^{-\frac{1}{m n}} \operatorname{Erfi}\left[\frac{\sqrt{a+b \operatorname{Log}\left[c \left(d (e+f x)^m\right)^n\right]}}{\sqrt{b} \sqrt{m} \sqrt{n}}\right]}{4 f} - \frac{3 b m n (e+f x) \sqrt{a+b \operatorname{Log}\left[c \left(d (e+f x)^m\right)^n\right]}}{2 f} + \frac{(e+f x) \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^{3/2}}{f}$$

Result (type 8, 24 leaves):

$$\int \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^m\right)^n\right]\right)^{3/2} dx$$

Problem 413: Attempted integration timed out after 120 seconds.

$$\int \sqrt{a+b \operatorname{Log}\left[c \left(d (e+f x)^m\right)^n\right]} \, dx$$

Optimal (type 4, 139 leaves, 6 steps):

$$-\frac{\sqrt{b} e^{-\frac{a}{b m n}} \sqrt{m} \sqrt{n} \sqrt{\pi} (e+f x) \left(c \left(d (e+f x)^m\right)^n\right)^{-\frac{1}{m n}} \operatorname{Erfi}\left[\frac{\sqrt{a+b \operatorname{Log}\left[c \left(d (e+f x)^m\right)^n\right]}}{\sqrt{b} \sqrt{m} \sqrt{n}}\right]}{2 f} + \frac{(e+f x) \sqrt{a+b \operatorname{Log}\left[c \left(d (e+f x)^m\right)^n\right]}}{f}$$

Result (type 1, 1 leaves):

???

Problem 432: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{g+h x} dx$$

Optimal (type 4, 123 leaves, 5 steps):

$$\frac{\left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]}{h} + \frac{2 b p q \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \operatorname{PolyLog}\left[2, -\frac{h (e+f x)}{f g-e h}\right]}{h} - \frac{2 b^2 p^2 q^2 \operatorname{PolyLog}\left[3, -\frac{h (e+f x)}{f g-e h}\right]}{h}$$

Result (type 4, 324 leaves):

$$\frac{1}{h}\Big(a^2 \,\text{Log}[g+h\,x] - 2\,a\,b\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}[g+h\,x] + b^2\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}[g+h\,x] + 2\,a\,b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\text{Log}[g+h\,x] - 2\,b^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\text{Log}[g+h\,x] + b^2\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]^2\text{Log}[g+h\,x] + 2\,a\,b\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[\frac{f\,(g+h\,x)}{f\,g-e\,h}\right] - b^2\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}\left[\frac{f\,(g+h\,x)}{f\,g-e\,h}\right] + 2\,b^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\text{Log}\left[\frac{f\,(g+h\,x)}{f\,g-e\,h}\right] + 2\,b\,p\,q\,\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)\text{PolyLog}\left[2,\frac{h\,(e+f\,x)}{-f\,g+e\,h}\right] - 2\,b^2\,p^2\,q^2\,\text{PolyLog}\left[3,\frac{h\,(e+f\,x)}{-f\,g+e\,h}\right]\Big)$$

Problem 437: Result more than twice size of optimal antiderivative.

$$\int \left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^3 dx$$

Optimal (type 3, 121 leaves, 6 steps):

$$6\,a\,b^2\,p^2\,q^2\,x - 6\,b^3\,p^3\,q^3\,x + \frac{6\,b^3\,p^2\,q^2\,(e+f\,x)\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}{f} - \frac{3\,b\,p\,q\,(e+f\,x)\,\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^2}{f} + \frac{(e+f\,x)\,\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^3}{f}$$

Result (type 3, 268 leaves):

$$\frac{1}{f}\Big(b^3\,e\,p^3\,q^3\,\text{Log}[e+f\,x]^3 - 3\,b^2\,e\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\left(a-b\,p\,q+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right) + 3\,b\,e\,p\,q\,\text{Log}[e+f\,x]\,\left(a^2-2\,a\,b\,p\,q+2\,b^2\,p^2\,q^2+2\,b\,(a-b\,p\,q)\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]+b^2\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]^2\right) + f\,x\,\Big(a^3-3\,a^2\,b\,p\,q+6\,a\,b^2\,p^2\,q^2 - 6\,b^3\,p^3\,q^3+3\,b\,\left(a^2-2\,a\,b\,p\,q+2\,b^2\,p^2\,q^2\right)\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]+3\,b^2\,(a-b\,p\,q)\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]^2+b^3\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]^3\Big)\Big)$$

Problem 438: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^3}{g+h\,x}\,dx$$

Optimal (type 4, 177 leaves, 6 steps):

$$\frac{\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)^3\,\text{Log}\left[\frac{f\,(g+h\,x)}{f\,g-e\,h}\right]}{h}+\frac{3\,b\,p\,q\,\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)^2\,\text{PolyLog}\left[2,-\frac{h\,(e+f\,x)}{f\,g-e\,h}\right]}{h}-\frac{6\,b^2\,p^2\,q^2\,\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)\,\text{PolyLog}\left[3,-\frac{h\,(e+f\,x)}{f\,g-e\,h}\right]}{h}+\frac{6\,b^3\,p^3\,q^3\,\text{PolyLog}\left[4,-\frac{h\,(e+f\,x)}{f\,g-e\,h}\right]}{h}$$

Result (type 4, 646 leaves):

$$\frac{1}{h}\left(a^3\,\text{Log}[g+h\,x]-3\,a^2\,b\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}[g+h\,x]+3\,a\,b^2\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}[g+h\,x]-\right.$$
$$b^3\,p^3\,q^3\,\text{Log}[e+f\,x]^3\,\text{Log}[g+h\,x]+3\,a^2\,b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}[g+h\,x]-6\,a\,b^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}[g+h\,x]+$$
$$3\,b^3\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}[g+h\,x]+3\,a\,b^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2\,\text{Log}[g+h\,x]-$$
$$3\,b^3\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2\,\text{Log}[g+h\,x]+b^3\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^3\,\text{Log}[g+h\,x]+$$
$$3\,a^2\,b\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[\frac{f\,(g+h\,x)}{f\,g-e\,h}\right]-3\,a\,b^2\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}\left[\frac{f\,(g+h\,x)}{f\,g-e\,h}\right]+b^3\,p^3\,q^3\,\text{Log}[e+f\,x]^3\,\text{Log}\left[\frac{f\,(g+h\,x)}{f\,g-e\,h}\right]+$$
$$6\,a\,b^2\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}\left[\frac{f\,(g+h\,x)}{f\,g-e\,h}\right]-3\,b^3\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\,\text{Log}\left[\frac{f\,(g+h\,x)}{f\,g-e\,h}\right]+$$
$$3\,b^3\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]^2\,\text{Log}\left[\frac{f\,(g+h\,x)}{f\,g-e\,h}\right]+3\,b\,p\,q\,\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)^2\,\text{PolyLog}\left[2,\frac{h\,(e+f\,x)}{-f\,g+e\,h}\right]-$$
$$\left.6\,b^2\,p^2\,q^2\,\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)\,\text{PolyLog}\left[3,\frac{h\,(e+f\,x)}{-f\,g+e\,h}\right]+6\,b^3\,p^3\,q^3\,\text{PolyLog}\left[4,\frac{h\,(e+f\,x)}{-f\,g+e\,h}\right]\right)$$

Problem 439: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)^3}{\left(g+h\,x\right)^2}\,dx$$

Optimal (type 4, 209 leaves, 6 steps):

$$\frac{\left(e+f\,x\right)\,\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)^3}{\left(f\,g-e\,h\right)\,\left(g+h\,x\right)}-\frac{3\,b\,f\,p\,q\,\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)^2\,\text{Log}\left[\frac{f\,(g+h\,x)}{f\,g-e\,h}\right]}{h\,\left(f\,g-e\,h\right)}-\frac{6\,b^2\,f\,p^2\,q^2\,\left(a+b\,\text{Log}\left[c\,\left(d\,\left(e+f\,x\right)^p\right)^q\right]\right)\,\text{PolyLog}\left[2,-\frac{h\,(e+f\,x)}{f\,g-e\,h}\right]}{h\,\left(f\,g-e\,h\right)}+\frac{6\,b^3\,f\,p^3\,q^3\,\text{PolyLog}\left[3,-\frac{h\,(e+f\,x)}{f\,g-e\,h}\right]}{h\,\left(f\,g-e\,h\right)}$$

Result (type 4, 444 leaves):

$$\frac{1}{h\,(f\,g-e\,h)\,(g+h\,x)}\Big(-3\,b\,(f\,g-e\,h)\,p\,q\,\text{Log}[e+f\,x]\,(a-b\,p\,q\,\text{Log}[e+f\,x]+b\,\text{Log}[c\,(d\,(e+f\,x)^p)^q])^2+3\,b\,f\,p\,q\,(g+h\,x)\,\text{Log}[e+f\,x]\,(a-b\,p\,q\,\text{Log}[e+f\,x]+b\,\text{Log}[c\,(d\,(e+f\,x)^p)^q])^2-(f\,g-e\,h)\,(a-b\,p\,q\,\text{Log}[e+f\,x]+b\,\text{Log}[c\,(d\,(e+f\,x)^p)^q])^3-3\,b\,f\,p\,q\,(g+h\,x)\,(a-b\,p\,q\,\text{Log}[e+f\,x]+b\,\text{Log}[c\,(d\,(e+f\,x)^p)^q])^2\,\text{Log}[g+h\,x]+3\,b^2\,p^2\,q^2\,(a-b\,p\,q\,\text{Log}[e+f\,x]+b\,\text{Log}[c\,(d\,(e+f\,x)^p)^q])\Big(\text{Log}[e+f\,x]\Big(h\,(e+f\,x)\,\text{Log}[e+f\,x]-2\,f\,(g+h\,x)\,\text{Log}\Big[\frac{f\,(g+h\,x)}{f\,g-e\,h}\Big]\Big)-2\,f\,(g+h\,x)\,\text{PolyLog}\Big[2,\frac{h\,(e+f\,x)}{-f\,g+e\,h}\Big]\Big)+b^3\,p^3\,q^3\,\Big(\text{Log}[e+f\,x]^2\Big(h\,(e+f\,x)\,\text{Log}[e+f\,x]-3\,f\,(g+h\,x)\,\text{Log}\Big[\frac{f\,(g+h\,x)}{f\,g-e\,h}\Big]\Big)-6\,f\,(g+h\,x)\,\text{Log}[e+f\,x]\,\text{PolyLog}\Big[2,\frac{h\,(e+f\,x)}{-f\,g+e\,h}\Big]+6\,f\,(g+h\,x)\,\text{PolyLog}\Big[3,\frac{h\,(e+f\,x)}{-f\,g+e\,h}\Big]\Big)\Big)$$

Problem 441: Result more than twice size of optimal antiderivative.

$$\int(a+b\,\text{Log}[c\,(d\,(e+f\,x)^p)^q])^4\,dx$$

Optimal (type 3, 160 leaves, 7 steps):

$$-24\,a\,b^3\,p^3\,q^3\,x+24\,b^4\,p^4\,q^4\,x-\frac{24\,b^4\,p^3\,q^3\,(e+f\,x)\,\text{Log}[c\,(d\,(e+f\,x)^p)^q]}{f}+\frac{12\,b^2\,p^2\,q^2\,(e+f\,x)\,(a+b\,\text{Log}[c\,(d\,(e+f\,x)^p)^q])^2}{f}-\frac{4\,b\,p\,q\,(e+f\,x)\,(a+b\,\text{Log}[c\,(d\,(e+f\,x)^p)^q])^3}{f}+\frac{(e+f\,x)\,(a+b\,\text{Log}[c\,(d\,(e+f\,x)^p)^q])^4}{f}$$

Result (type 3, 480 leaves):

$$\frac{1}{f}\Big(-b^4\,e\,p^4\,q^4\,\text{Log}[e+f\,x]^4+4\,b^3\,e\,p^3\,q^3\,\text{Log}[e+f\,x]^3\,(a-b\,p\,q+b\,\text{Log}[c\,(d\,(e+f\,x)^p)^q])-6\,b^2\,e\,p^2\,q^2\,\text{Log}[e+f\,x]^2\,(a^2-2\,a\,b\,p\,q+2\,b^2\,p^2\,q^2+2\,b\,(a-b\,p\,q)\,\text{Log}[c\,(d\,(e+f\,x)^p)^q]+b^2\,\text{Log}[c\,(d\,(e+f\,x)^p)^q]^2)+4\,b\,e\,p\,q\,\text{Log}[e+f\,x]\,(a^3-3\,a^2\,b\,p\,q+6\,a\,b^2\,p^2\,q^2-6\,b^3\,p^3\,q^3+3\,b\,(a^2-2\,a\,b\,p\,q+2\,b^2\,p^2\,q^2)\,\text{Log}[c\,(d\,(e+f\,x)^p)^q]+3\,b^2\,(a-b\,p\,q)\,\text{Log}[c\,(d\,(e+f\,x)^p)^q]^2+b^3\,\text{Log}[c\,(d\,(e+f\,x)^p)^q]^3)+f\,x\,(a^4-4\,a^3\,b\,p\,q+12\,a^2\,b^2\,p^2\,q^2-24\,a\,b^3\,p^3\,q^3+24\,b^4\,p^4\,q^4+4\,b\,(a^3-3\,a^2\,b\,p\,q+6\,a\,b^2\,p^2\,q^2-6\,b^3\,p^3\,q^3)\,\text{Log}[c\,(d\,(e+f\,x)^p)^q]+6\,b^2\,(a^2-2\,a\,b\,p\,q+2\,b^2\,p^2\,q^2)\,\text{Log}[c\,(d\,(e+f\,x)^p)^q]^2+4\,b^3\,(a-b\,p\,q)\,\text{Log}[c\,(d\,(e+f\,x)^p)^q]^3+b^4\,\text{Log}[c\,(d\,(e+f\,x)^p)^q]^4)\Big)$$

Problem 442: Result more than twice size of optimal antiderivative.

$$\int\frac{(a+b\,\text{Log}[c\,(d\,(e+f\,x)^p)^q])^4}{g+h\,x}\,dx$$

Optimal (type 4, 231 leaves, 7 steps):

$$\frac{\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^4 \operatorname{Log}\left[\frac{f(g+h x)}{f g-e h}\right]}{h}+\frac{4 b p q\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^3 \operatorname{PolyLog}\left[2,-\frac{h(e+f x)}{f g-e h}\right]}{h}-\frac{12 b^2 p^2 q^2\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^2 \operatorname{PolyLog}\left[3,-\frac{h(e+f x)}{f g-e h}\right]}{h}+\frac{24 b^3 p^3 q^3\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right) \operatorname{PolyLog}\left[4,-\frac{h(e+f x)}{f g-e h}\right]}{h}-\frac{24 b^4 p^4 q^4 \operatorname{PolyLog}\left[5,-\frac{h(e+f x)}{f g-e h}\right]}{h}$$

Result (type 4, 1095 leaves) :

$$\frac{1}{h}\left(a^4 \operatorname{Log}[g+h x]-4 a^3 b p q \operatorname{Log}[e+f x] \operatorname{Log}[g+h x]+6 a^2 b^2 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}[g+h x]-4 a b^3 p^3 q^3 \operatorname{Log}[e+f x]^3 \operatorname{Log}[g+h x]+\right.$$
$$b^4 p^4 q^4 \operatorname{Log}[e+f x]^4 \operatorname{Log}[g+h x]+4 a^3 b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right] \operatorname{Log}[g+h x]-12 a^2 b^2 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right] \operatorname{Log}[g+h x]+$$
$$12 a b^3 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right] \operatorname{Log}[g+h x]-4 b^4 p^3 q^3 \operatorname{Log}[e+f x]^3 \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right] \operatorname{Log}[g+h x]+$$
$$6 a^2 b^2 \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \operatorname{Log}[g+h x]-12 a b^3 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \operatorname{Log}[g+h x]+$$
$$6 b^4 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \operatorname{Log}[g+h x]+4 a b^3 \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]^3 \operatorname{Log}[g+h x]-$$
$$4 b^4 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]^3 \operatorname{Log}[g+h x]+b^4 \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]^4 \operatorname{Log}[g+h x]+4 a^3 b p q \operatorname{Log}[e+f x] \operatorname{Log}\left[\frac{f(g+h x)}{f g-e h}\right]-$$
$$6 a^2 b^2 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}\left[\frac{f(g+h x)}{f g-e h}\right]+4 a b^3 p^3 q^3 \operatorname{Log}[e+f x]^3 \operatorname{Log}\left[\frac{f(g+h x)}{f g-e h}\right]-b^4 p^4 q^4 \operatorname{Log}[e+f x]^4 \operatorname{Log}\left[\frac{f(g+h x)}{f g-e h}\right]+$$
$$12 a^2 b^2 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right] \operatorname{Log}\left[\frac{f(g+h x)}{f g-e h}\right]-12 a b^3 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right] \operatorname{Log}\left[\frac{f(g+h x)}{f g-e h}\right]+$$
$$4 b^4 p^3 q^3 \operatorname{Log}[e+f x]^3 \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right] \operatorname{Log}\left[\frac{f(g+h x)}{f g-e h}\right]+12 a b^3 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \operatorname{Log}\left[\frac{f(g+h x)}{f g-e h}\right]-$$
$$6 b^4 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \operatorname{Log}\left[\frac{f(g+h x)}{f g-e h}\right]+4 b^4 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]^3 \operatorname{Log}\left[\frac{f(g+h x)}{f g-e h}\right]+$$
$$4 b p q\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^3 \operatorname{PolyLog}\left[2, \frac{h(e+f x)}{-f g+e h}\right]-12 b^2 p^2 q^2\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^2 \operatorname{PolyLog}\left[3, \frac{h(e+f x)}{-f g+e h}\right]+$$
$$\left.24 a b^3 p^3 q^3 \operatorname{PolyLog}\left[4, \frac{h(e+f x)}{-f g+e h}\right]+24 b^4 p^3 q^3 \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right] \operatorname{PolyLog}\left[4, \frac{h(e+f x)}{-f g+e h}\right]-24 b^4 p^4 q^4 \operatorname{PolyLog}\left[5, \frac{h(e+f x)}{-f g+e h}\right]\right)$$

Problem 443: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^4}{(g+h x)^2} \, dx$$

Optimal (type 4, 274 leaves, 7 steps) :

$$\frac{(e+fx)\left(a+b\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]\right)^4}{(fg-eh)\,(g+hx)}-\frac{4\,b\,f\,p\,q\left(a+b\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]\right)^3\text{Log}\left[\frac{f\,(g+hx)}{fg-eh}\right]}{h\,(fg-eh)}-$$

$$\frac{12\,b^2 f\,p^2 q^2\left(a+b\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]\right)^2\text{PolyLog}\left[2,-\frac{h\,(e+fx)}{fg-eh}\right]}{h\,(fg-eh)}+$$

$$\frac{24\,b^3 f\,p^3 q^3\left(a+b\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]\right)\text{PolyLog}\left[3,-\frac{h\,(e+fx)}{fg-eh}\right]}{h\,(fg-eh)}-\frac{24\,b^4 f\,p^4 q^4\,\text{PolyLog}\left[4,-\frac{h\,(e+fx)}{fg-eh}\right]}{h\,(fg-eh)}$$

Result (type 4, 1301 leaves) :

$$\frac{1}{h\,(-fg+eh)\,(g+hx)}$$

$$\Big(a^4 f g-a^4 e h-4 a^3 b f g p q \,\text{Log}[e+fx]-4 a^3 b f h p q x \,\text{Log}[e+fx]+6 a^2 b^2 f g p^2 q^2 \,\text{Log}[e+fx]^2+6 a^2 b^2 f h p^2 q^2 x \,\text{Log}[e+fx]^2-$$

$$4 a b^3 f g p^3 q^3 \,\text{Log}[e+fx]^3-4 a b^3 f h p^3 q^3 x \,\text{Log}[e+fx]^3+b^4 f g p^4 q^4 \,\text{Log}[e+fx]^4+b^4 f h p^4 q^4 x \,\text{Log}[e+fx]^4+4 a^3 b f g \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]-$$

$$4 a^3 b e h \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]-12 a^2 b^2 f g p q \,\text{Log}[e+fx]\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]-12 a^2 b^2 f h p q x \,\text{Log}[e+fx]\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]+$$

$$12 a b^3 f g p^2 q^2 \,\text{Log}[e+fx]^2\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]+12 a b^3 f h p^2 q^2 x \,\text{Log}[e+fx]^2\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]-$$

$$4 b^4 f g p^3 q^3 \,\text{Log}[e+fx]^3\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]-4 b^4 f h p^3 q^3 x \,\text{Log}[e+fx]^3\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]+6 a^2 b^2 f g \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^2-$$

$$6 a^2 b^2 e h \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^2-12 a b^3 f g p q \,\text{Log}[e+fx]\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^2-12 a b^3 f h p q x \,\text{Log}[e+fx]\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^2+$$

$$6 b^4 f g p^2 q^2 \,\text{Log}[e+fx]^2\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^2+6 b^4 f h p^2 q^2 x \,\text{Log}[e+fx]^2\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^2+$$

$$4 a b^3 f g \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^3-4 a b^3 e h \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^3-4 b^4 f g p q \,\text{Log}[e+fx]\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^3-$$

$$4 b^4 f h p q x \,\text{Log}[e+fx]\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^3+b^4 f g \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^4-b^4 e h \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^4+$$

$$4 a^3 b f g p q \,\text{Log}\left[\frac{f\,(g+hx)}{fg-eh}\right]+4 a^3 b f h p q x \,\text{Log}\left[\frac{f\,(g+hx)}{fg-eh}\right]+12 a^2 b^2 f g p q \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]\text{Log}\left[\frac{f\,(g+hx)}{fg-eh}\right]+$$

$$12 a^2 b^2 f h p q x \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]\text{Log}\left[\frac{f\,(g+hx)}{fg-eh}\right]+12 a b^3 f g p q \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^2\text{Log}\left[\frac{f\,(g+hx)}{fg-eh}\right]+$$

$$12 a b^3 f h p q x \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^2\text{Log}\left[\frac{f\,(g+hx)}{fg-eh}\right]+4 b^4 f g p q \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^3\text{Log}\left[\frac{f\,(g+hx)}{fg-eh}\right]+$$

$$4 b^4 f h p q x \,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]^3\text{Log}\left[\frac{f\,(g+hx)}{fg-eh}\right]+12 b^2 f p^2 q^2 (g+hx)\left(a+b\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]\right)^2\text{PolyLog}\left[2,\frac{h\,(e+fx)}{-fg+eh}\right]-$$

$$24 b^3 f p^3 q^3 (g+hx)\left(a+b\,\text{Log}\left[c\left(d\,(e+fx)^p\right)^q\right]\right)\text{PolyLog}\left[3,\frac{h\,(e+fx)}{-fg+eh}\right]+$$

$$24 b^4 f g p^4 q^4\,\text{PolyLog}\left[4,\frac{h\,(e+fx)}{-fg+eh}\right]+24 b^4 f h p^4 q^4 x\,\text{PolyLog}\left[4,\frac{h\,(e+fx)}{-fg+eh}\right]\Big)$$

Problem 450: Result more than twice size of optimal antiderivative.

$$\int \frac{(g+h x)^2}{\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^2} \, dx$$

Optimal (type 4, 326 leaves, 21 steps):

$$\frac{e^{-\frac{a}{b p q}} (f g-e h)^2 (e+f x) \left(c\left(d(e+f x)^p\right)^q\right)^{-\frac{1}{p q}} \text{ExpIntegralEi}\left[\frac{a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]}{b p q}\right]}{b^2 f^3 p^2 q^2}+$$

$$\frac{4 e^{-\frac{2 a}{b p q}} h (f g-e h) (e+f x)^2 \left(c\left(d(e+f x)^p\right)^q\right)^{-\frac{2}{p q}} \text{ExpIntegralEi}\left[\frac{2\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)}{b p q}\right]}{b^2 f^3 p^2 q^2}+$$

$$\frac{3 e^{-\frac{3 a}{b p q}} h^2 (e+f x)^3 \left(c\left(d(e+f x)^p\right)^q\right)^{-\frac{3}{p q}} \text{ExpIntegralEi}\left[\frac{3\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)}{b p q}\right]}{b^2 f^3 p^2 q^2}-\frac{(e+f x)(g+h x)^2}{b f p q\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)}$$

Result (type 4, 1310 leaves):

$$\frac{1}{b^2 f^3 p^2 q^2 \left(a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)} \mathrm{e}^{-\frac{3 a}{b p q}} \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{3}{p q}}$$
$$\Bigg(-b e\, \mathrm{e}^{\frac{3 a}{b p q}} f^2 g^2 p q \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{3}{p q}}-b\, \mathrm{e}^{\frac{3 a}{b p q}} f^3 g^2 p q x \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{3}{p q}}-2 b e\, \mathrm{e}^{\frac{3 a}{b p q}} f^2 g h p q x \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{3}{p q}}-$$
$$2 b\, \mathrm{e}^{\frac{3 a}{b p q}} f^3 g h p q x^2 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{3}{p q}}-b e\, \mathrm{e}^{\frac{3 a}{b p q}} f^2 h^2 p q x^2 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{3}{p q}}-b\, \mathrm{e}^{\frac{3 a}{b p q}} f^3 h^2 p q x^3 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{3}{p q}}+$$
$$a\, \mathrm{e}^{\frac{2 a}{b p q}} f^2 g^2 (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{2}{p q}} \text{ExpIntegralEi}\left[\frac{a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}\right]-2 a e\, \mathrm{e}^{\frac{2 a}{b p q}} f g h (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{2}{p q}}$$
$$\text{ExpIntegralEi}\left[\frac{a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}\right]+a e^2 \mathrm{e}^{\frac{2 a}{b p q}} h^2 (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{2}{p q}} \text{ExpIntegralEi}\left[\frac{a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}\right]+$$
$$4 a\, \mathrm{e}^{\frac{a}{b p q}} f g h (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{1}{p q}} \text{ExpIntegralEi}\left[\frac{2 \left(a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{b p q}\right]-4 a e\, \mathrm{e}^{\frac{a}{b p q}} h^2 (e+f x)^2$$
$$\left(c \left(d (e+f x)^p\right)^q\right)^{\frac{1}{p q}} \text{ExpIntegralEi}\left[\frac{2 \left(a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{b p q}\right]+3 a h^2 (e+f x)^3 \text{ExpIntegralEi}\left[\frac{3 \left(a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{b p q}\right]+$$
$$b\, \mathrm{e}^{\frac{2 a}{b p q}} f^2 g^2 (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{2}{p q}} \text{ExpIntegralEi}\left[\frac{a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}\right] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]-$$
$$2 b e\, \mathrm{e}^{\frac{2 a}{b p q}} f g h (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{2}{p q}} \text{ExpIntegralEi}\left[\frac{a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}\right] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]+$$
$$b e^2 \mathrm{e}^{\frac{2 a}{b p q}} h^2 (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{2}{p q}} \text{ExpIntegralEi}\left[\frac{a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}\right] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]+$$
$$4 b\, \mathrm{e}^{\frac{a}{b p q}} f g h (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{1}{p q}} \text{ExpIntegralEi}\left[\frac{2 \left(a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{b p q}\right] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]-$$
$$4 b e\, \mathrm{e}^{\frac{a}{b p q}} h^2 (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{1}{p q}} \text{ExpIntegralEi}\left[\frac{2 \left(a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{b p q}\right] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]+$$
$$3 b h^2 (e+f x)^3 \text{ExpIntegralEi}\left[\frac{3 \left(a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{b p q}\right] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\Bigg)$$

Problem 460: Unable to integrate problem.

$$\int (g+h x)^2 \sqrt{a+b \,\text{Log}\left[c \left(d (e+f x)^p\right)^q\right]} \, dx$$

Optimal (type 4, 488 leaves, 18 steps):

$$-\frac{\sqrt{b}\, e^{-\frac{a}{b p q}} (f g-e h)^2 \sqrt{p} \sqrt{\pi} \sqrt{q} (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right]}{2 f^3}-$$
$$\frac{\sqrt{b}\, e^{-\frac{2 a}{b p q}} h (f g-e h) \sqrt{p} \sqrt{\frac{\pi}{2}} \sqrt{q} (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{2}{p q}} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right]}{2 f^3}-$$
$$\frac{\sqrt{b}\, e^{-\frac{3 a}{b p q}} h^2 \sqrt{p} \sqrt{\frac{\pi}{3}} \sqrt{q} (e+f x)^3 \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{3}{p q}} \text{Erfi}\left[\frac{\sqrt{3} \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right]}{6 f^3}+\frac{(f g-e h)^2 (e+f x) \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{f^3}+$$
$$\frac{h (f g-e h) (e+f x)^2 \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{f^3}+\frac{h^2 (e+f x)^3 \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{3 f^3}$$

Result (type 8, 32 leaves):

$$\int (g+h x)^2 \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}\, dx$$

Problem 461: Unable to integrate problem.

$$\int (g+h x) \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}\, dx$$

Optimal (type 4, 311 leaves, 13 steps):

$$-\frac{\sqrt{b}\, e^{-\frac{a}{b p q}} (f g-e h) \sqrt{p} \sqrt{\pi} \sqrt{q} (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right]}{2 f^2}-$$
$$\frac{\sqrt{b}\, e^{-\frac{2 a}{b p q}} h \sqrt{p} \sqrt{\frac{\pi}{2}} \sqrt{q} (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{2}{p q}} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right]}{4 f^2}+$$
$$\frac{(f g-e h) (e+f x) \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{f^2}+\frac{h (e+f x)^2 \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{2 f^2}$$

Result (type 8, 30 leaves):

$$\int (g+h x) \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}\, dx$$

Problem 462: Attempted integration timed out after 120 seconds.

$$\int \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}\, dx$$

Optimal (type 4, 139 leaves, 6 steps):

$$-\frac{\sqrt{b}\, e^{-\frac{a}{b p q}} \sqrt{p}\, \sqrt{\pi}\, \sqrt{q}\, (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b}\, \sqrt{p}\, \sqrt{q}}\right]}{2 f}+\frac{(e+f x) \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{f}$$

Result (type 1, 1 leaves):

???

Problem 465: Unable to integrate problem.

$$\int (g+h x)^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{3/2} dx$$

Optimal (type 4, 625 leaves, 21 steps):

$$\frac{3 b^{3/2} e^{-\frac{a}{b p q}} (f g-e h)^2 p^{3/2} \sqrt{\pi}\, q^{3/2} (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b}\, \sqrt{p}\, \sqrt{q}}\right]}{4 f^3}+$$

$$\frac{3 b^{3/2} e^{-\frac{2 a}{b p q}} h (f g-e h) p^{3/2} \sqrt{\frac{\pi}{2}}\, q^{3/2} (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{2}{p q}} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b}\, \sqrt{p}\, \sqrt{q}}\right]}{8 f^3}+$$

$$\frac{b^{3/2} e^{-\frac{3 a}{b p q}} h^2 p^{3/2} \sqrt{\frac{\pi}{3}}\, q^{3/2} (e+f x)^3 \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{3}{p q}} \text{Erfi}\left[\frac{\sqrt{3} \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b}\, \sqrt{p}\, \sqrt{q}}\right]}{12 f^3}-$$

$$\frac{3 b (f g-e h)^2 p q (e+f x) \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{2 f^3}-\frac{3 b h (f g-e h) p q (e+f x)^2 \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{4 f^3}-$$

$$\frac{b h^2 p q (e+f x)^3 \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{6 f^3}+\frac{(f g-e h)^2 (e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{3/2}}{f^3}+$$

$$\frac{h (f g-e h) (e+f x)^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{3/2}}{f^3}+\frac{h^2 (e+f x)^3 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{3/2}}{3 f^3}$$

Result (type 8, 32 leaves):

$$\int (g+h x)^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{3/2} dx$$

Problem 466: Unable to integrate problem.

$$\int (g+h x) \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{3/2} dx$$

Optimal (type 4, 396 leaves, 15 steps):

$$\frac{3 b^{3/2} e^{-\frac{a}{b p q}} (f g-e h) p^{3/2} \sqrt{\pi } q^{3/2} (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right]}{4 f^2}+$$
$$\frac{3 b^{3/2} e^{-\frac{2 a}{b p q}} h p^{3/2} \sqrt{\frac{\pi }{2}} q^{3/2} (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{2}{p q}} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right]}{16 f^2}-$$
$$\frac{3 b (f g-e h) p q (e+f x) \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{2 f^2}-\frac{3 b h p q (e+f x)^2 \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{8 f^2}+$$
$$\frac{(f g-e h) (e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{3/2}}{f^2}+\frac{h (e+f x)^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{3/2}}{2 f^2}$$

Result (type 8, 30 leaves):

$$\int (g+h x) \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{3/2} \, dx$$

Problem 467: Unable to integrate problem.

$$\int \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{3/2} \, dx$$

Optimal (type 4, 176 leaves, 7 steps):

$$\frac{3 b^{3/2} e^{-\frac{a}{b p q}} p^{3/2} \sqrt{\pi } q^{3/2} (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right]}{4 f}-$$
$$\frac{3 b p q (e+f x) \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{2 f}+\frac{(e+f x) \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{3/2}}{f}$$

Result (type 8, 24 leaves):

$$\int \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{3/2} \, dx$$

Problem 470: Result more than twice size of optimal antiderivative.

$$\int \frac{(g+h x)^2}{\sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}} \, dx$$

Optimal (type 4, 355 leaves, 15 steps):

$$\frac{\mathrm{e}^{-\frac{a}{b\,p\,q}}\,(f\,g-e\,h)^2\,\sqrt{\pi}\,(e+f\,x)\,\left(c\,\left(d\,(e+f\,x)^p\right)^q\right)^{-\frac{1}{p\,q}}\,\text{Erfi}\left[\frac{\sqrt{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right]}{\sqrt{b}\,f^3\,\sqrt{p}\,\sqrt{q}}+$$

$$\frac{\mathrm{e}^{-\frac{2\,a}{b\,p\,q}}\,h\,(f\,g-e\,h)\,\sqrt{2\,\pi}\,(e+f\,x)^2\,\left(c\,\left(d\,(e+f\,x)^p\right)^q\right)^{-\frac{2}{p\,q}}\,\text{Erfi}\left[\frac{\sqrt{2}\,\sqrt{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right]}{\sqrt{b}\,f^3\,\sqrt{p}\,\sqrt{q}}+$$

$$\frac{\mathrm{e}^{-\frac{3\,a}{b\,p\,q}}\,h^2\,\sqrt{\frac{\pi}{3}}\,(e+f\,x)^3\,\left(c\,\left(d\,(e+f\,x)^p\right)^q\right)^{-\frac{3}{p\,q}}\,\text{Erfi}\left[\frac{\sqrt{3}\,\sqrt{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right]}{\sqrt{b}\,f^3\,\sqrt{p}\,\sqrt{q}}$$

Result (type 4, 843 leaves):

$$\frac{1}{3\,\sqrt{b}\,f^3\,\sqrt{p}\,\sqrt{q}\,\sqrt{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}}\,\mathrm{e}^{-\frac{3\,a}{b\,p\,q}}\,\sqrt{\pi}\,(e+f\,x)\,\left(c\,\left(d\,(e+f\,x)^p\right)^q\right)^{-\frac{3}{p\,q}}$$
$$\Bigg(3\,\mathrm{e}^{\frac{2\,a}{b\,p\,q}}\,f\,g\,(f\,g-2\,e\,h)\,\left(c\,\left(d\,(e+f\,x)^p\right)^q\right)^{\frac{2}{p\,q}}\,\text{Erfi}\left[\frac{\sqrt{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right]\,\sqrt{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}+$$
$$h\,\Bigg(3\,\sqrt{2}\,\mathrm{e}^{\frac{a}{b\,p\,q}}\,f\,g\,(e+f\,x)\,\left(c\,\left(d\,(e+f\,x)^p\right)^q\right)^{\frac{1}{p\,q}}\,\text{Erfi}\left[\frac{\sqrt{2}\,\sqrt{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right]\,\sqrt{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}+$$
$$\sqrt{b}\,h\,\sqrt{p}\,\sqrt{q}\,\Bigg(\sqrt{3}\,e^2+2\,\sqrt{3}\,e\,f\,x+\sqrt{3}\,f^2\,x^2-3\,\sqrt{2}\,e^2\,\mathrm{e}^{\frac{a}{b\,p\,q}}\,\left(c\,\left(d\,(e+f\,x)^p\right)^q\right)^{\frac{1}{p\,q}}-3\,\sqrt{2}\,e\,\mathrm{e}^{\frac{a}{b\,p\,q}}\,f\,x\,\left(c\,\left(d\,(e+f\,x)^p\right)^q\right)^{\frac{1}{p\,q}}+$$
$$3\,e^2\,\mathrm{e}^{\frac{2\,a}{b\,p\,q}}\,\left(c\,\left(d\,(e+f\,x)^p\right)^q\right)^{\frac{2}{p\,q}}-3\,e^2\,\mathrm{e}^{\frac{2\,a}{b\,p\,q}}\,\left(c\,\left(d\,(e+f\,x)^p\right)^q\right)^{\frac{2}{p\,q}}\,\text{Erf}\left[\sqrt{-\frac{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}{b\,p\,q}}\right]+3\,\sqrt{2}\,e\,\mathrm{e}^{\frac{a}{b\,p\,q}}\,(e+f\,x)$$
$$\left(c\,\left(d\,(e+f\,x)^p\right)^q\right)^{\frac{1}{p\,q}}\,\text{Erf}\left[\sqrt{2}\,\sqrt{-\frac{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}{b\,p\,q}}\right]-\sqrt{3}\,e^2\,\text{Erf}\left[\sqrt{3}\,\sqrt{-\frac{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}{b\,p\,q}}\right]-2\,\sqrt{3}\,e\,f\,x$$
$$\text{Erf}\left[\sqrt{3}\,\sqrt{-\frac{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}{b\,p\,q}}\right]-\sqrt{3}\,f^2\,x^2\,\text{Erf}\left[\sqrt{3}\,\sqrt{-\frac{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}{b\,p\,q}}\right]\Bigg)\,\sqrt{-\frac{a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]}{b\,p\,q}}\Bigg)\Bigg)$$

Problem 474: Result more than twice size of optimal antiderivative.

$$\int \frac{(g+h x)^2}{\left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{3/2}} \, dx$$

Optimal (type 4, 404 leaves, 26 steps):

$$\frac{2 e^{-\frac{a}{b p q}} (f g-e h)^2 \sqrt{\pi } (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right]}{b^{3/2} f^3 p^{3/2} q^{3/2}}+$$
$$\frac{4 e^{-\frac{2 a}{b p q}} h (f g-e h) \sqrt{2 \pi } (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{2}{p q}} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right]}{b^{3/2} f^3 p^{3/2} q^{3/2}}+$$
$$\frac{2 e^{-\frac{3 a}{b p q}} h^2 \sqrt{3 \pi } (e+f x)^3 \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{3}{p q}} \text{Erfi}\left[\frac{\sqrt{3} \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right]}{b^{3/2} f^3 p^{3/2} q^{3/2}}-\frac{2 (e+f x) (g+h x)^2}{b f p q \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}$$

Result (type 4, 1680 leaves):

$$\frac{1}{b^{3/2} f^3 p^{3/2} q^{3/2} \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}$$
$$2 e^{-\frac{3 a}{b p q}} \left(c \left(d (e+f x)^p\right)^q\right)^{-\frac{3}{p q}} \left(-\sqrt{b}\, e\, e^{\frac{3 a}{b p q}} f^2 g^2 \sqrt{p} \sqrt{q} \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{3}{p q}}-\sqrt{b}\, e^{\frac{3 a}{b p q}} f^3 g^2 \sqrt{p} \sqrt{q}\, x \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{3}{p q}}-\right.$$
$$2 \sqrt{b}\, e\, e^{\frac{3 a}{b p q}} f^2 g h \sqrt{p} \sqrt{q}\, x \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{3}{p q}}-2 \sqrt{b}\, e^{\frac{3 a}{b p q}} f^3 g h \sqrt{p} \sqrt{q}\, x^2 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{3}{p q}}-$$
$$\sqrt{b}\, e\, e^{\frac{3 a}{b p q}} f^2 h^2 \sqrt{p} \sqrt{q}\, x^2 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{3}{p q}}-\sqrt{b}\, e^{\frac{3 a}{b p q}} f^3 h^2 \sqrt{p} \sqrt{q}\, x^3 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{3}{p q}}+$$
$$e^{\frac{2 a}{b p q}} f^2 g^2 \sqrt{\pi } (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{2}{p q}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}-$$
$$2\, e\, e^{\frac{2 a}{b p q}} f g h \sqrt{\pi } (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{2}{p q}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}-$$
$$2\, e^2 e^{\frac{2 a}{b p q}} h^2 \sqrt{\pi } (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{2}{p q}} \text{Erfi}\left[\frac{\sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}+$$
$$2\, e^{\frac{a}{b p q}} f g h \sqrt{2 \pi } (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}+$$

$$e\, e^{\frac{a}{b p q}} h^2 \sqrt{2\pi} (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{1}{p q}} \text{Erfi}\left[\frac{\sqrt{2} \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}}{\sqrt{b} \sqrt{p} \sqrt{q}}\right] \sqrt{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]} +$$

$$\sqrt{b}\, h^2 \sqrt{p} \sqrt{3\pi} \sqrt{q} (e+f x)^3 \sqrt{-\frac{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}} - 3 \sqrt{b}\, e\, e^{\frac{a}{b p q}} h^2 \sqrt{p} \sqrt{2\pi} \sqrt{q} (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{1}{p q}}$$

$$\sqrt{-\frac{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}} + 3 \sqrt{b}\, e^2 e^{\frac{2 a}{b p q}} h^2 \sqrt{p} \sqrt{\pi} \sqrt{q} (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{2}{p q}} \sqrt{-\frac{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}} -$$

$$3 \sqrt{b}\, e^2 e^{\frac{2 a}{b p q}} h^2 \sqrt{p} \sqrt{\pi} \sqrt{q} (e+f x) \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{2}{p q}} \text{Erf}\left[\sqrt{-\frac{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}}\right] \sqrt{-\frac{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}} +$$

$$3 \sqrt{b}\, e\, e^{\frac{a}{b p q}} h^2 \sqrt{p} \sqrt{2\pi} \sqrt{q} (e+f x)^2 \left(c \left(d (e+f x)^p\right)^q\right)^{\frac{1}{p q}} \text{Erf}\left[\sqrt{2} \sqrt{-\frac{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}}\right] \sqrt{-\frac{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}} -$$

$$\left.\sqrt{b}\, h^2 \sqrt{p} \sqrt{3\pi} \sqrt{q} (e+f x)^3 \text{Erf}\left[\sqrt{3} \sqrt{-\frac{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}}\right] \sqrt{-\frac{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{b p q}}\right)$$

Problem 478: Result more than twice size of optimal antiderivative.

$$\int \frac{(g+h x)^2}{\left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^{5/2}} \, dx$$

Optimal (type 4, 514 leaves, 42 steps) :

$$\frac{4\,e^{-\frac{a}{b p q}} (f g-e h)^2 \sqrt{\pi}\,(e+f x)\left(c\left(d (e+f x)^p\right)^q\right)^{-\frac{1}{p q}} \mathrm{Erfi}\left[\frac{\sqrt{a+b \mathrm{Log}\left[c\left(d (e+f x)^p\right)^q\right]}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right]}{3\, b^{5/2} f^3 p^{5/2} q^{5/2}}+$$

$$\frac{16\, e^{-\frac{2 a}{b p q}} h (f g-e h) \sqrt{2 \pi}\,(e+f x)^2\left(c\left(d (e+f x)^p\right)^q\right)^{-\frac{2}{p q}} \mathrm{Erfi}\left[\frac{\sqrt{2}\,\sqrt{a+b \mathrm{Log}\left[c\left(d (e+f x)^p\right)^q\right]}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right]}{3\, b^{5/2} f^3 p^{5/2} q^{5/2}}+$$

$$\frac{4\, e^{-\frac{3 a}{b p q}} h^2 \sqrt{3 \pi}\,(e+f x)^3\left(c\left(d (e+f x)^p\right)^q\right)^{-\frac{3}{p q}} \mathrm{Erfi}\left[\frac{\sqrt{3}\,\sqrt{a+b \mathrm{Log}\left[c\left(d (e+f x)^p\right)^q\right]}}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\right]}{b^{5/2} f^3 p^{5/2} q^{5/2}}-\frac{2 (e+f x)(g+h x)^2}{3\, b f p q\left(a+b \mathrm{Log}\left[c\left(d (e+f x)^p\right)^q\right]\right)^{3/2}}+$$

$$\frac{8 (f g-e h)(e+f x)(g+h x)}{3\, b^2 f^2 p^2 q^2 \sqrt{a+b \mathrm{Log}\left[c\left(d (e+f x)^p\right)^q\right]}}-\frac{4 (e+f x)(g+h x)^2}{b^2 f p^2 q^2 \sqrt{a+b \mathrm{Log}\left[c\left(d (e+f x)^p\right)^q\right]}}$$

Result (type 4, 6490 leaves) :

$$\left(4\, e^{-\frac{a+b q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)+b\left(-q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)-\mathrm{Log}\left[d (e+f x)^p\right]\left(q-\frac{q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)}{\mathrm{Log}\left[d (e+f x)^p\right]}\right)+\mathrm{Log}\left[c\, e^{q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)}\left(d (e+f x)^p\right)^{q-\frac{q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)}{\mathrm{Log}\left[d (e+f x)^p\right]}}\right]\right)}{b p q}}\right.$$

$$g^2 \sqrt{\pi}\, \mathrm{Erfi}\left[\frac{1}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\left(\sqrt{\left(a+b\left(p q \mathrm{Log}[e+f x]-\mathrm{Log}\left[d (e+f x)^p\right]\left(q-\frac{q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)}{\mathrm{Log}\left[d (e+f x)^p\right]}\right)+\right.\right.}\right.\right.$$

$$\left.\left.\left.\left.\mathrm{Log}\left[c\, e^{q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)}\left(d (e+f x)^p\right)^{q-\frac{q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)}{\mathrm{Log}\left[d (e+f x)^p\right]}}\right]\right)\right)\right)\right]$$

$$\sqrt{\left(a+b\left(p q \mathrm{Log}[e+f x]-\mathrm{Log}\left[d (e+f x)^p\right]\left(q-\frac{q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)}{\mathrm{Log}\left[d (e+f x)^p\right]}\right)+\right.\right.}$$

$$\left.\left.\left.\mathrm{Log}\left[c\, e^{q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)}\left(d (e+f x)^p\right)^{q-\frac{q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)}{\mathrm{Log}\left[d (e+f x)^p\right]}}\right]\right)\right)\right)\Big/$$

$$\left(3\, b^{5/2} f p^{5/2} q^{5/2} \sqrt{\left(a+b p q \mathrm{Log}[e+f x]+b q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)+b\left(-q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)-\right.\right.}\right.$$

$$\left.\left.\left.\mathrm{Log}\left[d (e+f x)^p\right]\left(q-\frac{q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)}{\mathrm{Log}\left[d (e+f x)^p\right]}\right)+\mathrm{Log}\left[c\, e^{q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)}\left(d (e+f x)^p\right)^{q-\frac{q\left(-p \mathrm{Log}[e+f x]+\mathrm{Log}\left[d (e+f x)^p\right]\right)}{\mathrm{Log}\left[d (e+f x)^p\right]}}\right]\right)\right)\right)+$$

$$\Bigg(8\,e\,\mathbb{e}^{-\frac{a+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\,\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,\mathbb{e}^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)}{b\,p\,q}}\,g\,h\,\sqrt{\pi}$$

$$\text{Erfi}\Big[\frac{1}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\Big(\sqrt{\Big(a+b\,\Big(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+}$$

$$\text{Log}\left[c\,\mathbb{e}^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\Big)\Big)}\Big)\Big]$$

$$\sqrt{\Big(a+b\,\Big(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+}$$

$$\text{Log}\left[c\,\mathbb{e}^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\Big)\Big)}\Bigg)\Bigg/$$

$$\Big(b^{5/2}\,f^2\,p^{5/2}\,q^{5/2}\,\sqrt{\Big(a+b\,p\,q\,\text{Log}[e+f\,x]+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\,\Big(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-}$$

$$\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,\mathbb{e}^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\Big)\Big)}\Big)+$$

$$\Bigg(8\,e^2\,\mathbb{e}^{-\frac{a+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\,\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,\mathbb{e}^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)}{b\,p\,q}}\,h^2\,\sqrt{\pi}$$

$$\text{Erfi}\Big[\frac{1}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\Big(\sqrt{\Big(a+b\,\Big(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+}$$

$$\text{Log}\left[c\,\mathbb{e}^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\Big)\Big)}\Big)\Big]$$

$$\sqrt{\Big(a+b\,\Big(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+}$$

$$\text{Log}\left[c\, e^{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}\left(d\,(e+f x)^p\right)^{q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}}\right]\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\, b^{5/2} f^3 p^{5/2} q^{5/2} \sqrt{\Bigg(a+b\,p\,q\,\text{Log}[e+f x]+b\,q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)+b\,\Bigg(-q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)-}$$

$$\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+\text{Log}\left[c\, e^{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}\left(d\,(e+f x)^p\right)^{q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}}\right]\Bigg)\Bigg)}\;\Bigg)+$$

$$\Bigg(16\, e^{-\frac{2\left(a+b\left(-\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+\text{Log}\left[c\, e^{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}\left(d\,(e+f x)^p\right)^{q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}}\right]\right)\right)}{b\,p\,q}}\, g\, h\,\sqrt{\pi}$$

$$\Bigg(-2\, e\, e^{\frac{a+b\,q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)+b\left(-q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)-\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+\text{Log}\left[c\, e^{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}\left(d\,(e+f x)^p\right)^{q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}}\right]\right)}{b\,p\,q}}$$

$$\text{Erfi}\Bigg[\frac{1}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\Bigg(\sqrt{\Bigg(a+b\,\Bigg(p\,q\,\text{Log}[e+f x]-\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+}$$

$$\text{Log}\left[c\, e^{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}\left(d\,(e+f x)^p\right)^{q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}}\right]\Bigg)\Bigg)}\;\Bigg)\Bigg]+$$

$$\sqrt{2}\,\text{Erfi}\Bigg[\frac{1}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\sqrt{2}\,\sqrt{\Bigg(a+b\,\Bigg(p\,q\,\text{Log}[e+f x]-\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+}$$

$$\text{Log}\left[c\, e^{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}\left(d\,(e+f x)^p\right)^{q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}}\right]\Bigg)\Bigg)}\;\Bigg]\Bigg)$$

$$\sqrt{\Bigg(a+b\,\Bigg(p\,q\,\text{Log}[e+f x]-\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\left(-p\,\text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+}$$

$$\text{Log}\left[c\, e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\right]\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,b^{5/2}\,f^2\,p^{5/2}\,q^{5/2}\,\sqrt{\Bigg(a+b\,p\,q\,\text{Log}[e+f\,x]+b\,q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])+b\,\Bigg(-q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])\,-}$$

$$\text{Log}[d\,(e+f\,x)^p]\,\left(q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}\right)+\text{Log}\left[c\, e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\right]\Bigg)\Bigg)\Bigg)+$$

$$\Bigg(20\,e\,e^{-\frac{2\left(a+b\left(-\text{Log}[d\,(e+f\,x)^p]\,\left(q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}\right)+\text{Log}\left[c\,e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,(d\,(e+f\,x)^p)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\right]\right)\right)}{b\,p\,q}}\,h^2\,\sqrt{\pi}$$

$$\Bigg(-2\,e\,e^{\frac{a+b\,q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])+b\left(-q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])-\text{Log}[d\,(e+f\,x)^p]\,\left(q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}\right)+\text{Log}\left[c\,e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,(d\,(e+f\,x)^p)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\right]\right)}{b\,p\,q}}$$

$$\text{Erfi}\Bigg[\frac{1}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\Bigg(\sqrt{\Bigg(a+b\,\Bigg(p\,q\,\text{Log}[e+f\,x]-\text{Log}[d\,(e+f\,x)^p]\,\left(q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}\right)+}$$

$$\text{Log}\left[c\, e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\right]\Bigg)\Bigg)\Bigg)\Bigg]+$$

$$\sqrt{2}\,\text{Erfi}\Bigg[\frac{1}{\sqrt{b}\,\sqrt{p}\,\sqrt{q}}\sqrt{2}\,\sqrt{\Bigg(a+b\,\Bigg(p\,q\,\text{Log}[e+f\,x]-\text{Log}[d\,(e+f\,x)^p]\,\left(q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}\right)+}$$

$$\text{Log}\left[c\, e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\right]\Bigg)\Bigg)\Bigg]\Bigg)$$

$$\sqrt{\Bigg(a+b\,\Bigg(p\,q\,\text{Log}[e+f\,x]-\text{Log}[d\,(e+f\,x)^p]\,\left(q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}\right)+}$$

$$\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,b^{5/2}\,f^3\,p^{5/2}\,q^{5/2}\,\sqrt{\Bigg(a+b\,p\,q\,\text{Log}[e+f\,x]+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\,\Bigg(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-}$$

$$\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\Bigg)\Bigg)\Bigg)+$$

$$\Bigg(4\,e^{-\frac{3\,\left(a+b\,\left(-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)}{b\,p\,q}}\,h^2\,\sqrt{\pi}$$

$$\Bigg(\sqrt{3}-3\,\sqrt{2}\,e\,e^{\frac{a+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\,\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)}{b\,p\,q}}+$$

$$3\,e^2\,e^{\frac{2\,\left(a+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\,\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)}{b\,p\,q}}-$$

$$3\,e^2\,e^{\frac{2\,\left(a+b\,\left(-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)}{b\,p\,q}}\,\text{Erf}\Bigg[\sqrt{\Bigg(-\frac{1}{b\,p\,q}\Bigg(a+b\,\Bigg(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,(e+f\,x)^p\right]}$$

$$\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\Bigg)\Bigg)\Bigg)}\Bigg]+$$

$$3\,\sqrt{2}\,e\,e^{\frac{a+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\,\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)}{b\,p\,q}}$$

$$\text{Erf}\Bigg[\sqrt{2}\,\sqrt{\Bigg(-\frac{1}{b\,p\,q}\Bigg(a+b\,\Bigg(p\,q\,\text{Log}[e+f\,x]-\text{Log}\left[d\,(e+f\,x)^p\right]\,\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+}$$

$$\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\Bigg)\Bigg)\Bigg)}\Bigg]-$$

$$\sqrt{3}\,\text{Erf}\Big[\sqrt{3}\,\sqrt{\Big(-\frac{1}{b\,p\,q}\Big(a+b\Big(p\,q\,\text{Log}[e+f\,x]-\text{Log}\big[d\,(e+f\,x)^p\big]\,\Big(q-\frac{q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)}{\text{Log}\big[d\,(e+f\,x)^p\big]}\Big)+}$$

$$\text{Log}\Big[c\,e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\big(d\,(e+f\,x)^p\big)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\Big]\Big)\Big)\Big)\Big]$$

$$\sqrt{\Big(-\frac{1}{b\,p\,q}\Big(a+b\Big(p\,q\,\text{Log}[e+f\,x]-\text{Log}\big[d\,(e+f\,x)^p\big]\,\Big(q-\frac{q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)}{\text{Log}\big[d\,(e+f\,x)^p\big]}\Big)+}$$

$$\text{Log}\Big[c\,e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\big(d\,(e+f\,x)^p\big)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\Big]\Big)\Big)\Big)\Big/$$

$$\Big(b^2\,f^3\,p^2\,q^2\,\sqrt{\Big(a+b\,p\,q\,\text{Log}[e+f\,x]+b\,q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)+b\,\Big(-q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)-}$$

$$\text{Log}\big[d\,(e+f\,x)^p\big]\,\Big(q-\frac{q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)}{\text{Log}\big[d\,(e+f\,x)^p\big]}\Big)+\text{Log}\Big[c\,e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\big(d\,(e+f\,x)^p\big)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\Big]\Big)\Big)}+$$

$$\sqrt{\Big(a+b\,p\,q\,\text{Log}[e+f\,x]+b\,q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)+b\,\Big(-q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)-}$$

$$\text{Log}\big[d\,(e+f\,x)^p\big]\,\Big(q-\frac{q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)}{\text{Log}\big[d\,(e+f\,x)^p\big]}\Big)+\text{Log}\Big[c\,e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\big(d\,(e+f\,x)^p\big)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\Big]\Big)\Big)}$$

$$\Big(-\Big(\Big(2\,(e+f\,x)\,(g+h\,x)^2\Big)\Big/\Big(3\,b\,f\,p\,q\,\Big(a+b\,p\,q\,\text{Log}[e+f\,x]+b\,q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)+$$

$$b\,\Big(-q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)-\text{Log}\big[d\,(e+f\,x)^p\big]\,\Big(q-\frac{q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)}{\text{Log}\big[d\,(e+f\,x)^p\big]}\Big)+$$

$$\text{Log}\Big[c\,e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\big(d\,(e+f\,x)^p\big)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\Big]\Big)\Big)^2\Big)\Big)-\Big(4\,(e+f\,x)\,(g+h\,x)\,(f\,g+2\,e\,h+3\,f\,h\,x)\Big)\Big/$$

$$\Big(3\,b^2\,f^2\,p^2\,q^2\,\Big(a+b\,p\,q\,\text{Log}[e+f\,x]+b\,q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)+b\,\Big(-q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)-\text{Log}\big[d\,(e+f\,x)^p\big]$$

$$\Big(q-\frac{q\,\big(-p\,\text{Log}[e+f\,x]+\text{Log}\big[d\,(e+f\,x)^p\big]\big)}{\text{Log}\big[d\,(e+f\,x)^p\big]}\Big)+\text{Log}\Big[c\,e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,\big(d\,(e+f\,x)^p\big)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\Big]\Big)\Big)\Big)\Big)$$

Problem 489: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (g+h x)^{3/2} \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 dx$$

Optimal (type 4, 635 leaves, 29 steps):

$$\frac{368 b^2 (f g-e h)^2 p^2 q^2 \sqrt{g+h x}}{75 f^2 h}+\frac{128 b^2 (f g-e h) p^2 q^2 (g+h x)^{3/2}}{225 f h}+\frac{16 b^2 p^2 q^2 (g+h x)^{5/2}}{125 h}-\frac{368 b^2 (f g-e h)^{5/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]}{75 f^{5/2} h}-$$
$$\frac{8 b^2 (f g-e h)^{5/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]^2}{5 f^{5/2} h}-\frac{8 b (f g-e h)^2 p q \sqrt{g+h x} \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{5 f^2 h}-$$
$$\frac{8 b (f g-e h) p q (g+h x)^{3/2} \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{15 f h}-\frac{8 b p q (g+h x)^{5/2} \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{25 h}+$$
$$\frac{8 b (f g-e h)^{5/2} p q \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{5 f^{5/2} h}+\frac{2 (g+h x)^{5/2} \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{5 h}+$$
$$\frac{16 b^2 (f g-e h)^{5/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \text{Log}\left[\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{5 f^{5/2} h}+\frac{8 b^2 (f g-e h)^{5/2} p^2 q^2 \text{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{5 f^{5/2} h}$$

Result (type 5, 2450 leaves):

$$\frac{1}{3 f h \sqrt{1+\frac{h (e+f x)}{f g-e h}}} 2 b^2 g p^2 q^2 \sqrt{\frac{f g-e h+h (e+f x)}{f}} \left(3 h (e+f x) \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1,1\right\},\{2,2,2\},\frac{h (e+f x)}{-f g+e h}\right]-\right.$$
$$3 h (e+f x) \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{h (e+f x)}{-f g+e h}\right] \text{Log}[e+f x]-f g \text{Log}[e+f x]^2+e h \text{Log}[e+f x]^2+$$
$$\left.f g \sqrt{1+\frac{h (e+f x)}{f g-e h}} \text{Log}[e+f x]^2-e h \sqrt{1+\frac{h (e+f x)}{f g-e h}} \text{Log}[e+f x]^2+h (e+f x) \sqrt{1+\frac{h (e+f x)}{f g-e h}} \text{Log}[e+f x]^2\right)-$$

$$\frac{1}{15 f^2 h \sqrt{1+\frac{h (e+f x)}{f g-e h}}} 2 b^2 p^2 q^2 \sqrt{\frac{f g-e h+h (e+f x)}{f}} \left(10 f g h (e+f x) \text{HypergeometricPFQ}\left[\left\{-\frac{3}{2},1,1,1\right\},\{2,2,2\},\frac{h (e+f x)}{-f g+e h}\right]-\right.$$

$$10 e h^2 (e+f x) \text{HypergeometricPFQ}\left[\left\{-\frac{3}{2},1,1,1\right\},\{2,2,2\},\frac{h (e+f x)}{-f g+e h}\right]+$$

$$15 e h^2 (e+f x) \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1,1\right\},\{2,2,2\},\frac{h (e+f x)}{-f g+e h}\right]-4 f^2 g^2 \text{Log}[e+f x]+8 e f g h \text{Log}[e+f x]-$$

$$4 e^2 h^2 \text{Log}[e+f x]+4 f^2 g^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{Log}[e+f x]-8 e f g h \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{Log}[e+f x]+$$

$$4 e^2 h^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{Log}[e+f x]+8 f g h (e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{Log}[e+f x]-$$

$$8 e h^2 (e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{Log}[e+f x]+4 h^2 (e+f x)^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{Log}[e+f x]-$$

$$15 e h^2 (e+f x) \text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{h (e+f x)}{-f g+e h}\right] \text{Log}[e+f x]-2 f^2 g^2 \text{Log}[e+f x]^2-e f g h \text{Log}[e+f x]^2+$$

$$3 e^2 h^2 \text{Log}[e+f x]^2+2 f^2 g^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{Log}[e+f x]^2+e f g h \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{Log}[e+f x]^2-$$

$$3 e^2 h^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{Log}[e+f x]^2-f g h (e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{Log}[e+f x]^2+$$

$$6 e h^2 (e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{Log}[e+f x]^2-3 h^2 (e+f x)^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{Log}[e+f x]^2+$$

$$\left.10 h (-f g+e h) (e+f x) \text{HypergeometricPFQ}\left[\left\{-\frac{3}{2},1,1\right\},\{2,2\},\frac{h (e+f x)}{-f g+e h}\right] (1+\text{Log}[e+f x])\right)+\frac{1}{9 f h}$$

$$4\,b\,g\,p\,q\left(\frac{6\,(f\,g-e\,h)^{3/2}\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}}{\sqrt{f\,g-e\,h}}\right]}{\sqrt{f}}-\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}\,\left(h\,(e+f\,x)\,(2-3\,\text{Log}[e+f\,x])+(f\,g-e\,h)\,(8-3\,\text{Log}[e+f\,x])\right)\right)$$

$$\left(a+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)-$$

$$\frac{1}{225\,f^{5/2}\,h}\,4\,b\,p\,q\left(30\,(f\,g-e\,h)^{3/2}\,(2\,f\,g+3\,e\,h)\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}}{\sqrt{f\,g-e\,h}}\right]+\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}\right.$$
$$\left.\left(9\,h^2\,(e+f\,x)^2\,(2-5\,\text{Log}[e+f\,x])+(f\,g-e\,h)\,\left(3\,e\,h\,(-46+15\,\text{Log}[e+f\,x])+2\,f\,g\,(-31+15\,\text{Log}[e+f\,x])\right)+h\,(e+f\,x)\,\left(f\,g\,(16-15\,\text{Log}[e+f\,x])+6\,e\,h\,(-11+15\,\text{Log}[e+f\,x])\right)\right)\right)$$

$$\left(a+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)+$$

$$\sqrt{g+h\,x}\,\left(\frac{1}{5\,h}2\,g^2\left(a+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)^2+\right.$$

$$\frac{4}{5}\,g\,x\left(a+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)^2+$$

$$\frac{2}{5} h x^2 \left(a + b q \left(-p \,\text{Log}[e + f x] + \text{Log}\left[d (e + f x)^p\right]\right) + b \left(-q \left(-p \,\text{Log}[e + f x] + \text{Log}\left[d (e + f x)^p\right]\right) - \text{Log}\left[d (e + f x)^p\right] \left(q - \frac{q \left(-p \,\text{Log}[e + f x] + \text{Log}\left[d (e + f x)^p\right]\right)}{\text{Log}\left[d (e + f x)^p\right]}\right) + \text{Log}\left[c\, e^{q \left(-p \,\text{Log}[e+f x] + \text{Log}\left[d (e+f x)^p\right]\right)} \left(d (e + f x)^p\right)^{q - \frac{q \left(-p \,\text{Log}[e+f x] + \text{Log}\left[d (e+f x)^p\right]\right)}{\text{Log}\left[d (e+f x)^p\right]}}\right]\right)\right)^2$$

Problem 490: Result unnecessarily involves higher level functions.

$$\int \sqrt{g + h x} \left(a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^2 dx$$

Optimal (type 4, 547 leaves, 22 steps):

$$\frac{64 b^2 (f g - e h) p^2 q^2 \sqrt{g + h x}}{9 f h} + \frac{16 b^2 p^2 q^2 (g + h x)^{3/2}}{27 h} - \frac{64 b^2 (f g - e h)^{3/2} p^2 q^2 \,\text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]}{9 f^{3/2} h} - \frac{8 b^2 (f g - e h)^{3/2} p^2 q^2 \,\text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]^2}{3 f^{3/2} h} - \frac{8 b (f g - e h) p q \sqrt{g + h x} \left(a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)}{3 f h} - \frac{8 b p q (g + h x)^{3/2} \left(a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)}{9 h} + \frac{8 b (f g - e h)^{3/2} p q \,\text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \left(a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)}{3 f^{3/2} h} + \frac{2 (g + h x)^{3/2} \left(a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^2}{3 h} + \frac{16 b^2 (f g - e h)^{3/2} p^2 q^2 \,\text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \text{Log}\left[\frac{2}{1 - \frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{3 f^{3/2} h} + \frac{8 b^2 (f g - e h)^{3/2} p^2 q^2 \,\text{PolyLog}\left[2, 1 - \frac{2}{1 - \frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{3 f^{3/2} h}$$

Result (type 5, 365 leaves):

$$\frac{1}{9h}2\left(\frac{1}{f\sqrt{\frac{f(g+hx)}{fg-eh}}}\right.$$

$$3b^2p^2q^2\sqrt{g+hx}\left(3h(e+fx)\,\text{HypergeometricPFQ}\left[\left\{-\frac{1}{2},1,1,1\right\},\{2,2,2\},\frac{h(e+fx)}{-fg+eh}\right]+\text{Log}[e+fx]\left(-3h(e+fx)\,\text{HypergeometricPFQ}\left[\right.\right.\right.$$

$$\left.\left.\left.\left\{-\frac{1}{2},1,1\right\},\{2,2\},\frac{h(e+fx)}{-fg+eh}\right]+\left(eh+fhx\sqrt{\frac{f(g+hx)}{fg-eh}}+fg\left(-1+\sqrt{\frac{f(g+hx)}{fg-eh}}\right)\right)\text{Log}[e+fx]\right)\right)-$$

$$\frac{1}{f^{3/2}}2bpq\left(6(fg-eh)^{3/2}\text{ArcTanh}\left[\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{fg-eh}}\right]+\sqrt{f}\sqrt{g+hx}\left(6eh-2f(4g+hx)+3f(g+hx)\text{Log}[e+fx]\right)\right)$$

$$\left.(-a+bpq\,\text{Log}[e+fx]-b\,\text{Log}[c(d(e+fx)^p)^q])+3(g+hx)^{3/2}\left(a-bpq\,\text{Log}[e+fx]+b\,\text{Log}[c(d(e+fx)^p)^q]\right)^2\right)$$

Problem 491: Result unnecessarily involves higher level functions.

$$\int\frac{\left(a+b\,\text{Log}\left[c\left(d(e+fx)^p\right)^q\right]\right)^2}{\sqrt{g+hx}}\,dx$$

Optimal (type 4, 447 leaves, 16 steps) :

$$\frac{16 b^2 p^2 q^2 \sqrt{g+h x}}{h}-\frac{16 b^2 \sqrt{f g-e h}\, p^2 q^2 \operatorname{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]}{\sqrt{f}\, h}-$$

$$\frac{8 b^2 \sqrt{f g-e h}\, p^2 q^2 \operatorname{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]^2}{\sqrt{f}\, h}-\frac{8 b p q \sqrt{g+h x}\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)}{h}+$$

$$\frac{8 b \sqrt{f g-e h}\, p q \operatorname{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)}{\sqrt{f}\, h}+\frac{2 \sqrt{g+h x}\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^2}{h}+$$

$$\frac{16 b^2 \sqrt{f g-e h}\, p^2 q^2 \operatorname{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \operatorname{Log}\left[\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{\sqrt{f}\, h}+\frac{8 b^2 \sqrt{f g-e h}\, p^2 q^2 \operatorname{PolyLog}\left[2, 1-\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{\sqrt{f}\, h}$$

Result (type 5, 646 leaves):

$$\frac{1}{f h \sqrt{g+h x}} 2 \left(a^2 f g-4 a b f g p q+a^2 f h x-4 a b f h p q x+4 a b \sqrt{f} \sqrt{f g-e h}\, p q \sqrt{g+h x} \operatorname{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]+\right.$$

$$b^2 h p^2 q^2 (e+f x) \sqrt{\frac{f (g+h x)}{f g-e h}} \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{2}, 1, 1, 1\right\}, \{2, 2, 2\}, \frac{h (e+f x)}{-f g+e h}\right]+4 b^2 f g p^2 q^2 \operatorname{Log}[e+f x]+$$

$$4 b^2 f h p^2 q^2 x \operatorname{Log}[e+f x]-4 b^2 \sqrt{f} \sqrt{f g-e h}\, p^2 q^2 \sqrt{g+h x} \operatorname{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \operatorname{Log}[e+f x]-$$

$$b^2 h p^2 q^2 (e+f x) \sqrt{\frac{f (g+h x)}{f g-e h}} \operatorname{HypergeometricPFQ}\left[\left\{\frac{1}{2}, 1, 1\right\}, \{2, 2\}, \frac{h (e+f x)}{-f g+e h}\right] \operatorname{Log}[e+f x]-$$

$$b^2 f g p^2 q^2 \sqrt{\frac{f (g+h x)}{f g-e h}} \operatorname{Log}[e+f x]^2+b^2 e h p^2 q^2 \sqrt{\frac{f (g+h x)}{f g-e h}} \operatorname{Log}[e+f x]^2+2 a b f g \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]-$$

$$4 b^2 f g p q \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]+2 a b f h x \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]-4 b^2 f h p q x \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]+$$

$$\left.4 b^2 \sqrt{f} \sqrt{f g-e h}\, p q \sqrt{g+h x} \operatorname{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]+b^2 f g \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2+b^2 f h x \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2\right)$$

Problem 492: Result unnecessarily involves higher level functions.

$$\int \frac{\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^2}{(g+h x)^{3/2}} \, dx$$

Optimal (type 4, 330 leaves, 11 steps):

$$\frac{8 b^2 \sqrt{f}\, p^2 q^2 \operatorname{ArcTanh}\left[\frac{\sqrt{f}\, \sqrt{g+h x}}{\sqrt{f g-e h}}\right]^2}{h \sqrt{f g-e h}}-\frac{8 b \sqrt{f}\, p q \operatorname{ArcTanh}\left[\frac{\sqrt{f}\, \sqrt{g+h x}}{\sqrt{f g-e h}}\right]\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)}{h \sqrt{f g-e h}}-$$
$$\frac{2\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^2}{h \sqrt{g+h x}}-\frac{16 b^2 \sqrt{f}\, p^2 q^2 \operatorname{ArcTanh}\left[\frac{\sqrt{f}\, \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \operatorname{Log}\left[\frac{2}{1-\frac{\sqrt{f}\, \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{h \sqrt{f g-e h}}-\frac{8 b^2 \sqrt{f}\, p^2 q^2 \operatorname{PolyLog}\left[2, 1-\frac{2}{1-\frac{\sqrt{f}\, \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{h \sqrt{f g-e h}}$$

Result (type 5, 356 leaves):

$$\frac{1}{h} 2 \left(\frac{1}{\sqrt{f g-e h}\,(g+h x)} 2 b p q \left(2 \sqrt{f}\,(g+h x) \operatorname{ArcTanh}\left[\frac{\sqrt{f}\, \sqrt{g+h x}}{\sqrt{f g-e h}}\right]+\sqrt{f g-e h}\, \sqrt{g+h x}\, \operatorname{Log}[e+f x]\right)\right.$$
$$\left(-a+b p q \operatorname{Log}[e+f x]-b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)-\frac{\left(a-b p q \operatorname{Log}[e+f x]+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^2}{\sqrt{g+h x}}+$$
$$\frac{1}{(f g-e h) \sqrt{g+h x}} b^2 p^2 q^2 \left(h(e+f x) \sqrt{\frac{f(g+h x)}{f g-e h}}\, \operatorname{HypergeometricPFQ}\left[\left\{1,1,1,\frac{3}{2}\right\},\{2,2,2\}, \frac{h(e+f x)}{-f g+e h}\right]+\right.$$
$$\left.\left.(f g-e h) \operatorname{Log}[e+f x]\left(\left(-1+\sqrt{\frac{f(g+h x)}{f g-e h}}\right) \operatorname{Log}[e+f x]-4 \sqrt{\frac{f(g+h x)}{f g-e h}}\, \operatorname{Log}\left[\frac{1}{2}\left(1+\sqrt{\frac{f(g+h x)}{f g-e h}}\right)\right]\right)\right)\right)$$

Problem 493: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^2}{(g+h x)^{5/2}} \, dx$$

Optimal (type 4, 449 leaves, 15 steps):

$$\frac{16 b^2 f^{3/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h x}}{\sqrt{f g-e h}}\right]}{3 h\,(f g-e h)^{3/2}}+\frac{8 b^2 f^{3/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h x}}{\sqrt{f g-e h}}\right]^2}{3 h\,(f g-e h)^{3/2}}+\frac{8 b f p q\left(a+b \text{Log}\left[c\left(d\,(e+f x)^p\right)^q\right]\right)}{3 h\,(f g-e h)\,\sqrt{g+h x}}-$$

$$\frac{8 b f^{3/2} p q \text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h x}}{\sqrt{f g-e h}}\right]\left(a+b \text{Log}\left[c\left(d\,(e+f x)^p\right)^q\right]\right)}{3 h\,(f g-e h)^{3/2}}-\frac{2\left(a+b \text{Log}\left[c\left(d\,(e+f x)^p\right)^q\right]\right)^2}{3 h\,(g+h x)^{3/2}}-$$

$$\frac{16 b^2 f^{3/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{g+h x}}{\sqrt{f g-e h}}\right] \text{Log}\left[\frac{2}{1-\frac{\sqrt{f}\,\sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{3 h\,(f g-e h)^{3/2}}-\frac{8 b^2 f^{3/2} p^2 q^2 \text{PolyLog}\left[2,\,1-\frac{2}{1-\frac{\sqrt{f}\,\sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{3 h\,(f g-e h)^{3/2}}$$

Result (type 5, 1311 leaves):

$$\frac{4 a b f^{3/2} p q\left(-\frac{2 \text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{\frac{f g-e h+h (e+f x)}{f}}}{\sqrt{f g-e h}}\right]}{(f g-e h)^{3/2}}+\frac{\sqrt{f}\,\sqrt{\frac{f g-e h+h (e+f x)}{f}}\,\left(2 h\,(e+f x)-f g\,(-2+\text{Log}[e+f x])+e h\,(-2+\text{Log}[e+f x])\right)}{(f g-e h)\,(f g+f h x)^2}\right)}{3 h}+\frac{1}{3 h}$$

$$4 b^2 f^{3/2} p q^2\left(-\frac{2 \text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{\frac{f g-e h+h (e+f x)}{f}}}{\sqrt{f g-e h}}\right]}{(f g-e h)^{3/2}}+\frac{\sqrt{f}\,\sqrt{\frac{f g-e h+h (e+f x)}{f}}\,\left(2 h\,(e+f x)-f g\,(-2+\text{Log}[e+f x])+e h\,(-2+\text{Log}[e+f x])\right)}{(f g-e h)\,(f g+f h x)^2}\right)$$

$$\left(-p \text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)+\frac{1}{3 h}$$

$$4 b^2 f^{3/2} p q\left(-\frac{2 \text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{\frac{f g-e h+h (e+f x)}{f}}}{\sqrt{f g-e h}}\right]}{(f g-e h)^{3/2}}+\frac{\sqrt{f}\,\sqrt{\frac{f g-e h+h (e+f x)}{f}}\,\left(2 h\,(e+f x)-f g\,(-2+\text{Log}[e+f x])+e h\,(-2+\text{Log}[e+f x])\right)}{(f g-e h)\,(f g+f h x)^2}\right)$$

$$\left(-q\left(-p \text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)-\text{Log}\left[d\,(e+f x)^p\right]\left(q-\frac{q\left(-p \text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}\right)+\right.$$

$$\left.\text{Log}\left[c\, e^{q\left(-p \text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}\left(d\,(e+f x)^p\right)^{q-\frac{q\left(-p \text{Log}[e+f x]+\text{Log}\left[d\,(e+f x)^p\right]\right)}{\text{Log}\left[d\,(e+f x)^p\right]}}\right]\right)-$$

$$\frac{1}{3\,h\,(g+h\,x)^{3/2}}2\left(a+b\,q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])+b\left(-q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])-\text{Log}[d\,(e+f\,x)^p]\left(q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}\right)+\text{Log}\left[c\,e^{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}\,(d\,(e+f\,x)^p)^{q-\frac{q\,(-p\,\text{Log}[e+f\,x]+\text{Log}[d\,(e+f\,x)^p])}{\text{Log}[d\,(e+f\,x)^p]}}\right]\right)\right)^2+$$

$$\frac{1}{3\,h\,(f\,g-e\,h)^2\,(f\,g+f\,h\,x)\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}}2\,b^2\,f\,p^2\,q^2\left(3\,h\,(e+f\,x)\,(f\,g+f\,h\,x)\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\right.$$

$$\text{HypergeometricPFQ}\left[\left\{1,1,1,\frac{5}{2}\right\},\{2,2,2\},\frac{h\,(e+f\,x)}{-f\,g+e\,h}\right]+(f\,g-e\,h)\,\text{Log}[e+f\,x]$$

$$\left(4\,f\,g-4\,e\,h+4\,h\,(e+f\,x)-4\,f\,g\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}+4\,e\,h\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}-4\,h\,(e+f\,x)\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}-\right.$$

$$f\,g\,\text{Log}[e+f\,x]+e\,h\,\text{Log}[e+f\,x]+f\,g\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\,\text{Log}[e+f\,x]-e\,h\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\,\text{Log}[e+f\,x]+$$

$$\left.\left.h\,(e+f\,x)\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}}\,\text{Log}[e+f\,x]-4\,(f\,g-e\,h)\left(\frac{f\,g-e\,h+h\,(e+f\,x)}{f\,g-e\,h}\right)^{3/2}\text{Log}\left[\frac{1}{2}\left(1+\sqrt{1+\frac{h\,(e+f\,x)}{f\,g-e\,h}}\right)\right]\right)\right)$$

Problem 494: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{(a+b\,\text{Log}[c\,(d\,(e+f\,x)^p)^q])^2}{(g+h\,x)^{7/2}}\,dx$$

Optimal (type 4, 537 leaves, 20 steps):

$$-\frac{16 b^2 f^2 p^2 q^2}{15 h (f g-e h)^2 \sqrt{g+h x}}+\frac{64 b^2 f^{5/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]}{15 h (f g-e h)^{5/2}}+\frac{8 b^2 f^{5/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]^2}{5 h (f g-e h)^{5/2}}+\frac{8 b f p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{15 h (f g-e h) (g+h x)^{3/2}}+$$

$$\frac{8 b f^2 p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{5 h (f g-e h)^2 \sqrt{g+h x}}-\frac{8 b f^{5/2} p q \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{5 h (f g-e h)^{5/2}}-$$

$$\frac{2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{5 h (g+h x)^{5/2}}-\frac{16 b^2 f^{5/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \text{Log}\left[\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{5 h (f g-e h)^{5/2}}-\frac{8 b^2 f^{5/2} p^2 q^2 \text{PolyLog}\left[2, 1-\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{5 h (f g-e h)^{5/2}}$$

Result (type 5, 1349 leaves):

$$\frac{1}{5 h (f g-e h)^3 (f g+f h x)^2 \sqrt{\frac{f g-e h+h (e+f x)}{f}}}$$

$$\left(2 b^2 f^2 p^2 q^2 \left(5 h (e+f x) (f g+f h x)^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{HypergeometricPFQ}\left[\left\{1,1,1,\frac{7}{2}\right\},\{2,2,2\},\frac{h (e+f x)}{-f g+e h}\right]-\right.\right.$$

$$5 h (e+f x) (f g+f h x)^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{HypergeometricPFQ}\left[\left\{1,1,\frac{7}{2}\right\},\{2,2\},\frac{h (e+f x)}{-f g+e h}\right] \text{Log}[e+f x]+$$

$$(f g-e h) \left(f^2 g^2 \left(-1+\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right)-2 f g h \left(-(e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}+e \left(-1+\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right)\right)+\right.$$

$$\left.\left.h^2 \left(-2 e (e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}+(e+f x)^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}+e^2 \left(-1+\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right)\right)\right) \text{Log}[e+f x]^2\right)+\frac{1}{15 h}$$

$$4 a b f^{5/2} p q \left(-\frac{6 \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{\frac{f g-e h+h (e+f x)}{f}}}{\sqrt{f g-e h}}\right]}{(f g-e h)^{5/2}}+\frac{\sqrt{f} \sqrt{\frac{f g-e h+h (e+f x)}{f}} \left(2 (f g-e h) (f g+f h x)+6 (f g+f h x)^2-3 (f g-e h)^2 \text{Log}[e+f x]\right)}{(f g-e h)^2 (f g+f h x)^3}\right)+$$

$$\frac{1}{15\,h}4\,b^2\,f^{5/2}\,p\,q^2\left(-\frac{6\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}}{\sqrt{f\,g-e\,h}}\right]}{(f\,g-e\,h)^{5/2}}+\frac{\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}\,\left(2\,(f\,g-e\,h)\,(f\,g+f\,h\,x)+6\,(f\,g+f\,h\,x)^2-3\,(f\,g-e\,h)^2\,\text{Log}[e+f\,x]\right)}{(f\,g-e\,h)^2\,(f\,g+f\,h\,x)^3}\right)$$

$$\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+\frac{1}{15\,h}$$

$$4\,b^2\,f^{5/2}\,p\,q\left(-\frac{6\,\text{ArcTanh}\left[\frac{\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}}{\sqrt{f\,g-e\,h}}\right]}{(f\,g-e\,h)^{5/2}}+\frac{\sqrt{f}\,\sqrt{\frac{f\,g-e\,h+h\,(e+f\,x)}{f}}\,\left(2\,(f\,g-e\,h)\,(f\,g+f\,h\,x)+6\,(f\,g+f\,h\,x)^2-3\,(f\,g-e\,h)^2\,\text{Log}[e+f\,x]\right)}{(f\,g-e\,h)^2\,(f\,g+f\,h\,x)^3}\right)$$

$$\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\right.$$

$$\left.\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)-$$

$$\frac{1}{5\,h\,(g+h\,x)^{5/2}}2\left(a+b\,q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)+b\left(-q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)-\right.\right.$$

$$\left.\left.\text{Log}\left[d\,(e+f\,x)^p\right]\left(q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}\right)+\text{Log}\left[c\,e^{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}\,\left(d\,(e+f\,x)^p\right)^{q-\frac{q\,\left(-p\,\text{Log}[e+f\,x]+\text{Log}\left[d\,(e+f\,x)^p\right]\right)}{\text{Log}\left[d\,(e+f\,x)^p\right]}}\right]\right)\right)^2$$

Problem 495: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,\left(d\,(e+f\,x)^p\right)^q\right]\right)^2}{(g+h\,x)^{9/2}}\,dx$$

Optimal (type 4, 625 leaves, 26 steps):

$$-\frac{16 b^2 f^2 p^2 q^2}{105 h (f g-e h)^2 (g+h x)^{3/2}}-\frac{128 b^2 f^3 p^2 q^2}{105 h (f g-e h)^3 \sqrt{g+h x}}+\frac{368 b^2 f^{7/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]}{105 h (f g-e h)^{7/2}}+$$

$$\frac{8 b^2 f^{7/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right]^2}{7 h (f g-e h)^{7/2}}+\frac{8 b f p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{35 h (f g-e h) (g+h x)^{5/2}}+\frac{8 b f^2 p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{21 h (f g-e h)^2 (g+h x)^{3/2}}+$$

$$\frac{8 b f^3 p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{7 h (f g-e h)^3 \sqrt{g+h x}}-\frac{8 b f^{7/2} p q \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)}{7 h (f g-e h)^{7/2}}-$$

$$\frac{2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{7 h (g+h x)^{7/2}}-\frac{16 b^2 f^{7/2} p^2 q^2 \text{ArcTanh}\left[\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}\right] \text{Log}\left[\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{7 h (f g-e h)^{7/2}}-\frac{8 b^2 f^{7/2} p^2 q^2 \text{PolyLog}\left[2,1-\frac{2}{1-\frac{\sqrt{f} \sqrt{g+h x}}{\sqrt{f g-e h}}}\right]}{7 h (f g-e h)^{7/2}}$$

Result (type 5, 1582 leaves) :

$$\frac{1}{7 h (f g-e h)^4 (f g+f h x)^3 \sqrt{\frac{f g-e h+h (e+f x)}{f}}}$$

$$\left(2 b^2 f^3 p^2 q^2 \left(7 h (e+f x) (f g+f h x)^3 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{HypergeometricPFQ}\left[\left\{1,1,1,\frac{9}{2}\right\},\{2,2,2\},\frac{h (e+f x)}{-f g+e h}\right]-\right.\right.$$

$$7 h (e+f x) (f g+f h x)^3 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}} \text{HypergeometricPFQ}\left[\left\{1,1,\frac{9}{2}\right\},\{2,2\},\frac{h (e+f x)}{-f g+e h}\right] \text{Log}[e+f x]+$$

$$(f g-e h) \left(f^3 g^3 \left(-1+\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right)-3 f^2 g^2 h \left(-(e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}+e \left(-1+\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right)\right)+\right.$$

$$3 f g h^2 \left(-2 e (e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}+(e+f x)^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}+e^2 \left(-1+\sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}\right)\right)+$$

$$h^3 \left(3 e^2 (e+f x) \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}-3 e (e+f x)^2 \sqrt{\frac{f g-e h+h (e+f x)}{f g-e h}}+\right.$$

$$(e+fx)^3\sqrt{\frac{fg-eh+h(e+fx)}{fg-eh}}-e^3\left(-1+\sqrt{\frac{fg-eh+h(e+fx)}{fg-eh}}\right)\Bigg)\Bigg)\,\text{Log}[e+fx]^2\Bigg)+$$

$$\frac{1}{105\,h}4\,a\,b\,f^{7/2}\,p\,q\left(-\frac{30\,\text{ArcTanh}\left[\frac{\sqrt{f}\sqrt{\frac{fg-eh+h(e+fx)}{f}}}{\sqrt{fg-eh}}\right]}{(fg-eh)^{7/2}}+\frac{1}{(fg-eh)^3\,(fg+fhx)^4}\sqrt{f}\sqrt{\frac{fg-eh+h(e+fx)}{f}}\right.$$

$$\left.\left(6\,(fg-eh)^2\,(fg+fhx)+10\,(fg-eh)\,(fg+fhx)^2+30\,(fg+fhx)^3-15\,(fg-eh)^3\,\text{Log}[e+fx]\right)\right)+$$

$$\frac{1}{105\,h}4\,b^2\,f^{7/2}\,p\,q^2\left(-\frac{30\,\text{ArcTanh}\left[\frac{\sqrt{f}\sqrt{\frac{fg-eh+h(e+fx)}{f}}}{\sqrt{fg-eh}}\right]}{(fg-eh)^{7/2}}+\frac{1}{(fg-eh)^3\,(fg+fhx)^4}\right.$$

$$\left.\sqrt{f}\sqrt{\frac{fg-eh+h(e+fx)}{f}}\left(6\,(fg-eh)^2\,(fg+fhx)+10\,(fg-eh)\,(fg+fhx)^2+30\,(fg+fhx)^3-15\,(fg-eh)^3\,\text{Log}[e+fx]\right)\right)$$

$$\left(-p\,\text{Log}[e+fx]+\text{Log}\left[d\,(e+fx)^p\right]\right)+\frac{1}{105\,h}4\,b^2\,f^{7/2}\,p\,q\left(-\frac{30\,\text{ArcTanh}\left[\frac{\sqrt{f}\sqrt{\frac{fg-eh+h(e+fx)}{f}}}{\sqrt{fg-eh}}\right]}{(fg-eh)^{7/2}}+\frac{1}{(fg-eh)^3\,(fg+fhx)^4}\right.$$

$$\sqrt{f}\sqrt{\frac{f g-e h+h (e+f x)}{f}}\left(6 (f g-e h)^2 (f g+f h x)+10 (f g-e h) (f g+f h x)^2+30 (f g+f h x)^3-15 (f g-e h)^3 \text{Log}[e+f x]\right)\Bigg)$$

$$\left(-q \left(-p \text{Log}[e+f x]+\text{Log}\left[d (e+f x)^p\right]\right)-\text{Log}\left[d (e+f x)^p\right] \left(q-\frac{q \left(-p \text{Log}[e+f x]+\text{Log}\left[d (e+f x)^p\right]\right)}{\text{Log}\left[d (e+f x)^p\right]}\right)+\right.$$
$$\left.\text{Log}\left[c\, e^{q \left(-p \text{Log}[e+f x]+\text{Log}\left[d (e+f x)^p\right]\right)} \left(d (e+f x)^p\right)^{q-\frac{q \left(-p \text{Log}[e+f x]+\text{Log}\left[d (e+f x)^p\right]\right)}{\text{Log}\left[d (e+f x)^p\right]}}\right]\right)-$$

$$\frac{1}{7 h (g+h x)^{7/2}} 2 \Bigg(a+b q \left(-p \text{Log}[e+f x]+\text{Log}\left[d (e+f x)^p\right]\right)+b \Bigg(-q \left(-p \text{Log}[e+f x]+\text{Log}\left[d (e+f x)^p\right]\right)-$$
$$\text{Log}\left[d (e+f x)^p\right] \left(q-\frac{q \left(-p \text{Log}[e+f x]+\text{Log}\left[d (e+f x)^p\right]\right)}{\text{Log}\left[d (e+f x)^p\right]}\right)+\text{Log}\left[c\, e^{q \left(-p \text{Log}[e+f x]+\text{Log}\left[d (e+f x)^p\right]\right)} \left(d (e+f x)^p\right)^{q-\frac{q \left(-p \text{Log}[e+f x]+\text{Log}\left[d (e+f x)^p\right]\right)}{\text{Log}\left[d (e+f x)^p\right]}}\right]\Bigg)\Bigg)^2$$

Problem 518: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{g+h x^2} \, dx$$

Optimal (type 4, 249 leaves, 9 steps):

$$\frac{\left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \text{Log}\left[\frac{f \left(\sqrt{-g}-\sqrt{h} x\right)}{f \sqrt{-g}+e \sqrt{h}}\right]}{2 \sqrt{-g} \sqrt{h}}-$$
$$\frac{\left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \text{Log}\left[\frac{f \left(\sqrt{-g}+\sqrt{h} x\right)}{f \sqrt{-g}-e \sqrt{h}}\right]}{2 \sqrt{-g} \sqrt{h}}-\frac{b p q \text{PolyLog}\left[2,-\frac{\sqrt{h} (e+f x)}{f \sqrt{-g}-e \sqrt{h}}\right]}{2 \sqrt{-g} \sqrt{h}}+\frac{b p q \text{PolyLog}\left[2,\frac{\sqrt{h} (e+f x)}{f \sqrt{-g}+e \sqrt{h}}\right]}{2 \sqrt{-g} \sqrt{h}}$$

Result (type 4, 261 leaves):

$$\frac{1}{2\sqrt{g}\sqrt{h}}\left(2\,a\,\text{ArcTan}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]-2\,b\,p\,q\,\text{ArcTan}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]\text{Log}[e+f\,x]+2\,b\,\text{ArcTan}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]\text{Log}\left[c\left(d\,(e+f\,x)^p\right)^q\right]+i\,b\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[1-\frac{\sqrt{h}\,(e+f\,x)}{-i\,f\sqrt{g}+e\sqrt{h}}\right]-\right.$$
$$\left.i\,b\,p\,q\,\text{Log}[e+f\,x]\,\text{Log}\left[1-\frac{\sqrt{h}\,(e+f\,x)}{i\,f\sqrt{g}+e\sqrt{h}}\right]+i\,b\,p\,q\,\text{PolyLog}\left[2,\frac{\sqrt{h}\,(e+f\,x)}{-i\,f\sqrt{g}+e\sqrt{h}}\right]-i\,b\,p\,q\,\text{PolyLog}\left[2,\frac{\sqrt{h}\,(e+f\,x)}{i\,f\sqrt{g}+e\sqrt{h}}\right]\right)$$

Problem 519: Attempted integration timed out after 120 seconds.

$$\int\frac{a+b\,\text{Log}\left[c\left(d\,(e+f\,x)^p\right)^q\right]}{\sqrt{2+h\,x^2}}\,dx$$

Optimal (type 4, 335 leaves, 11 steps):

$$\frac{b\,p\,q\,\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{2}}\right]^2}{2\sqrt{h}}-\frac{b\,p\,q\,\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{2}}\right]\text{Log}\left[1+\frac{\sqrt{2}\,e^{\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{2}}\right]}f}{e\sqrt{h}-\sqrt{2\,f^2+e^2\,h}}\right]}{\sqrt{h}}-\frac{b\,p\,q\,\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{2}}\right]\text{Log}\left[1+\frac{\sqrt{2}\,e^{\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{2}}\right]}f}{e\sqrt{h}+\sqrt{2\,f^2+e^2\,h}}\right]}{\sqrt{h}}+$$
$$\frac{\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{2}}\right]\left(a+b\,\text{Log}\left[c\left(d\,(e+f\,x)^p\right)^q\right]\right)}{\sqrt{h}}-\frac{b\,p\,q\,\text{PolyLog}\left[2,-\frac{\sqrt{2}\,e^{\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{2}}\right]}f}{e\sqrt{h}-\sqrt{2\,f^2+e^2\,h}}\right]}{\sqrt{h}}-\frac{b\,p\,q\,\text{PolyLog}\left[2,-\frac{\sqrt{2}\,e^{\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{2}}\right]}f}{e\sqrt{h}+\sqrt{2\,f^2+e^2\,h}}\right]}{\sqrt{h}}$$

Result (type 1, 1 leaves):

???

Problem 520: Attempted integration timed out after 120 seconds.

$$\int\frac{a+b\,\text{Log}\left[c\left(d\,(e+f\,x)^p\right)^q\right]}{\sqrt{g+h\,x^2}}\,dx$$

Optimal (type 4, 515 leaves, 12 steps):

$$\frac{b\sqrt{g}\,p\,q\,\sqrt{1+\frac{h x^2}{g}}\,\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]^2}{2\sqrt{h}\,\sqrt{g+h x^2}}-\frac{b\sqrt{g}\,p\,q\,\sqrt{1+\frac{h x^2}{g}}\,\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]\text{Log}\left[1+\frac{e^{\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]}f\sqrt{g}}{e\sqrt{h}-\sqrt{f^2 g+e^2 h}}\right]}{\sqrt{h}\,\sqrt{g+h x^2}}-$$

$$\frac{b\sqrt{g}\,p\,q\,\sqrt{1+\frac{h x^2}{g}}\,\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]\text{Log}\left[1+\frac{e^{\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]}f\sqrt{g}}{e\sqrt{h}+\sqrt{f^2 g+e^2 h}}\right]}{\sqrt{h}\,\sqrt{g+h x^2}}+\frac{\sqrt{g}\,\sqrt{1+\frac{h x^2}{g}}\,\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]\left(a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right)}{\sqrt{h}\,\sqrt{g+h x^2}}-$$

$$\frac{b\sqrt{g}\,p\,q\,\sqrt{1+\frac{h x^2}{g}}\,\text{PolyLog}\left[2,-\frac{e^{\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]}f\sqrt{g}}{e\sqrt{h}-\sqrt{f^2 g+e^2 h}}\right]}{\sqrt{h}\,\sqrt{g+h x^2}}-\frac{b\sqrt{g}\,p\,q\,\sqrt{1+\frac{h x^2}{g}}\,\text{PolyLog}\left[2,-\frac{e^{\text{ArcSinh}\left[\frac{\sqrt{h}\,x}{\sqrt{g}}\right]}f\sqrt{g}}{e\sqrt{h}+\sqrt{f^2 g+e^2 h}}\right]}{\sqrt{h}\,\sqrt{g+h x^2}}$$

Result (type 1, 1 leaves):

???

Problem 521: Attempted integration timed out after 120 seconds.

$$\int\frac{a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]}{\sqrt{2-h x}\,\sqrt{2+h x}}\,dx$$

Optimal (type 4, 287 leaves, 10 steps):

$$\frac{i\,b\,p\,q\,\text{ArcSin}\left[\frac{h x}{2}\right]^2}{2h}-\frac{b\,p\,q\,\text{ArcSin}\left[\frac{h x}{2}\right]\text{Log}\left[1+\frac{2e^{i\,\text{ArcSin}\left[\frac{h x}{2}\right]}f}{i\,e\,h-\sqrt{4 f^2-e^2 h^2}}\right]}{h}-\frac{b\,p\,q\,\text{ArcSin}\left[\frac{h x}{2}\right]\text{Log}\left[1+\frac{2e^{i\,\text{ArcSin}\left[\frac{h x}{2}\right]}f}{i\,e\,h+\sqrt{4 f^2-e^2 h^2}}\right]}{h}+$$

$$\frac{\text{ArcSin}\left[\frac{h x}{2}\right]\left(a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right)}{h}+\frac{i\,b\,p\,q\,\text{PolyLog}\left[2,-\frac{2e^{i\,\text{ArcSin}\left[\frac{h x}{2}\right]}f}{i\,e\,h-\sqrt{4 f^2-e^2 h^2}}\right]}{h}+\frac{i\,b\,p\,q\,\text{PolyLog}\left[2,-\frac{2e^{i\,\text{ArcSin}\left[\frac{h x}{2}\right]}f}{i\,e\,h+\sqrt{4 f^2-e^2 h^2}}\right]}{h}$$

Result (type 1, 1 leaves):

???

Problem 522: Attempted integration timed out after 120 seconds.

$$\int\frac{a+b\,\text{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]}{\sqrt{g-h x}\,\sqrt{g+h x}}\,dx$$

Optimal (type 4, 519 leaves, 12 steps):

$$\frac{i\, b\, g\, p\, q\, \sqrt{1-\frac{h^2 x^2}{g^2}}\, \text{ArcSin}\left[\frac{h x}{g}\right]^2}{2 h \sqrt{g-h x}\, \sqrt{g+h x}} - \frac{b\, g\, p\, q\, \sqrt{1-\frac{h^2 x^2}{g^2}}\, \text{ArcSin}\left[\frac{h x}{g}\right] \text{Log}\left[1+\frac{e^{i\, \text{ArcSin}\left[\frac{h x}{g}\right]} f g}{i\, e\, h-\sqrt{f^2 g^2-e^2 h^2}}\right]}{h \sqrt{g-h x}\, \sqrt{g+h x}} -$$

$$\frac{b\, g\, p\, q\, \sqrt{1-\frac{h^2 x^2}{g^2}}\, \text{ArcSin}\left[\frac{h x}{g}\right] \text{Log}\left[1+\frac{e^{i\, \text{ArcSin}\left[\frac{h x}{g}\right]} f g}{i\, e\, h+\sqrt{f^2 g^2-e^2 h^2}}\right]}{h \sqrt{g-h x}\, \sqrt{g+h x}} + \frac{g \sqrt{1-\frac{h^2 x^2}{g^2}}\, \text{ArcSin}\left[\frac{h x}{g}\right] \left(a+b\, \text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]\right)}{h \sqrt{g-h x}\, \sqrt{g+h x}} +$$

$$\frac{i\, b\, g\, p\, q\, \sqrt{1-\frac{h^2 x^2}{g^2}}\, \text{PolyLog}\left[2,-\frac{e^{i\, \text{ArcSin}\left[\frac{h x}{g}\right]} f g}{i\, e\, h-\sqrt{f^2 g^2-e^2 h^2}}\right]}{h \sqrt{g-h x}\, \sqrt{g+h x}} + \frac{i\, b\, g\, p\, q\, \sqrt{1-\frac{h^2 x^2}{g^2}}\, \text{PolyLog}\left[2,-\frac{e^{i\, \text{ArcSin}\left[\frac{h x}{g}\right]} f g}{i\, e\, h+\sqrt{f^2 g^2-e^2 h^2}}\right]}{h \sqrt{g-h x}\, \sqrt{g+h x}}$$

Result (type 1, 1 leaves):

???

Problem 531: Result more than twice size of optimal antiderivative.

$$\int \frac{(i+j x) \left(a+b\, \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{g+h x}\, dx$$

Optimal (type 4, 240 leaves, 11 steps):

$$-\frac{2 a b j p q x}{h} + \frac{2 b^2 j p^2 q^2 x}{h} - \frac{2 b^2 j p q (e+f x) \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]}{f h} +$$

$$\frac{j (e+f x) \left(a+b\, \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{f h} + \frac{(h i-g j) \left(a+b\, \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]}{h^2} +$$

$$\frac{2 b (h i-g j) p q \left(a+b\, \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \text{PolyLog}\left[2,-\frac{h (e+f x)}{f g-e h}\right]}{h^2} - \frac{2 b^2 (h i-g j) p^2 q^2\, \text{PolyLog}\left[3,-\frac{h (e+f x)}{f g-e h}\right]}{h^2}$$

Result (type 4, 866 leaves):

$$\frac{1}{f h^2}\Big(-2 a b e h j p q+2 b^2 e h j p^2 q^2+a^2 f h j x-2 a b f h j p q x+2 b^2 f h j p^2 q^2 x+2 a b e h j p q \text{Log}[e+f x]-b^2 e h j p^2 q^2 \text{Log}[e+f x]^2-$$
$$2 b^2 e h j p q \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]+2 a b f h j x \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]-2 b^2 f h j p q x \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]+$$
$$2 b^2 e h j p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]+b^2 f h j x \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2+a^2 f h i \text{Log}[g+h x]-a^2 f g j \text{Log}[g+h x]-$$
$$2 a b f h i p q \text{Log}[e+f x] \text{Log}[g+h x]+2 a b f g j p q \text{Log}[e+f x] \text{Log}[g+h x]+b^2 f h i p^2 q^2 \text{Log}[e+f x]^2 \text{Log}[g+h x]-$$
$$b^2 f g j p^2 q^2 \text{Log}[e+f x]^2 \text{Log}[g+h x]+2 a b f h i \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]-2 a b f g j \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]-$$
$$2 b^2 f h i p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]+2 b^2 f g j p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]+$$
$$b^2 f h i \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]-b^2 f g j \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]+2 a b f h i p q \text{Log}[e+f x] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$$
$$2 a b f g j p q \text{Log}[e+f x] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-b^2 f h i p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+b^2 f g j p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$$
$$2 b^2 f h i p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-2 b^2 f g j p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$$
$$2 b f (h i-g j) p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \text{PolyLog}\left[2,\frac{h (e+f x)}{-f g+e h}\right]+2 b^2 f (-h i+g j) p^2 q^2 \text{PolyLog}\left[3,\frac{h (e+f x)}{-f g+e h}\right]\Big)$$

Problem 532: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{g+h x} \, dx$$

Optimal (type 4, 123 leaves, 5 steps):

$$\frac{\left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]}{h}+\frac{2 b p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \text{PolyLog}\left[2,-\frac{h (e+f x)}{f g-e h}\right]}{h}-\frac{2 b^2 p^2 q^2 \text{PolyLog}\left[3,-\frac{h (e+f x)}{f g-e h}\right]}{h}$$

Result (type 4, 324 leaves):

$$\frac{1}{h}\Big(a^2 \text{Log}[g+h x]-2 a b p q \text{Log}[e+f x] \text{Log}[g+h x]+b^2 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}[g+h x]+2 a b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]-$$
$$2 b^2 p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]+b^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]+2 a b p q \text{Log}[e+f x] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$$
$$b^2 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+2 b^2 p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$$
$$2 b p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \text{PolyLog}\left[2,\frac{h (e+f x)}{-f g+e h}\right]-2 b^2 p^2 q^2 \text{PolyLog}\left[3,\frac{h (e+f x)}{-f g+e h}\right]\Big)$$

Problem 533: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2}{(g+h x) (i+j x)} \, dx$$

Optimal (type 4, 288 leaves, 11 steps):

$$\frac{\left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]}{h i-g j}-\frac{\left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 \operatorname{Log}\left[\frac{f (i+j x)}{f i-e j}\right]}{h i-g j}+\frac{2 b p q \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \operatorname{PolyLog}\left[2,-\frac{h (e+f x)}{f g-e h}\right]}{h i-g j}-\frac{2 b p q \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \operatorname{PolyLog}\left[2,-\frac{j (e+f x)}{f i-e j}\right]}{h i-g j}-\frac{2 b^2 p^2 q^2 \operatorname{PolyLog}\left[3,-\frac{h (e+f x)}{f g-e h}\right]}{h i-g j}+\frac{2 b^2 p^2 q^2 \operatorname{PolyLog}\left[3,-\frac{j (e+f x)}{f i-e j}\right]}{h i-g j}$$

Result (type 4, 652 leaves):

$$\frac{1}{h i-g j}\Big(a^2 \operatorname{Log}[g+h x]-2 a b p q \operatorname{Log}[e+f x] \operatorname{Log}[g+h x]+b^2 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}[g+h x]+2 a b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right] \operatorname{Log}[g+h x]-2 b^2 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right] \operatorname{Log}[g+h x]+b^2 \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \operatorname{Log}[g+h x]+2 a b p q \operatorname{Log}[e+f x] \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-b^2 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+2 b^2 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right] \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-a^2 \operatorname{Log}[i+j x]+2 a b p q \operatorname{Log}[e+f x] \operatorname{Log}[i+j x]-b^2 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}[i+j x]-2 a b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right] \operatorname{Log}[i+j x]+2 b^2 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right] \operatorname{Log}[i+j x]-b^2 \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \operatorname{Log}[i+j x]-2 a b p q \operatorname{Log}[e+f x] \operatorname{Log}\left[\frac{f (i+j x)}{f i-e j}\right]+b^2 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}\left[\frac{f (i+j x)}{f i-e j}\right]-2 b^2 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right] \operatorname{Log}\left[\frac{f (i+j x)}{f i-e j}\right]+2 b p q \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \operatorname{PolyLog}\left[2,\frac{h (e+f x)}{-f g+e h}\right]-2 b p q \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \operatorname{PolyLog}\left[2,\frac{j (e+f x)}{-f i+e j}\right]-2 b^2 p^2 q^2 \operatorname{PolyLog}\left[3,\frac{h (e+f x)}{-f g+e h}\right]+2 b^2 p^2 q^2 \operatorname{PolyLog}\left[3,\frac{j (e+f x)}{-f i+e j}\right]\Big)$$

Problem 535: Result more than twice size of optimal antiderivative.

$$\int \frac{(i+j x)^2 \left(a+b \operatorname{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3}{g+h x} \, dx$$

Optimal (type 4, 742 leaves, 24 steps):

$$\frac{6ab^2j(fi-ej)p^2q^2x}{fh}+\frac{6ab^2j(hi-gj)p^2q^2x}{h^2}-\frac{6b^3j(fi-ej)p^3q^3x}{fh}-$$
$$\frac{6b^3j(hi-gj)p^3q^3x}{h^2}-\frac{3b^3j^2p^3q^3(e+fx)^2}{8f^2h}+\frac{6b^3j(fi-ej)p^2q^2(e+fx)\,\text{Log}[c(d(e+fx)^p)^q]}{f^2h}+$$
$$\frac{6b^3j(hi-gj)p^2q^2(e+fx)\,\text{Log}[c(d(e+fx)^p)^q]}{fh^2}+\frac{3b^2j^2p^2q^2(e+fx)^2(a+b\,\text{Log}[c(d(e+fx)^p)^q])}{4f^2h}-$$
$$\frac{3bj(fi-ej)pq(e+fx)(a+b\,\text{Log}[c(d(e+fx)^p)^q])^2}{f^2h}-\frac{3bj(hi-gj)pq(e+fx)(a+b\,\text{Log}[c(d(e+fx)^p)^q])^2}{fh^2}-$$
$$\frac{3bj^2pq(e+fx)^2(a+b\,\text{Log}[c(d(e+fx)^p)^q])^2}{4f^2h}+\frac{j(fi-ej)(e+fx)(a+b\,\text{Log}[c(d(e+fx)^p)^q])^3}{f^2h}+$$
$$\frac{j(hi-gj)(e+fx)(a+b\,\text{Log}[c(d(e+fx)^p)^q])^3}{fh^2}+\frac{j^2(e+fx)^2(a+b\,\text{Log}[c(d(e+fx)^p)^q])^3}{2f^2h}+$$
$$\frac{(hi-gj)^2(a+b\,\text{Log}[c(d(e+fx)^p)^q])^3\,\text{Log}\left[\frac{f(g+hx)}{fg-eh}\right]}{h^3}+\frac{3b(hi-gj)^2pq(a+b\,\text{Log}[c(d(e+fx)^p)^q])^2\,\text{PolyLog}\left[2,-\frac{h(e+fx)}{fg-eh}\right]}{h^3}-$$
$$\frac{6b^2(hi-gj)^2p^2q^2(a+b\,\text{Log}[c(d(e+fx)^p)^q])\,\text{PolyLog}\left[3,-\frac{h(e+fx)}{fg-eh}\right]}{h^3}+\frac{6b^3(hi-gj)^2p^3q^3\,\text{PolyLog}\left[4,-\frac{h(e+fx)}{fg-eh}\right]}{h^3}$$

Result (type 4, 4146 leaves):

$$\frac{1}{8f^2h^3}\Big(-48a^2befh^2ijpq+24a^2befghj^2pq+96ab^2efh^2ijp^2q^2-48ab^2efghj^2p^2q^2-96b^3efh^2ijp^3q^3+48b^3efghj^2p^3q^3+$$
$$16a^3f^2h^2ijx-8a^3f^2ghj^2x-48a^2bf^2h^2ijpqx+24a^2bf^2ghj^2pqx+12a^2befh^2j^2pqx+96ab^2f^2h^2ijp^2q^2x-$$
$$48ab^2f^2ghj^2p^2q^2x-36ab^2efh^2j^2p^2q^2x-96b^3f^2h^2ijp^3q^3x+48b^3f^2ghj^2p^3q^3x+42b^3efh^2j^2p^3q^3x+4a^3f^2h^2j^2x^2-$$
$$6a^2bf^2h^2j^2pqx^2+6ab^2f^2h^2j^2p^2q^2x^2-3b^3f^2h^2j^2p^3q^3x^2+48a^2befh^2ijpq\,\text{Log}[e+fx]-24a^2befghj^2pq\,\text{Log}[e+fx]-$$
$$12a^2be^2h^2j^2pq\,\text{Log}[e+fx]+36ab^2e^2h^2j^2p^2q^2\,\text{Log}[e+fx]-42b^3e^2h^2j^2p^3q^3\,\text{Log}[e+fx]-48ab^2efh^2ijp^2q^2\,\text{Log}[e+fx]^2+$$
$$24ab^2efghj^2p^2q^2\,\text{Log}[e+fx]^2+12ab^2e^2h^2j^2p^2q^2\,\text{Log}[e+fx]^2-18b^3e^2h^2j^2p^3q^3\,\text{Log}[e+fx]^2+16b^3efh^2ijp^3q^3\,\text{Log}[e+fx]^3-$$
$$8b^3efghj^2p^3q^3\,\text{Log}[e+fx]^3-4b^3e^2h^2j^2p^3q^3\,\text{Log}[e+fx]^3-96ab^2efh^2ijpq\,\text{Log}[c(d(e+fx)^p)^q]+$$
$$48ab^2efghj^2pq\,\text{Log}[c(d(e+fx)^p)^q]+96b^3efh^2ijp^2q^2\,\text{Log}[c(d(e+fx)^p)^q]-48b^3efghj^2p^2q^2\,\text{Log}[c(d(e+fx)^p)^q]+$$
$$48a^2bf^2h^2ijx\,\text{Log}[c(d(e+fx)^p)^q]-24a^2bf^2ghj^2x\,\text{Log}[c(d(e+fx)^p)^q]-96ab^2f^2h^2ijpqx\,\text{Log}[c(d(e+fx)^p)^q]+$$
$$48ab^2f^2ghj^2pqx\,\text{Log}[c(d(e+fx)^p)^q]+24ab^2efh^2j^2pqx\,\text{Log}[c(d(e+fx)^p)^q]+96b^3f^2h^2ijp^2q^2x\,\text{Log}[c(d(e+fx)^p)^q]-$$
$$48b^3f^2ghj^2p^2q^2x\,\text{Log}[c(d(e+fx)^p)^q]-36b^3efh^2j^2p^2q^2x\,\text{Log}[c(d(e+fx)^p)^q]+12a^2bf^2h^2j^2x^2\,\text{Log}[c(d(e+fx)^p)^q]-$$
$$12ab^2f^2h^2j^2pqx^2\,\text{Log}[c(d(e+fx)^p)^q]+6b^3f^2h^2j^2p^2q^2x^2\,\text{Log}[c(d(e+fx)^p)^q]+96ab^2efh^2ijpq\,\text{Log}[e+fx]\,\text{Log}[c(d(e+fx)^p)^q]-$$
$$48ab^2efghj^2pq\,\text{Log}[e+fx]\,\text{Log}[c(d(e+fx)^p)^q]-24ab^2e^2h^2j^2pq\,\text{Log}[e+fx]\,\text{Log}[c(d(e+fx)^p)^q]+$$
$$36b^3e^2h^2j^2p^2q^2\,\text{Log}[e+fx]\,\text{Log}[c(d(e+fx)^p)^q]-48b^3efh^2ijp^2q^2\,\text{Log}[e+fx]^2\,\text{Log}[c(d(e+fx)^p)^q]+$$
$$24b^3efghj^2p^2q^2\,\text{Log}[e+fx]^2\,\text{Log}[c(d(e+fx)^p)^q]+12b^3e^2h^2j^2p^2q^2\,\text{Log}[e+fx]^2\,\text{Log}[c(d(e+fx)^p)^q]-$$
$$48b^3efh^2ijpq\,\text{Log}[c(d(e+fx)^p)^q]^2+24b^3efghj^2pq\,\text{Log}[c(d(e+fx)^p)^q]^2+48ab^2f^2h^2ijx\,\text{Log}[c(d(e+fx)^p)^q]^2-$$
$$24ab^2f^2ghj^2x\,\text{Log}[c(d(e+fx)^p)^q]^2-48b^3f^2h^2ijpqx\,\text{Log}[c(d(e+fx)^p)^q]^2+24b^3f^2ghj^2pqx\,\text{Log}[c(d(e+fx)^p)^q]^2+$$
$$12b^3efh^2j^2pqx\,\text{Log}[c(d(e+fx)^p)^q]^2+12ab^2f^2h^2j^2x^2\,\text{Log}[c(d(e+fx)^p)^q]^2-6b^3f^2h^2j^2pqx^2\,\text{Log}[c(d(e+fx)^p)^q]^2+$$

$48 b^3 e f h^2 i j p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^2-24 b^3 e f g h j^2 p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^2-$

$12 b^3 e^2 h^2 j^2 p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^2+16 b^3 f^2 h^2 i j x \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^3-8 b^3 f^2 g h j^2 x \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^3+$

$4 b^3 f^2 h^2 j^2 x^2 \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^3+8 a^3 f^2 h^2 i^2 \,\text{Log}[g+h x]-16 a^3 f^2 g h i j \,\text{Log}[g+h x]+8 a^3 f^2 g^2 j^2 \,\text{Log}[g+h x]-$

$24 a^2 b f^2 h^2 i^2 p q \,\text{Log}[e+f x] \,\text{Log}[g+h x]+48 a^2 b f^2 g h i j p q \,\text{Log}[e+f x] \,\text{Log}[g+h x]-24 a^2 b f^2 g^2 j^2 p q \,\text{Log}[e+f x] \,\text{Log}[g+h x]+$

$24 a b^2 f^2 h^2 i^2 p^2 q^2 \,\text{Log}[e+f x]^2 \,\text{Log}[g+h x]-48 a b^2 f^2 g h i j p^2 q^2 \,\text{Log}[e+f x]^2 \,\text{Log}[g+h x]+24 a b^2 f^2 g^2 j^2 p^2 q^2 \,\text{Log}[e+f x]^2 \,\text{Log}[g+h x]-$

$8 b^3 f^2 h^2 i^2 p^3 q^3 \,\text{Log}[e+f x]^3 \,\text{Log}[g+h x]+16 b^3 f^2 g h i j p^3 q^3 \,\text{Log}[e+f x]^3 \,\text{Log}[g+h x]-8 b^3 f^2 g^2 j^2 p^3 q^3 \,\text{Log}[e+f x]^3 \,\text{Log}[g+h x]+$

$24 a^2 b f^2 h^2 i^2 \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}[g+h x]-48 a^2 b f^2 g h i j \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}[g+h x]+$

$24 a^2 b f^2 g^2 j^2 \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}[g+h x]-48 a b^2 f^2 h^2 i^2 p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}[g+h x]+$

$96 a b^2 f^2 g h i j p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}[g+h x]-48 a b^2 f^2 g^2 j^2 p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}[g+h x]+$

$24 b^3 f^2 h^2 i^2 p^2 q^2 \,\text{Log}[e+f x]^2 \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}[g+h x]-48 b^3 f^2 g h i j p^2 q^2 \,\text{Log}[e+f x]^2 \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}[g+h x]+$

$24 b^3 f^2 g^2 j^2 p^2 q^2 \,\text{Log}[e+f x]^2 \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}[g+h x]+24 a b^2 f^2 h^2 i^2 \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^2 \,\text{Log}[g+h x]-$

$48 a b^2 f^2 g h i j \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^2 \,\text{Log}[g+h x]+24 a b^2 f^2 g^2 j^2 \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^2 \,\text{Log}[g+h x]-$

$24 b^3 f^2 h^2 i^2 p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^2 \,\text{Log}[g+h x]+48 b^3 f^2 g h i j p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^2 \,\text{Log}[g+h x]-$

$24 b^3 f^2 g^2 j^2 p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^2 \,\text{Log}[g+h x]+8 b^3 f^2 h^2 i^2 \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^3 \,\text{Log}[g+h x]-$

$16 b^3 f^2 g h i j \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^3 \,\text{Log}[g+h x]+8 b^3 f^2 g^2 j^2 \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^3 \,\text{Log}[g+h x]+$

$24 a^2 b f^2 h^2 i^2 p q \,\text{Log}[e+f x] \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-48 a^2 b f^2 g h i j p q \,\text{Log}[e+f x] \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$

$24 a^2 b f^2 g^2 j^2 p q \,\text{Log}[e+f x] \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-24 a b^2 f^2 h^2 i^2 p^2 q^2 \,\text{Log}[e+f x]^2 \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$

$48 a b^2 f^2 g h i j p^2 q^2 \,\text{Log}[e+f x]^2 \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-24 a b^2 f^2 g^2 j^2 p^2 q^2 \,\text{Log}[e+f x]^2 \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$

$8 b^3 f^2 h^2 i^2 p^3 q^3 \,\text{Log}[e+f x]^3 \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-16 b^3 f^2 g h i j p^3 q^3 \,\text{Log}[e+f x]^3 \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$

$8 b^3 f^2 g^2 j^2 p^3 q^3 \,\text{Log}[e+f x]^3 \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+48 a b^2 f^2 h^2 i^2 p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$

$96 a b^2 f^2 g h i j p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+48 a b^2 f^2 g^2 j^2 p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$

$24 b^3 f^2 h^2 i^2 p^2 q^2 \,\text{Log}[e+f x]^2 \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+48 b^3 f^2 g h i j p^2 q^2 \,\text{Log}[e+f x]^2 \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$

$24 b^3 f^2 g^2 j^2 p^2 q^2 \,\text{Log}[e+f x]^2 \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right] \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+24 b^3 f^2 h^2 i^2 p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^2 \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-$

$48 b^3 f^2 g h i j p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^2 \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+24 b^3 f^2 g^2 j^2 p q \,\text{Log}[e+f x] \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]^2 \,\text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+$

$24 b f^2 \left(h i-g j\right)^2 p q \left(a+b \,\text{Log}\left[c \left(d \left(e+f x\right)^p\right)^q\right]\right)^2 \,\text{PolyLog}\left[2, \frac{h (e+f x)}{-f g+e h}\right]-$

$$48 b^2 f^2 (h i - g j)^2 p^2 q^2 \left(a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right) \text{PolyLog}\left[3, \frac{h (e + f x)}{-f g + e h}\right] + 48 b^3 f^2 h^2 i^2 p^3 q^3 \,\text{PolyLog}\left[4, \frac{h (e + f x)}{-f g + e h}\right] -$$
$$96 b^3 f^2 g h i j p^3 q^3 \,\text{PolyLog}\left[4, \frac{h (e + f x)}{-f g + e h}\right] + 48 b^3 f^2 g^2 j^2 p^3 q^3 \,\text{PolyLog}\left[4, \frac{h (e + f x)}{-f g + e h}\right]\Bigg)$$

Problem 536: Result more than twice size of optimal antiderivative.

$$\int \frac{(i + j x) \left(a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^3}{g + h x} \, dx$$

Optimal (type 4, 349 leaves, 13 steps):

$$\frac{6 a b^2 j p^2 q^2 x}{h} - \frac{6 b^3 j p^3 q^3 x}{h} + \frac{6 b^3 j p^2 q^2 (e + f x) \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]}{f h} -$$
$$\frac{3 b j p q (e + f x) \left(a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^2}{f h} + \frac{j (e + f x) \left(a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^3}{f h} +$$
$$\frac{(h i - g j) \left(a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^3 \text{Log}\left[\frac{f (g + h x)}{f g - e h}\right]}{h^2} + \frac{3 b (h i - g j) p q \left(a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right)^2 \text{PolyLog}\left[2, -\frac{h (e + f x)}{f g - e h}\right]}{h^2} -$$
$$\frac{6 b^2 (h i - g j) p^2 q^2 \left(a + b \,\text{Log}\left[c \left(d (e + f x)^p\right)^q\right]\right) \text{PolyLog}\left[3, -\frac{h (e + f x)}{f g - e h}\right]}{h^2} + \frac{6 b^3 (h i - g j) p^3 q^3 \,\text{PolyLog}\left[4, -\frac{h (e + f x)}{f g - e h}\right]}{h^2}$$

Result (type 4, 1806 leaves):

$$
\begin{aligned}
&\frac{1}{f h^2}\Big(-3 a^2 b e h j p q+6 a b^2 e h j p^2 q^2-6 b^3 e h j p^3 q^3+a^3 f h j x-3 a^2 b f h j p q x+6 a b^2 f h j p^2 q^2 x-6 b^3 f h j p^3 q^3 x+3 a^2 b e h j p q \text{Log}[e+f x]-\\
&3 a b^2 e h j p^2 q^2 \text{Log}[e+f x]^2+b^3 e h j p^3 q^3 \text{Log}[e+f x]^3-6 a b^2 e h j p q \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]+6 b^3 e h j p^2 q^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]+\\
&3 a^2 b f h j x \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]-6 a b^2 f h j p q x \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]+6 b^3 f h j p^2 q^2 x \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]+\\
&6 a b^2 e h j p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]-3 b^3 e h j p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]-3 b^3 e h j p q \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2+\\
&3 a b^2 f h j x \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2-3 b^3 f h j p q x \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2+3 b^3 e h j p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2+\\
&b^3 f h j x \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^3+a^3 f h i \text{Log}[g+h x]-a^3 f g j \text{Log}[g+h x]-3 a^2 b f h i p q \text{Log}[e+f x] \text{Log}[g+h x]+\\
&3 a^2 b f g j p q \text{Log}[e+f x] \text{Log}[g+h x]+3 a b^2 f h i p^2 q^2 \text{Log}[e+f x]^2 \text{Log}[g+h x]-3 a b^2 f g j p^2 q^2 \text{Log}[e+f x]^2 \text{Log}[g+h x]-\\
&b^3 f h i p^3 q^3 \text{Log}[e+f x]^3 \text{Log}[g+h x]+b^3 f g j p^3 q^3 \text{Log}[e+f x]^3 \text{Log}[g+h x]+3 a^2 b f h i \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]-\\
&3 a^2 b f g j \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]-6 a b^2 f h i p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]+\\
&6 a b^2 f g j p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]+3 b^3 f h i p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]-\\
&3 b^3 f g j p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}[g+h x]+3 a b^2 f h i \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]-\\
&3 a b^2 f g j \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]-3 b^3 f h i p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]+\\
&3 b^3 f g j p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]+b^3 f h i \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^3 \text{Log}[g+h x]-\\
&b^3 f g j \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^3 \text{Log}[g+h x]+3 a^2 b f h i p q \text{Log}[e+f x] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-3 a^2 b f g j p q \text{Log}[e+f x] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-\\
&3 a b^2 f h i p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+3 a b^2 f g j p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+b^3 f h i p^3 q^3 \text{Log}[e+f x]^3 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-\\
&b^3 f g j p^3 q^3 \text{Log}[e+f x]^3 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+6 a b^2 f h i p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-\\
&6 a b^2 f g j p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-3 b^3 f h i p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+\\
&3 b^3 f g j p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c \left(d (e+f x)^p\right)^q\right] \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+3 b^3 f h i p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-\\
&3 b^3 f g j p q \text{Log}[e+f x] \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]^2 \text{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+3 b f (h i-g j) p q \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^2 \text{PolyLog}\left[2,\frac{h (e+f x)}{-f g+e h}\right]-\\
&6 b^2 f (h i-g j) p^2 q^2 \left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right) \text{PolyLog}\left[3,\frac{h (e+f x)}{-f g+e h}\right]+\\
&6 b^3 f h i p^3 q^3 \text{PolyLog}\left[4,\frac{h (e+f x)}{-f g+e h}\right]-6 b^3 f g j p^3 q^3 \text{PolyLog}\left[4,\frac{h (e+f x)}{-f g+e h}\right]\Big)
\end{aligned}
$$

Problem 537: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \text{Log}\left[c \left(d (e+f x)^p\right)^q\right]\right)^3}{g+h x}\,dx$$

Optimal (type 4, 177 leaves, 6 steps) :

$$\frac{\left(a+b \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right)^3 \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]}{h}+\frac{3 b p q\left(a+b \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right)^2 \operatorname{PolyLog}\left[2,-\frac{h (e+f x)}{f g-e h}\right]}{h}-\frac{6 b^2 p^2 q^2\left(a+b \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right) \operatorname{PolyLog}\left[3,-\frac{h (e+f x)}{f g-e h}\right]}{h}+\frac{6 b^3 p^3 q^3 \operatorname{PolyLog}\left[4,-\frac{h (e+f x)}{f g-e h}\right]}{h}$$

Result (type 4, 646 leaves):

$$\frac{1}{h}\Bigg(a^3 \operatorname{Log}[g+h x]-3 a^2 b p q \operatorname{Log}[e+f x] \operatorname{Log}[g+h x]+3 a b^2 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}[g+h x]- b^3 p^3 q^3 \operatorname{Log}[e+f x]^3 \operatorname{Log}[g+h x]+3 a^2 b \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right] \operatorname{Log}[g+h x]-6 a b^2 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right] \operatorname{Log}[g+h x]+ 3 b^3 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right] \operatorname{Log}[g+h x]+3 a b^2 \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]^2 \operatorname{Log}[g+h x]- 3 b^3 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]^2 \operatorname{Log}[g+h x]+b^3 \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]^3 \operatorname{Log}[g+h x]+ 3 a^2 b p q \operatorname{Log}[e+f x] \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-3 a b^2 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+b^3 p^3 q^3 \operatorname{Log}[e+f x]^3 \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+ 6 a b^2 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right] \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]-3 b^3 p^2 q^2 \operatorname{Log}[e+f x]^2 \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right] \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+ 3 b^3 p q \operatorname{Log}[e+f x] \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]^2 \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]+3 b p q\left(a+b \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right)^2 \operatorname{PolyLog}\left[2,\frac{h (e+f x)}{-f g+e h}\right]- 6 b^2 p^2 q^2\left(a+b \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right) \operatorname{PolyLog}\left[3,\frac{h (e+f x)}{-f g+e h}\right]+6 b^3 p^3 q^3 \operatorname{PolyLog}\left[4,\frac{h (e+f x)}{-f g+e h}\right]\Bigg)$$

Problem 538: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right)^3}{(g+h x)(i+j x)} \, dx$$

Optimal (type 4, 410 leaves, 13 steps):

$$\frac{\left(a+b \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right)^3 \operatorname{Log}\left[\frac{f (g+h x)}{f g-e h}\right]}{h i-g j}-\frac{\left(a+b \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right)^3 \operatorname{Log}\left[\frac{f (i+j x)}{f i-e j}\right]}{h i-g j}+\frac{3 b p q\left(a+b \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right)^2 \operatorname{PolyLog}\left[2,-\frac{h (e+f x)}{f g-e h}\right]}{h i-g j}-\frac{3 b p q\left(a+b \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right)^2 \operatorname{PolyLog}\left[2,-\frac{j (e+f x)}{f i-e j}\right]}{h i-g j}-\frac{6 b^2 p^2 q^2\left(a+b \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right) \operatorname{PolyLog}\left[3,-\frac{h (e+f x)}{f g-e h}\right]}{h i-g j}+\frac{6 b^2 p^2 q^2\left(a+b \operatorname{Log}\left[c\left(d\left(e+f x\right)^p\right)^q\right]\right) \operatorname{PolyLog}\left[3,-\frac{j (e+f x)}{f i-e j}\right]}{h i-g j}+\frac{6 b^3 p^3 q^3 \operatorname{PolyLog}\left[4,-\frac{h (e+f x)}{f g-e h}\right]}{h i-g j}-\frac{6 b^3 p^3 q^3 \operatorname{PolyLog}\left[4,-\frac{j (e+f x)}{f i-e j}\right]}{h i-g j}$$

Result (type 4, 1350 leaves) :

$$\frac{1}{h i-g j}\Big(a^3 \text{Log}[g+h x]-3 a^2 b p q \text{Log}[e+f x] \text{Log}[g+h x]+3 a b^2 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}[g+h x]-$$
$$b^3 p^3 q^3 \text{Log}[e+f x]^3 \text{Log}[g+h x]+3 a^2 b \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}[g+h x]-6 a b^2 p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}[g+h x]+$$
$$3 b^3 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}[g+h x]+3 a b^2 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]-$$
$$3 b^3 p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \text{Log}[g+h x]+b^3 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^3 \text{Log}[g+h x]+3 a^2 b p q \text{Log}[e+f x] \text{Log}\left[\frac{f(g+h x)}{f g-e h}\right]-$$
$$3 a b^2 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[\frac{f(g+h x)}{f g-e h}\right]+b^3 p^3 q^3 \text{Log}[e+f x]^3 \text{Log}\left[\frac{f(g+h x)}{f g-e h}\right]+6 a b^2 p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}\left[\frac{f(g+h x)}{f g-e h}\right]-$$
$$3 b^3 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}\left[\frac{f(g+h x)}{f g-e h}\right]+3 b^3 p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \text{Log}\left[\frac{f(g+h x)}{f g-e h}\right]-$$
$$a^3 \text{Log}[i+j x]+3 a^2 b p q \text{Log}[e+f x] \text{Log}[i+j x]-3 a b^2 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}[i+j x]+b^3 p^3 q^3 \text{Log}[e+f x]^3 \text{Log}[i+j x]-$$
$$3 a^2 b \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}[i+j x]+6 a b^2 p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}[i+j x]-$$
$$3 b^3 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}[i+j x]-3 a b^2 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \text{Log}[i+j x]+$$
$$3 b^3 p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \text{Log}[i+j x]-b^3 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^3 \text{Log}[i+j x]-3 a^2 b p q \text{Log}[e+f x] \text{Log}\left[\frac{f(i+j x)}{f i-e j}\right]+$$
$$3 a b^2 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[\frac{f(i+j x)}{f i-e j}\right]-b^3 p^3 q^3 \text{Log}[e+f x]^3 \text{Log}\left[\frac{f(i+j x)}{f i-e j}\right]-6 a b^2 p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}\left[\frac{f(i+j x)}{f i-e j}\right]+$$
$$3 b^3 p^2 q^2 \text{Log}[e+f x]^2 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{Log}\left[\frac{f(i+j x)}{f i-e j}\right]-3 b^3 p q \text{Log}[e+f x] \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]^2 \text{Log}\left[\frac{f(i+j x)}{f i-e j}\right]+$$
$$3 b p q \left(a+b \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^2 \text{PolyLog}\left[2,\frac{h(e+f x)}{-f g+e h}\right]-3 b p q \left(a+b \text{Log}\left[c\left(d(e+f x)^p\right)^q\right]\right)^2 \text{PolyLog}\left[2,\frac{j(e+f x)}{-f i+e j}\right]-$$
$$6 a b^2 p^2 q^2 \text{PolyLog}\left[3,\frac{h(e+f x)}{-f g+e h}\right]-6 b^3 p^2 q^2 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{PolyLog}\left[3,\frac{h(e+f x)}{-f g+e h}\right]+6 a b^2 p^2 q^2 \text{PolyLog}\left[3,\frac{j(e+f x)}{-f i+e j}\right]+$$
$$6 b^3 p^2 q^2 \text{Log}\left[c\left(d(e+f x)^p\right)^q\right] \text{PolyLog}\left[3,\frac{j(e+f x)}{-f i+e j}\right]+6 b^3 p^3 q^3 \text{PolyLog}\left[4,\frac{h(e+f x)}{-f g+e h}\right]-6 b^3 p^3 q^3 \text{PolyLog}\left[4,\frac{j(e+f x)}{-f i+e j}\right]\Big)$$

Test results for the 641 problems in "3.4 u (a+b log(c (d+e x^m)^n))^p.m"

Problem 80: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[c\left(a+b x^2\right)^p\right]^2}{x}\,dx$$

Optimal (type 4, 72 leaves, 5 steps) :

$$\frac{1}{2}\,\text{Log}\left[-\frac{b\,x^2}{a}\right]\,\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]^2+p\,\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]\,\text{PolyLog}\left[2,\,1+\frac{b\,x^2}{a}\right]-p^2\,\text{PolyLog}\left[3,\,1+\frac{b\,x^2}{a}\right]$$

Result (type 4, 163 leaves):

$$\text{Log}[x]\,\left(-p\,\text{Log}\left[a+b\,x^2\right]+\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]\right)^2+2\,p\,\left(-p\,\text{Log}\left[a+b\,x^2\right]+\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]\right)\,\left(\text{Log}[x]\,\left(\text{Log}\left[a+b\,x^2\right]-\text{Log}\left[1+\frac{b\,x^2}{a}\right]\right)-\frac{1}{2}\,\text{PolyLog}\left[2,\,-\frac{b\,x^2}{a}\right]\right)+\frac{1}{2}\,p^2\,\left(\text{Log}\left[-\frac{b\,x^2}{a}\right]\,\text{Log}\left[a+b\,x^2\right]^2+2\,\text{Log}\left[a+b\,x^2\right]\,\text{PolyLog}\left[2,\,1+\frac{b\,x^2}{a}\right]-2\,\text{PolyLog}\left[3,\,1+\frac{b\,x^2}{a}\right]\right)$$

Problem 81: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]^2}{x^3}\,dx$$

Optimal (type 4, 80 leaves, 4 steps):

$$\frac{b\,p\,\text{Log}\left[-\frac{b\,x^2}{a}\right]\,\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]}{a}-\frac{\left(a+b\,x^2\right)\,\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]^2}{2\,a\,x^2}+\frac{b\,p^2\,\text{PolyLog}\left[2,\,1+\frac{b\,x^2}{a}\right]}{a}$$

Result (type 4, 446 leaves):

$$-\frac{1}{2\,a\,x^2}\left(2\,p\,\left(2\,b\,x^2\,\text{Log}[x]-\left(a+b\,x^2\right)\,\text{Log}\left[a+b\,x^2\right]\right)\,\left(p\,\text{Log}\left[a+b\,x^2\right]-\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]\right)+a\,\left(-p\,\text{Log}\left[a+b\,x^2\right]+\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]\right)^2+p^2\,\left(a\,\text{Log}\left[a+b\,x^2\right]^2+b\,x^2\,\left(\text{Log}\left[-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right]^2+\text{Log}\left[\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right]^2+2\,\text{Log}\left[-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right]\,\text{Log}\left[\frac{1}{2}-\frac{i\,\sqrt{b}\,x}{2\,\sqrt{a}}\right]+2\,\text{Log}\left[\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right]\,\text{Log}\left[\frac{1}{2}+\frac{i\,\sqrt{b}\,x}{2\,\sqrt{a}}\right]+4\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\,\sqrt{b}\,x}{\sqrt{a}}\right]+4\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\,\sqrt{b}\,x}{\sqrt{a}}\right]-4\,\text{Log}[x]\,\text{Log}\left[a+b\,x^2\right]-2\,\text{Log}\left[-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right]\,\text{Log}\left[a+b\,x^2\right]-2\,\text{Log}\left[\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right]\,\text{Log}\left[a+b\,x^2\right]+2\,\text{Log}\left[a+b\,x^2\right]^2+4\,\text{PolyLog}\left[2,\,-\frac{i\,\sqrt{b}\,x}{\sqrt{a}}\right]+4\,\text{PolyLog}\left[2,\,\frac{i\,\sqrt{b}\,x}{\sqrt{a}}\right]+2\,\text{PolyLog}\left[2,\,\frac{1}{2}-\frac{i\,\sqrt{b}\,x}{2\,\sqrt{a}}\right]+2\,\text{PolyLog}\left[2,\,\frac{1}{2}+\frac{i\,\sqrt{b}\,x}{2\,\sqrt{a}}\right]\right)\right)\right)$$

Problem 82: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]^2}{x^5}\,dx$$

Optimal (type 4, 129 leaves, 8 steps):

$$\frac{b^2 p^2 \text{Log}[x]}{a^2} - \frac{b p \left(a + b x^2\right) \text{Log}\left[c \left(a + b x^2\right)^p\right]}{2 a^2 x^2} - \frac{\text{Log}\left[c \left(a + b x^2\right)^p\right]^2}{4 x^4} - \frac{b^2 p \text{Log}\left[c \left(a + b x^2\right)^p\right] \text{Log}\left[1 - \frac{a}{a+b x^2}\right]}{2 a^2} + \frac{b^2 p^2 \text{PolyLog}\left[2, \frac{a}{a+b x^2}\right]}{2 a^2}$$

Result (type 4, 550 leaves):

$$\frac{1}{4 a^2 x^4} \left(4 b^2 p^2 x^4 \text{Log}[x] + b^2 p^2 x^4 \text{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}} + x\right]^2 + b^2 p^2 x^4 \text{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}} + x\right]^2 + 2 b^2 p^2 x^4 \text{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}} + x\right] \text{Log}\left[\frac{1}{2} - \frac{i \sqrt{b} x}{2 \sqrt{a}}\right] + \right.$$
$$2 b^2 p^2 x^4 \text{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}} + x\right] \text{Log}\left[\frac{1}{2} + \frac{i \sqrt{b} x}{2 \sqrt{a}}\right] + 4 b^2 p^2 x^4 \text{Log}[x] \text{Log}\left[1 - \frac{i \sqrt{b} x}{\sqrt{a}}\right] + 4 b^2 p^2 x^4 \text{Log}[x] \text{Log}\left[1 + \frac{i \sqrt{b} x}{\sqrt{a}}\right] -$$
$$2 b^2 p^2 x^4 \text{Log}\left[a + b x^2\right] - 2 b^2 p^2 x^4 \text{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}} + x\right] \text{Log}\left[a + b x^2\right] - 2 b^2 p^2 x^4 \text{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}} + x\right] \text{Log}\left[a + b x^2\right] - 2 a b p x^2 \text{Log}\left[c \left(a + b x^2\right)^p\right] -$$
$$4 b^2 p x^4 \text{Log}[x] \text{Log}\left[c \left(a + b x^2\right)^p\right] + 2 b^2 p x^4 \text{Log}\left[a + b x^2\right] \text{Log}\left[c \left(a + b x^2\right)^p\right] - a^2 \text{Log}\left[c \left(a + b x^2\right)^p\right]^2 + 4 b^2 p^2 x^4 \text{PolyLog}\left[2, -\frac{i \sqrt{b} x}{\sqrt{a}}\right] +$$
$$\left. 4 b^2 p^2 x^4 \text{PolyLog}\left[2, \frac{i \sqrt{b} x}{\sqrt{a}}\right] + 2 b^2 p^2 x^4 \text{PolyLog}\left[2, \frac{1}{2} - \frac{i \sqrt{b} x}{2 \sqrt{a}}\right] + 2 b^2 p^2 x^4 \text{PolyLog}\left[2, \frac{1}{2} + \frac{i \sqrt{b} x}{2 \sqrt{a}}\right]\right)$$

Problem 83: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[c \left(a + b x^2\right)^p\right]^2}{x^7} \, dx$$

Optimal (type 4, 193 leaves, 12 steps):

$$-\frac{b^2 p^2}{6 a^2 x^2} - \frac{b^3 p^2 \text{Log}[x]}{a^3} + \frac{b^3 p^2 \text{Log}\left[a + b x^2\right]}{6 a^3} - \frac{b p \text{Log}\left[c \left(a + b x^2\right)^p\right]}{6 a x^4} +$$
$$\frac{b^2 p \left(a + b x^2\right) \text{Log}\left[c \left(a + b x^2\right)^p\right]}{3 a^3 x^2} - \frac{\text{Log}\left[c \left(a + b x^2\right)^p\right]^2}{6 x^6} + \frac{b^3 p \text{Log}\left[c \left(a + b x^2\right)^p\right] \text{Log}\left[1 - \frac{a}{a+b x^2}\right]}{3 a^3} - \frac{b^3 p^2 \text{PolyLog}\left[2, \frac{a}{a+b x^2}\right]}{3 a^3}$$

Result (type 4, 583 leaves):

$$-\frac{1}{6 a^3 x^6}\left(a b^2 p^2 x^4+6 b^3 p^2 x^6 \operatorname{Log}[x]+b^3 p^2 x^6 \operatorname{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}}+x\right]^2+b^3 p^2 x^6 \operatorname{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}}+x\right]^2+2 b^3 p^2 x^6 \operatorname{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \operatorname{Log}\left[\frac{1}{2}-\frac{i \sqrt{b} x}{2 \sqrt{a}}\right]+\right.$$
$$2 b^3 p^2 x^6 \operatorname{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \operatorname{Log}\left[\frac{1}{2}+\frac{i \sqrt{b} x}{2 \sqrt{a}}\right]+4 b^3 p^2 x^6 \operatorname{Log}[x] \operatorname{Log}\left[1-\frac{i \sqrt{b} x}{\sqrt{a}}\right]+4 b^3 p^2 x^6 \operatorname{Log}[x] \operatorname{Log}\left[1+\frac{i \sqrt{b} x}{\sqrt{a}}\right]-$$
$$3 b^3 p^2 x^6 \operatorname{Log}\left[a+b x^2\right]-2 b^3 p^2 x^6 \operatorname{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \operatorname{Log}\left[a+b x^2\right]-2 b^3 p^2 x^6 \operatorname{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \operatorname{Log}\left[a+b x^2\right]+a^2 b p x^2 \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]-$$
$$2 a b^2 p x^4 \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]-4 b^3 p x^6 \operatorname{Log}[x] \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]+2 b^3 p x^6 \operatorname{Log}\left[a+b x^2\right] \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]+a^3 \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]^2+$$
$$\left.4 b^3 p^2 x^6 \operatorname{PolyLog}\left[2,-\frac{i \sqrt{b} x}{\sqrt{a}}\right]+4 b^3 p^2 x^6 \operatorname{PolyLog}\left[2, \frac{i \sqrt{b} x}{\sqrt{a}}\right]+2 b^3 p^2 x^6 \operatorname{PolyLog}\left[2, \frac{1}{2}-\frac{i \sqrt{b} x}{2 \sqrt{a}}\right]+2 b^3 p^2 x^6 \operatorname{PolyLog}\left[2, \frac{1}{2}+\frac{i \sqrt{b} x}{2 \sqrt{a}}\right]\right)$$

Problem 87: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Log}\left[c\left(a+b x^2\right)^p\right]^2}{x^2} \, dx$$

Optimal (type 4, 190 leaves, 7 steps):

$$\frac{4 i \sqrt{b} p^2 \operatorname{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right]^2}{\sqrt{a}}+\frac{8 \sqrt{b} p^2 \operatorname{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right] \operatorname{Log}\left[\frac{2 \sqrt{a}}{\sqrt{a}+i \sqrt{b} x}\right]}{\sqrt{a}}+$$
$$\frac{4 \sqrt{b} p \operatorname{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right] \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]}{\sqrt{a}}-\frac{\operatorname{Log}\left[c\left(a+b x^2\right)^p\right]^2}{x}+\frac{4 i \sqrt{b} p^2 \operatorname{PolyLog}\left[2,1-\frac{2 \sqrt{a}}{\sqrt{a}+i \sqrt{b} x}\right]}{\sqrt{a}}$$

Result (type 4, 387 leaves):

$$-\frac{1}{\sqrt{a} x}\left(4 \sqrt{b} p^2 x \operatorname{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right] \operatorname{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}}+x\right]+i \sqrt{b} p^2 x \operatorname{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}}+x\right]^2+\right.$$
$$4 \sqrt{b} p^2 x \operatorname{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right] \operatorname{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}}+x\right]-i \sqrt{b} p^2 x \operatorname{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}}+x\right]^2-2 i \sqrt{b} p^2 x \operatorname{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \operatorname{Log}\left[\frac{1}{2}-\frac{i \sqrt{b} x}{2 \sqrt{a}}\right]+$$
$$2 i \sqrt{b} p^2 x \operatorname{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \operatorname{Log}\left[\frac{1}{2}+\frac{i \sqrt{b} x}{2 \sqrt{a}}\right]-4 \sqrt{b} p x \operatorname{ArcTan}\left[\frac{\sqrt{b} x}{\sqrt{a}}\right] \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]+$$
$$\left.\sqrt{a} \operatorname{Log}\left[c\left(a+b x^2\right)^p\right]^2+2 i \sqrt{b} p^2 x \operatorname{PolyLog}\left[2, \frac{1}{2}-\frac{i \sqrt{b} x}{2 \sqrt{a}}\right]-2 i \sqrt{b} p^2 x \operatorname{PolyLog}\left[2, \frac{1}{2}+\frac{i \sqrt{b} x}{2 \sqrt{a}}\right]\right)$$

Problem 94: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[c\left(a+b x^2\right)^p\right]^3}{x}\,dx$$

Optimal (type 4, 106 leaves, 6 steps):

$$\frac{1}{2}\text{Log}\left[-\frac{b x^2}{a}\right]\text{Log}\left[c\left(a+b x^2\right)^p\right]^3+\frac{3}{2}p\,\text{Log}\left[c\left(a+b x^2\right)^p\right]^2\text{PolyLog}\left[2,1+\frac{b x^2}{a}\right]-3 p^2\,\text{Log}\left[c\left(a+b x^2\right)^p\right]\text{PolyLog}\left[3,1+\frac{b x^2}{a}\right]+3 p^3\,\text{PolyLog}\left[4,1+\frac{b x^2}{a}\right]$$

Result (type 4, 279 leaves):

$$\text{Log}[x]\left(-p\,\text{Log}\left[a+b x^2\right]+\text{Log}\left[c\left(a+b x^2\right)^p\right]\right)^3+3 p\left(-p\,\text{Log}\left[a+b x^2\right]+\text{Log}\left[c\left(a+b x^2\right)^p\right]\right)^2\left(\text{Log}[x]\left(\text{Log}\left[a+b x^2\right]-\text{Log}\left[1+\frac{b x^2}{a}\right]\right)-\frac{1}{2}\text{PolyLog}\left[2,-\frac{b x^2}{a}\right]\right)-\frac{3}{2}p^2\left(p\,\text{Log}\left[a+b x^2\right]-\text{Log}\left[c\left(a+b x^2\right)^p\right]\right)\left(\text{Log}\left[-\frac{b x^2}{a}\right]\text{Log}\left[a+b x^2\right]^2+2\,\text{Log}\left[a+b x^2\right]\text{PolyLog}\left[2,1+\frac{b x^2}{a}\right]-2\,\text{PolyLog}\left[3,1+\frac{b x^2}{a}\right]\right)+\frac{1}{2}p^3\left(\text{Log}\left[-\frac{b x^2}{a}\right]\text{Log}\left[a+b x^2\right]^3+3\,\text{Log}\left[a+b x^2\right]^2\text{PolyLog}\left[2,1+\frac{b x^2}{a}\right]-6\,\text{Log}\left[a+b x^2\right]\text{PolyLog}\left[3,1+\frac{b x^2}{a}\right]+6\,\text{PolyLog}\left[4,1+\frac{b x^2}{a}\right]\right)$$

Problem 95: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[c\left(a+b x^2\right)^p\right]^3}{x^3}\,dx$$

Optimal (type 4, 119 leaves, 6 steps):

$$\frac{3 b p\,\text{Log}\left[-\frac{b x^2}{a}\right]\text{Log}\left[c\left(a+b x^2\right)^p\right]^2}{2 a}-\frac{\left(a+b x^2\right)\text{Log}\left[c\left(a+b x^2\right)^p\right]^3}{2 a x^2}+\frac{3 b p^2\,\text{Log}\left[c\left(a+b x^2\right)^p\right]\text{PolyLog}\left[2,1+\frac{b x^2}{a}\right]}{a}-\frac{3 b p^3\,\text{PolyLog}\left[3,1+\frac{b x^2}{a}\right]}{a}$$

Result (type 4, 627 leaves):

$$\frac{1}{2\,a\,x^2}\Big(a\left(p\,\text{Log}[a+b\,x^2]-\text{Log}[c\,(a+b\,x^2)^p]\right)^3+$$
$$6\,b\,p\,x^2\,\text{Log}[x]\,\left(-p\,\text{Log}[a+b\,x^2]+\text{Log}[c\,(a+b\,x^2)^p]\right)^2-3\,a\,p\,\text{Log}[a+b\,x^2]\,\left(-p\,\text{Log}[a+b\,x^2]+\text{Log}[c\,(a+b\,x^2)^p]\right)^2-$$
$$3\,b\,p\,x^2\,\text{Log}[a+b\,x^2]\,\left(-p\,\text{Log}[a+b\,x^2]+\text{Log}[c\,(a+b\,x^2)^p]\right)^2+3\,p^2\,\left(p\,\text{Log}[a+b\,x^2]-\text{Log}[c\,(a+b\,x^2)^p]\right)\Big(a\,\text{Log}[a+b\,x^2]^2+$$
$$b\,x^2\Big(\text{Log}\Big[-\frac{i\sqrt{a}}{\sqrt{b}}+x\Big]^2+\text{Log}\Big[\frac{i\sqrt{a}}{\sqrt{b}}+x\Big]^2+2\,\text{Log}\Big[-\frac{i\sqrt{a}}{\sqrt{b}}+x\Big]\,\text{Log}\Big[\frac{1}{2}-\frac{i\sqrt{b}\,x}{2\sqrt{a}}\Big]+2\,\text{Log}\Big[\frac{i\sqrt{a}}{\sqrt{b}}+x\Big]\,\text{Log}\Big[\frac{1}{2}+\frac{i\sqrt{b}\,x}{2\sqrt{a}}\Big]+4\,\text{Log}[x]$$
$$\text{Log}\Big[1-\frac{i\sqrt{b}\,x}{\sqrt{a}}\Big]+4\,\text{Log}[x]\,\text{Log}\Big[1+\frac{i\sqrt{b}\,x}{\sqrt{a}}\Big]-4\,\text{Log}[x]\,\text{Log}[a+b\,x^2]-2\,\text{Log}\Big[-\frac{i\sqrt{a}}{\sqrt{b}}+x\Big]\,\text{Log}[a+b\,x^2]-2\,\text{Log}\Big[\frac{i\sqrt{a}}{\sqrt{b}}+x\Big]\,\text{Log}[a+b\,x^2]+$$
$$2\,\text{Log}[a+b\,x^2]^2+4\,\text{PolyLog}\Big[2,-\frac{i\sqrt{b}\,x}{\sqrt{a}}\Big]+4\,\text{PolyLog}\Big[2,\frac{i\sqrt{b}\,x}{\sqrt{a}}\Big]+2\,\text{PolyLog}\Big[2,\frac{1}{2}-\frac{i\sqrt{b}\,x}{2\sqrt{a}}\Big]+2\,\text{PolyLog}\Big[2,\frac{1}{2}+\frac{i\sqrt{b}\,x}{2\sqrt{a}}\Big]\Big)\Big)-$$
$$p^3\Big(\text{Log}[a+b\,x^2]^2\Big(-3\,b\,x^2\,\text{Log}\Big[-\frac{b\,x^2}{a}\Big]+(a+b\,x^2)\,\text{Log}[a+b\,x^2]\Big)-6\,b\,x^2\,\text{Log}[a+b\,x^2]\,\text{PolyLog}\Big[2,1+\frac{b\,x^2}{a}\Big]+6\,b\,x^2\,\text{PolyLog}\Big[3,1+\frac{b\,x^2}{a}\Big]\Big)\Big)$$

Problem 96: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}[c\,(a+b\,x^2)^p]^3}{x^5}\,dx$$

Optimal (type 4, 219 leaves, 10 steps):

$$\frac{3\,b^2\,p^2\,\text{Log}\big[-\frac{b\,x^2}{a}\big]\,\text{Log}[c\,(a+b\,x^2)^p]}{2\,a^2}-\frac{3\,b\,p\,(a+b\,x^2)\,\text{Log}[c\,(a+b\,x^2)^p]^2}{4\,a^2\,x^2}-\frac{\text{Log}[c\,(a+b\,x^2)^p]^3}{4\,x^4}-\frac{3\,b^2\,p\,\text{Log}[c\,(a+b\,x^2)^p]^2\,\text{Log}\big[1-\frac{a}{a+b\,x^2}\big]}{4\,a^2}+$$
$$\frac{3\,b^2\,p^2\,\text{Log}[c\,(a+b\,x^2)^p]\,\text{PolyLog}\big[2,\frac{a}{a+b\,x^2}\big]}{2\,a^2}+\frac{3\,b^2\,p^3\,\text{PolyLog}\big[2,1+\frac{b\,x^2}{a}\big]}{2\,a^2}+\frac{3\,b^2\,p^3\,\text{PolyLog}\big[3,\frac{a}{a+b\,x^2}\big]}{2\,a^2}$$

Result (type 4, 803 leaves):

$$\frac{1}{4 a^2 x^4}\Big(a^2 \left(p \text{Log}[a+b x^2]-\text{Log}[c (a+b x^2)^p]\right)^3-3 a b p x^2 \left(-p \text{Log}[a+b x^2]+\text{Log}[c (a+b x^2)^p]\right)^2-$$
$$6 b^2 p x^4 \text{Log}[x] \left(-p \text{Log}[a+b x^2]+\text{Log}[c (a+b x^2)^p]\right)^2-3 a^2 p \text{Log}[a+b x^2] \left(-p \text{Log}[a+b x^2]+\text{Log}[c (a+b x^2)^p]\right)^2+$$
$$3 b^2 p x^4 \text{Log}[a+b x^2] \left(-p \text{Log}[a+b x^2]+\text{Log}[c (a+b x^2)^p]\right)^2+3 p^2 \left(p \text{Log}[a+b x^2]-\text{Log}[c (a+b x^2)^p]\right)$$
$$\Big(a^2 \text{Log}[a+b x^2]^2-b x^2 \Big(4 b x^2 \text{Log}[x]+b x^2 \text{Log}\Big[-\frac{i \sqrt{a}}{\sqrt{b}}+x\Big]^2+b x^2 \text{Log}\Big[\frac{i \sqrt{a}}{\sqrt{b}}+x\Big]^2+2 b x^2 \text{Log}\Big[-\frac{i \sqrt{a}}{\sqrt{b}}+x\Big] \text{Log}\Big[\frac{1}{2}-\frac{i \sqrt{b} x}{2 \sqrt{a}}\Big]+2 b x^2 \text{Log}\Big[$$
$$\frac{i \sqrt{a}}{\sqrt{b}}+x\Big] \text{Log}\Big[\frac{1}{2}+\frac{i \sqrt{b} x}{2 \sqrt{a}}\Big]+4 b x^2 \text{Log}[x] \text{Log}\Big[1-\frac{i \sqrt{b} x}{\sqrt{a}}\Big]+4 b x^2 \text{Log}[x] \text{Log}\Big[1+\frac{i \sqrt{b} x}{\sqrt{a}}\Big]-2 a \text{Log}[a+b x^2]-2 b x^2 \text{Log}[a+b x^2]-$$
$$4 b x^2 \text{Log}[x] \text{Log}[a+b x^2]-2 b x^2 \text{Log}\Big[-\frac{i \sqrt{a}}{\sqrt{b}}+x\Big] \text{Log}[a+b x^2]-2 b x^2 \text{Log}\Big[\frac{i \sqrt{a}}{\sqrt{b}}+x\Big] \text{Log}[a+b x^2]+2 b x^2 \text{Log}[a+b x^2]^2+$$
$$4 b x^2 \text{PolyLog}\Big[2,-\frac{i \sqrt{b} x}{\sqrt{a}}\Big]+4 b x^2 \text{PolyLog}\Big[2,\frac{i \sqrt{b} x}{\sqrt{a}}\Big]+2 b x^2 \text{PolyLog}\Big[2,\frac{1}{2}-\frac{i \sqrt{b} x}{2 \sqrt{a}}\Big]+2 b x^2 \text{PolyLog}\Big[2,\frac{1}{2}+\frac{i \sqrt{b} x}{2 \sqrt{a}}\Big]\Big)\Big)+$$
$$p^3 \Big(\text{Log}[a+b x^2] \Big(-3 b^2 x^4 \text{Log}\Big[-\frac{b x^2}{a}\Big] \left(-2+\text{Log}[a+b x^2]\right)-(a+b x^2) \text{Log}[a+b x^2] \left(3 b x^2+(a-b x^2) \text{Log}[a+b x^2]\right)\Big)-$$
$$6 b^2 x^4 \left(-1+\text{Log}[a+b x^2]\right) \text{PolyLog}\Big[2,1+\frac{b x^2}{a}\Big]+6 b^2 x^4 \text{PolyLog}\Big[3,1+\frac{b x^2}{a}\Big]\Big)\Big)$$

Problem 97: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}[c (a+b x^2)^p]^3}{x^7}\, dx$$

Optimal (type 4, 352 leaves, 17 steps):

$$\frac{b^3 p^3 \text{Log}[x]}{a^3}-\frac{b^2 p^2 (a+b x^2) \text{Log}[c (a+b x^2)^p]}{2 a^3 x^2}-\frac{b^3 p^2 \text{Log}\left[-\frac{b x^2}{a}\right] \text{Log}[c (a+b x^2)^p]}{a^3}-\frac{b p \text{Log}[c (a+b x^2)^p]^2}{4 a x^4}+$$
$$\frac{b^2 p (a+b x^2) \text{Log}[c (a+b x^2)^p]^2}{2 a^3 x^2}-\frac{\text{Log}[c (a+b x^2)^p]^3}{6 x^6}-\frac{b^3 p^2 \text{Log}[c (a+b x^2)^p] \text{Log}\left[1-\frac{a}{a+b x^2}\right]}{2 a^3}+\frac{b^3 p \text{Log}[c (a+b x^2)^p]^2 \text{Log}\left[1-\frac{a}{a+b x^2}\right]}{2 a^3}+$$
$$\frac{b^3 p^3 \text{PolyLog}\left[2,\frac{a}{a+b x^2}\right]}{2 a^3}-\frac{b^3 p^2 \text{Log}[c (a+b x^2)^p] \text{PolyLog}\left[2,\frac{a}{a+b x^2}\right]}{a^3}-\frac{b^3 p^3 \text{PolyLog}\left[2,1+\frac{b x^2}{a}\right]}{a^3}-\frac{b^3 p^3 \text{PolyLog}\left[3,\frac{a}{a+b x^2}\right]}{a^3}$$

Result (type 4, 1013 leaves):

$$\frac{1}{12 a^3 x^6}\Big(2 a^3 \left(p \text{Log}[a+b x^2]-\text{Log}[c (a+b x^2)^p]\right)^3-3 a^2 b p x^2 \left(-p \text{Log}[a+b x^2]+\text{Log}[c (a+b x^2)^p]\right)^2+6 a b^2 p x^4 \left(-p \text{Log}[a+b x^2]+\text{Log}[c (a+b x^2)^p]\right)^2+$$
$$12 b^3 p x^6 \text{Log}[x] \left(-p \text{Log}[a+b x^2]+\text{Log}[c (a+b x^2)^p]\right)^2-6 a^3 p \text{Log}[a+b x^2] \left(-p \text{Log}[a+b x^2]+\text{Log}[c (a+b x^2)^p]\right)^2-$$
$$6 b^3 p x^6 \text{Log}[a+b x^2] \left(-p \text{Log}[a+b x^2]+\text{Log}[c (a+b x^2)^p]\right)^2+6 p^2 \left(p \text{Log}[a+b x^2]-\text{Log}[c (a+b x^2)^p]\right)$$
$$\Big(a^3 \text{Log}[a+b x^2]^2+b x^2 \Big(a b x^2+6 b^2 x^4 \text{Log}[x]+b^2 x^4 \text{Log}\Big[-\frac{i \sqrt{a}}{\sqrt{b}}+x\Big]^2+b^2 x^4 \text{Log}\Big[\frac{i \sqrt{a}}{\sqrt{b}}+x\Big]^2+2 b^2 x^4 \text{Log}\Big[-\frac{i \sqrt{a}}{\sqrt{b}}+x\Big] \text{Log}\Big[\frac{1}{2}-\frac{i \sqrt{b} x}{2 \sqrt{a}}\Big]+$$
$$2 b^2 x^4 \text{Log}\Big[\frac{i \sqrt{a}}{\sqrt{b}}+x\Big] \text{Log}\Big[\frac{1}{2}+\frac{i \sqrt{b} x}{2 \sqrt{a}}\Big]+4 b^2 x^4 \text{Log}[x] \text{Log}\Big[1-\frac{i \sqrt{b} x}{\sqrt{a}}\Big]+4 b^2 x^4 \text{Log}[x] \text{Log}\Big[1+\frac{i \sqrt{b} x}{\sqrt{a}}\Big]+a^2 \text{Log}[a+b x^2]-$$
$$2 a b x^2 \text{Log}[a+b x^2]-3 b^2 x^4 \text{Log}[a+b x^2]-4 b^2 x^4 \text{Log}[x] \text{Log}[a+b x^2]-2 b^2 x^4 \text{Log}\Big[-\frac{i \sqrt{a}}{\sqrt{b}}+x\Big] \text{Log}[a+b x^2]-$$
$$2 b^2 x^4 \text{Log}\Big[\frac{i \sqrt{a}}{\sqrt{b}}+x\Big] \text{Log}[a+b x^2]+2 b^2 x^4 \text{Log}[a+b x^2]^2+4 b^2 x^4 \text{PolyLog}\Big[2,-\frac{i \sqrt{b} x}{\sqrt{a}}\Big]+$$
$$4 b^2 x^4 \text{PolyLog}\Big[2,\frac{i \sqrt{b} x}{\sqrt{a}}\Big]+2 b^2 x^4 \text{PolyLog}\Big[2,\frac{1}{2}-\frac{i \sqrt{b} x}{2 \sqrt{a}}\Big]+2 b^2 x^4 \text{PolyLog}\Big[2,\frac{1}{2}+\frac{i \sqrt{b} x}{2 \sqrt{a}}\Big]\Big)\Big)-$$
$$p^3 \Big(-6 b^3 x^6 \text{Log}\Big[-\frac{b x^2}{a}\Big]+6 a b^2 x^4 \text{Log}[a+b x^2]+6 b^3 x^6 \text{Log}[a+b x^2]+18 b^3 x^6 \text{Log}\Big[-\frac{b x^2}{a}\Big] \text{Log}[a+b x^2]+3 a^2 b x^2 \text{Log}[a+b x^2]^2-$$
$$6 a b^2 x^4 \text{Log}[a+b x^2]^2-9 b^3 x^6 \text{Log}[a+b x^2]^2-6 b^3 x^6 \text{Log}\Big[-\frac{b x^2}{a}\Big] \text{Log}[a+b x^2]^2+2 a^3 \text{Log}[a+b x^2]^3+$$
$$2 b^3 x^6 \text{Log}[a+b x^2]^3+6 b^3 x^6 \left(3-2 \text{Log}[a+b x^2]\right) \text{PolyLog}\Big[2,1+\frac{b x^2}{a}\Big]+12 b^3 x^6 \text{PolyLog}\Big[3,1+\frac{b x^2}{a}\Big]\Big)\Big)$$

Problem 131: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}[c (d+e x^3)^p]^2}{x} \, dx$$

Optimal (type 4, 77 leaves, 5 steps):

$$\frac{1}{3} \text{Log}\Big[-\frac{e x^3}{d}\Big] \text{Log}[c (d+e x^3)^p]^2+\frac{2}{3} p \text{Log}[c (d+e x^3)^p] \text{PolyLog}\Big[2,1+\frac{e x^3}{d}\Big]-\frac{2}{3} p^2 \text{PolyLog}\Big[3,1+\frac{e x^3}{d}\Big]$$

Result (type 4, 2965 leaves):

$$\text{Log}[x] \left(-p \text{Log}[d+e x^3]+\text{Log}[c (d+e x^3)^p]\right)^2+$$
$$2 p \left(-p \text{Log}[d+e x^3]+\text{Log}[c (d+e x^3)^p]\right) \Big(\text{Log}[x] \Big(\text{Log}[d+e x^3]-\text{Log}\Big[1+\frac{e x^3}{d}\Big]\Big)-\frac{1}{3} \text{PolyLog}\Big[2,-\frac{e x^3}{d}\Big]\Big)+$$

$$p^2 \Bigg(\mathrm{Log}\left[-\frac{e^{1/3} x}{d^{1/3}}\right] \mathrm{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]^2 + 2\, \mathrm{Log}\left[-\frac{e^{1/3} x}{d^{1/3}}\right] \mathrm{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right] \mathrm{Log}\left[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\right] +$$

$$\mathrm{Log}\left[-\frac{(-1)^{2/3} e^{1/3} x}{d^{1/3}}\right] \mathrm{Log}\left[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\right]^2 + 2\, \mathrm{Log}\left[-\frac{e^{1/3} x}{d^{1/3}}\right] \mathrm{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right] \mathrm{Log}\left[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\right] +$$

$$2\, \mathrm{Log}\left[-\frac{(-1)^{2/3} e^{1/3} x}{d^{1/3}}\right] \mathrm{Log}\left[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\right] \mathrm{Log}\left[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\right] + \mathrm{Log}\left[\frac{(-1)^{1/3} e^{1/3} x}{d^{1/3}}\right] \mathrm{Log}\left[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\right]^2 +$$

$$\mathrm{Log}\left[\frac{(-1)^{2/3}\left(\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\right)}{-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x}\right]^2 \left(\mathrm{Log}\left[-\frac{(-1)^{2/3} e^{1/3} x}{d^{1/3}}\right] + \mathrm{Log}\left[\frac{i \sqrt{3}\, d^{1/3}}{(-1)^{1/3} d^{1/3} - e^{1/3} x}\right] - \mathrm{Log}\left[\frac{(-1)^{2/3}\left(1+(-1)^{1/3}\right) e^{1/3} x}{(-1)^{1/3} d^{1/3} - e^{1/3} x}\right]\right) +$$

$$\left(\mathrm{Log}\left[-\frac{e^{1/3} x}{d^{1/3}}\right] + \mathrm{Log}\left[-\frac{\left(-1+(-1)^{2/3}\right) d^{1/3}}{d^{1/3}+e^{1/3} x}\right] - \mathrm{Log}\left[\frac{\left(1+(-1)^{1/3}\right) e^{1/3} x}{d^{1/3}+e^{1/3} x}\right]\right) \mathrm{Log}\left[\frac{d^{1/3} - (-1)^{1/3} e^{1/3} x}{d^{1/3}+e^{1/3} x}\right]^2 +$$

$$\left(\mathrm{Log}[2] + \mathrm{Log}\left[-\frac{e^{1/3} x}{d^{1/3}}\right] + \mathrm{Log}\left[\frac{\left(1+(-1)^{1/3}\right) d^{1/3}}{d^{1/3}+e^{1/3} x}\right] - \mathrm{Log}\left[\frac{\left(3 - i \sqrt{3}\right) e^{1/3} x}{d^{1/3}+e^{1/3} x}\right]\right) \mathrm{Log}\left[\frac{d^{1/3} + (-1)^{2/3} e^{1/3} x}{d^{1/3}+e^{1/3} x}\right]^2 +$$

$$2 \left(\mathrm{Log}\left[\frac{(-1)^{1/3} e^{1/3} x}{d^{1/3}}\right] - \mathrm{Log}\left[-\frac{(-1)^{2/3} e^{1/3} x}{d^{1/3}}\right]\right) \mathrm{Log}\left[\frac{(-1)^{2/3}\left(\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\right)}{-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x}\right] \mathrm{Log}\left[1 - \frac{(-1)^{1/3} e^{1/3} x}{d^{1/3}}\right] +$$

$$2 \left(-\mathrm{Log}\left[-\frac{e^{1/3} x}{d^{1/3}}\right] + \mathrm{Log}\left[\frac{(-1)^{1/3} e^{1/3} x}{d^{1/3}}\right]\right) \mathrm{Log}\left[\frac{d^{1/3} - (-1)^{1/3} e^{1/3} x}{d^{1/3}+e^{1/3} x}\right] \mathrm{Log}\left[1 - \frac{(-1)^{1/3} e^{1/3} x}{d^{1/3}}\right] +$$

$$\left(\mathrm{Log}\left[-\frac{e^{1/3} x}{d^{1/3}}\right] - \mathrm{Log}\left[\frac{(-1)^{1/3} e^{1/3} x}{d^{1/3}}\right]\right) \mathrm{Log}\left[1 - \frac{(-1)^{1/3} e^{1/3} x}{d^{1/3}}\right] \left(-2\, \mathrm{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right] + \mathrm{Log}\left[1 - \frac{(-1)^{1/3} e^{1/3} x}{d^{1/3}}\right]\right) +$$

$$\left(-\mathrm{Log}\left[\frac{(-1)^{1/3} e^{1/3} x}{d^{1/3}}\right] + \mathrm{Log}\left[-\frac{(-1)^{2/3} e^{1/3} x}{d^{1/3}}\right]\right) \mathrm{Log}\left[1 - \frac{(-1)^{1/3} e^{1/3} x}{d^{1/3}}\right] \left(-2\, \mathrm{Log}\left[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\right] + \mathrm{Log}\left[1 - \frac{(-1)^{1/3} e^{1/3} x}{d^{1/3}}\right]\right) +$$

$$2 \left(-\mathrm{Log}\left[-\frac{e^{1/3} x}{d^{1/3}}\right] + \mathrm{Log}\left[-\frac{(-1)^{2/3} e^{1/3} x}{d^{1/3}}\right]\right) \mathrm{Log}\left[\frac{d^{1/3} + (-1)^{2/3} e^{1/3} x}{d^{1/3}+e^{1/3} x}\right] \mathrm{Log}\left[1 + \frac{(-1)^{2/3} e^{1/3} x}{d^{1/3}}\right] +$$

$$\left(\mathrm{Log}\left[-\frac{e^{1/3} x}{d^{1/3}}\right] - \mathrm{Log}\left[-\frac{(-1)^{2/3} e^{1/3} x}{d^{1/3}}\right]\right) \mathrm{Log}\left[1 + \frac{(-1)^{2/3} e^{1/3} x}{d^{1/3}}\right] \left(-2\, \mathrm{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right] + \mathrm{Log}\left[1 + \frac{(-1)^{2/3} e^{1/3} x}{d^{1/3}}\right]\right) +$$

$$\mathrm{Log}[x] \left(\mathrm{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right] + \mathrm{Log}\left[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\right] + \mathrm{Log}\left[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\right] - \mathrm{Log}\left[d + e\, x^3\right]\right)^2 -$$

$$2\left(\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]+\text{Log}\left[-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x\right]+\text{Log}\left[\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right]-\text{Log}\left[d+e\,x^3\right]\right)\left(\text{Log}[x]\,\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]+\right.$$

$$\text{Log}[x]\,\text{Log}\left[-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x\right]+\text{Log}[x]\,\text{Log}\left[\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right]-\text{Log}[x]\,\text{Log}\left[1+\frac{e^{1/3}x}{d^{1/3}}\right]-\text{Log}[x]\,\text{Log}\left[1-\frac{(-1)^{1/3}e^{1/3}x}{d^{1/3}}\right]-$$

$$\left.\text{Log}[x]\,\text{Log}\left[1+\frac{(-1)^{2/3}e^{1/3}x}{d^{1/3}}\right]-\text{PolyLog}\left[2,-\frac{e^{1/3}x}{d^{1/3}}\right]-\text{PolyLog}\left[2,\frac{(-1)^{1/3}e^{1/3}x}{d^{1/3}}\right]-\text{PolyLog}\left[2,-\frac{(-1)^{2/3}e^{1/3}x}{d^{1/3}}\right]\right)+$$

$$2\,\text{Log}\left[\frac{(-1)^{2/3}\left(\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right)}{-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x}\right]\left(-\text{PolyLog}\left[2,\frac{(-1)^{2/3}\left(\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right)}{-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x}\right]+\text{PolyLog}\left[2,\frac{(-1)^{2/3}d^{1/3}+e^{1/3}x}{-(-1)^{1/3}d^{1/3}+e^{1/3}x}\right]\right)+$$

$$2\,\text{Log}\left[\frac{d^{1/3}-(-1)^{1/3}e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]\left(\text{PolyLog}\left[2,\frac{(-1)^{2/3}d^{1/3}+e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]-\text{PolyLog}\left[2,\frac{d^{1/3}-(-1)^{1/3}e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]\right)+$$

$$2\,\text{Log}\left[\frac{d^{1/3}+(-1)^{2/3}e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]\left(\text{PolyLog}\left[2,\frac{-(-1)^{1/3}d^{1/3}+e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]-\text{PolyLog}\left[2,\frac{d^{1/3}+(-1)^{2/3}e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]\right)+$$

$$2\,\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]\text{PolyLog}\left[2,1+\frac{e^{1/3}x}{d^{1/3}}\right]+2\left(\text{Log}\left[\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right]-\text{Log}\left[\frac{d^{1/3}-(-1)^{1/3}e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]\right)\text{PolyLog}\left[2,1+\frac{e^{1/3}x}{d^{1/3}}\right]+$$

$$2\left(\text{Log}\left[-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x\right]-\text{Log}\left[\frac{d^{1/3}+(-1)^{2/3}e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]\right)\text{PolyLog}\left[2,1+\frac{e^{1/3}x}{d^{1/3}}\right]+2\,\text{Log}\left[\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right]\text{PolyLog}\left[2,1-\frac{(-1)^{1/3}e^{1/3}x}{d^{1/3}}\right]+$$

$$2\left(\text{Log}\left[-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x\right]+\text{Log}\left[\frac{(-1)^{2/3}\left(\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right)}{-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x}\right]\right)\text{PolyLog}\left[2,1-\frac{(-1)^{1/3}e^{1/3}x}{d^{1/3}}\right]+$$

$$2\left(\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]+\text{Log}\left[\frac{d^{1/3}-(-1)^{1/3}e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]\right)\text{PolyLog}\left[2,1-\frac{(-1)^{1/3}e^{1/3}x}{d^{1/3}}\right]+2\,\text{Log}\left[-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x\right]\text{PolyLog}\left[2,1+\frac{(-1)^{2/3}e^{1/3}x}{d^{1/3}}\right]+$$

$$2\left(\text{Log}\left[\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right]-\text{Log}\left[\frac{(-1)^{2/3}\left(\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right)}{-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x}\right]\right)\text{PolyLog}\left[2,1+\frac{(-1)^{2/3}e^{1/3}x}{d^{1/3}}\right]+$$

$$2\left(\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]+\text{Log}\left[\frac{d^{1/3}+(-1)^{2/3}e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]\right)\text{PolyLog}\left[2,1+\frac{(-1)^{2/3}e^{1/3}x}{d^{1/3}}\right]+$$

$$2\,\text{PolyLog}\left[3,\frac{(-1)^{2/3}\left(\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right)}{-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x}\right]-2\,\text{PolyLog}\left[3,\frac{-(-1)^{1/3}d^{1/3}+e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]-2\,\text{PolyLog}\left[3,\frac{(-1)^{2/3}d^{1/3}+e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]-$$

$$2\,\text{PolyLog}\left[3,\frac{(-1)^{2/3}d^{1/3}+e^{1/3}x}{-(-1)^{1/3}d^{1/3}+e^{1/3}x}\right]+2\,\text{PolyLog}\left[3,\frac{d^{1/3}-(-1)^{1/3}e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]+2\,\text{PolyLog}\left[3,\frac{d^{1/3}+(-1)^{2/3}e^{1/3}x}{d^{1/3}+e^{1/3}x}\right]-$$

$$6\,\text{PolyLog}\left[3,1+\frac{e^{1/3}x}{d^{1/3}}\right]-6\,\text{PolyLog}\left[3,1-\frac{(-1)^{1/3}e^{1/3}x}{d^{1/3}}\right]-6\,\text{PolyLog}\left[3,1+\frac{(-1)^{2/3}e^{1/3}x}{d^{1/3}}\right]\Bigg)$$

Problem 132: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[c\,(d+e\,x^3)^p\right]^2}{x^4}\,dx$$

Optimal (type 4, 86 leaves, 4 steps):

$$\frac{2\,e\,p\,\text{Log}\left[-\frac{e\,x^3}{d}\right]\text{Log}\left[c\,(d+e\,x^3)^p\right]}{3\,d}-\frac{(d+e\,x^3)\,\text{Log}\left[c\,(d+e\,x^3)^p\right]^2}{3\,d\,x^3}+\frac{2\,e\,p^2\,\text{PolyLog}\left[2,1+\frac{e\,x^3}{d}\right]}{3\,d}$$

Result (type 4, 1374 leaves):

$$-\frac{1}{9\,d\,x^3}\Bigg(6\,p\,\left(3\,e\,x^3\,\text{Log}[x]-(d+e\,x^3)\,\text{Log}\left[d+e\,x^3\right]\right)\left(p\,\text{Log}\left[d+e\,x^3\right]-\text{Log}\left[c\,(d+e\,x^3)^p\right]\right)+3\,d\left(-p\,\text{Log}\left[d+e\,x^3\right]+\text{Log}\left[c\,(d+e\,x^3)^p\right]\right)^2+$$

$$p^2\Bigg(3\,d\,\text{Log}\left[d+e\,x^3\right]^2+e\,x^3\Bigg(6\,\text{Log}[2]^2+\text{Log}[6]\,\text{Log}[64]-4\,\text{Log}[8]\,\text{Log}[x]-2\,\text{Log}[4096]\,\text{Log}[x]+3\,\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]^2-$$

$$2\,\text{Log}[8]\,\text{Log}\left[\frac{\left(-1-i\sqrt{3}\right)d^{1/3}}{e^{1/3}}+2\,x\right]-\text{Log}[46656]\,\text{Log}\left[\frac{\left(-1-i\sqrt{3}\right)d^{1/3}}{e^{1/3}}+2\,x\right]+3\,\text{Log}\left[\frac{\left(-1-i\sqrt{3}\right)d^{1/3}}{e^{1/3}}+2\,x\right]^2-$$

$$\text{Log}[64]\,\text{Log}\left[\frac{i\left(i+\sqrt{3}\right)d^{1/3}}{e^{1/3}}+2\,x\right]+3\,\text{Log}\left[\frac{i\left(i+\sqrt{3}\right)d^{1/3}}{e^{1/3}}+2\,x\right]^2-2\,\text{Log}[8]\,\text{Log}\left[\frac{-2\,i\,d^{1/3}+\left(i+\sqrt{3}\right)e^{1/3}x}{\left(-3\,i+\sqrt{3}\right)d^{1/3}}\right]+$$

$$6\,\text{Log}\left[\frac{i\left(i+\sqrt{3}\right)d^{1/3}}{e^{1/3}}+2\,x\right]\text{Log}\left[\frac{-2\,i\,d^{1/3}+\left(i+\sqrt{3}\right)e^{1/3}x}{\left(-3\,i+\sqrt{3}\right)d^{1/3}}\right]+6\,\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[\frac{i+\sqrt{3}-\frac{2\,i\,e^{1/3}x}{d^{1/3}}}{3\,i+\sqrt{3}}\right]+$$

$$6\,\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[-\frac{-i+\sqrt{3}+\frac{2\,i\,e^{1/3}x}{d^{1/3}}}{3\,i-\sqrt{3}}\right]+18\,\text{Log}[x]\,\text{Log}\left[1+\frac{e^{1/3}x}{d^{1/3}}\right]-\text{Log}[64]\,\text{Log}\left[\frac{2\,i\left(1+\frac{e^{1/3}x}{d^{1/3}}\right)}{3\,i-\sqrt{3}}\right]+$$

$$6\,\text{Log}\left[\frac{\left(-1-i\sqrt{3}\right)d^{1/3}}{e^{1/3}}+2x\right]\text{Log}\left[\frac{2i\left(1+\frac{e^{1/3}x}{d^{1/3}}\right)}{3i-\sqrt{3}}\right]-\text{Log}[64]\,\text{Log}\left[\frac{2i\left(1+\frac{e^{1/3}x}{d^{1/3}}\right)}{3i+\sqrt{3}}\right]+6\,\text{Log}\left[\frac{i\left(i+\sqrt{3}\right)d^{1/3}}{e^{1/3}}+2x\right]\text{Log}\left[\frac{2i\left(1+\frac{e^{1/3}x}{d^{1/3}}\right)}{3i+\sqrt{3}}\right]-$$

$$\text{Log}[64]\,\text{Log}\left[3+i\sqrt{3}-\frac{2i\sqrt{3}\,e^{1/3}x}{d^{1/3}}\right]+6\,\text{Log}\left[\frac{\left(-1-i\sqrt{3}\right)d^{1/3}}{e^{1/3}}+2x\right]\text{Log}\left[3+i\sqrt{3}-\frac{2i\sqrt{3}\,e^{1/3}x}{d^{1/3}}\right]+$$

$$18\,\text{Log}[x]\,\text{Log}\left[2+\frac{\left(-1-i\sqrt{3}\right)e^{1/3}x}{d^{1/3}}\right]+18\,\text{Log}[x]\,\text{Log}\left[2+\frac{i\left(i+\sqrt{3}\right)e^{1/3}x}{d^{1/3}}\right]+\text{Log}[16]\,\text{Log}\left[d+e\,x^3\right]+\text{Log}[256]\,\text{Log}\left[d+e\,x^3\right]-$$

$$18\,\text{Log}[x]\,\text{Log}\left[d+e\,x^3\right]-6\,\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[d+e\,x^3\right]-6\,\text{Log}\left[\frac{\left(-1-i\sqrt{3}\right)d^{1/3}}{e^{1/3}}+2x\right]\text{Log}\left[d+e\,x^3\right]-6\,\text{Log}\left[\frac{i\left(i+\sqrt{3}\right)d^{1/3}}{e^{1/3}}+2x\right]$$

$$\text{Log}\left[d+e\,x^3\right]+6\,\text{Log}\left[d+e\,x^3\right]^2+18\,\text{PolyLog}\left[2,-\frac{e^{1/3}x}{d^{1/3}}\right]+18\,\text{PolyLog}\left[2,\frac{\left(1-i\sqrt{3}\right)e^{1/3}x}{2\,d^{1/3}}\right]+18\,\text{PolyLog}\left[2,\frac{\left(1+i\sqrt{3}\right)e^{1/3}x}{2\,d^{1/3}}\right]+$$

$$6\,\text{PolyLog}\left[2,\frac{-2i\,d^{1/3}+\left(i+\sqrt{3}\right)e^{1/3}x}{\left(-3i+\sqrt{3}\right)d^{1/3}}\right]+6\,\text{PolyLog}\left[2,\frac{i+\sqrt{3}-\frac{2i\,e^{1/3}x}{d^{1/3}}}{3i+\sqrt{3}}\right]+6\,\text{PolyLog}\left[2,-\frac{-i+\sqrt{3}+\frac{2i\,e^{1/3}x}{d^{1/3}}}{3i-\sqrt{3}}\right]+$$

$$6\,\text{PolyLog}\left[2,\frac{2i\left(1+\frac{e^{1/3}x}{d^{1/3}}\right)}{3i-\sqrt{3}}\right]+6\,\text{PolyLog}\left[2,\frac{2i\left(1+\frac{e^{1/3}x}{d^{1/3}}\right)}{3i+\sqrt{3}}\right]+6\,\text{PolyLog}\left[2,\frac{1}{6}\left(3+i\sqrt{3}-\frac{2i\sqrt{3}\,e^{1/3}x}{d^{1/3}}\right)\right]\Bigg)\Bigg)\Bigg)$$

Problem 133: Result unnecessarily involves higher level functions.

$$\int x\,\text{Log}\left[c\left(d+e\,x^3\right)^p\right]^2\,dx$$

Optimal (type 4, 1294 leaves, 49 steps) :

$$\frac{9 p^2 x^2}{4}+\frac{3 \sqrt{3}\, d^{2/3} p^2 \text{ArcTan}\left[\frac{d^{1/3}-2 e^{1/3} x}{\sqrt{3}\, d^{1/3}}\right]}{2 e^{2/3}}+\frac{3 d^{2/3} p^2 \text{Log}\left[d^{1/3}+e^{1/3} x\right]}{2 e^{2/3}}+\frac{d^{2/3} p^2 \text{Log}\left[d^{1/3}+e^{1/3} x\right]^2}{2 e^{2/3}}+\frac{d^{2/3} p^2 \text{Log}\left[d^{1/3}+e^{1/3} x\right] \text{Log}\left[-\frac{(-1)^{2/3} d^{1/3}+e^{1/3} x}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right]}{e^{2/3}}-$$

$$\frac{(-1)^{1/3} d^{2/3} p^2 \text{Log}\left[\frac{(-1)^{1/3}\left(d^{1/3}+e^{1/3} x\right)}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right] \text{Log}\left[d^{1/3}-(-1)^{1/3} e^{1/3} x\right]}{e^{2/3}}-\frac{(-1)^{1/3} d^{2/3} p^2 \text{Log}\left[d^{1/3}-(-1)^{1/3} e^{1/3} x\right]^2}{2 e^{2/3}}+$$

$$\frac{(-1)^{2/3} d^{2/3} p^2 \text{Log}\left[-\frac{(-1)^{2/3}\left(d^{1/3}+e^{1/3} x\right)}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right] \text{Log}\left[d^{1/3}+(-1)^{2/3} e^{1/3} x\right]}{e^{2/3}}+\frac{(-1)^{2/3} d^{2/3} p^2 \text{Log}\left[\frac{(-1)^{1/3}\left(d^{1/3}-(-1)^{1/3} e^{1/3} x\right)}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right] \text{Log}\left[d^{1/3}+(-1)^{2/3} e^{1/3} x\right]}{e^{2/3}}+$$

$$\frac{(-1)^{2/3} d^{2/3} p^2 \text{Log}\left[d^{1/3}+(-1)^{2/3} e^{1/3} x\right]^2}{2 e^{2/3}}+\frac{d^{2/3} p^2 \text{Log}\left[d^{1/3}+e^{1/3} x\right] \text{Log}\left[\frac{(-1)^{1/3}\left(d^{1/3}+(-1)^{2/3} e^{1/3} x\right)}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]}{e^{2/3}}-$$

$$\frac{(-1)^{2/3} d^{2/3} p^2 \text{Log}\left[-\frac{(-1)^{2/3}\left(d^{1/3}+e^{1/3} x\right)}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right] \text{Log}\left[\frac{d^{1/3}+(-1)^{2/3} e^{1/3} x}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right]}{e^{2/3}}-\frac{(-1)^{1/3} d^{2/3} p^2 \text{Log}\left[d^{1/3}-(-1)^{1/3} e^{1/3} x\right] \text{Log}\left[-\frac{(-1)^{2/3}\left(d^{1/3}+(-1)^{2/3} e^{1/3} x\right)}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right]}{e^{2/3}}-$$

$$\frac{3 d^{2/3} p^2 \text{Log}\left[d^{2/3}-d^{1/3} e^{1/3} x+e^{2/3} x^2\right]}{4 e^{2/3}}-\frac{3}{2} p x^2 \text{Log}\left[c\left(d+e x^3\right)^p\right]-\frac{d^{2/3} p \text{Log}\left[d^{1/3}+e^{1/3} x\right] \text{Log}\left[c\left(d+e x^3\right)^p\right]}{e^{2/3}}+$$

$$\frac{(-1)^{1/3} d^{2/3} p \text{Log}\left[d^{1/3}-(-1)^{1/3} e^{1/3} x\right] \text{Log}\left[c\left(d+e x^3\right)^p\right]}{e^{2/3}}-\frac{(-1)^{2/3} d^{2/3} p \text{Log}\left[d^{1/3}+(-1)^{2/3} e^{1/3} x\right] \text{Log}\left[c\left(d+e x^3\right)^p\right]}{e^{2/3}}+$$

$$\frac{1}{2} x^2 \text{Log}\left[c\left(d+e x^3\right)^p\right]^2+\frac{d^{2/3} p^2 \text{PolyLog}\left[2,\frac{d^{1/3}+e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]}{e^{2/3}}-\frac{(-1)^{2/3} d^{2/3} p^2 \text{PolyLog}\left[2,-\frac{(-1)^{2/3}\left(d^{1/3}+e^{1/3} x\right)}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right]}{e^{2/3}}+\frac{d^{2/3} p^2 \text{PolyLog}\left[2,\frac{2\left(d^{1/3}+e^{1/3} x\right)}{\left(3-i \sqrt{3}\right) d^{1/3}}\right]}{e^{2/3}}-$$

$$\frac{(-1)^{1/3} d^{2/3} p^2 \text{PolyLog}\left[2,-\frac{(-1)^{1/3}\left((-1)^{2/3} d^{1/3}+e^{1/3} x\right)}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right]}{e^{2/3}}-\frac{(-1)^{1/3} d^{2/3} p^2 \text{PolyLog}\left[2,\frac{d^{1/3}-(-1)^{1/3} e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]}{e^{2/3}}+\frac{(-1)^{2/3} d^{2/3} p^2 \text{PolyLog}\left[2,\frac{d^{1/3}+(-1)^{2/3} e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]}{e^{2/3}}$$

Result (type 5, 1227 leaves) :

$$p\left(-\frac{3 e x^5 \text{Hypergeometric2F1}\left[1,\frac{5}{3},\frac{8}{3},-\frac{e x^3}{d}\right]}{5 d}+x^2 \text{Log}\left[d+e x^3\right]\right)\left(-p \text{Log}\left[d+e x^3\right]+\text{Log}\left[c\left(d+e x^3\right)^p\right]\right)+$$

$$\frac{1}{2} x^2\left(-p \text{Log}\left[d+e x^3\right]+\text{Log}\left[c\left(d+e x^3\right)^p\right]\right)^2+$$

$$p^2 \left(\frac{1}{2} x^2 \operatorname{Log}\left[d+e x^3\right]^2-\frac{1}{4 e^{2/3}}\left(6 d^{1/3} e^{1/3} x+6 (-1)^{2/3} d^{1/3} e^{1/3} x-6 e^{2/3} x^2-3 e^{1/3} x \left(2 (-1)^{1/3} d^{1/3}+e^{1/3} x\right)+6 e^{2/3} x^2 \operatorname{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]+\right.\right.$$

$$2 d^{2/3} \operatorname{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]^2+6 e^{2/3} x^2 \operatorname{Log}\left[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\right]-\frac{6 d^{2/3} \operatorname{Log}\left[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\right]^2}{\left(1+(-1)^{1/3}\right)^2}+6 e^{2/3} x^2 \operatorname{Log}\left[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\right]-$$

$$2 (-1)^{1/3} d^{2/3} \operatorname{Log}\left[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\right]^2-6 d^{2/3} \operatorname{Log}\left[d^{1/3}+e^{1/3} x\right]-6 (-1)^{2/3} d^{2/3} \operatorname{Log}\left[-(-1)^{1/3} d^{1/3}+e^{1/3} x\right]+6 (-1)^{1/3} d^{2/3}$$

$$\operatorname{Log}\left[(-1)^{2/3} d^{1/3}+e^{1/3} x\right]-2 \left(3 e^{2/3} x^2+2 \sqrt{3} d^{2/3} \operatorname{ArcTan}\left[\frac{1-\frac{2 e^{1/3} x}{d^{1/3}}}{\sqrt{3}}\right]+2 d^{2/3} \operatorname{Log}\left[d^{1/3}+e^{1/3} x\right]-d^{2/3} \operatorname{Log}\left[d^{2/3}-d^{1/3} e^{1/3} x+e^{2/3} x^2\right]\right)$$

$$\left(\operatorname{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]+\operatorname{Log}\left[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\right]+\operatorname{Log}\left[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\right]-\operatorname{Log}\left[d+e x^3\right]\right)+$$

$$4 d^{2/3} \left(\operatorname{Log}\left[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\right] \operatorname{Log}\left[\frac{d^{1/3}+e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]+\operatorname{PolyLog}\left[2,\frac{(-1)^{1/3} d^{1/3}-e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]\right)-$$

$$\frac{12 d^{2/3} \left(\operatorname{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right] \operatorname{Log}\left[\frac{(-1)^{1/3} d^{1/3}-e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]+\operatorname{PolyLog}\left[2,\frac{d^{1/3}+e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]\right)}{\left(1+(-1)^{1/3}\right)^2}-$$

$$\frac{12 d^{2/3} \left(\operatorname{Log}\left[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\right] \operatorname{Log}\left[\frac{d^{1/3}+(-1)^{2/3} e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]+\operatorname{PolyLog}\left[2,-\frac{i \left((-1)^{2/3} d^{1/3}+e^{1/3} x\right)}{\sqrt{3} d^{1/3}}\right]\right)}{\left(1+(-1)^{1/3}\right)^2}-$$

$$4 (-1)^{1/3} d^{2/3} \left(\operatorname{Log}\left[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\right] \operatorname{Log}\left[-\frac{i \left((-1)^{2/3} d^{1/3}+e^{1/3} x\right)}{\sqrt{3} d^{1/3}}\right]+\operatorname{PolyLog}\left[2,\frac{d^{1/3}+(-1)^{2/3} e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]\right)+$$

$$4 d^{2/3} \left(\operatorname{Log}\left[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\right] \operatorname{Log}\left[\frac{2 i \left(1+\frac{e^{1/3} x}{d^{1/3}}\right)}{3 i+\sqrt{3}}\right]+\operatorname{PolyLog}\left[2,\frac{i+\sqrt{3}-\frac{2 i e^{1/3} x}{d^{1/3}}}{3 i+\sqrt{3}}\right]\right)-$$

$$4\,(-1)^{1/3}\,d^{2/3}\left(\mathrm{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]\mathrm{Log}\left[\frac{i+\sqrt{3}-\frac{2\,i\,e^{1/3}\,x}{d^{1/3}}}{3\,i+\sqrt{3}}\right]+\mathrm{PolyLog}\left[2,\frac{2\,i\left(1+\frac{e^{1/3}\,x}{d^{1/3}}\right)}{3\,i+\sqrt{3}}\right]\right)\Bigg)\Bigg)$$

Problem 135: Result unnecessarily involves higher level functions.

$$\int\frac{\mathrm{Log}\left[c\,\left(d+e\,x^3\right)^p\right]^2}{x^2}\,dx$$

Optimal (type 4, 1137 leaves, 39 steps):

$$\frac{e^{1/3}\,p^2\,\mathrm{Log}\left[d^{1/3}+e^{1/3}\,x\right]^2}{d^{1/3}}+\frac{2\,e^{1/3}\,p^2\,\mathrm{Log}\left[d^{1/3}+e^{1/3}\,x\right]\mathrm{Log}\left[-\frac{(-1)^{2/3}\,d^{1/3}+e^{1/3}\,x}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]}{d^{1/3}}-\frac{2\,(-1)^{1/3}\,e^{1/3}\,p^2\,\mathrm{Log}\left[\frac{(-1)^{1/3}\left(d^{1/3}+e^{1/3}\,x\right)}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]\mathrm{Log}\left[d^{1/3}-(-1)^{1/3}\,e^{1/3}\,x\right]}{d^{1/3}}-$$

$$\frac{(-1)^{1/3}\,e^{1/3}\,p^2\,\mathrm{Log}\left[d^{1/3}-(-1)^{1/3}\,e^{1/3}\,x\right]^2}{d^{1/3}}+\frac{2\,(-1)^{2/3}\,e^{1/3}\,p^2\,\mathrm{Log}\left[-\frac{(-1)^{2/3}\left(d^{1/3}+e^{1/3}\,x\right)}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]\mathrm{Log}\left[d^{1/3}+(-1)^{2/3}\,e^{1/3}\,x\right]}{d^{1/3}}+$$

$$\frac{2\,(-1)^{2/3}\,e^{1/3}\,p^2\,\mathrm{Log}\left[\frac{(-1)^{1/3}\left(d^{1/3}-(-1)^{1/3}\,e^{1/3}\,x\right)}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]\mathrm{Log}\left[d^{1/3}+(-1)^{2/3}\,e^{1/3}\,x\right]}{d^{1/3}}+\frac{(-1)^{2/3}\,e^{1/3}\,p^2\,\mathrm{Log}\left[d^{1/3}+(-1)^{2/3}\,e^{1/3}\,x\right]^2}{d^{1/3}}+$$

$$\frac{2\,e^{1/3}\,p^2\,\mathrm{Log}\left[d^{1/3}+e^{1/3}\,x\right]\mathrm{Log}\left[\frac{(-1)^{1/3}\left(d^{1/3}+(-1)^{2/3}\,e^{1/3}\,x\right)}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]}{d^{1/3}}-\frac{2\,(-1)^{2/3}\,e^{1/3}\,p^2\,\mathrm{Log}\left[-\frac{(-1)^{2/3}\left(d^{1/3}+e^{1/3}\,x\right)}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]\mathrm{Log}\left[\frac{d^{1/3}+(-1)^{2/3}\,e^{1/3}\,x}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]}{d^{1/3}}-$$

$$\frac{2\,(-1)^{1/3}\,e^{1/3}\,p^2\,\mathrm{Log}\left[d^{1/3}-(-1)^{1/3}\,e^{1/3}\,x\right]\mathrm{Log}\left[-\frac{(-1)^{2/3}\left(d^{1/3}+(-1)^{2/3}\,e^{1/3}\,x\right)}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]}{d^{1/3}}-\frac{2\,e^{1/3}\,p\,\mathrm{Log}\left[d^{1/3}+e^{1/3}\,x\right]\mathrm{Log}\left[c\,\left(d+e\,x^3\right)^p\right]}{d^{1/3}}+$$

$$\frac{2\,(-1)^{1/3}\,e^{1/3}\,p\,\mathrm{Log}\left[d^{1/3}-(-1)^{1/3}\,e^{1/3}\,x\right]\mathrm{Log}\left[c\,\left(d+e\,x^3\right)^p\right]}{d^{1/3}}-\frac{2\,(-1)^{2/3}\,e^{1/3}\,p\,\mathrm{Log}\left[d^{1/3}+(-1)^{2/3}\,e^{1/3}\,x\right]\mathrm{Log}\left[c\,\left(d+e\,x^3\right)^p\right]}{d^{1/3}}-$$

$$\frac{\mathrm{Log}\left[c\,\left(d+e\,x^3\right)^p\right]^2}{x}+\frac{2\,e^{1/3}\,p^2\,\mathrm{PolyLog}\left[2,\frac{d^{1/3}+e^{1/3}\,x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]}{d^{1/3}}-\frac{2\,(-1)^{2/3}\,e^{1/3}\,p^2\,\mathrm{PolyLog}\left[2,-\frac{(-1)^{2/3}\left(d^{1/3}+e^{1/3}\,x\right)}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]}{d^{1/3}}+\frac{2\,e^{1/3}\,p^2\,\mathrm{PolyLog}\left[2,\frac{2\left(d^{1/3}+e^{1/3}\,x\right)}{\left(3-i\sqrt{3}\right)d^{1/3}}\right]}{d^{1/3}}-$$

$$\frac{2\,(-1)^{1/3}\,e^{1/3}\,p^2\,\mathrm{PolyLog}\left[2,-\frac{(-1)^{1/3}\left((-1)^{2/3}\,d^{1/3}+e^{1/3}\,x\right)}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]}{d^{1/3}}-\frac{2\,(-1)^{1/3}\,e^{1/3}\,p^2\,\mathrm{PolyLog}\left[2,\frac{d^{1/3}-(-1)^{1/3}\,e^{1/3}\,x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]}{d^{1/3}}+\frac{2\,(-1)^{2/3}\,e^{1/3}\,p^2\,\mathrm{PolyLog}\left[2,\frac{d^{1/3}+(-1)^{2/3}\,e^{1/3}\,x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]}{d^{1/3}}$$

Result (type 5, 994 leaves) :

$$2\,p\left(\frac{3\,e\,x^2\,\text{Hypergeometric2F1}\left[\frac{2}{3},1,\frac{5}{3},-\frac{e\,x^3}{d}\right]}{2\,d}-\frac{\text{Log}\left[d+e\,x^3\right]}{x}\right)\left(-p\,\text{Log}\left[d+e\,x^3\right]+\text{Log}\left[c\,\left(d+e\,x^3\right)^p\right]\right)-$$

$$\frac{\left(-p\,\text{Log}\left[d+e\,x^3\right]+\text{Log}\left[c\,\left(d+e\,x^3\right)^p\right]\right)^2}{x}+p^2\left(-\frac{\text{Log}\left[d+e\,x^3\right]^2}{x}-\right.$$

$$\frac{1}{\sqrt{3}\,d^{1/3}}\,i\,e^{1/3}\left(-i\,\sqrt{3}\,\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]^2-(-1)^{1/3}\left(-1+(-1)^{2/3}\right)\text{Log}\left[-\frac{(-1)^{1/3}\,d^{1/3}}{e^{1/3}}+x\right]^2+(-1)^{2/3}\left(1+(-1)^{1/3}\right)\text{Log}\left[\frac{(-1)^{2/3}\,d^{1/3}}{e^{1/3}}+x\right]^2-\right.$$

$$(-1)^{5/6}\sqrt{3}\left(-1+(-1)^{1/3}\right)\left(2\sqrt{3}\,\text{ArcTan}\left[\frac{1-\frac{2\,e^{1/3}\,x}{d^{1/3}}}{\sqrt{3}}\right]+2\,\text{Log}\left[d^{1/3}+e^{1/3}\,x\right]-\text{Log}\left[d^{2/3}-d^{1/3}\,e^{1/3}\,x+e^{2/3}\,x^2\right]\right)$$

$$\left(\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]+\text{Log}\left[-\frac{(-1)^{1/3}\,d^{1/3}}{e^{1/3}}+x\right]+\text{Log}\left[\frac{(-1)^{2/3}\,d^{1/3}}{e^{1/3}}+x\right]-\text{Log}\left[d+e\,x^3\right]\right)-$$

$$2\,i\,\sqrt{3}\left(\text{Log}\left[-\frac{(-1)^{1/3}\,d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[\frac{d^{1/3}+e^{1/3}\,x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]+\text{PolyLog}\left[2,\frac{(-1)^{1/3}\,d^{1/3}-e^{1/3}\,x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]\right)-$$

$$2\,(-1)^{1/3}\left(-1+(-1)^{2/3}\right)\left(\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[\frac{(-1)^{1/3}\,d^{1/3}-e^{1/3}\,x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]+\text{PolyLog}\left[2,\frac{d^{1/3}+e^{1/3}\,x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]\right)-$$

$$2\,(-1)^{1/3}\left(-1+(-1)^{2/3}\right)\left(\text{Log}\left[\frac{(-1)^{2/3}\,d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[\frac{d^{1/3}+(-1)^{2/3}\,e^{1/3}\,x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]+\text{PolyLog}\left[2,-\frac{i\left((-1)^{2/3}\,d^{1/3}+e^{1/3}\,x\right)}{\sqrt{3}\,d^{1/3}}\right]\right)+$$

$$2\,(-1)^{2/3}\left(1+(-1)^{1/3}\right)\left(\text{Log}\left[-\frac{(-1)^{1/3}\,d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[-\frac{i\left((-1)^{2/3}\,d^{1/3}+e^{1/3}\,x\right)}{\sqrt{3}\,d^{1/3}}\right]+\text{PolyLog}\left[2,\frac{d^{1/3}+(-1)^{2/3}\,e^{1/3}\,x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]\right)-$$

$$2\,i\,\sqrt{3}\left(\text{Log}\left[\frac{(-1)^{2/3}\,d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[\frac{2\,i\left(1+\frac{e^{1/3}\,x}{d^{1/3}}\right)}{3\,i+\sqrt{3}}\right]+\text{PolyLog}\left[2,\frac{i+\sqrt{3}-\frac{2\,i\,e^{1/3}\,x}{d^{1/3}}}{3\,i+\sqrt{3}}\right]\right)+$$

$$\left.\left.2\,(-1)^{2/3}\left(1+(-1)^{1/3}\right)\left(\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[\frac{i+\sqrt{3}-\frac{2\,i\,e^{1/3}\,x}{d^{1/3}}}{3\,i+\sqrt{3}}\right]+\text{PolyLog}\left[2,\frac{2\,i\left(1+\frac{e^{1/3}\,x}{d^{1/3}}\right)}{3\,i+\sqrt{3}}\right]\right)\right)\right)$$

Problem 136: Result unnecessarily involves higher level functions.

$$\int \frac{\text{Log}\left[c\left(d+e x^3\right)^p\right]^2}{x^3}\,dx$$

Optimal (type 4, 1170 leaves, 39 steps):

$$-\frac{e^{2/3} p^2 \text{Log}\left[-d^{1/3}-e^{1/3} x\right]^2}{2 d^{2/3}}-\frac{e^{2/3} p^2 \text{Log}\left[-d^{1/3}-e^{1/3} x\right] \text{Log}\left[-\frac{(-1)^{2/3} d^{1/3}+e^{1/3} x}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right]}{d^{2/3}}-\frac{(-1)^{2/3} e^{2/3} p^2 \text{Log}\left[\frac{(-1)^{1/3}\left(d^{1/3}+e^{1/3} x\right)}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right] \text{Log}\left[-d^{1/3}+(-1)^{1/3} e^{1/3} x\right]}{d^{2/3}}-$$

$$\frac{(-1)^{2/3} e^{2/3} p^2 \text{Log}\left[-d^{1/3}+(-1)^{1/3} e^{1/3} x\right]^2}{2 d^{2/3}}+\frac{(-1)^{1/3} e^{2/3} p^2 \text{Log}\left[-\frac{(-1)^{2/3}\left(d^{1/3}+e^{1/3} x\right)}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right] \text{Log}\left[-d^{1/3}-(-1)^{2/3} e^{1/3} x\right]}{d^{2/3}}+$$

$$\frac{(-1)^{1/3} e^{2/3} p^2 \text{Log}\left[\frac{(-1)^{1/3}\left(d^{1/3}-(-1)^{1/3} e^{1/3} x\right)}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right] \text{Log}\left[-d^{1/3}-(-1)^{2/3} e^{1/3} x\right]}{d^{2/3}}+\frac{(-1)^{1/3} e^{2/3} p^2 \text{Log}\left[-d^{1/3}-(-1)^{2/3} e^{1/3} x\right]^2}{2 d^{2/3}}-$$

$$\frac{e^{2/3} p^2 \text{Log}\left[-d^{1/3}-e^{1/3} x\right] \text{Log}\left[\frac{(-1)^{1/3}\left(d^{1/3}+(-1)^{2/3} e^{1/3} x\right)}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]}{d^{2/3}}-\frac{(-1)^{1/3} e^{2/3} p^2 \text{Log}\left[-\frac{(-1)^{2/3}\left(d^{1/3}+e^{1/3} x\right)}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right] \text{Log}\left[\frac{d^{1/3}+(-1)^{2/3} e^{1/3} x}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right]}{d^{2/3}}-$$

$$\frac{(-1)^{2/3} e^{2/3} p^2 \text{Log}\left[-d^{1/3}+(-1)^{1/3} e^{1/3} x\right] \text{Log}\left[-\frac{(-1)^{2/3}\left(d^{1/3}+(-1)^{2/3} e^{1/3} x\right)}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right]}{d^{2/3}}+\frac{e^{2/3} p \text{Log}\left[-d^{1/3}-e^{1/3} x\right] \text{Log}\left[c\left(d+e x^3\right)^p\right]}{d^{2/3}}+$$

$$\frac{(-1)^{2/3} e^{2/3} p \text{Log}\left[-d^{1/3}+(-1)^{1/3} e^{1/3} x\right] \text{Log}\left[c\left(d+e x^3\right)^p\right]}{d^{2/3}}-\frac{(-1)^{1/3} e^{2/3} p \text{Log}\left[-d^{1/3}-(-1)^{2/3} e^{1/3} x\right] \text{Log}\left[c\left(d+e x^3\right)^p\right]}{d^{2/3}}-$$

$$\frac{\text{Log}\left[c\left(d+e x^3\right)^p\right]^2}{2 x^2}-\frac{e^{2/3} p^2 \text{PolyLog}\left[2, \frac{d^{1/3}+e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]}{d^{2/3}}-\frac{(-1)^{1/3} e^{2/3} p^2 \text{PolyLog}\left[2, -\frac{(-1)^{2/3}\left(d^{1/3}+e^{1/3} x\right)}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right]}{d^{2/3}}-\frac{e^{2/3} p^2 \text{PolyLog}\left[2, \frac{2\left(d^{1/3}+e^{1/3} x\right)}{\left(3-i\sqrt{3}\right) d^{1/3}}\right]}{d^{2/3}}-$$

$$\frac{(-1)^{2/3} e^{2/3} p^2 \text{PolyLog}\left[2, -\frac{(-1)^{1/3}\left((-1)^{2/3} d^{1/3}+e^{1/3} x\right)}{\left(1-(-1)^{2/3}\right) d^{1/3}}\right]}{d^{2/3}}-\frac{(-1)^{2/3} e^{2/3} p^2 \text{PolyLog}\left[2, \frac{d^{1/3}-(-1)^{1/3} e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]}{d^{2/3}}+\frac{(-1)^{1/3} e^{2/3} p^2 \text{PolyLog}\left[2, \frac{d^{1/3}+(-1)^{2/3} e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\right]}{d^{2/3}}$$

Result (type 5, 964 leaves):

$$p\left(\frac{3\,e\,x\,\text{Hypergeometric2F1}\left[\frac{1}{3},1,\frac{4}{3},-\frac{e\,x^3}{d}\right]}{d}-\frac{\text{Log}\left[d+e\,x^3\right]}{x^2}\right)\left(-p\,\text{Log}\left[d+e\,x^3\right]+\text{Log}\left[c\left(d+e\,x^3\right)^p\right]\right)-$$

$$\frac{\left(-p\,\text{Log}\left[d+e\,x^3\right]+\text{Log}\left[c\left(d+e\,x^3\right)^p\right]\right)^2}{2\,x^2}+p^2\,\Bigg(-\frac{\text{Log}\left[d+e\,x^3\right]^2}{2\,x^2}-$$

$$\frac{1}{2\sqrt{3}\,d^{2/3}}\,i\,e^{2/3}\,\Bigg(i\sqrt{3}\,\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]^2-\left(-1+(-1)^{2/3}\right)\text{Log}\left[-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x\right]^2-\left(1+(-1)^{1/3}\right)\text{Log}\left[\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right]^2-(-1)^{5/6}\sqrt{3}$$

$$\left(-1+(-1)^{1/3}\right)\left(2\sqrt{3}\,\text{ArcTan}\left[\frac{1-\frac{2e^{1/3}x}{d^{1/3}}}{\sqrt{3}}\right]-2\,\text{Log}\left[d^{1/3}+e^{1/3}x\right]+\text{Log}\left[d^{2/3}-d^{1/3}e^{1/3}x+e^{2/3}x^2\right]\right)\Bigg(\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]+\text{Log}\left[-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x\right]+$$

$$\text{Log}\left[\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right]-\text{Log}\left[d+e\,x^3\right]\Bigg)+2\,i\sqrt{3}\left(\text{Log}\left[-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[\frac{d^{1/3}+e^{1/3}x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]+\text{PolyLog}\left[2,\frac{(-1)^{1/3}d^{1/3}-e^{1/3}x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]\right)-$$

$$2\left(-1+(-1)^{2/3}\right)\left(\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[\frac{(-1)^{1/3}d^{1/3}-e^{1/3}x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]+\text{PolyLog}\left[2,\frac{d^{1/3}+e^{1/3}x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]\right)-$$

$$2\left(-1+(-1)^{2/3}\right)\left(\text{Log}\left[\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[\frac{d^{1/3}+(-1)^{2/3}e^{1/3}x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]+\text{PolyLog}\left[2,-\frac{i\left((-1)^{2/3}d^{1/3}+e^{1/3}x\right)}{\sqrt{3}\,d^{1/3}}\right]\right)-$$

$$2\left(1+(-1)^{1/3}\right)\left(\text{Log}\left[-\frac{(-1)^{1/3}d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[-\frac{i\left((-1)^{2/3}d^{1/3}+e^{1/3}x\right)}{\sqrt{3}\,d^{1/3}}\right]+\text{PolyLog}\left[2,\frac{d^{1/3}+(-1)^{2/3}e^{1/3}x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]\right)+$$

$$2\,i\sqrt{3}\left(\text{Log}\left[\frac{(-1)^{2/3}d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[\frac{2\,i\left(1+\frac{e^{1/3}x}{d^{1/3}}\right)}{3\,i+\sqrt{3}}\right]+\text{PolyLog}\left[2,\frac{i+\sqrt{3}-\frac{2\,i\,e^{1/3}x}{d^{1/3}}}{3\,i+\sqrt{3}}\right]\right)-$$

$$2\left(1+(-1)^{1/3}\right)\left(\text{Log}\left[\frac{d^{1/3}}{e^{1/3}}+x\right]\text{Log}\left[\frac{i+\sqrt{3}-\frac{2\,i\,e^{1/3}x}{d^{1/3}}}{3\,i+\sqrt{3}}\right]+\text{PolyLog}\left[2,\frac{2\,i\left(1+\frac{e^{1/3}x}{d^{1/3}}\right)}{3\,i+\sqrt{3}}\right]\right)\Bigg)\Bigg)\Bigg)$$

Problem 137: Result unnecessarily involves higher level functions.

$$\int\frac{\text{Log}\left[c\left(d+e\,x^3\right)^p\right]^2}{x^5}\,dx$$

Optimal (type 4, 1328 leaves, 48 steps):

$$-\frac{3\sqrt{3}\,e^{4/3}p^2\,\text{ArcTan}\left[\frac{d^{1/3}-2e^{1/3}x}{\sqrt{3}\,d^{1/3}}\right]}{2d^{4/3}}-\frac{3e^{4/3}p^2\,\text{Log}\left[d^{1/3}+e^{1/3}x\right]}{2d^{4/3}}-\frac{e^{4/3}p^2\,\text{Log}\left[d^{1/3}+e^{1/3}x\right]^2}{4d^{4/3}}-\frac{e^{4/3}p^2\,\text{Log}\left[d^{1/3}+e^{1/3}x\right]\text{Log}\left[-\frac{(-1)^{2/3}d^{1/3}+e^{1/3}x}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]}{2d^{4/3}}+$$

$$\frac{(-1)^{1/3}e^{4/3}p^2\,\text{Log}\left[\frac{(-1)^{1/3}\left(d^{1/3}+e^{1/3}x\right)}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]\text{Log}\left[d^{1/3}-(-1)^{1/3}e^{1/3}x\right]}{2d^{4/3}}+\frac{(-1)^{1/3}e^{4/3}p^2\,\text{Log}\left[d^{1/3}-(-1)^{1/3}e^{1/3}x\right]^2}{4d^{4/3}}-$$

$$\frac{(-1)^{2/3}e^{4/3}p^2\,\text{Log}\left[-\frac{(-1)^{2/3}\left(d^{1/3}+e^{1/3}x\right)}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]\text{Log}\left[d^{1/3}+(-1)^{2/3}e^{1/3}x\right]}{2d^{4/3}}-\frac{(-1)^{2/3}e^{4/3}p^2\,\text{Log}\left[\frac{(-1)^{1/3}\left(d^{1/3}-(-1)^{1/3}e^{1/3}x\right)}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]\text{Log}\left[d^{1/3}+(-1)^{2/3}e^{1/3}x\right]}{2d^{4/3}}-$$

$$\frac{(-1)^{2/3}e^{4/3}p^2\,\text{Log}\left[d^{1/3}+(-1)^{2/3}e^{1/3}x\right]^2}{4d^{4/3}}-\frac{e^{4/3}p^2\,\text{Log}\left[d^{1/3}+e^{1/3}x\right]\text{Log}\left[\frac{(-1)^{1/3}\left(d^{1/3}+(-1)^{2/3}e^{1/3}x\right)}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]}{2d^{4/3}}+$$

$$\frac{(-1)^{2/3}e^{4/3}p^2\,\text{Log}\left[-\frac{(-1)^{2/3}\left(d^{1/3}+e^{1/3}x\right)}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]\text{Log}\left[\frac{d^{1/3}+(-1)^{2/3}e^{1/3}x}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]}{2d^{4/3}}+\frac{(-1)^{1/3}e^{4/3}p^2\,\text{Log}\left[d^{1/3}-(-1)^{1/3}e^{1/3}x\right]\text{Log}\left[-\frac{(-1)^{2/3}\left(d^{1/3}+(-1)^{2/3}e^{1/3}x\right)}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]}{2d^{4/3}}+$$

$$\frac{3e^{4/3}p^2\,\text{Log}\left[d^{2/3}-d^{1/3}e^{1/3}x+e^{2/3}x^2\right]}{4d^{4/3}}-\frac{3e\,p\,\text{Log}\left[c\left(d+e\,x^3\right)^p\right]}{2d\,x}+\frac{e^{4/3}p\,\text{Log}\left[d^{1/3}+e^{1/3}x\right]\text{Log}\left[c\left(d+e\,x^3\right)^p\right]}{2d^{4/3}}-$$

$$\frac{(-1)^{1/3}e^{4/3}p\,\text{Log}\left[d^{1/3}-(-1)^{1/3}e^{1/3}x\right]\text{Log}\left[c\left(d+e\,x^3\right)^p\right]}{2d^{4/3}}+\frac{(-1)^{2/3}e^{4/3}p\,\text{Log}\left[d^{1/3}+(-1)^{2/3}e^{1/3}x\right]\text{Log}\left[c\left(d+e\,x^3\right)^p\right]}{2d^{4/3}}-$$

$$\frac{\text{Log}\left[c\left(d+e\,x^3\right)^p\right]^2}{4x^4}-\frac{e^{4/3}p^2\,\text{PolyLog}\left[2,\frac{d^{1/3}+e^{1/3}x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]}{2d^{4/3}}+\frac{(-1)^{2/3}e^{4/3}p^2\,\text{PolyLog}\left[2,-\frac{(-1)^{2/3}\left(d^{1/3}+e^{1/3}x\right)}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]}{2d^{4/3}}-\frac{e^{4/3}p^2\,\text{PolyLog}\left[2,\frac{2\left(d^{1/3}+e^{1/3}x\right)}{\left(3-i\sqrt{3}\right)d^{1/3}}\right]}{2d^{4/3}}+$$

$$\frac{(-1)^{1/3}e^{4/3}p^2\,\text{PolyLog}\left[2,-\frac{(-1)^{1/3}\left((-1)^{2/3}d^{1/3}+e^{1/3}x\right)}{\left(1-(-1)^{2/3}\right)d^{1/3}}\right]}{2d^{4/3}}+\frac{(-1)^{1/3}e^{4/3}p^2\,\text{PolyLog}\left[2,\frac{d^{1/3}-(-1)^{1/3}e^{1/3}x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]}{2d^{4/3}}-\frac{(-1)^{2/3}e^{4/3}p^2\,\text{PolyLog}\left[2,\frac{d^{1/3}+(-1)^{2/3}e^{1/3}x}{\left(1+(-1)^{1/3}\right)d^{1/3}}\right]}{2d^{4/3}}$$

Result (type 5, 1296 leaves):

$$\frac{1}{4x^4}\left(\frac{1}{d}2p\left(3e\,x^3\,\text{Hypergeometric2F1}\left[-\frac{1}{3},1,\frac{2}{3},-\frac{e\,x^3}{d}\right]+d\,\text{Log}\left[d+e\,x^3\right]\right)\left(p\,\text{Log}\left[d+e\,x^3\right]-\text{Log}\left[c\left(d+e\,x^3\right)^p\right]\right)-\right.$$

$$\left(-p\,\text{Log}\left[d+e\,x^3\right]+\text{Log}\left[c\left(d+e\,x^3\right)^p\right]\right)^2+$$

$$p^2 \Big(-\text{Log}[d+e x^3]^2 + \frac{1}{\left(1+(-1)^{1/3}\right)^2 d^{4/3}} e x^3 \Big(3 (-1)^{1/3} e^{1/3} x \,\text{Log}\Big[\frac{d^{1/3}}{e^{1/3}}+x\Big]^2 + 3 (-1)^{1/3} \left(-1+(-1)^{1/3}\right) e^{1/3} x \,\text{Log}\Big[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\Big]^2 +$$

$$3 (-1)^{1/3} \left(-1+(-1)^{1/3}\right)^2 e^{1/3} x \,\text{Log}\Big[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\Big]^2 + 6 \left(1+(-1)^{1/3}\right)^2 \Big(e^{1/3} x \,\text{Log}[x] - d^{1/3} \text{Log}\Big[\frac{d^{1/3}}{e^{1/3}}+x\Big] - e^{1/3} x \,\text{Log}\big[d^{1/3}+e^{1/3} x\big]\Big) +$$

$$6 \left(1+(-1)^{1/3}\right)^2 \Big((-1)^{2/3} e^{1/3} x \,\text{Log}[x] - d^{1/3} \text{Log}\Big[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\Big] - (-1)^{2/3} e^{1/3} x \,\text{Log}\big[-(-1)^{1/3} d^{1/3}+e^{1/3} x\big]\Big) -$$

$$6 \left(1+(-1)^{1/3}\right)^2 \Big((-1)^{1/3} e^{1/3} x \,\text{Log}[x] + d^{1/3} \text{Log}\Big[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\Big] - (-1)^{1/3} e^{1/3} x \,\text{Log}\big[(-1)^{2/3} d^{1/3}+e^{1/3} x\big]\Big) +$$

$$\left(1+(-1)^{1/3}\right)^2 \Big(6 d^{1/3} - 2\sqrt{3}\, e^{1/3} x \,\text{ArcTan}\Big[\frac{1-\frac{2 e^{1/3} x}{d^{1/3}}}{\sqrt{3}}\Big] - 2 e^{1/3} x \,\text{Log}\big[d^{1/3}+e^{1/3} x\big] + e^{1/3} x \,\text{Log}\big[d^{2/3}-d^{1/3} e^{1/3} x+e^{2/3} x^2\big]\Big)$$

$$\Big(\text{Log}\Big[\frac{d^{1/3}}{e^{1/3}}+x\Big] + \text{Log}\Big[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\Big] + \text{Log}\Big[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\Big] - \text{Log}[d+e x^3]\Big) +$$

$$6 (-1)^{1/3} e^{1/3} x \Big(\text{Log}\Big[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\Big] \text{Log}\Big[\frac{d^{1/3}+e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\Big] + \text{PolyLog}\Big[2, \frac{(-1)^{1/3} d^{1/3}-e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\Big]\Big) +$$

$$6 (-1)^{1/3} \left(-1+(-1)^{1/3}\right) e^{1/3} x \Big(\text{Log}\Big[\frac{d^{1/3}}{e^{1/3}}+x\Big] \text{Log}\Big[\frac{(-1)^{1/3} d^{1/3}-e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\Big] + \text{PolyLog}\Big[2, \frac{d^{1/3}+e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\Big]\Big) +$$

$$6 (-1)^{1/3} \left(-1+(-1)^{1/3}\right) e^{1/3} x \Big(\text{Log}\Big[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\Big] \text{Log}\Big[\frac{d^{1/3}+(-1)^{2/3} e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\Big] + \text{PolyLog}\Big[2, -\frac{i \left((-1)^{2/3} d^{1/3}+e^{1/3} x\right)}{\sqrt{3}\, d^{1/3}}\Big]\Big) +$$

$$6 (-1)^{1/3} \left(-1+(-1)^{1/3}\right)^2 e^{1/3} x \Big(\text{Log}\Big[-\frac{(-1)^{1/3} d^{1/3}}{e^{1/3}}+x\Big] \text{Log}\Big[-\frac{i \left((-1)^{2/3} d^{1/3}+e^{1/3} x\right)}{\sqrt{3}\, d^{1/3}}\Big] + \text{PolyLog}\Big[2, \frac{d^{1/3}+(-1)^{2/3} e^{1/3} x}{\left(1+(-1)^{1/3}\right) d^{1/3}}\Big]\Big) +$$

$$6 (-1)^{1/3} e^{1/3} x \Big(\text{Log}\Big[\frac{(-1)^{2/3} d^{1/3}}{e^{1/3}}+x\Big] \text{Log}\Big[\frac{2 i \left(1+\frac{e^{1/3} x}{d^{1/3}}\right)}{3 i+\sqrt{3}}\Big] + \text{PolyLog}\Big[2, \frac{i+\sqrt{3}-\frac{2 i e^{1/3} x}{d^{1/3}}}{3 i+\sqrt{3}}\Big]\Big) +$$

$$6 (-1)^{1/3} \left(-1+(-1)^{1/3}\right)^2 e^{1/3} x \Big(\text{Log}\Big[\frac{d^{1/3}}{e^{1/3}}+x\Big] \text{Log}\Big[\frac{i+\sqrt{3}-\frac{2 i e^{1/3} x}{d^{1/3}}}{3 i+\sqrt{3}}\Big] + \text{PolyLog}\Big[2, \frac{2 i \left(1+\frac{e^{1/3} x}{d^{1/3}}\right)}{3 i+\sqrt{3}}\Big]\Big)\Big)\Big)\Big)\Big)$$

Problem 169: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}[1+e\,x^n]}{x}\,dx$$

Optimal (type 4, 13 leaves, 1 step):

$$-\frac{\text{PolyLog}[2,-e\,x^n]}{n}$$

Result (type 4, 30 leaves):

$$\frac{\text{Log}[-e\,x^n]\,\text{Log}[1+e\,x^n]+\text{PolyLog}[2,1+e\,x^n]}{n}$$

Problem 174: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[c\,(d+e\,x^n)^p\right]^2}{x}\,dx$$

Optimal (type 4, 79 leaves, 5 steps):

$$\frac{\text{Log}\left[-\frac{e\,x^n}{d}\right]\text{Log}\left[c\,(d+e\,x^n)^p\right]^2}{n}+\frac{2\,p\,\text{Log}\left[c\,(d+e\,x^n)^p\right]\text{PolyLog}\left[2,1+\frac{e\,x^n}{d}\right]}{n}-\frac{2\,p^2\,\text{PolyLog}\left[3,1+\frac{e\,x^n}{d}\right]}{n}$$

Result (type 4, 164 leaves):

$$\text{Log}[x]\,\left(-p\,\text{Log}\left[d+e\,x^n\right]+\text{Log}\left[c\,(d+e\,x^n)^p\right]\right)^2+$$
$$2\,p\,\left(-p\,\text{Log}\left[d+e\,x^n\right]+\text{Log}\left[c\,(d+e\,x^n)^p\right]\right)\left(\text{Log}[x]\,\left(\text{Log}\left[d+e\,x^n\right]-\text{Log}\left[1+\frac{e\,x^n}{d}\right]\right)-\frac{\text{PolyLog}\left[2,-\frac{e\,x^n}{d}\right]}{n}\right)+$$
$$\frac{p^2\,\left(\text{Log}\left[-\frac{e\,x^n}{d}\right]\text{Log}[d+e\,x^n]^2+2\,\text{Log}[d+e\,x^n]\,\text{PolyLog}\left[2,1+\frac{e\,x^n}{d}\right]-2\,\text{PolyLog}\left[3,1+\frac{e\,x^n}{d}\right]\right)}{n}$$

Problem 175: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[c\,(d+e\,x^n)^p\right]^3}{x}\,dx$$

Optimal (type 4, 113 leaves, 6 steps):

$$\frac{\text{Log}\left[-\frac{e\,x^n}{d}\right]\text{Log}\left[c\,(d+e\,x^n)^p\right]^3}{n}+\frac{3\,p\,\text{Log}\left[c\,(d+e\,x^n)^p\right]^2\text{PolyLog}\left[2,1+\frac{e\,x^n}{d}\right]}{n}-\frac{6\,p^2\,\text{Log}\left[c\,(d+e\,x^n)^p\right]\text{PolyLog}\left[3,1+\frac{e\,x^n}{d}\right]}{n}+\frac{6\,p^3\,\text{PolyLog}\left[4,1+\frac{e\,x^n}{d}\right]}{n}$$

Result (type 4, 270 leaves):

$$\frac{1}{n}\left(-n\,p^3\,\text{Log}[x]\,\text{Log}\left[d+e\,x^n\right]^3+p^3\,\text{Log}\left[-\frac{e\,x^n}{d}\right]\text{Log}\left[d+e\,x^n\right]^3+\right.$$
$$3\,n\,p^2\,\text{Log}[x]\,\text{Log}\left[d+e\,x^n\right]^2\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]-3\,p^2\,\text{Log}\left[-\frac{e\,x^n}{d}\right]\text{Log}\left[d+e\,x^n\right]^2\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]-$$
$$3\,n\,p\,\text{Log}[x]\,\text{Log}\left[d+e\,x^n\right]\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]^2+3\,p\,\text{Log}\left[-\frac{e\,x^n}{d}\right]\text{Log}\left[d+e\,x^n\right]\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]^2+n\,\text{Log}[x]\,\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]^3+$$
$$\left.3\,p\,\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]^2\text{PolyLog}\left[2,1+\frac{e\,x^n}{d}\right]-6\,p^2\,\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]\text{PolyLog}\left[3,1+\frac{e\,x^n}{d}\right]+6\,p^3\,\text{PolyLog}\left[4,1+\frac{e\,x^n}{d}\right]\right)$$

Problem 188: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]}{d+e\,x}\,dx$$

Optimal (type 4, 201 leaves, 9 steps):

$$-\frac{p\,\text{Log}\left[\frac{e\left(\sqrt{-a}-\sqrt{b}\,x\right)}{\sqrt{b}\,d+\sqrt{-a}\,e}\right]\text{Log}[d+e\,x]}{e}-\frac{p\,\text{Log}\left[-\frac{e\left(\sqrt{-a}+\sqrt{b}\,x\right)}{\sqrt{b}\,d-\sqrt{-a}\,e}\right]\text{Log}[d+e\,x]}{e}+$$
$$\frac{\text{Log}[d+e\,x]\,\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]}{e}-\frac{p\,\text{PolyLog}\left[2,\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d-\sqrt{-a}\,e}\right]}{e}-\frac{p\,\text{PolyLog}\left[2,\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d+\sqrt{-a}\,e}\right]}{e}$$

Result (type 4, 262 leaves):

$$\frac{1}{e}\left(-p\,\text{Log}\left[-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}[d+e\,x]-p\,\text{Log}\left[\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}[d+e\,x]+p\,\text{Log}\left[\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}\left[\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d-i\,\sqrt{a}\,e}\right]+\right.$$
$$\left.p\,\text{Log}\left[-\frac{i\,\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}\left[\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d+i\,\sqrt{a}\,e}\right]+\text{Log}[d+e\,x]\,\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]+p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{a}-i\,\sqrt{b}\,x\right)}{i\,\sqrt{b}\,d+\sqrt{a}\,e}\right]+p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{a}+i\,\sqrt{b}\,x\right)}{-i\,\sqrt{b}\,d+\sqrt{a}\,e}\right]\right)$$

Problem 206: Result is not expressed in closed-form.

$$\int(d+e\,x)^m\,\text{Log}\left[c\,\left(a+b\,x^3\right)^p\right]dx$$

Optimal (type 5, 301 leaves, 6 steps):

$$\frac{b^{1/3}\,p\,(d+e\,x)^{2+m}\,\text{Hypergeometric2F1}\left[1,\,2+m,\,3+m,\,\frac{b^{1/3}\,(d+e\,x)}{b^{1/3}\,d-a^{1/3}\,e}\right]}{e\,\left(b^{1/3}\,d-a^{1/3}\,e\right)\,(1+m)\,(2+m)}+\frac{b^{1/3}\,p\,(d+e\,x)^{2+m}\,\text{Hypergeometric2F1}\left[1,\,2+m,\,3+m,\,\frac{b^{1/3}\,(d+e\,x)}{b^{1/3}\,d+(-1)^{1/3}\,a^{1/3}\,e}\right]}{e\,\left(b^{1/3}\,d+(-1)^{1/3}\,a^{1/3}\,e\right)\,(1+m)\,(2+m)}+$$

$$\frac{b^{1/3}\,p\,(d+e\,x)^{2+m}\,\text{Hypergeometric2F1}\left[1,\,2+m,\,3+m,\,\frac{b^{1/3}\,(d+e\,x)}{b^{1/3}\,d-(-1)^{2/3}\,a^{1/3}\,e}\right]}{e\,\left(b^{1/3}\,d-(-1)^{2/3}\,a^{1/3}\,e\right)\,(1+m)\,(2+m)}+\frac{(d+e\,x)^{1+m}\,\text{Log}\left[c\,\left(a+b\,x^3\right)^p\right]}{e\,(1+m)}$$

Result (type 7, 399 leaves):

$$\frac{1}{b\,e\,m\,(1+m)^2}$$

$$(d+e\,x)^m\left(-\left(b\,d^3-a\,e^3\right)\,(1+m)\,p\,\text{RootSum}\left[b\,d^3-a\,e^3-3\,b\,d^2\,\#1+3\,b\,d\,\#1^2-b\,\#1^3\,\&,\,\frac{\text{Hypergeometric2F1}\left[-m,\,-m,\,1-m,\,-\frac{\#1}{d+e\,x-\#1}\right]\left(\frac{d+e\,x}{d+e\,x-\#1}\right)^{-m}}{d^2-2\,d\,\#1+\#1^2}\,\&\right]+\right.$$

$$b\left(m\,(d+e\,x)\,\left(-3\,p+(1+m)\,\text{Log}\left[c\,\left(a+b\,x^3\right)^p\right]\right)+\right.$$

$$2\,d^2\,(1+m)\,p\,\text{RootSum}\left[b\,d^3-a\,e^3-3\,b\,d^2\,\#1+3\,b\,d\,\#1^2-b\,\#1^3\,\&,\,\frac{\text{Hypergeometric2F1}\left[-m,\,-m,\,1-m,\,-\frac{\#1}{d+e\,x-\#1}\right]\left(\frac{d+e\,x}{d+e\,x-\#1}\right)^{-m}\#1}{d^2-2\,d\,\#1+\#1^2}\,\&\right]-$$

$$\left.\left.d\,(1+m)\,p\,\text{RootSum}\left[b\,d^3-a\,e^3-3\,b\,d^2\,\#1+3\,b\,d\,\#1^2-b\,\#1^3\,\&,\,\frac{\text{Hypergeometric2F1}\left[-m,\,-m,\,1-m,\,-\frac{\#1}{d+e\,x-\#1}\right]\left(\frac{d+e\,x}{d+e\,x-\#1}\right)^{-m}\#1^2}{d^2-2\,d\,\#1+\#1^2}\,\&\right]\right)\right)$$

Problem 207: Result unnecessarily involves imaginary or complex numbers.

$$\int (d+e\,x)^m\,\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]\,dx$$

Optimal (type 5, 205 leaves, 5 steps):

$$\frac{\sqrt{b}\,p\,(d+e\,x)^{2+m}\,\text{Hypergeometric2F1}\left[1,\,2+m,\,3+m,\,\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d-\sqrt{-a}\,e}\right]}{e\,\left(\sqrt{b}\,d-\sqrt{-a}\,e\right)\,(1+m)\,(2+m)}+$$

$$\frac{\sqrt{b}\,p\,(d+e\,x)^{2+m}\,\text{Hypergeometric2F1}\left[1,\,2+m,\,3+m,\,\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d+\sqrt{-a}\,e}\right]}{e\,\left(\sqrt{b}\,d+\sqrt{-a}\,e\right)\,(1+m)\,(2+m)}+\frac{(d+e\,x)^{1+m}\,\text{Log}\left[c\,\left(a+b\,x^2\right)^p\right]}{e\,(1+m)}$$

Result (type 5, 285 leaves):

$$\frac{1}{\sqrt{b}\,e\,m\,(1+m)^2}(d+e\,x)^m\left(-\left(\sqrt{b}\,d+i\sqrt{a}\,e\right)(1+m)\,p\left(\frac{\sqrt{b}\,(d+e\,x)}{e\left(-i\sqrt{a}+\sqrt{b}\,x\right)}\right)^{-m}\text{Hypergeometric2F1}\left[-m,-m,1-m,\frac{\sqrt{b}\,d+i\sqrt{a}\,e}{i\sqrt{a}\,e-\sqrt{b}\,e\,x}\right]-\left(\sqrt{b}\,d-i\sqrt{a}\,e\right)(1+m)\,p\left(\frac{\sqrt{b}\,(d+e\,x)}{e\left(i\sqrt{a}+\sqrt{b}\,x\right)}\right)^{-m}\text{Hypergeometric2F1}\left[-m,-m,1-m,-\frac{\sqrt{b}\,d-i\sqrt{a}\,e}{i\sqrt{a}\,e+\sqrt{b}\,e\,x}\right]+\sqrt{b}\,m\,(d+e\,x)\left(-2\,p+(1+m)\,\text{Log}\left[c\left(a+b\,x^2\right)^p\right]\right)\right)$$

Problem 210: Result unnecessarily involves imaginary or complex numbers.

$$\int (d+e\,x)^m\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]dx$$

Optimal (type 5, 257 leaves, 9 steps):

$$\frac{\sqrt{-a}\,p\,(d+e\,x)^{2+m}\,\text{Hypergeometric2F1}\left[1,2+m,3+m,\frac{\sqrt{-a}\,(d+e\,x)}{\sqrt{-a}\,d-\sqrt{b}\,e}\right]}{e\left(\sqrt{-a}\,d-\sqrt{b}\,e\right)(1+m)(2+m)}+\frac{\sqrt{-a}\,p\,(d+e\,x)^{2+m}\,\text{Hypergeometric2F1}\left[1,2+m,3+m,\frac{\sqrt{-a}\,(d+e\,x)}{\sqrt{-a}\,d+\sqrt{b}\,e}\right]}{e\left(\sqrt{-a}\,d+\sqrt{b}\,e\right)(1+m)(2+m)}-\frac{2\,p\,(d+e\,x)^{2+m}\,\text{Hypergeometric2F1}\left[1,2+m,3+m,1+\frac{e\,x}{d}\right]}{d\,e\left(2+3\,m+m^2\right)}+\frac{(d+e\,x)^{1+m}\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{e\,(1+m)}$$

Result (type 5, 310 leaves):

$$\frac{1}{e\,m\,(1+m)}(d+e\,x)^m\left(2\,d\,p\left(1+\frac{d}{e\,x}\right)^{-m}\text{Hypergeometric2F1}\left[-m,-m,1-m,-\frac{d}{e\,x}\right]-\frac{\left(\sqrt{a}\,d+i\sqrt{b}\,e\right)p\left(\frac{\sqrt{a}\,(d+e\,x)}{e\left(-i\sqrt{b}+\sqrt{a}\,x\right)}\right)^{-m}\text{Hypergeometric2F1}\left[-m,-m,1-m,\frac{\sqrt{a}\,d+i\sqrt{b}\,e}{i\sqrt{b}\,e-\sqrt{a}\,e\,x}\right]}{\sqrt{a}}-\frac{\left(\sqrt{a}\,d-i\sqrt{b}\,e\right)p\left(\frac{\sqrt{a}\,(d+e\,x)}{e\left(i\sqrt{b}+\sqrt{a}\,x\right)}\right)^{-m}\text{Hypergeometric2F1}\left[-m,-m,1-m,-\frac{\sqrt{a}\,d-i\sqrt{b}\,e}{i\sqrt{b}\,e+\sqrt{a}\,e\,x}\right]}{\sqrt{a}}+m\,(d+e\,x)\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]\right)$$

Problem 216: Attempted integration timed out after 120 seconds.

$$\int \frac{\text{Log}\left[c\left(d+e x^n\right)^p\right]}{f+g x} \, dx$$

Optimal (type 9, 22 leaves, 0 steps):

$$\text{Unintegrable}\left[\frac{\text{Log}\left[c\left(d+e x^n\right)^p\right]}{f+g x}, x\right]$$

Result (type 1, 1 leaves):

???

Problem 226: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^3 \text{Log}\left[c\left(a+b x^2\right)^p\right]}{d+e x} \, dx$$

Optimal (type 4, 394 leaves, 21 steps):

$$-\frac{2 d^2 p x}{e^3}+\frac{2 a p x}{3 b e}+\frac{d p x^2}{2 e^2}-\frac{2 p x^3}{9 e}+\frac{2 \sqrt{a}\, d^2 p \text{ArcTan}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right]}{\sqrt{b}\, e^3}-\frac{2 a^{3/2} p \text{ArcTan}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right]}{3 b^{3/2} e}+$$
$$\frac{d^3 p \text{Log}\left[\frac{e\left(\sqrt{-a}-\sqrt{b}\, x\right)}{\sqrt{b}\, d+\sqrt{-a}\, e}\right] \text{Log}[d+e x]}{e^4}+\frac{d^3 p \text{Log}\left[-\frac{e\left(\sqrt{-a}+\sqrt{b}\, x\right)}{\sqrt{b}\, d-\sqrt{-a}\, e}\right] \text{Log}[d+e x]}{e^4}+\frac{d^2 x \text{Log}\left[c\left(a+b x^2\right)^p\right]}{e^3}+\frac{x^3 \text{Log}\left[c\left(a+b x^2\right)^p\right]}{3 e}-$$
$$\frac{d\left(a+b x^2\right) \text{Log}\left[c\left(a+b x^2\right)^p\right]}{2 b e^2}-\frac{d^3 \text{Log}[d+e x] \text{Log}\left[c\left(a+b x^2\right)^p\right]}{e^4}+\frac{d^3 p \text{PolyLog}\left[2, \frac{\sqrt{b}\,(d+e x)}{\sqrt{b}\, d-\sqrt{-a}\, e}\right]}{e^4}+\frac{d^3 p \text{PolyLog}\left[2, \frac{\sqrt{b}\,(d+e x)}{\sqrt{b}\, d+\sqrt{-a}\, e}\right]}{e^4}$$

Result (type 4, 509 leaves):

$$-\frac{1}{18 e^4}\left(36 d^2 e p x-\frac{12 a e^3 p x}{b}-9 d e^2 p x^2+4 e^3 p x^3+\frac{12 a^{3/2} e^3 p \,\text{ArcTan}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right]}{b^{3/2}}+\frac{18 i \sqrt{a}\, d^2 e p \,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]}{\sqrt{b}}-\frac{18 i \sqrt{a}\, d^2 e p \,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]}{\sqrt{b}}-\right.$$

$$18 d^3 p \,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right] \text{Log}[d+e x]-18 d^3 p \,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right] \text{Log}[d+e x]+18 d^3 p \,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right] \text{Log}\left[\frac{\sqrt{b}\,(d+e x)}{\sqrt{b}\, d-i\sqrt{a}\, e}\right]+$$

$$18 d^3 p \,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right] \text{Log}\left[\frac{\sqrt{b}\,(d+e x)}{\sqrt{b}\, d+i\sqrt{a}\, e}\right]+\frac{9 a d e^2 p \,\text{Log}\left[a+b x^2\right]}{b}-18 d^2 e x \,\text{Log}\left[c\left(a+b x^2\right)^p\right]+9 d e^2 x^2 \,\text{Log}\left[c\left(a+b x^2\right)^p\right]-$$

$$\left.6 e^3 x^3 \,\text{Log}\left[c\left(a+b x^2\right)^p\right]+18 d^3 \,\text{Log}[d+e x] \,\text{Log}\left[c\left(a+b x^2\right)^p\right]+18 d^3 p \,\text{PolyLog}\left[2,\frac{e\left(\sqrt{a}-i\sqrt{b}\, x\right)}{i\sqrt{b}\, d+\sqrt{a}\, e}\right]+18 d^3 p \,\text{PolyLog}\left[2,\frac{e\left(\sqrt{a}+i\sqrt{b}\, x\right)}{-i\sqrt{b}\, d+\sqrt{a}\, e}\right]\right)$$

Problem 227: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^2 \,\text{Log}\left[c\left(a+b x^2\right)^p\right]}{d+e x}\, dx$$

Optimal (type 4, 313 leaves, 17 steps):

$$\frac{2 d p x}{e^2}-\frac{p x^2}{2 e}-\frac{2\sqrt{a}\, d p \,\text{ArcTan}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right]}{\sqrt{b}\, e^2}-\frac{d^2 p \,\text{Log}\left[\frac{e\left(\sqrt{-a}-\sqrt{b}\, x\right)}{\sqrt{b}\, d+\sqrt{-a}\, e}\right] \text{Log}[d+e x]}{e^3}-\frac{d^2 p \,\text{Log}\left[-\frac{e\left(\sqrt{-a}+\sqrt{b}\, x\right)}{\sqrt{b}\, d-\sqrt{-a}\, e}\right] \text{Log}[d+e x]}{e^3}-\frac{d x \,\text{Log}\left[c\left(a+b x^2\right)^p\right]}{e^2}+$$

$$\frac{\left(a+b x^2\right) \text{Log}\left[c\left(a+b x^2\right)^p\right]}{2 b e}+\frac{d^2 \,\text{Log}[d+e x] \,\text{Log}\left[c\left(a+b x^2\right)^p\right]}{e^3}-\frac{d^2 p \,\text{PolyLog}\left[2,\frac{\sqrt{b}\,(d+e x)}{\sqrt{b}\, d-\sqrt{-a}\, e}\right]}{e^3}-\frac{d^2 p \,\text{PolyLog}\left[2,\frac{\sqrt{b}\,(d+e x)}{\sqrt{b}\, d+\sqrt{-a}\, e}\right]}{e^3}$$

Result (type 4, 438 leaves):

$$\frac{1}{2 b e^3}\left(4 b d e p x-b e^2 p x^2+2 i\sqrt{a}\sqrt{b}\, d e p \,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]-2 i\sqrt{a}\sqrt{b}\, d e p \,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]-\right.$$

$$2 b d^2 p \,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right] \text{Log}[d+e x]-2 b d^2 p \,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right] \text{Log}[d+e x]+2 b d^2 p \,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right] \text{Log}\left[\frac{\sqrt{b}\,(d+e x)}{\sqrt{b}\, d-i\sqrt{a}\, e}\right]+$$

$$2 b d^2 p \,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right] \text{Log}\left[\frac{\sqrt{b}\,(d+e x)}{\sqrt{b}\, d+i\sqrt{a}\, e}\right]+a e^2 p \,\text{Log}\left[a+b x^2\right]-2 b d e x \,\text{Log}\left[c\left(a+b x^2\right)^p\right]+b e^2 x^2 \,\text{Log}\left[c\left(a+b x^2\right)^p\right]+$$

$$\left.2 b d^2 \,\text{Log}[d+e x] \,\text{Log}\left[c\left(a+b x^2\right)^p\right]+2 b d^2 p \,\text{PolyLog}\left[2,\frac{e\left(\sqrt{a}-i\sqrt{b}\, x\right)}{i\sqrt{b}\, d+\sqrt{a}\, e}\right]+2 b d^2 p \,\text{PolyLog}\left[2,\frac{e\left(\sqrt{a}+i\sqrt{b}\, x\right)}{-i\sqrt{b}\, d+\sqrt{a}\, e}\right]\right)$$

Problem 228: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]}{d+e x} \, dx$$

Optimal (type 4, 256 leaves, 14 steps):

$$-\frac{2 p x}{e}+\frac{2 \sqrt{a}\, p \operatorname{ArcTan}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right]}{\sqrt{b}\, e}+\frac{d p \operatorname{Log}\left[\frac{e \left(\sqrt{-a}-\sqrt{b}\, x\right)}{\sqrt{b}\, d+\sqrt{-a}\, e}\right] \operatorname{Log}[d+e x]}{e^2}+\frac{d p \operatorname{Log}\left[-\frac{e \left(\sqrt{-a}+\sqrt{b}\, x\right)}{\sqrt{b}\, d-\sqrt{-a}\, e}\right] \operatorname{Log}[d+e x]}{e^2}+\frac{x \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]}{e}-\frac{d \operatorname{Log}[d+e x] \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]}{e^2}+\frac{d p \operatorname{PolyLog}\left[2, \frac{\sqrt{b}\, (d+e x)}{\sqrt{b}\, d-\sqrt{-a}\, e}\right]}{e^2}+\frac{d p \operatorname{PolyLog}\left[2, \frac{\sqrt{b}\, (d+e x)}{\sqrt{b}\, d+\sqrt{-a}\, e}\right]}{e^2}$$

Result (type 4, 357 leaves):

$$-\frac{1}{e^2}\left(2 e p x+\frac{i \sqrt{a}\, e p \operatorname{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}}+x\right]}{\sqrt{b}}-\frac{i \sqrt{a}\, e p \operatorname{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}}+x\right]}{\sqrt{b}}-d p \operatorname{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \operatorname{Log}[d+e x]-d p \operatorname{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \operatorname{Log}[d+e x]+d p \operatorname{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \operatorname{Log}\left[\frac{\sqrt{b}\, (d+e x)}{\sqrt{b}\, d-i \sqrt{a}\, e}\right]+d p \operatorname{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \operatorname{Log}\left[\frac{\sqrt{b}\, (d+e x)}{\sqrt{b}\, d+i \sqrt{a}\, e}\right]-e x \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]+d \operatorname{Log}[d+e x] \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]+d p \operatorname{PolyLog}\left[2, \frac{e \left(\sqrt{a}-i \sqrt{b}\, x\right)}{i \sqrt{b}\, d+\sqrt{a}\, e}\right]+d p \operatorname{PolyLog}\left[2, \frac{e \left(\sqrt{a}+i \sqrt{b}\, x\right)}{-i \sqrt{b}\, d+\sqrt{a}\, e}\right]\right)$$

Problem 229: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\operatorname{Log}\left[c \left(a+b x^2\right)^p\right]}{d+e x} \, dx$$

Optimal (type 4, 201 leaves, 9 steps):

$$-\frac{p \operatorname{Log}\left[\frac{e \left(\sqrt{-a}-\sqrt{b}\, x\right)}{\sqrt{b}\, d+\sqrt{-a}\, e}\right] \operatorname{Log}[d+e x]}{e}-\frac{p \operatorname{Log}\left[-\frac{e \left(\sqrt{-a}+\sqrt{b}\, x\right)}{\sqrt{b}\, d-\sqrt{-a}\, e}\right] \operatorname{Log}[d+e x]}{e}+\frac{\operatorname{Log}[d+e x] \operatorname{Log}\left[c \left(a+b x^2\right)^p\right]}{e}-\frac{p \operatorname{PolyLog}\left[2, \frac{\sqrt{b}\, (d+e x)}{\sqrt{b}\, d-\sqrt{-a}\, e}\right]}{e}-\frac{p \operatorname{PolyLog}\left[2, \frac{\sqrt{b}\, (d+e x)}{\sqrt{b}\, d+\sqrt{-a}\, e}\right]}{e}$$

Result (type 4, 262 leaves):

$$\frac{1}{e}\left(-p\,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}[d+e\,x]-p\,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}[d+e\,x]+p\,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}\left[\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d-i\sqrt{a}\,e}\right]+ p\,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}\left[\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d+i\sqrt{a}\,e}\right]+\text{Log}[d+e\,x]\,\text{Log}\left[c\left(a+b\,x^2\right)^p\right]+p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{a}-i\sqrt{b}\,x\right)}{i\sqrt{b}\,d+\sqrt{a}\,e}\right]+p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{a}+i\sqrt{b}\,x\right)}{-i\sqrt{b}\,d+\sqrt{a}\,e}\right]\right)$$

Problem 230: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}\left[c\left(a+b\,x^2\right)^p\right]}{x\,(d+e\,x)}\,dx$$

Optimal (type 4, 247 leaves, 14 steps):

$$\frac{p\,\text{Log}\left[\frac{e\left(\sqrt{-a}-\sqrt{b}\,x\right)}{\sqrt{b}\,d+\sqrt{-a}\,e}\right]\text{Log}[d+e\,x]}{d}+\frac{p\,\text{Log}\left[-\frac{e\left(\sqrt{-a}+\sqrt{b}\,x\right)}{\sqrt{b}\,d-\sqrt{-a}\,e}\right]\text{Log}[d+e\,x]}{d}+\frac{\text{Log}\left[-\frac{b\,x^2}{a}\right]\text{Log}\left[c\left(a+b\,x^2\right)^p\right]}{2\,d}-\frac{\text{Log}[d+e\,x]\,\text{Log}\left[c\left(a+b\,x^2\right)^p\right]}{d}+\frac{p\,\text{PolyLog}\left[2,\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d-\sqrt{-a}\,e}\right]}{d}+\frac{p\,\text{PolyLog}\left[2,\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d+\sqrt{-a}\,e}\right]}{d}+\frac{p\,\text{PolyLog}\left[2,1+\frac{b\,x^2}{a}\right]}{2\,d}$$

Result (type 4, 361 leaves):

$$-\frac{1}{d}\left(p\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]+p\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]-p\,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}[d+e\,x]-p\,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}[d+e\,x]+ p\,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}\left[\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d-i\sqrt{a}\,e}\right]+p\,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}\left[\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d+i\sqrt{a}\,e}\right]-\text{Log}[x]\,\text{Log}\left[c\left(a+b\,x^2\right)^p\right]+\text{Log}[d+e\,x]\,\text{Log}\left[c\left(a+b\,x^2\right)^p\right]+ p\,\text{PolyLog}\left[2,-\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]+p\,\text{PolyLog}\left[2,\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]+p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{a}-i\sqrt{b}\,x\right)}{i\sqrt{b}\,d+\sqrt{a}\,e}\right]+p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{a}+i\sqrt{b}\,x\right)}{-i\sqrt{b}\,d+\sqrt{a}\,e}\right]\right)$$

Problem 231: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}\left[c\left(a+b\,x^2\right)^p\right]}{x^2\,(d+e\,x)}\,dx$$

Optimal (type 4, 306 leaves, 16 steps):

$$\frac{2\sqrt{b}\,p\,\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right]}{\sqrt{a}\,d}-\frac{e\,p\,\text{Log}\left[\frac{e\left(\sqrt{-a}-\sqrt{b}\,x\right)}{\sqrt{b}\,d+\sqrt{-a}\,e}\right]\text{Log}[d+e\,x]}{d^2}-\frac{e\,p\,\text{Log}\left[-\frac{e\left(\sqrt{-a}+\sqrt{b}\,x\right)}{\sqrt{b}\,d-\sqrt{-a}\,e}\right]\text{Log}[d+e\,x]}{d^2}-$$

$$\frac{\text{Log}\left[c\left(a+b\,x^2\right)^p\right]}{d\,x}-\frac{e\,\text{Log}\left[-\frac{b\,x^2}{a}\right]\text{Log}\left[c\left(a+b\,x^2\right)^p\right]}{2\,d^2}+\frac{e\,\text{Log}[d+e\,x]\,\text{Log}\left[c\left(a+b\,x^2\right)^p\right]}{d^2}-$$

$$\frac{e\,p\,\text{PolyLog}\left[2,\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d-\sqrt{-a}\,e}\right]}{d^2}-\frac{e\,p\,\text{PolyLog}\left[2,\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d+\sqrt{-a}\,e}\right]}{d^2}-\frac{e\,p\,\text{PolyLog}\left[2,1+\frac{b\,x^2}{a}\right]}{2\,d^2}$$

Result (type 4, 417 leaves):

$$\frac{1}{d^2}\left(\frac{2\sqrt{b}\,d\,p\,\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right]}{\sqrt{a}}+e\,p\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]+e\,p\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]-\right.$$

$$e\,p\,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}[d+e\,x]-e\,p\,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}[d+e\,x]+e\,p\,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}\left[\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d-i\sqrt{a}\,e}\right]+$$

$$e\,p\,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}\left[\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d+i\sqrt{a}\,e}\right]-\frac{d\,\text{Log}\left[c\left(a+b\,x^2\right)^p\right]}{x}-e\,\text{Log}[x]\,\text{Log}\left[c\left(a+b\,x^2\right)^p\right]+e\,\text{Log}[d+e\,x]\,\text{Log}\left[c\left(a+b\,x^2\right)^p\right]+$$

$$\left.e\,p\,\text{PolyLog}\left[2,-\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]+e\,p\,\text{PolyLog}\left[2,\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]+e\,p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{a}-i\sqrt{b}\,x\right)}{i\sqrt{b}\,d+\sqrt{a}\,e}\right]+e\,p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{a}+i\sqrt{b}\,x\right)}{-i\sqrt{b}\,d+\sqrt{a}\,e}\right]\right)$$

Problem 232: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}\left[c\left(a+b\,x^2\right)^p\right]}{x^3\,(d+e\,x)}\,dx$$

Optimal (type 4, 371 leaves, 21 steps):

$$-\frac{2\sqrt{b}\,e\,p\,\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right]}{\sqrt{a}\,d^2}+\frac{b\,p\,\text{Log}[x]}{a\,d}+\frac{e^2\,p\,\text{Log}\left[\frac{e\left(\sqrt{-a}-\sqrt{b}\,x\right)}{\sqrt{b}\,d+\sqrt{-a}\,e}\right]\text{Log}[d+e\,x]}{d^3}+\frac{e^2\,p\,\text{Log}\left[-\frac{e\left(\sqrt{-a}+\sqrt{b}\,x\right)}{\sqrt{b}\,d-\sqrt{-a}\,e}\right]\text{Log}[d+e\,x]}{d^3}-$$

$$\frac{b\,p\,\text{Log}\left[a+b\,x^2\right]}{2\,a\,d}-\frac{\text{Log}\left[c\left(a+b\,x^2\right)^p\right]}{2\,d\,x^2}+\frac{e\,\text{Log}\left[c\left(a+b\,x^2\right)^p\right]}{d^2\,x}+\frac{e^2\,\text{Log}\left[-\frac{b\,x^2}{a}\right]\text{Log}\left[c\left(a+b\,x^2\right)^p\right]}{2\,d^3}-$$

$$\frac{e^2\,\text{Log}[d+e\,x]\,\text{Log}\left[c\left(a+b\,x^2\right)^p\right]}{d^3}+\frac{e^2\,p\,\text{PolyLog}\left[2,\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d-\sqrt{-a}\,e}\right]}{d^3}+\frac{e^2\,p\,\text{PolyLog}\left[2,\frac{\sqrt{b}\,(d+e\,x)}{\sqrt{b}\,d+\sqrt{-a}\,e}\right]}{d^3}+\frac{e^2\,p\,\text{PolyLog}\left[2,1+\frac{b\,x^2}{a}\right]}{2\,d^3}$$

Result (type 4, 503 leaves):

$$-\frac{1}{2 d^3}\left(\frac{4 \sqrt{b}\, d e p \,\text{ArcTan}\left[\frac{\sqrt{b}\, x}{\sqrt{a}}\right]}{\sqrt{a}}-\frac{2 b d^2 p \,\text{Log}[x]}{a}+2 e^2 p \,\text{Log}[x]\, \text{Log}\left[1-\frac{i \sqrt{b}\, x}{\sqrt{a}}\right]+2 e^2 p \,\text{Log}[x]\, \text{Log}\left[1+\frac{i \sqrt{b}\, x}{\sqrt{a}}\right]-\right.$$
$$2 e^2 p \,\text{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \text{Log}[d+e x]-2 e^2 p \,\text{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \text{Log}[d+e x]+2 e^2 p \,\text{Log}\left[\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \text{Log}\left[\frac{\sqrt{b}\,(d+e x)}{\sqrt{b}\, d-i \sqrt{a}\, e}\right]+$$
$$2 e^2 p \,\text{Log}\left[-\frac{i \sqrt{a}}{\sqrt{b}}+x\right] \text{Log}\left[\frac{\sqrt{b}\,(d+e x)}{\sqrt{b}\, d+i \sqrt{a}\, e}\right]+\frac{b d^2 p \,\text{Log}\left[a+b x^2\right]}{a}+\frac{d^2 \,\text{Log}\left[c\left(a+b x^2\right)^p\right]}{x^2}-\frac{2 d e \,\text{Log}\left[c\left(a+b x^2\right)^p\right]}{x}-$$
$$2 e^2 \,\text{Log}[x]\, \text{Log}\left[c\left(a+b x^2\right)^p\right]+2 e^2 \,\text{Log}[d+e x]\, \text{Log}\left[c\left(a+b x^2\right)^p\right]+2 e^2 p \,\text{PolyLog}\left[2,-\frac{i \sqrt{b}\, x}{\sqrt{a}}\right]+$$
$$\left.2 e^2 p \,\text{PolyLog}\left[2, \frac{i \sqrt{b}\, x}{\sqrt{a}}\right]+2 e^2 p \,\text{PolyLog}\left[2, \frac{e\left(\sqrt{a}-i \sqrt{b}\, x\right)}{i \sqrt{b}\, d+\sqrt{a}\, e}\right]+2 e^2 p \,\text{PolyLog}\left[2, \frac{e\left(\sqrt{a}+i \sqrt{b}\, x\right)}{-i \sqrt{b}\, d+\sqrt{a}\, e}\right]\right)$$

Problem 247: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x^3 \,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{d+e x}\, dx$$

Optimal (type 4, 421 leaves, 25 steps):

$$\frac{2 b p x}{3 a e}+\frac{2 \sqrt{b}\, d^2 p \,\text{ArcTan}\left[\frac{\sqrt{a}\, x}{\sqrt{b}}\right]}{\sqrt{a}\, e^3}-\frac{2 b^{3/2} p \,\text{ArcTan}\left[\frac{\sqrt{a}\, x}{\sqrt{b}}\right]}{3 a^{3/2} e}+\frac{d^2 x \,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{e^3}-\frac{d x^2 \,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{2 e^2}+\frac{x^3 \,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{3 e}-$$
$$\frac{d^3 \,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right] \text{Log}[d+e x]}{e^4}-\frac{2 d^3 p \,\text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]}{e^4}+\frac{d^3 p \,\text{Log}\left[\frac{e\left(\sqrt{b}-\sqrt{-a}\, x\right)}{\sqrt{-a}\, d+\sqrt{b}\, e}\right] \text{Log}[d+e x]}{e^4}+\frac{d^3 p \,\text{Log}\left[-\frac{e\left(\sqrt{b}+\sqrt{-a}\, x\right)}{\sqrt{-a}\, d-\sqrt{b}\, e}\right] \text{Log}[d+e x]}{e^4}-$$
$$\frac{b d p \,\text{Log}\left[b+a x^2\right]}{2 a e^2}+\frac{d^3 p \,\text{PolyLog}\left[2, \frac{\sqrt{-a}\,(d+e x)}{\sqrt{-a}\, d-\sqrt{b}\, e}\right]}{e^4}+\frac{d^3 p \,\text{PolyLog}\left[2, \frac{\sqrt{-a}\,(d+e x)}{\sqrt{-a}\, d+\sqrt{b}\, e}\right]}{e^4}-\frac{2 d^3 p \,\text{PolyLog}\left[2, 1+\frac{e x}{d}\right]}{e^4}$$

Result (type 4, 528 leaves):

$$-\frac{1}{6e^4}\left(-\frac{4be^3px}{a}+\frac{4b^{3/2}e^3p\,\text{ArcTan}\left[\frac{\sqrt{a}\,x}{\sqrt{b}}\right]}{a^{3/2}}-6d^2ex\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]+3de^2x^2\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]-\right.$$

$$2e^3x^3\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]+\frac{6\,i\sqrt{b}\,d^2ep\,\text{Log}\left[-\frac{i\sqrt{b}}{\sqrt{a}}+x\right]}{\sqrt{a}}-\frac{6\,i\sqrt{b}\,d^2ep\,\text{Log}\left[\frac{i\sqrt{b}}{\sqrt{a}}+x\right]}{\sqrt{a}}+6d^3\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]\text{Log}[d+ex]+$$

$$12d^3p\,\text{Log}[x]\,\text{Log}[d+ex]-6d^3p\,\text{Log}\left[-\frac{i\sqrt{b}}{\sqrt{a}}+x\right]\text{Log}[d+ex]-6d^3p\,\text{Log}\left[\frac{i\sqrt{b}}{\sqrt{a}}+x\right]\text{Log}[d+ex]+$$

$$6d^3p\,\text{Log}\left[\frac{i\sqrt{b}}{\sqrt{a}}+x\right]\text{Log}\left[\frac{\sqrt{a}\,(d+ex)}{\sqrt{a}\,d-i\sqrt{b}\,e}\right]+6d^3p\,\text{Log}\left[-\frac{i\sqrt{b}}{\sqrt{a}}+x\right]\text{Log}\left[\frac{\sqrt{a}\,(d+ex)}{\sqrt{a}\,d+i\sqrt{b}\,e}\right]-12d^3p\,\text{Log}[x]\,\text{Log}\left[1+\frac{ex}{d}\right]+$$

$$\left.\frac{3bde^2p\,\text{Log}[b+ax^2]}{a}-12d^3p\,\text{PolyLog}\left[2,-\frac{ex}{d}\right]+6d^3p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{b}-i\sqrt{a}\,x\right)}{i\sqrt{a}\,d+\sqrt{b}\,e}\right]+6d^3p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{b}+i\sqrt{a}\,x\right)}{-i\sqrt{a}\,d+\sqrt{b}\,e}\right]\right)$$

Problem 248: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{x^2\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{d+ex}\,dx$$

Optimal (type 4, 353 leaves, 21 steps):

$$-\frac{2\sqrt{b}\,dp\,\text{ArcTan}\left[\frac{\sqrt{a}\,x}{\sqrt{b}}\right]}{\sqrt{a}\,e^2}-\frac{dx\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{e^2}+\frac{x^2\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{2e}+\frac{d^2\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]\text{Log}[d+ex]}{e^3}+$$

$$\frac{2d^2p\,\text{Log}\left[-\frac{ex}{d}\right]\text{Log}[d+ex]}{e^3}-\frac{d^2p\,\text{Log}\left[\frac{e\left(\sqrt{b}-\sqrt{-a}\,x\right)}{\sqrt{-a}\,d+\sqrt{b}\,e}\right]\text{Log}[d+ex]}{e^3}-\frac{d^2p\,\text{Log}\left[-\frac{e\left(\sqrt{b}+\sqrt{-a}\,x\right)}{\sqrt{-a}\,d-\sqrt{b}\,e}\right]\text{Log}[d+ex]}{e^3}+$$

$$\frac{bp\,\text{Log}[b+ax^2]}{2ae}-\frac{d^2p\,\text{PolyLog}\left[2,\frac{\sqrt{-a}\,(d+ex)}{\sqrt{-a}\,d-\sqrt{b}\,e}\right]}{e^3}-\frac{d^2p\,\text{PolyLog}\left[2,\frac{\sqrt{-a}\,(d+ex)}{\sqrt{-a}\,d+\sqrt{b}\,e}\right]}{e^3}+\frac{2d^2p\,\text{PolyLog}\left[2,1+\frac{ex}{d}\right]}{e^3}$$

Result (type 4, 470 leaves):

$$
\begin{aligned}
&\frac{1}{2\,a\,e^3}\Bigg(-2\,a\,d\,e\,x\,\text{Log}\Big[c\,\Big(a+\frac{b}{x^2}\Big)^p\Big]+a\,e^2\,x^2\,\text{Log}\Big[c\,\Big(a+\frac{b}{x^2}\Big)^p\Big]+2\,i\,\sqrt{a}\,\sqrt{b}\,d\,e\,p\,\text{Log}\Big[-\frac{i\,\sqrt{b}}{\sqrt{a}}+x\Big]-2\,i\,\sqrt{a}\,\sqrt{b}\,d\,e\,p\,\text{Log}\Big[\frac{i\,\sqrt{b}}{\sqrt{a}}+x\Big]+\\
&\quad 2\,a\,d^2\,\text{Log}\Big[c\,\Big(a+\frac{b}{x^2}\Big)^p\Big]\,\text{Log}[d+e\,x]+4\,a\,d^2\,p\,\text{Log}[x]\,\text{Log}[d+e\,x]-2\,a\,d^2\,p\,\text{Log}\Big[-\frac{i\,\sqrt{b}}{\sqrt{a}}+x\Big]\,\text{Log}[d+e\,x]-2\,a\,d^2\,p\,\text{Log}\Big[\frac{i\,\sqrt{b}}{\sqrt{a}}+x\Big]\,\text{Log}[d+e\,x]+\\
&\quad 2\,a\,d^2\,p\,\text{Log}\Big[\frac{i\,\sqrt{b}}{\sqrt{a}}+x\Big]\,\text{Log}\Big[\frac{\sqrt{a}\,(d+e\,x)}{\sqrt{a}\,d-i\,\sqrt{b}\,e}\Big]+2\,a\,d^2\,p\,\text{Log}\Big[-\frac{i\,\sqrt{b}}{\sqrt{a}}+x\Big]\,\text{Log}\Big[\frac{\sqrt{a}\,(d+e\,x)}{\sqrt{a}\,d+i\,\sqrt{b}\,e}\Big]-4\,a\,d^2\,p\,\text{Log}[x]\,\text{Log}\Big[1+\frac{e\,x}{d}\Big]+\\
&\quad b\,e^2\,p\,\text{Log}\big[b+a\,x^2\big]-4\,a\,d^2\,p\,\text{PolyLog}\Big[2,-\frac{e\,x}{d}\Big]+2\,a\,d^2\,p\,\text{PolyLog}\Big[2,\frac{e\,\big(\sqrt{b}-i\,\sqrt{a}\,x\big)}{i\,\sqrt{a}\,d+\sqrt{b}\,e}\Big]+2\,a\,d^2\,p\,\text{PolyLog}\Big[2,\frac{e\,\big(\sqrt{b}+i\,\sqrt{a}\,x\big)}{-i\,\sqrt{a}\,d+\sqrt{b}\,e}\Big]\Bigg)
\end{aligned}
$$

Problem 249: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{x\,\text{Log}\Big[c\,\Big(a+\frac{b}{x^2}\Big)^p\Big]}{d+e\,x}\,dx$$

Optimal (type 4, 291 leaves, 18 steps):

$$
\begin{aligned}
&\frac{2\,\sqrt{b}\,p\,\text{ArcTan}\Big[\frac{\sqrt{a}\,x}{\sqrt{b}}\Big]}{\sqrt{a}\,e}+\frac{x\,\text{Log}\Big[c\,\Big(a+\frac{b}{x^2}\Big)^p\Big]}{e}-\frac{d\,\text{Log}\Big[c\,\Big(a+\frac{b}{x^2}\Big)^p\Big]\,\text{Log}[d+e\,x]}{e^2}-\frac{2\,d\,p\,\text{Log}\Big[-\frac{e\,x}{d}\Big]\,\text{Log}[d+e\,x]}{e^2}+\frac{d\,p\,\text{Log}\Big[\frac{e\,(\sqrt{b}-\sqrt{-a}\,x)}{\sqrt{-a}\,d+\sqrt{b}\,e}\Big]\,\text{Log}[d+e\,x]}{e^2}+\\
&\frac{d\,p\,\text{Log}\Big[-\frac{e\,(\sqrt{b}+\sqrt{-a}\,x)}{\sqrt{-a}\,d-\sqrt{b}\,e}\Big]\,\text{Log}[d+e\,x]}{e^2}+\frac{d\,p\,\text{PolyLog}\Big[2,\frac{\sqrt{-a}\,(d+e\,x)}{\sqrt{-a}\,d-\sqrt{b}\,e}\Big]}{e^2}+\frac{d\,p\,\text{PolyLog}\Big[2,\frac{\sqrt{-a}\,(d+e\,x)}{\sqrt{-a}\,d+\sqrt{b}\,e}\Big]}{e^2}-\frac{2\,d\,p\,\text{PolyLog}\Big[2,1+\frac{e\,x}{d}\Big]}{e^2}
\end{aligned}
$$

Result (type 4, 392 leaves):

$$
\begin{aligned}
&-\frac{1}{e^2}\Bigg(-e\,x\,\text{Log}\Big[c\,\Big(a+\frac{b}{x^2}\Big)^p\Big]+\frac{i\,\sqrt{b}\,e\,p\,\text{Log}\Big[-\frac{i\,\sqrt{b}}{\sqrt{a}}+x\Big]}{\sqrt{a}}-\frac{i\,\sqrt{b}\,e\,p\,\text{Log}\Big[\frac{i\,\sqrt{b}}{\sqrt{a}}+x\Big]}{\sqrt{a}}+\\
&\quad d\,\text{Log}\Big[c\,\Big(a+\frac{b}{x^2}\Big)^p\Big]\,\text{Log}[d+e\,x]+2\,d\,p\,\text{Log}[x]\,\text{Log}[d+e\,x]-d\,p\,\text{Log}\Big[-\frac{i\,\sqrt{b}}{\sqrt{a}}+x\Big]\,\text{Log}[d+e\,x]-d\,p\,\text{Log}\Big[\frac{i\,\sqrt{b}}{\sqrt{a}}+x\Big]\,\text{Log}[d+e\,x]+\\
&\quad d\,p\,\text{Log}\Big[\frac{i\,\sqrt{b}}{\sqrt{a}}+x\Big]\,\text{Log}\Big[\frac{\sqrt{a}\,(d+e\,x)}{\sqrt{a}\,d-i\,\sqrt{b}\,e}\Big]+d\,p\,\text{Log}\Big[-\frac{i\,\sqrt{b}}{\sqrt{a}}+x\Big]\,\text{Log}\Big[\frac{\sqrt{a}\,(d+e\,x)}{\sqrt{a}\,d+i\,\sqrt{b}\,e}\Big]-2\,d\,p\,\text{Log}[x]\,\text{Log}\Big[1+\frac{e\,x}{d}\Big]-\\
&\quad 2\,d\,p\,\text{PolyLog}\Big[2,-\frac{e\,x}{d}\Big]+d\,p\,\text{PolyLog}\Big[2,\frac{e\,\big(\sqrt{b}-i\,\sqrt{a}\,x\big)}{i\,\sqrt{a}\,d+\sqrt{b}\,e}\Big]+d\,p\,\text{PolyLog}\Big[2,\frac{e\,\big(\sqrt{b}+i\,\sqrt{a}\,x\big)}{-i\,\sqrt{a}\,d+\sqrt{b}\,e}\Big]\Bigg)
\end{aligned}
$$

Problem 250: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{d+e x} \, dx$$

Optimal (type 4, 241 leaves, 13 steps):

$$\frac{\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right] \text{Log}[d+e x]}{e}+\frac{2 p \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]}{e}-\frac{p \text{Log}\left[\frac{e\left(\sqrt{b}-\sqrt{-a} x\right)}{\sqrt{-a} d+\sqrt{b} e}\right] \text{Log}[d+e x]}{e}-\frac{p \text{Log}\left[-\frac{e\left(\sqrt{b}+\sqrt{-a} x\right)}{\sqrt{-a} d-\sqrt{b} e}\right] \text{Log}[d+e x]}{e}-\frac{p \text{PolyLog}\left[2, \frac{\sqrt{-a}(d+e x)}{\sqrt{-a} d-\sqrt{b} e}\right]}{e}-\frac{p \text{PolyLog}\left[2, \frac{\sqrt{-a}(d+e x)}{\sqrt{-a} d+\sqrt{b} e}\right]}{e}+\frac{2 p \text{PolyLog}\left[2, 1+\frac{e x}{d}\right]}{e}$$

Result (type 4, 299 leaves):

$$\frac{1}{e}\left(\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right] \text{Log}[d+e x]+2 p \text{Log}[x] \text{Log}[d+e x]-p \text{Log}\left[-\frac{i \sqrt{b}}{\sqrt{a}}+x\right] \text{Log}[d+e x]-p \text{Log}\left[\frac{i \sqrt{b}}{\sqrt{a}}+x\right] \text{Log}[d+e x]+p \text{Log}\left[\frac{i \sqrt{b}}{\sqrt{a}}+x\right] \text{Log}\left[\frac{\sqrt{a}(d+e x)}{\sqrt{a} d-i \sqrt{b} e}\right]+p \text{Log}\left[-\frac{i \sqrt{b}}{\sqrt{a}}+x\right] \text{Log}\left[\frac{\sqrt{a}(d+e x)}{\sqrt{a} d+i \sqrt{b} e}\right]-2 p \text{Log}[x] \text{Log}\left[1+\frac{e x}{d}\right]-2 p \text{PolyLog}\left[2,-\frac{e x}{d}\right]+p \text{PolyLog}\left[2, \frac{e\left(\sqrt{b}-i \sqrt{a} x\right)}{i \sqrt{a} d+\sqrt{b} e}\right]+p \text{PolyLog}\left[2, \frac{e\left(\sqrt{b}+i \sqrt{a} x\right)}{-i \sqrt{a} d+\sqrt{b} e}\right]\right)$$

Problem 251: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{x(d+e x)} \, dx$$

Optimal (type 4, 287 leaves, 18 steps):

$$-\frac{\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right] \text{Log}\left[-\frac{b}{a x^2}\right]}{2 d}-\frac{\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right] \text{Log}[d+e x]}{d}-\frac{2 p \text{Log}\left[-\frac{e x}{d}\right] \text{Log}[d+e x]}{d}+\frac{p \text{Log}\left[\frac{e\left(\sqrt{b}-\sqrt{-a} x\right)}{\sqrt{-a} d+\sqrt{b} e}\right] \text{Log}[d+e x]}{d}+\frac{p \text{Log}\left[-\frac{e\left(\sqrt{b}+\sqrt{-a} x\right)}{\sqrt{-a} d-\sqrt{b} e}\right] \text{Log}[d+e x]}{d}-\frac{p \text{PolyLog}\left[2, 1+\frac{b}{a x^2}\right]}{2 d}+\frac{p \text{PolyLog}\left[2, \frac{\sqrt{-a}(d+e x)}{\sqrt{-a} d-\sqrt{b} e}\right]}{d}+\frac{p \text{PolyLog}\left[2, \frac{\sqrt{-a}(d+e x)}{\sqrt{-a} d+\sqrt{b} e}\right]}{d}-\frac{2 p \text{PolyLog}\left[2, 1+\frac{e x}{d}\right]}{d}$$

Result (type 4, 405 leaves):

$$-\frac{1}{d}\left(-\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]\text{Log}[x]-p\,\text{Log}[x]^2+p\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{a}\,x}{\sqrt{b}}\right]+p\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{a}\,x}{\sqrt{b}}\right]+\right.$$

$$\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]\text{Log}[d+e\,x]+2\,p\,\text{Log}[x]\,\text{Log}[d+e\,x]-p\,\text{Log}\left[-\frac{i\sqrt{b}}{\sqrt{a}}+x\right]\text{Log}[d+e\,x]-p\,\text{Log}\left[\frac{i\sqrt{b}}{\sqrt{a}}+x\right]\text{Log}[d+e\,x]+$$

$$p\,\text{Log}\left[\frac{i\sqrt{b}}{\sqrt{a}}+x\right]\text{Log}\left[\frac{\sqrt{a}\,(d+e\,x)}{\sqrt{a}\,d-i\sqrt{b}\,e}\right]+p\,\text{Log}\left[-\frac{i\sqrt{b}}{\sqrt{a}}+x\right]\text{Log}\left[\frac{\sqrt{a}\,(d+e\,x)}{\sqrt{a}\,d+i\sqrt{b}\,e}\right]-2\,p\,\text{Log}[x]\,\text{Log}\left[1+\frac{e\,x}{d}\right]+p\,\text{PolyLog}\left[2,-\frac{i\sqrt{a}\,x}{\sqrt{b}}\right]+$$

$$\left.p\,\text{PolyLog}\left[2,\frac{i\sqrt{a}\,x}{\sqrt{b}}\right]-2\,p\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]+p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{b}-i\sqrt{a}\,x\right)}{i\sqrt{a}\,d+\sqrt{b}\,e}\right]+p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{b}+i\sqrt{a}\,x\right)}{-i\sqrt{a}\,d+\sqrt{b}\,e}\right]\right)$$

Problem 252: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{x^2\,(d+e\,x)}\,dx$$

Optimal (type 4, 357 leaves, 22 steps):

$$\frac{2\,p}{d\,x}+\frac{2\sqrt{a}\,p\,\text{ArcTan}\left[\frac{\sqrt{a}\,x}{\sqrt{b}}\right]}{\sqrt{b}\,d}-\frac{\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{d\,x}+\frac{e\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]\text{Log}\left[-\frac{b}{a\,x^2}\right]}{2\,d^2}+\frac{e\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]\text{Log}[d+e\,x]}{d^2}+$$

$$\frac{2\,e\,p\,\text{Log}\left[-\frac{e\,x}{d}\right]\text{Log}[d+e\,x]}{d^2}-\frac{e\,p\,\text{Log}\left[\frac{e\left(\sqrt{b}-\sqrt{-a}\,x\right)}{\sqrt{-a}\,d+\sqrt{b}\,e}\right]\text{Log}[d+e\,x]}{d^2}-\frac{e\,p\,\text{Log}\left[-\frac{e\left(\sqrt{b}+\sqrt{-a}\,x\right)}{\sqrt{-a}\,d-\sqrt{b}\,e}\right]\text{Log}[d+e\,x]}{d^2}+$$

$$\frac{e\,p\,\text{PolyLog}\left[2,1+\frac{b}{a\,x^2}\right]}{2\,d^2}-\frac{e\,p\,\text{PolyLog}\left[2,\frac{\sqrt{-a}\,(d+e\,x)}{\sqrt{-a}\,d-\sqrt{b}\,e}\right]}{d^2}-\frac{e\,p\,\text{PolyLog}\left[2,\frac{\sqrt{-a}\,(d+e\,x)}{\sqrt{-a}\,d+\sqrt{b}\,e}\right]}{d^2}+\frac{2\,e\,p\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{d^2}$$

Result (type 4, 472 leaves):

$$\frac{1}{d^2}\left(\frac{2\,d\,p}{x}+\frac{2\sqrt{a}\;d\,p\,\text{ArcTan}\left[\frac{\sqrt{a}\;x}{\sqrt{b}}\right]}{\sqrt{b}}-\frac{d\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{x}-e\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]\text{Log}[x]-e\,p\,\text{Log}[x]^2+\right.$$
$$e\,p\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{a}\;x}{\sqrt{b}}\right]+e\,p\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{a}\;x}{\sqrt{b}}\right]+e\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]\text{Log}[d+e\,x]+2\,e\,p\,\text{Log}[x]\,\text{Log}[d+e\,x]-$$
$$e\,p\,\text{Log}\left[-\frac{i\sqrt{b}}{\sqrt{a}}+x\right]\text{Log}[d+e\,x]-e\,p\,\text{Log}\left[\frac{i\sqrt{b}}{\sqrt{a}}+x\right]\text{Log}[d+e\,x]+e\,p\,\text{Log}\left[\frac{i\sqrt{b}}{\sqrt{a}}+x\right]\text{Log}\left[\frac{\sqrt{a}\;(d+e\,x)}{\sqrt{a}\;d-i\sqrt{b}\;e}\right]+$$
$$e\,p\,\text{Log}\left[-\frac{i\sqrt{b}}{\sqrt{a}}+x\right]\text{Log}\left[\frac{\sqrt{a}\;(d+e\,x)}{\sqrt{a}\;d+i\sqrt{b}\;e}\right]-2\,e\,p\,\text{Log}[x]\,\text{Log}\left[1+\frac{e\,x}{d}\right]+e\,p\,\text{PolyLog}\left[2,-\frac{i\sqrt{a}\;x}{\sqrt{b}}\right]+$$
$$\left.e\,p\,\text{PolyLog}\left[2,\frac{i\sqrt{a}\;x}{\sqrt{b}}\right]-2\,e\,p\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]+e\,p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{b}-i\sqrt{a}\;x\right)}{i\sqrt{a}\;d+\sqrt{b}\;e}\right]+e\,p\,\text{PolyLog}\left[2,\frac{e\left(\sqrt{b}+i\sqrt{a}\;x\right)}{-i\sqrt{a}\;d+\sqrt{b}\;e}\right]\right)$$

Problem 253: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{x^3\,(d+e\,x)}\,dx$$

Optimal (type 4, 414 leaves, 25 steps):

$$\frac{p}{2\,d\,x^2}-\frac{2\,e\,p}{d^2\,x}-\frac{2\sqrt{a}\;e\,p\,\text{ArcTan}\left[\frac{\sqrt{a}\;x}{\sqrt{b}}\right]}{\sqrt{b}\;d^2}-\frac{\left(a+\frac{b}{x^2}\right)\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{2\,b\,d}+\frac{e\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]}{d^2\,x}-\frac{e^2\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]\text{Log}\left[-\frac{b}{a\,x^2}\right]}{2\,d^3}-$$
$$\frac{e^2\,\text{Log}\left[c\left(a+\frac{b}{x^2}\right)^p\right]\text{Log}[d+e\,x]}{d^3}-\frac{2\,e^2\,p\,\text{Log}\left[-\frac{e\,x}{d}\right]\text{Log}[d+e\,x]}{d^3}+\frac{e^2\,p\,\text{Log}\left[\frac{e\left(\sqrt{b}-\sqrt{-a}\;x\right)}{\sqrt{-a}\;d+\sqrt{b}\;e}\right]\text{Log}[d+e\,x]}{d^3}+\frac{e^2\,p\,\text{Log}\left[-\frac{e\left(\sqrt{b}+\sqrt{-a}\;x\right)}{\sqrt{-a}\;d-\sqrt{b}\;e}\right]\text{Log}[d+e\,x]}{d^3}-$$
$$\frac{e^2\,p\,\text{PolyLog}\left[2,1+\frac{b}{a\,x^2}\right]}{2\,d^3}+\frac{e^2\,p\,\text{PolyLog}\left[2,\frac{\sqrt{-a}\;(d+e\,x)}{\sqrt{-a}\;d-\sqrt{b}\;e}\right]}{d^3}+\frac{e^2\,p\,\text{PolyLog}\left[2,\frac{\sqrt{-a}\;(d+e\,x)}{\sqrt{-a}\;d+\sqrt{b}\;e}\right]}{d^3}-\frac{2\,e^2\,p\,\text{PolyLog}\left[2,1+\frac{e\,x}{d}\right]}{d^3}$$

Result (type 4, 643 leaves):

$$-\frac{1}{2\,b\,d^3\,x^2}\left(-b\,d^2\,p+4\,b\,d\,e\,p\,x+4\,\sqrt{a}\,\sqrt{b}\,d\,e\,p\,x^2\,\text{ArcTan}\left[\frac{\sqrt{a}\,x}{\sqrt{b}}\right]+b\,d^2\,\text{Log}\left[c\,\left(a+\frac{b}{x^2}\right)^p\right]-2\,b\,d\,e\,x\,\text{Log}\left[c\,\left(a+\frac{b}{x^2}\right)^p\right]-2\,a\,d^2\,p\,x^2\,\text{Log}[x]-\right.$$

$$2\,b\,e^2\,x^2\,\text{Log}\left[c\,\left(a+\frac{b}{x^2}\right)^p\right]\,\text{Log}[x]-2\,b\,e^2\,p\,x^2\,\text{Log}[x]^2+2\,b\,e^2\,p\,x^2\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\,\sqrt{a}\,x}{\sqrt{b}}\right]+2\,b\,e^2\,p\,x^2\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\,\sqrt{a}\,x}{\sqrt{b}}\right]+$$

$$2\,b\,e^2\,x^2\,\text{Log}\left[c\,\left(a+\frac{b}{x^2}\right)^p\right]\,\text{Log}[d+e\,x]+4\,b\,e^2\,p\,x^2\,\text{Log}[x]\,\text{Log}[d+e\,x]-2\,b\,e^2\,p\,x^2\,\text{Log}\left[-\frac{i\,\sqrt{b}}{\sqrt{a}}+x\right]\,\text{Log}[d+e\,x]-$$

$$2\,b\,e^2\,p\,x^2\,\text{Log}\left[\frac{i\,\sqrt{b}}{\sqrt{a}}+x\right]\,\text{Log}[d+e\,x]+2\,b\,e^2\,p\,x^2\,\text{Log}\left[\frac{i\,\sqrt{b}}{\sqrt{a}}+x\right]\,\text{Log}\left[\frac{\sqrt{a}\,(d+e\,x)}{\sqrt{a}\,d-i\,\sqrt{b}\,e}\right]+2\,b\,e^2\,p\,x^2\,\text{Log}\left[-\frac{i\,\sqrt{b}}{\sqrt{a}}+x\right]\,\text{Log}\left[\frac{\sqrt{a}\,(d+e\,x)}{\sqrt{a}\,d+i\,\sqrt{b}\,e}\right]-$$

$$4\,b\,e^2\,p\,x^2\,\text{Log}[x]\,\text{Log}\left[1+\frac{e\,x}{d}\right]+a\,d^2\,p\,x^2\,\text{Log}\left[b+a\,x^2\right]+2\,b\,e^2\,p\,x^2\,\text{PolyLog}\left[2,-\frac{i\,\sqrt{a}\,x}{\sqrt{b}}\right]+2\,b\,e^2\,p\,x^2\,\text{PolyLog}\left[2,\frac{i\,\sqrt{a}\,x}{\sqrt{b}}\right]-$$

$$\left.4\,b\,e^2\,p\,x^2\,\text{PolyLog}\left[2,-\frac{e\,x}{d}\right]+2\,b\,e^2\,p\,x^2\,\text{PolyLog}\left[2,\frac{e\,\left(\sqrt{b}-i\,\sqrt{a}\,x\right)}{i\,\sqrt{a}\,d+\sqrt{b}\,e}\right]+2\,b\,e^2\,p\,x^2\,\text{PolyLog}\left[2,\frac{e\,\left(\sqrt{b}+i\,\sqrt{a}\,x\right)}{-i\,\sqrt{a}\,d+\sqrt{b}\,e}\right]\right)$$

Problem 263: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}\left[c\,(d+e\,x)^p\right]}{f+g\,x^2}\,dx$$

Optimal (type 4, 229 leaves, 8 steps):

$$\frac{\text{Log}\left[c\,(d+e\,x)^p\right]\,\text{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g}\,x\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,\sqrt{-f}\,\sqrt{g}}-\frac{\text{Log}\left[c\,(d+e\,x)^p\right]\,\text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g}\,x\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,\sqrt{-f}\,\sqrt{g}}-\frac{p\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,\sqrt{-f}\,\sqrt{g}}+\frac{p\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,\sqrt{-f}\,\sqrt{g}}$$

Result (type 4, 232 leaves):

$$\frac{\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\,\left(-p\,\text{Log}[d+e\,x]+\text{Log}\left[c\,(d+e\,x)^p\right]\right)}{\sqrt{f}\,\sqrt{g}}+$$

$$p\left(\frac{i\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{-i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)}{2\,\sqrt{f}\,\sqrt{g}}-\frac{i\,\left(\text{Log}[d+e\,x]\,\text{Log}\left[1-\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x)}{i\,e\,\sqrt{f}+d\,\sqrt{g}}\right]\right)}{2\,\sqrt{f}\,\sqrt{g}}\right)$$

Problem 266: Result is not expressed in closed-form.

$$\int \frac{\text{Log}\left[c\left(d+e\sqrt{x}\right)^p\right]}{f+g\,x^2}\,dx$$

Optimal (type 4, 541 leaves, 19 steps):

$$-\frac{\text{Log}\left[c\left(d+e\sqrt{x}\right)^p\right]\text{Log}\left[\frac{e\left(\sqrt{-\sqrt{-f}}-g^{1/4}\sqrt{x}\right)}{e\sqrt{-\sqrt{-f}}+d\,g^{1/4}}\right]}{2\sqrt{-f}\sqrt{g}}+\frac{\text{Log}\left[c\left(d+e\sqrt{x}\right)^p\right]\text{Log}\left[\frac{e\left((-f)^{1/4}-g^{1/4}\sqrt{x}\right)}{e\,(-f)^{1/4}+d\,g^{1/4}}\right]}{2\sqrt{-f}\sqrt{g}}-$$

$$\frac{\text{Log}\left[c\left(d+e\sqrt{x}\right)^p\right]\text{Log}\left[\frac{e\left(\sqrt{-\sqrt{-f}}+g^{1/4}\sqrt{x}\right)}{e\sqrt{-\sqrt{-f}}-d\,g^{1/4}}\right]}{2\sqrt{-f}\sqrt{g}}+\frac{\text{Log}\left[c\left(d+e\sqrt{x}\right)^p\right]\text{Log}\left[\frac{e\left((-f)^{1/4}+g^{1/4}\sqrt{x}\right)}{e\,(-f)^{1/4}-d\,g^{1/4}}\right]}{2\sqrt{-f}\sqrt{g}}-$$

$$\frac{p\,\text{PolyLog}\left[2,-\frac{g^{1/4}\left(d+e\sqrt{x}\right)}{e\sqrt{-\sqrt{-f}}-d\,g^{1/4}}\right]}{2\sqrt{-f}\sqrt{g}}+\frac{p\,\text{PolyLog}\left[2,-\frac{g^{1/4}\left(d+e\sqrt{x}\right)}{e\,(-f)^{1/4}-d\,g^{1/4}}\right]}{2\sqrt{-f}\sqrt{g}}-\frac{p\,\text{PolyLog}\left[2,\frac{g^{1/4}\left(d+e\sqrt{x}\right)}{e\sqrt{-\sqrt{-f}}+d\,g^{1/4}}\right]}{2\sqrt{-f}\sqrt{g}}+\frac{p\,\text{PolyLog}\left[2,\frac{g^{1/4}\left(d+e\sqrt{x}\right)}{e\,(-f)^{1/4}+d\,g^{1/4}}\right]}{2\sqrt{-f}\sqrt{g}}$$

Result (type 7, 227 leaves):

$$\frac{\left(\text{ArcTan}\left[1-\frac{\sqrt{2}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]+\text{ArcTan}\left[1+\frac{\sqrt{2}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]\right)\left(p\,\text{Log}\left[d+e\sqrt{x}\right]-\text{Log}\left[c\left(d+e\sqrt{x}\right)^p\right]\right)}{\sqrt{f}\sqrt{g}}+\frac{1}{4\,g}$$

$$e^2\,p\,\text{RootSum}\left[e^4 f+d^4 g-4\,d^3 g\,\#1+6\,d^2 g\,\#1^2-4\,d\,g\,\#1^3+g\,\#1^4\,\&,\frac{-\text{Log}\left[d+e\sqrt{x}\right]^2+2\,\text{Log}\left[d+e\sqrt{x}\right]\text{Log}\left[1-\frac{d+e\sqrt{x}}{\#1}\right]+2\,\text{PolyLog}\left[2,\frac{d+e\sqrt{x}}{\#1}\right]}{d^2-2\,d\,\#1+\#1^2}\,\&\right]$$

Problem 267: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^p\right]}{f+g\,x^2}\,dx$$

Optimal (type 4, 561 leaves, 20 steps):

$$-\frac{\text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^p\right]\text{Log}\left[\frac{e\left(g^{1/4}-\frac{\sqrt{-\sqrt{-f}}}{\sqrt{x}}\right)}{d\sqrt{-\sqrt{-f}}+e\,g^{1/4}}\right]}{2\sqrt{-f}\,\sqrt{g}}-\frac{\text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^p\right]\text{Log}\left[-\frac{e\left(g^{1/4}+\frac{\sqrt{-\sqrt{-f}}}{\sqrt{x}}\right)}{d\sqrt{-\sqrt{-f}}-e\,g^{1/4}}\right]}{2\sqrt{-f}\,\sqrt{g}}+$$

$$\frac{\text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^p\right]\text{Log}\left[\frac{e\left(g^{1/4}-\frac{(-f)^{1/4}}{\sqrt{x}}\right)}{d\,(-f)^{1/4}+e\,g^{1/4}}\right]}{2\sqrt{-f}\,\sqrt{g}}+\frac{\text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^p\right]\text{Log}\left[-\frac{e\left(g^{1/4}+\frac{(-f)^{1/4}}{\sqrt{x}}\right)}{d\,(-f)^{1/4}-e\,g^{1/4}}\right]}{2\sqrt{-f}\,\sqrt{g}}-\frac{p\,\text{PolyLog}\left[2,\frac{\sqrt{-\sqrt{-f}}\left(d+\frac{e}{\sqrt{x}}\right)}{d\sqrt{-\sqrt{-f}}-e\,g^{1/4}}\right]}{2\sqrt{-f}\,\sqrt{g}}+$$

$$\frac{p\,\text{PolyLog}\left[2,\frac{(-f)^{1/4}\left(d+\frac{e}{\sqrt{x}}\right)}{d\,(-f)^{1/4}-e\,g^{1/4}}\right]}{2\sqrt{-f}\,\sqrt{g}}-\frac{p\,\text{PolyLog}\left[2,\frac{\sqrt{-\sqrt{-f}}\left(d+\frac{e}{\sqrt{x}}\right)}{d\sqrt{-\sqrt{-f}}+e\,g^{1/4}}\right]}{2\sqrt{-f}\,\sqrt{g}}+\frac{p\,\text{PolyLog}\left[2,\frac{(-f)^{1/4}\left(d+\frac{e}{\sqrt{x}}\right)}{d\,(-f)^{1/4}+e\,g^{1/4}}\right]}{2\sqrt{-f}\,\sqrt{g}}$$

Result (type 4, 895 leaves) :

$$\frac{1}{4\sqrt{f}\,\sqrt{g}}\Bigg(4\,p\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]+4\,p\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]+$$

$$4\,p\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]-4\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]\text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^p\right]-4\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]\text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^p\right]-$$

$$4\,p\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\text{Log}\left[\frac{e}{d}+\sqrt{x}\right]-2\,i\,p\,\text{Log}\left[1+\frac{g^{1/4}\left(e+d\sqrt{x}\right)}{(-1)^{1/4}\,d\,f^{1/4}-e\,g^{1/4}}\right]\text{Log}\left[\frac{e}{d}+\sqrt{x}\right]+2\,i\,p\,\text{Log}\left[1+\frac{g^{1/4}\left(e+d\sqrt{x}\right)}{(-1)^{3/4}\,d\,f^{1/4}-e\,g^{1/4}}\right]\text{Log}\left[\frac{e}{d}+\sqrt{x}\right]-$$

$$2\,i\,p\,\text{Log}\left[1-\frac{g^{1/4}\left(e+d\sqrt{x}\right)}{(-1)^{1/4}\,d\,f^{1/4}+e\,g^{1/4}}\right]\text{Log}\left[\frac{e}{d}+\sqrt{x}\right]+2\,i\,p\,\text{Log}\left[1-\frac{g^{1/4}\left(e+d\sqrt{x}\right)}{(-1)^{3/4}\,d\,f^{1/4}+e\,g^{1/4}}\right]\text{Log}\left[\frac{e}{d}+\sqrt{x}\right]+2\,p\,\text{ArcTan}\left[\frac{\sqrt{g}\,x}{\sqrt{f}}\right]\text{Log}[x]-$$

$$i\,p\,\text{Log}\left[1-\frac{(-1)^{1/4}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]\text{Log}[x]-i\,p\,\text{Log}\left[1+\frac{(-1)^{1/4}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]\text{Log}[x]+i\,p\,\text{Log}\left[1-\frac{(-1)^{3/4}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]\text{Log}[x]+$$

$$i\,p\,\text{Log}\left[1+\frac{(-1)^{3/4}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]\text{Log}[x]-2\,i\,p\,\text{PolyLog}\left[2,-\frac{g^{1/4}\left(e+d\sqrt{x}\right)}{(-1)^{1/4}\,d\,f^{1/4}-e\,g^{1/4}}\right]+2\,i\,p\,\text{PolyLog}\left[2,-\frac{g^{1/4}\left(e+d\sqrt{x}\right)}{(-1)^{3/4}\,d\,f^{1/4}-e\,g^{1/4}}\right]-$$

$$2\,i\,p\,\text{PolyLog}\left[2,\frac{g^{1/4}\left(e+d\sqrt{x}\right)}{(-1)^{1/4}\,d\,f^{1/4}+e\,g^{1/4}}\right]+2\,i\,p\,\text{PolyLog}\left[2,\frac{g^{1/4}\left(e+d\sqrt{x}\right)}{(-1)^{3/4}\,d\,f^{1/4}+e\,g^{1/4}}\right]-2\,i\,p\,\text{PolyLog}\left[2,-\frac{(-1)^{1/4}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]-$$

$$2\,i\,p\,\text{PolyLog}\left[2,\frac{(-1)^{1/4}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]+2\,i\,p\,\text{PolyLog}\left[2,-\frac{(-1)^{3/4}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]+2\,i\,p\,\text{PolyLog}\left[2,\frac{(-1)^{3/4}\,g^{1/4}\sqrt{x}}{f^{1/4}}\right]\Bigg)$$

Problem 274: Result more than twice size of optimal antiderivative.

$$\int \left(f+g x^2\right) \text{Log}\left[c \left(d+e x^2\right)^p\right]^2 \, dx$$

Optimal (type 4, 548 leaves, 30 steps):

$$8 f p^2 x-\frac{32 d g p^2 x}{9 e}+\frac{8}{27} g p^2 x^3-\frac{8 \sqrt{d} f p^2 \text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right]}{\sqrt{e}}+\frac{32 d^{3/2} g p^2 \text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right]}{9 e^{3/2}}+\frac{4 i \sqrt{d} f p^2 \text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right]^2}{\sqrt{e}}-\frac{4 i d^{3/2} g p^2 \text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right]^2}{3 e^{3/2}}+$$
$$\frac{8 \sqrt{d} f p^2 \text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right] \text{Log}\left[\frac{2 \sqrt{d}}{\sqrt{d}+i \sqrt{e} x}\right]}{\sqrt{e}}-\frac{8 d^{3/2} g p^2 \text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right] \text{Log}\left[\frac{2 \sqrt{d}}{\sqrt{d}+i \sqrt{e} x}\right]}{3 e^{3/2}}-4 f p x \text{Log}\left[c \left(d+e x^2\right)^p\right]+\frac{4 d g p x \text{Log}\left[c \left(d+e x^2\right)^p\right]}{3 e}-$$
$$\frac{4}{9} g p x^3 \text{Log}\left[c \left(d+e x^2\right)^p\right]+\frac{4 \sqrt{d} f p \text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right] \text{Log}\left[c \left(d+e x^2\right)^p\right]}{\sqrt{e}}-\frac{4 d^{3/2} g p \text{ArcTan}\left[\frac{\sqrt{e} x}{\sqrt{d}}\right] \text{Log}\left[c \left(d+e x^2\right)^p\right]}{3 e^{3/2}}+$$
$$f x \text{Log}\left[c \left(d+e x^2\right)^p\right]^2+\frac{1}{3} g x^3 \text{Log}\left[c \left(d+e x^2\right)^p\right]^2+\frac{4 i \sqrt{d} f p^2 \text{PolyLog}\left[2,1-\frac{2 \sqrt{d}}{\sqrt{d}+i \sqrt{e} x}\right]}{\sqrt{e}}-\frac{4 i d^{3/2} g p^2 \text{PolyLog}\left[2,1-\frac{2 \sqrt{d}}{\sqrt{d}+i \sqrt{e} x}\right]}{3 e^{3/2}}$$

Result (type 4, 1125 leaves):

$$2\,f\,p\left(-2\,e\left(\frac{x}{e}-\frac{\sqrt{d}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}{e^{3/2}}\right)+x\,\text{Log}\left[d+e\,x^2\right]\right)\left(-p\,\text{Log}\left[d+e\,x^2\right]+\text{Log}\left[c\,\left(d+e\,x^2\right)^p\right]\right)+$$

$$2\,g\,p\left(-\frac{2}{3}\,e\left(-\frac{d\,x}{e^2}+\frac{x^3}{3\,e}+\frac{d^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]}{e^{5/2}}\right)+\frac{1}{3}\,x^3\,\text{Log}\left[d+e\,x^2\right]\right)\left(-p\,\text{Log}\left[d+e\,x^2\right]+\text{Log}\left[c\,\left(d+e\,x^2\right)^p\right]\right)+$$

$$f\,x\left(-p\,\text{Log}\left[d+e\,x^2\right]+\text{Log}\left[c\,\left(d+e\,x^2\right)^p\right]\right)^2+\frac{1}{3}\,g\,x^3\left(-p\,\text{Log}\left[d+e\,x^2\right]+\text{Log}\left[c\,\left(d+e\,x^2\right)^p\right]\right)^2+$$

$$f\,p^2\left(x\,\text{Log}\left[d+e\,x^2\right]^2-\frac{1}{\sqrt{e}}\left(-8\,\sqrt{e}\,x-4\,i\,\sqrt{d}\,\text{Log}\left[-\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]+4\,\sqrt{d}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[-\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]+\right.\right.$$
$$i\,\sqrt{d}\,\text{Log}\left[-\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]^2+4\,i\,\sqrt{d}\,\text{Log}\left[\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]+4\,\sqrt{d}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]-i\,\sqrt{d}\,\text{Log}\left[\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]^2-$$
$$2\,i\,\sqrt{d}\,\text{Log}\left[-\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}-\frac{i\,\sqrt{e}\,x}{2\,\sqrt{d}}\right]+2\,i\,\sqrt{d}\,\text{Log}\left[\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}+\frac{i\,\sqrt{e}\,x}{2\,\sqrt{d}}\right]+4\,\sqrt{e}\,x\,\text{Log}\left[d+e\,x^2\right]-$$
$$\left.\left.4\,\sqrt{d}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[d+e\,x^2\right]+2\,i\,\sqrt{d}\,\text{PolyLog}\left[2,\frac{1}{2}-\frac{i\,\sqrt{e}\,x}{2\,\sqrt{d}}\right]-2\,i\,\sqrt{d}\,\text{PolyLog}\left[2,\frac{1}{2}+\frac{i\,\sqrt{e}\,x}{2\,\sqrt{d}}\right]\right)\right)+$$

$$g\,p^2\left(\frac{1}{3}\,x^3\,\text{Log}\left[d+e\,x^2\right]^2-\frac{1}{27\,e^{3/2}}\left(96\,d\,\sqrt{e}\,x-8\,e^{3/2}\,x^3-24\,d^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]+36\,i\,d^{3/2}\,\text{Log}\left[-\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]-\right.\right.$$
$$36\,d^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[-\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]-9\,i\,d^{3/2}\,\text{Log}\left[-\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]^2-36\,i\,d^{3/2}\,\text{Log}\left[\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]-36\,d^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]+$$
$$9\,i\,d^{3/2}\,\text{Log}\left[\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]^2+18\,i\,d^{3/2}\,\text{Log}\left[-\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}-\frac{i\,\sqrt{e}\,x}{2\,\sqrt{d}}\right]-18\,i\,d^{3/2}\,\text{Log}\left[\frac{i\,\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}+\frac{i\,\sqrt{e}\,x}{2\,\sqrt{d}}\right]-36\,d\,\sqrt{e}\,x\,\text{Log}\left[d+e\,x^2\right]+$$
$$\left.\left.12\,e^{3/2}\,x^3\,\text{Log}\left[d+e\,x^2\right]+36\,d^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[d+e\,x^2\right]-18\,i\,d^{3/2}\,\text{PolyLog}\left[2,\frac{1}{2}-\frac{i\,\sqrt{e}\,x}{2\,\sqrt{d}}\right]+18\,i\,d^{3/2}\,\text{PolyLog}\left[2,\frac{1}{2}+\frac{i\,\sqrt{e}\,x}{2\,\sqrt{d}}\right]\right)\right)$$

Problem 341: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[c\,\left(d+e\,x^2\right)^p\right]}{x\,\left(f+g\,x^2\right)}\,dx$$

Optimal (type 4, 119 leaves, 8 steps):

$$\frac{\text{Log}\left[-\frac{e\,x^2}{d}\right]\text{Log}\left[c\,\left(d+e\,x^2\right)^p\right]}{2\,f}-\frac{\text{Log}\left[c\,\left(d+e\,x^2\right)^p\right]\text{Log}\left[\frac{e\,\left(f+g\,x^2\right)}{e\,f-d\,g}\right]}{2\,f}-\frac{p\,\text{PolyLog}\left[2,-\frac{g\,\left(d+e\,x^2\right)}{e\,f-d\,g}\right]}{2\,f}+\frac{p\,\text{PolyLog}\left[2,1+\frac{e\,x^2}{d}\right]}{2\,f}$$

Result (type 4, 663 leaves):

$$-\frac{1}{2 f}\left(2 p \text{Log}[x] \text{Log}\left[1-\frac{i \sqrt{e} x}{\sqrt{d}}\right]+2 p \text{Log}[x] \text{Log}\left[1+\frac{i \sqrt{e} x}{\sqrt{d}}\right]+p \text{Log}\left[\frac{i \sqrt{d}}{\sqrt{e}}+x\right] \text{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}-i \sqrt{g} x\right)}{\sqrt{e} \sqrt{f}-\sqrt{d} \sqrt{g}}\right]+\right.$$
$$p \text{Log}\left[-\frac{i \sqrt{d}}{\sqrt{e}}+x\right] \text{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}-i \sqrt{g} x\right)}{\sqrt{e} \sqrt{f}+\sqrt{d} \sqrt{g}}\right]+p \text{Log}\left[-\frac{i \sqrt{d}}{\sqrt{e}}+x\right] \text{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}+i \sqrt{g} x\right)}{\sqrt{e} \sqrt{f}-\sqrt{d} \sqrt{g}}\right]+p \text{Log}\left[\frac{i \sqrt{d}}{\sqrt{e}}+x\right] \text{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}+i \sqrt{g} x\right)}{\sqrt{e} \sqrt{f}+\sqrt{d} \sqrt{g}}\right]-$$
$$2 \text{Log}[x] \text{Log}\left[c\left(d+e x^2\right)^p\right]-p \text{Log}\left[-\frac{i \sqrt{d}}{\sqrt{e}}+x\right] \text{Log}\left[f+g x^2\right]-p \text{Log}\left[\frac{i \sqrt{d}}{\sqrt{e}}+x\right] \text{Log}\left[f+g x^2\right]+$$
$$\text{Log}\left[c\left(d+e x^2\right)^p\right] \text{Log}\left[f+g x^2\right]+2 p \text{PolyLog}\left[2,-\frac{i \sqrt{e} x}{\sqrt{d}}\right]+2 p \text{PolyLog}\left[2, \frac{i \sqrt{e} x}{\sqrt{d}}\right]+p \text{PolyLog}\left[2, \frac{\sqrt{g}\left(\sqrt{d}-i \sqrt{e} x\right)}{-\sqrt{e} \sqrt{f}+\sqrt{d} \sqrt{g}}\right]+$$
$$\left.p \text{PolyLog}\left[2, \frac{\sqrt{g}\left(\sqrt{d}-i \sqrt{e} x\right)}{\sqrt{e} \sqrt{f}+\sqrt{d} \sqrt{g}}\right]+p \text{PolyLog}\left[2, \frac{\sqrt{g}\left(\sqrt{d}+i \sqrt{e} x\right)}{-\sqrt{e} \sqrt{f}+\sqrt{d} \sqrt{g}}\right]+p \text{PolyLog}\left[2, \frac{\sqrt{g}\left(\sqrt{d}+i \sqrt{e} x\right)}{\sqrt{e} \sqrt{f}+\sqrt{d} \sqrt{g}}\right]\right)$$

Problem 342: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[c\left(d+e x^2\right)^p\right]}{x^3\left(f+g x^2\right)} \, dx$$

Optimal (type 4, 176 leaves, 12 steps):

$$\frac{e p \text{Log}[x]}{d f}-\frac{e p \text{Log}\left[d+e x^2\right]}{2 d f}-\frac{\text{Log}\left[c\left(d+e x^2\right)^p\right]}{2 f x^2}-\frac{g \text{Log}\left[-\frac{e x^2}{d}\right] \text{Log}\left[c\left(d+e x^2\right)^p\right]}{2 f^2}+$$
$$\frac{g \text{Log}\left[c\left(d+e x^2\right)^p\right] \text{Log}\left[\frac{e\left(f+g x^2\right)}{e f-d g}\right]}{2 f^2}+\frac{g p \text{PolyLog}\left[2,-\frac{g\left(d+e x^2\right)}{e f-d g}\right]}{2 f^2}-\frac{g p \text{PolyLog}\left[2,1+\frac{e x^2}{d}\right]}{2 f^2}$$

Result (type 4, 791 leaves):

$$\frac{1}{2\,d\,f^2\,x^2}\left(2\,e\,f\,p\,x^2\,\text{Log}[x]+2\,d\,g\,p\,x^2\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+2\,d\,g\,p\,x^2\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+d\,g\,p\,x^2\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}-i\sqrt{g}\,x\right)}{\sqrt{e}\sqrt{f}-\sqrt{d}\sqrt{g}}\right]+\right.$$

$$d\,g\,p\,x^2\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}-i\sqrt{g}\,x\right)}{\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}\right]+d\,g\,p\,x^2\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}+i\sqrt{g}\,x\right)}{\sqrt{e}\sqrt{f}-\sqrt{d}\sqrt{g}}\right]+$$

$$d\,g\,p\,x^2\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}+i\sqrt{g}\,x\right)}{\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}\right]-e\,f\,p\,x^2\,\text{Log}\left[d+e\,x^2\right]-d\,f\,\text{Log}\left[c\left(d+e\,x^2\right)^p\right]-2\,d\,g\,x^2\,\text{Log}[x]\,\text{Log}\left[c\left(d+e\,x^2\right)^p\right]-$$

$$d\,g\,p\,x^2\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[f+g\,x^2\right]-d\,g\,p\,x^2\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[f+g\,x^2\right]+d\,g\,x^2\,\text{Log}\left[c\left(d+e\,x^2\right)^p\right]\text{Log}\left[f+g\,x^2\right]+$$

$$2\,d\,g\,p\,x^2\,\text{PolyLog}\left[2,-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+2\,d\,g\,p\,x^2\,\text{PolyLog}\left[2,\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+d\,g\,p\,x^2\,\text{PolyLog}\left[2,\frac{\sqrt{g}\left(\sqrt{d}-i\sqrt{e}\,x\right)}{-\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}\right]+$$

$$\left.d\,g\,p\,x^2\,\text{PolyLog}\left[2,\frac{\sqrt{g}\left(\sqrt{d}-i\sqrt{e}\,x\right)}{\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}\right]+d\,g\,p\,x^2\,\text{PolyLog}\left[2,\frac{\sqrt{g}\left(\sqrt{d}+i\sqrt{e}\,x\right)}{-\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}\right]+d\,g\,p\,x^2\,\text{PolyLog}\left[2,\frac{\sqrt{g}\left(\sqrt{d}+i\sqrt{e}\,x\right)}{\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}\right]\right)$$

Problem 351: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[c\left(d+e\,x^2\right)^p\right]}{x\left(f+g\,x^2\right)^2}\,dx$$

Optimal (type 4, 201 leaves, 12 steps):

$$-\frac{e\,p\,\text{Log}\left[d+e\,x^2\right]}{2\,f\left(e\,f-d\,g\right)}+\frac{\text{Log}\left[c\left(d+e\,x^2\right)^p\right]}{2\,f\left(f+g\,x^2\right)}+\frac{\text{Log}\left[-\frac{e\,x^2}{d}\right]\text{Log}\left[c\left(d+e\,x^2\right)^p\right]}{2\,f^2}+$$

$$\frac{e\,p\,\text{Log}\left[f+g\,x^2\right]}{2\,f\left(e\,f-d\,g\right)}-\frac{\text{Log}\left[c\left(d+e\,x^2\right)^p\right]\text{Log}\left[\frac{e\left(f+g\,x^2\right)}{e\,f-d\,g}\right]}{2\,f^2}-\frac{p\,\text{PolyLog}\left[2,-\frac{g\left(d+e\,x^2\right)}{e\,f-d\,g}\right]}{2\,f^2}+\frac{p\,\text{PolyLog}\left[2,1+\frac{e\,x^2}{d}\right]}{2\,f^2}$$

Result (type 4, 1124 leaves):

$$-\frac{1}{4 f^2}\left(\frac{i\sqrt{f}\, p \,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]}{-i\sqrt{f}+\sqrt{g}\, x}-\frac{i\sqrt{f}\, p\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]}{i\sqrt{f}+\sqrt{g}\, x}+\frac{2 f p\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]}{f+g x^2}+\frac{i\sqrt{f}\, p\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]}{-i\sqrt{f}+\sqrt{g}\, x}-\frac{i\sqrt{f}\, p\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]}{i\sqrt{f}+\sqrt{g}\, x}+\frac{2 f p\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]}{f+g x^2}+\right.$$

$$4 p\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{e}\, x}{\sqrt{d}}\right]+4 p\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{e}\, x}{\sqrt{d}}\right]+2 p\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}-i\sqrt{g}\, x\right)}{\sqrt{e}\sqrt{f}-\sqrt{d}\sqrt{g}}\right]+2 p\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]$$

$$\text{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}-i\sqrt{g}\, x\right)}{\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}\right]+2 p\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}+i\sqrt{g}\, x\right)}{\sqrt{e}\sqrt{f}-\sqrt{d}\sqrt{g}}\right]+2 p\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}+i\sqrt{g}\, x\right)}{\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}\right]+$$

$$\frac{\sqrt{e}\sqrt{f}\, p\,\text{Log}\left[d+e x^2\right]}{\sqrt{e}\sqrt{f}-\sqrt{d}\sqrt{g}}+\frac{\sqrt{e}\sqrt{f}\, p\,\text{Log}\left[d+e x^2\right]}{\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}-\frac{2 f\,\text{Log}\left[c\left(d+e x^2\right)^p\right]}{f+g x^2}-4\,\text{Log}[x]\,\text{Log}\left[c\left(d+e x^2\right)^p\right]-$$

$$\frac{\sqrt{e}\sqrt{f}\, p\,\text{Log}\left[f+g x^2\right]}{\sqrt{e}\sqrt{f}-\sqrt{d}\sqrt{g}}-\frac{\sqrt{e}\sqrt{f}\, p\,\text{Log}\left[f+g x^2\right]}{\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}-2 p\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[f+g x^2\right]-2 p\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[f+g x^2\right]+$$

$$2\,\text{Log}\left[c\left(d+e x^2\right)^p\right]\text{Log}\left[f+g x^2\right]+4 p\,\text{PolyLog}\left[2,-\frac{i\sqrt{e}\, x}{\sqrt{d}}\right]+4 p\,\text{PolyLog}\left[2,\frac{i\sqrt{e}\, x}{\sqrt{d}}\right]+2 p\,\text{PolyLog}\left[2,\frac{\sqrt{g}\left(\sqrt{d}-i\sqrt{e}\, x\right)}{-\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}\right]+$$

$$\left.2 p\,\text{PolyLog}\left[2,\frac{\sqrt{g}\left(\sqrt{d}-i\sqrt{e}\, x\right)}{\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}\right]+2 p\,\text{PolyLog}\left[2,\frac{\sqrt{g}\left(\sqrt{d}+i\sqrt{e}\, x\right)}{-\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}\right]+2 p\,\text{PolyLog}\left[2,\frac{\sqrt{g}\left(\sqrt{d}+i\sqrt{e}\, x\right)}{\sqrt{e}\sqrt{f}+\sqrt{d}\sqrt{g}}\right]\right)$$

Problem 352: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[c\left(d+e x^2\right)^p\right]}{x^3\left(f+g x^2\right)^2}\, dx$$

Optimal (type 4, 251 leaves, 16 steps):

$$\frac{e p\,\text{Log}[x]}{d f^2}-\frac{e p\,\text{Log}\left[d+e x^2\right]}{2 d f^2}+\frac{e g p\,\text{Log}\left[d+e x^2\right]}{2 f^2\left(e f-d g\right)}-\frac{\text{Log}\left[c\left(d+e x^2\right)^p\right]}{2 f^2 x^2}-\frac{g\,\text{Log}\left[c\left(d+e x^2\right)^p\right]}{2 f^2\left(f+g x^2\right)}-\frac{g\,\text{Log}\left[-\frac{e x^2}{d}\right]\text{Log}\left[c\left(d+e x^2\right)^p\right]}{f^3}-$$

$$\frac{e g p\,\text{Log}\left[f+g x^2\right]}{2 f^2\left(e f-d g\right)}+\frac{g\,\text{Log}\left[c\left(d+e x^2\right)^p\right]\text{Log}\left[\frac{e\left(f+g x^2\right)}{e f-d g}\right]}{f^3}+\frac{g p\,\text{PolyLog}\left[2,-\frac{g\left(d+e x^2\right)}{e f-d g}\right]}{f^3}-\frac{g p\,\text{PolyLog}\left[2,1+\frac{e x^2}{d}\right]}{f^3}$$

Result (type 4, 1197 leaves):

$$\frac{1}{4 f^3}\left(\frac{4 e f p \operatorname{Log}[x]}{d}+\frac{i \sqrt{f}\, g p \operatorname{Log}\left[-\frac{i \sqrt{d}}{\sqrt{e}}+x\right]}{-i \sqrt{f}+\sqrt{g}\, x}-\frac{i \sqrt{f}\, g p \operatorname{Log}\left[-\frac{i \sqrt{d}}{\sqrt{e}}+x\right]}{i \sqrt{f}+\sqrt{g}\, x}+\frac{2 f g p \operatorname{Log}\left[-\frac{i \sqrt{d}}{\sqrt{e}}+x\right]}{f+g x^2}+\right.$$

$$\frac{i \sqrt{f}\, g p \operatorname{Log}\left[\frac{i \sqrt{d}}{\sqrt{e}}+x\right]}{-i \sqrt{f}+\sqrt{g}\, x}-\frac{i \sqrt{f}\, g p \operatorname{Log}\left[\frac{i \sqrt{d}}{\sqrt{e}}+x\right]}{i \sqrt{f}+\sqrt{g}\, x}+\frac{2 f g p \operatorname{Log}\left[\frac{i \sqrt{d}}{\sqrt{e}}+x\right]}{f+g x^2}+8 g p \operatorname{Log}[x] \operatorname{Log}\left[1-\frac{i \sqrt{e}\, x}{\sqrt{d}}\right]+$$

$$8 g p \operatorname{Log}[x] \operatorname{Log}\left[1+\frac{i \sqrt{e}\, x}{\sqrt{d}}\right]+4 g p \operatorname{Log}\left[\frac{i \sqrt{d}}{\sqrt{e}}+x\right] \operatorname{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}-i \sqrt{g}\, x\right)}{\sqrt{e} \sqrt{f}-\sqrt{d} \sqrt{g}}\right]+4 g p \operatorname{Log}\left[-\frac{i \sqrt{d}}{\sqrt{e}}+x\right] \operatorname{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}-i \sqrt{g}\, x\right)}{\sqrt{e} \sqrt{f}+\sqrt{d} \sqrt{g}}\right]+$$

$$4 g p \operatorname{Log}\left[-\frac{i \sqrt{d}}{\sqrt{e}}+x\right] \operatorname{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}+i \sqrt{g}\, x\right)}{\sqrt{e} \sqrt{f}-\sqrt{d} \sqrt{g}}\right]+4 g p \operatorname{Log}\left[\frac{i \sqrt{d}}{\sqrt{e}}+x\right] \operatorname{Log}\left[\frac{\sqrt{e}\left(\sqrt{f}+i \sqrt{g}\, x\right)}{\sqrt{e} \sqrt{f}+\sqrt{d} \sqrt{g}}\right]-\frac{2 e f p \operatorname{Log}\left[d+e x^2\right]}{d}+$$

$$\frac{\sqrt{e} \sqrt{f}\, g p \operatorname{Log}\left[d+e x^2\right]}{\sqrt{e} \sqrt{f}-\sqrt{d} \sqrt{g}}+\frac{\sqrt{e} \sqrt{f}\, g p \operatorname{Log}\left[d+e x^2\right]}{\sqrt{e} \sqrt{f}+\sqrt{d} \sqrt{g}}-\frac{2 f \operatorname{Log}\left[c\left(d+e x^2\right)^p\right]}{x^2}-\frac{2 f g \operatorname{Log}\left[c\left(d+e x^2\right)^p\right]}{f+g x^2}-8 g \operatorname{Log}[x] \operatorname{Log}\left[c\left(d+e x^2\right)^p\right]-$$

$$\frac{\sqrt{e} \sqrt{f}\, g p \operatorname{Log}\left[f+g x^2\right]}{\sqrt{e} \sqrt{f}-\sqrt{d} \sqrt{g}}-\frac{\sqrt{e} \sqrt{f}\, g p \operatorname{Log}\left[f+g x^2\right]}{\sqrt{e} \sqrt{f}+\sqrt{d} \sqrt{g}}-4 g p \operatorname{Log}\left[-\frac{i \sqrt{d}}{\sqrt{e}}+x\right] \operatorname{Log}\left[f+g x^2\right]-4 g p \operatorname{Log}\left[\frac{i \sqrt{d}}{\sqrt{e}}+x\right] \operatorname{Log}\left[f+g x^2\right]+$$

$$4 g \operatorname{Log}\left[c\left(d+e x^2\right)^p\right] \operatorname{Log}\left[f+g x^2\right]+8 g p \operatorname{PolyLog}\left[2,-\frac{i \sqrt{e}\, x}{\sqrt{d}}\right]+8 g p \operatorname{PolyLog}\left[2,\frac{i \sqrt{e}\, x}{\sqrt{d}}\right]+4 g p \operatorname{PolyLog}\left[2,-\frac{\sqrt{g}\left(\sqrt{d}-i \sqrt{e}\, x\right)}{\sqrt{e} \sqrt{f}-\sqrt{d} \sqrt{g}}\right]+$$

$$\left.4 g p \operatorname{PolyLog}\left[2,\frac{\sqrt{g}\left(\sqrt{d}-i \sqrt{e}\, x\right)}{\sqrt{e} \sqrt{f}+\sqrt{d} \sqrt{g}}\right]+4 g p \operatorname{PolyLog}\left[2,-\frac{\sqrt{g}\left(\sqrt{d}+i \sqrt{e}\, x\right)}{\sqrt{e} \sqrt{f}-\sqrt{d} \sqrt{g}}\right]+4 g p \operatorname{PolyLog}\left[2,\frac{\sqrt{g}\left(\sqrt{d}+i \sqrt{e}\, x\right)}{\sqrt{e} \sqrt{f}+\sqrt{d} \sqrt{g}}\right]\right)$$

Problem 359: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Log}\left[d+e x^2\right]}{1-x^2}\, dx$$

Optimal (type 4, 217 leaves, 11 steps):

$$2 \operatorname{ArcTanh}[x] \operatorname{Log}\left[\frac{2}{1+x}\right]-\operatorname{ArcTanh}[x] \operatorname{Log}\left[\frac{2\left(\sqrt{-d}-\sqrt{e}\, x\right)}{\left(\sqrt{-d}-\sqrt{e}\right)(1+x)}\right]-\operatorname{ArcTanh}[x] \operatorname{Log}\left[\frac{2\left(\sqrt{-d}+\sqrt{e}\, x\right)}{\left(\sqrt{-d}+\sqrt{e}\right)(1+x)}\right]+$$

$$\operatorname{ArcTanh}[x] \operatorname{Log}\left[d+e x^2\right]-\operatorname{PolyLog}\left[2,1-\frac{2}{1+x}\right]+\frac{1}{2} \operatorname{PolyLog}\left[2,1-\frac{2\left(\sqrt{-d}-\sqrt{e}\, x\right)}{\left(\sqrt{-d}-\sqrt{e}\right)(1+x)}\right]+\frac{1}{2} \operatorname{PolyLog}\left[2,1-\frac{2\left(\sqrt{-d}+\sqrt{e}\, x\right)}{\left(\sqrt{-d}+\sqrt{e}\right)(1+x)}\right]$$

Result (type 4, 468 leaves):

$$\frac{1}{2}\left(\text{Log}[1-x]\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]-\text{Log}\left[\frac{\sqrt{e}\,(-1+x)}{i\sqrt{d}-\sqrt{e}}\right]\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]-\text{Log}[1+x]\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]+\right.$$
$$\text{Log}\left[-\frac{i\sqrt{e}\,(1+x)}{\sqrt{d}-i\sqrt{e}}\right]\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]+\text{Log}[1-x]\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]-\text{Log}\left[\frac{\sqrt{e}\,(-1+x)}{-i\sqrt{d}-\sqrt{e}}\right]\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]-$$
$$\text{Log}[1+x]\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]+\text{Log}\left[\frac{i\sqrt{e}\,(1+x)}{\sqrt{d}+i\sqrt{e}}\right]\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]-\text{Log}[1-x]\,\text{Log}[d+e\,x^2]+\text{Log}[1+x]\,\text{Log}[d+e\,x^2]-$$
$$\left.\text{PolyLog}\left[2,\frac{\sqrt{d}-i\sqrt{e}\,x}{\sqrt{d}-i\sqrt{e}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{d}-i\sqrt{e}\,x}{\sqrt{d}+i\sqrt{e}}\right]+\text{PolyLog}\left[2,\frac{\sqrt{d}+i\sqrt{e}\,x}{\sqrt{d}-i\sqrt{e}}\right]-\text{PolyLog}\left[2,\frac{\sqrt{d}+i\sqrt{e}\,x}{\sqrt{d}+i\sqrt{e}}\right]\right)$$

Problem 370: Unable to integrate problem.

$$\int\frac{\text{Log}\left[c\,(d+e\,x^n)^p\right]}{x\,(f+g\,x^{2n})}\,dx$$

Optimal (type 4, 266 leaves, 13 steps):

$$\frac{\text{Log}\left[-\frac{e\,x^n}{d}\right]\text{Log}\left[c\,(d+e\,x^n)^p\right]}{f\,n}-\frac{\text{Log}\left[c\,(d+e\,x^n)^p\right]\text{Log}\left[\frac{e\left(\sqrt{-f}-\sqrt{g}\,x^n\right)}{e\sqrt{-f}+d\sqrt{g}}\right]}{2\,f\,n}-$$
$$\frac{\text{Log}\left[c\,(d+e\,x^n)^p\right]\text{Log}\left[\frac{e\left(\sqrt{-f}+\sqrt{g}\,x^n\right)}{e\sqrt{-f}-d\sqrt{g}}\right]}{2\,f\,n}-\frac{p\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,(d+e\,x^n)}{e\sqrt{-f}-d\sqrt{g}}\right]}{2\,f\,n}-\frac{p\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,(d+e\,x^n)}{e\sqrt{-f}+d\sqrt{g}}\right]}{2\,f\,n}+\frac{p\,\text{PolyLog}\left[2,1+\frac{e\,x^n}{d}\right]}{f\,n}$$

Result (type 8, 29 leaves):

$$\int\frac{\text{Log}\left[c\,(d+e\,x^n)^p\right]}{x\,(f+g\,x^{2n})}\,dx$$

Problem 371: Unable to integrate problem.

$$\int\frac{\text{Log}\left[c\,(d+e\,x^n)^p\right]}{x\,(f+g\,x^n)}\,dx$$

Optimal (type 4, 121 leaves, 8 steps):

$$\frac{\text{Log}\left[-\frac{e\,x^n}{d}\right]\text{Log}\left[c\,(d+e\,x^n)^p\right]}{f\,n}-\frac{\text{Log}\left[c\,(d+e\,x^n)^p\right]\text{Log}\left[\frac{e\,(f+g\,x^n)}{e\,f-d\,g}\right]}{f\,n}-\frac{p\,\text{PolyLog}\left[2,-\frac{g\,(d+e\,x^n)}{e\,f-d\,g}\right]}{f\,n}+\frac{p\,\text{PolyLog}\left[2,1+\frac{e\,x^n}{d}\right]}{f\,n}$$

Result (type 8, 27 leaves):

$$\int \frac{\text{Log}\left[c \left(d+e x^n\right)^p\right]}{x \left(f+g x^n\right)} \, dx$$

Problem 372: Unable to integrate problem.

$$\int \frac{\text{Log}\left[c \left(d+e x^n\right)^p\right]}{x \left(f+g x^{-n}\right)} \, dx$$

Optimal (type 4, 70 leaves, 5 steps):

$$\frac{\text{Log}\left[c \left(d+e x^n\right)^p\right] \text{Log}\left[-\frac{e \left(g+f x^n\right)}{d f-e g}\right]}{f n}+\frac{p \, \text{PolyLog}\left[2, \frac{f \left(d+e x^n\right)}{d f-e g}\right]}{f n}$$

Result (type 8, 29 leaves):

$$\int \frac{\text{Log}\left[c \left(d+e x^n\right)^p\right]}{x \left(f+g x^{-n}\right)} \, dx$$

Problem 373: Unable to integrate problem.

$$\int \frac{\text{Log}\left[c \left(d+e x^n\right)^p\right]}{x \left(f+g x^{-2 n}\right)} \, dx$$

Optimal (type 4, 221 leaves, 9 steps):

$$\frac{\text{Log}\left[c \left(d+e x^n\right)^p\right] \text{Log}\left[\frac{e \left(\sqrt{g}-\sqrt{-f} \, x^n\right)}{d \sqrt{-f}+e \sqrt{g}}\right]}{2 f n}+\frac{\text{Log}\left[c \left(d+e x^n\right)^p\right] \text{Log}\left[-\frac{e \left(\sqrt{g}+\sqrt{-f} \, x^n\right)}{d \sqrt{-f}-e \sqrt{g}}\right]}{2 f n}+\frac{p \, \text{PolyLog}\left[2, \frac{\sqrt{-f} \left(d+e x^n\right)}{d \sqrt{-f}-e \sqrt{g}}\right]}{2 f n}+\frac{p \, \text{PolyLog}\left[2, \frac{\sqrt{-f} \left(d+e x^n\right)}{d \sqrt{-f}+e \sqrt{g}}\right]}{2 f n}$$

Result (type 8, 29 leaves):

$$\int \frac{\text{Log}\left[c \left(d+e x^n\right)^p\right]}{x \left(f+g x^{-2 n}\right)} \, dx$$

Problem 374: Unable to integrate problem.

$$\int \frac{\text{Log}\left[c \left(d+e x^n\right)^p\right]}{x \left(f+g x^{2 n}\right)^2} \, dx$$

Optimal (type 4, 419 leaves, 19 steps):

$$-\frac{d\,e\,\sqrt{g}\,p\,\text{ArcTan}\left[\frac{\sqrt{g}\,x^n}{\sqrt{f}}\right]}{2\,f^{3/2}\,\left(e^2\,f+d^2\,g\right)\,n}-\frac{e^2\,p\,\text{Log}\left[d+e\,x^n\right]}{2\,f\,\left(e^2\,f+d^2\,g\right)\,n}+\frac{\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]}{2\,f\,n\,\left(f+g\,x^{2\,n}\right)}+\frac{\text{Log}\left[-\frac{e\,x^n}{d}\right]\,\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]}{f^2\,n}-\frac{\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}-\sqrt{g}\,x^n\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,f^2\,n}-\frac{\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]\,\text{Log}\left[\frac{e\,\left(\sqrt{-f}+\sqrt{g}\,x^n\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,f^2\,n}+\frac{e^2\,p\,\text{Log}\left[f+g\,x^{2\,n}\right]}{4\,f\,\left(e^2\,f+d^2\,g\right)\,n}-\frac{p\,\text{PolyLog}\left[2,-\frac{\sqrt{g}\,\left(d+e\,x^n\right)}{e\,\sqrt{-f}-d\,\sqrt{g}}\right]}{2\,f^2\,n}-\frac{p\,\text{PolyLog}\left[2,\frac{\sqrt{g}\,\left(d+e\,x^n\right)}{e\,\sqrt{-f}+d\,\sqrt{g}}\right]}{2\,f^2\,n}+\frac{p\,\text{PolyLog}\left[2,1+\frac{e\,x^n}{d}\right]}{f^2\,n}$$

Result (type 8, 29 leaves) :

$$\int\frac{\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]}{x\,\left(f+g\,x^{2\,n}\right)^2}\,dx$$

Problem 375: Unable to integrate problem.

$$\int\frac{\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]}{x\,\left(f+g\,x^n\right)^2}\,dx$$

Optimal (type 4, 204 leaves, 12 steps) :

$$-\frac{e\,p\,\text{Log}\left[d+e\,x^n\right]}{f\,\left(e\,f-d\,g\right)\,n}+\frac{\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]}{f\,n\,\left(f+g\,x^n\right)}+\frac{\text{Log}\left[-\frac{e\,x^n}{d}\right]\,\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]}{f^2\,n}+\frac{e\,p\,\text{Log}\left[f+g\,x^n\right]}{f\,\left(e\,f-d\,g\right)\,n}-\frac{\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]\,\text{Log}\left[\frac{e\,\left(f+g\,x^n\right)}{e\,f-d\,g}\right]}{f^2\,n}-\frac{p\,\text{PolyLog}\left[2,-\frac{g\,\left(d+e\,x^n\right)}{e\,f-d\,g}\right]}{f^2\,n}+\frac{p\,\text{PolyLog}\left[2,1+\frac{e\,x^n}{d}\right]}{f^2\,n}$$

Result (type 8, 27 leaves) :

$$\int\frac{\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]}{x\,\left(f+g\,x^n\right)^2}\,dx$$

Problem 376: Unable to integrate problem.

$$\int\frac{\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]}{x\,\left(f+g\,x^{-n}\right)^2}\,dx$$

Optimal (type 4, 156 leaves, 10 steps) :

$$\frac{e\,g\,p\,\text{Log}\left[d+e\,x^n\right]}{f^2\,\left(d\,f-e\,g\right)\,n}+\frac{g\,\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]}{f^2\,n\,\left(g+f\,x^n\right)}-\frac{e\,g\,p\,\text{Log}\left[g+f\,x^n\right]}{f^2\,\left(d\,f-e\,g\right)\,n}+\frac{\text{Log}\left[c\,\left(d+e\,x^n\right)^p\right]\,\text{Log}\left[-\frac{e\,\left(g+f\,x^n\right)}{d\,f-e\,g}\right]}{f^2\,n}+\frac{p\,\text{PolyLog}\left[2,\frac{f\,\left(d+e\,x^n\right)}{d\,f-e\,g}\right]}{f^2\,n}$$

Result (type 8, 29 leaves) :

$$\int \frac{\text{Log}\left[c\left(d+e\,x^n\right)^p\right]}{x\left(f+g\,x^{-n}\right)^2}\,dx$$

Problem 377: Unable to integrate problem.

$$\int \frac{\text{Log}\left[c\left(d+e\,x^n\right)^p\right]}{x\left(f+g\,x^{-2n}\right)^2}\,dx$$

Optimal (type 4, 377 leaves, 17 steps):

$$-\frac{d\,e\,\sqrt{g}\,p\,\text{ArcTan}\left[\frac{\sqrt{f}\,x^n}{\sqrt{g}}\right]}{2\,f^{3/2}\left(d^2 f+e^2 g\right)n}-\frac{e^2 g\,p\,\text{Log}\left[d+e\,x^n\right]}{2\,f^2\left(d^2 f+e^2 g\right)n}+\frac{g\,\text{Log}\left[c\left(d+e\,x^n\right)^p\right]}{2\,f^2\,n\left(g+f\,x^{2n}\right)}+\frac{\text{Log}\left[c\left(d+e\,x^n\right)^p\right]\text{Log}\left[\frac{e\left(\sqrt{g}-\sqrt{-f}\,x^n\right)}{d\sqrt{-f}+e\sqrt{g}}\right]}{2\,f^2\,n}+$$

$$\frac{\text{Log}\left[c\left(d+e\,x^n\right)^p\right]\text{Log}\left[-\frac{e\left(\sqrt{g}+\sqrt{-f}\,x^n\right)}{d\sqrt{-f}-e\sqrt{g}}\right]}{2\,f^2\,n}+\frac{e^2 g\,p\,\text{Log}\left[g+f\,x^{2n}\right]}{4\,f^2\left(d^2 f+e^2 g\right)n}+\frac{p\,\text{PolyLog}\left[2,\frac{\sqrt{-f}\left(d+e\,x^n\right)}{d\sqrt{-f}-e\sqrt{g}}\right]}{2\,f^2\,n}+\frac{p\,\text{PolyLog}\left[2,\frac{\sqrt{-f}\left(d+e\,x^n\right)}{d\sqrt{-f}+e\sqrt{g}}\right]}{2\,f^2\,n}$$

Result (type 8, 29 leaves):

$$\int \frac{\text{Log}\left[c\left(d+e\,x^n\right)^p\right]}{x\left(f+g\,x^{-2n}\right)^2}\,dx$$

Problem 380: Unable to integrate problem.

$$\int \frac{\text{Log}\left[c\left(d+e\,x^{-n}\right)\right]}{x\left(c\,e-\left(1-c\,d\right)x^n\right)}\,dx$$

Optimal (type 4, 26 leaves, 4 steps):

$$\frac{\text{PolyLog}\left[2,1-c\left(d+e\,x^{-n}\right)\right]}{c\,e\,n}$$

Result (type 8, 35 leaves):

$$\int \frac{\text{Log}\left[c\left(d+e\,x^{-n}\right)\right]}{x\left(c\,e-\left(1-c\,d\right)x^n\right)}\,dx$$

Problem 392: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[x^{-n}\left(a+x^n\right)\right]}{x}\,dx$$

Optimal (type 4, 14 leaves, 2 steps):

$$\frac{\text{PolyLog}\left[2,-a x^{-n}\right]}{n}$$

Result (type 4, 51 leaves):

$$\frac{1}{2}\text{Log}[x]\left(n\,\text{Log}[x]+2\,\text{Log}\left[1+a x^{-n}\right]-2\,\text{Log}\left[\frac{a+x^n}{a}\right]\right)-\frac{\text{PolyLog}\left[2,-\frac{x^n}{a}\right]}{n}$$

Problem 397: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}\left[\frac{a+b x^2}{x^2}\right]}{c+d x}\,dx$$

Optimal (type 4, 227 leaves, 14 steps):

$$\frac{\text{Log}\left[b+\frac{a}{x^2}\right]\text{Log}[c+d x]}{d}+\frac{2\,\text{Log}\left[-\frac{d x}{c}\right]\text{Log}[c+d x]}{d}-\frac{\text{Log}\left[\frac{d\left(\sqrt{-a}-\sqrt{b}\,x\right)}{\sqrt{b}\,c+\sqrt{-a}\,d}\right]\text{Log}[c+d x]}{d}-\frac{\text{Log}\left[-\frac{d\left(\sqrt{-a}+\sqrt{b}\,x\right)}{\sqrt{b}\,c-\sqrt{-a}\,d}\right]\text{Log}[c+d x]}{d}-\frac{\text{PolyLog}\left[2,\frac{\sqrt{b}\,(c+d x)}{\sqrt{b}\,c-\sqrt{-a}\,d}\right]}{d}-\frac{\text{PolyLog}\left[2,\frac{\sqrt{b}\,(c+d x)}{\sqrt{b}\,c+\sqrt{-a}\,d}\right]}{d}+\frac{2\,\text{PolyLog}\left[2,1+\frac{d x}{c}\right]}{d}$$

Result (type 4, 284 leaves):

$$\frac{1}{d}\left(\text{Log}\left[b+\frac{a}{x^2}\right]\text{Log}[c+d x]+2\,\text{Log}[x]\,\text{Log}[c+d x]-\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}[c+d x]-\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}[c+d x]+\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}\left[\frac{\sqrt{b}\,(c+d x)}{\sqrt{b}\,c-i\sqrt{a}\,d}\right]+\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}\left[\frac{\sqrt{b}\,(c+d x)}{\sqrt{b}\,c+i\sqrt{a}\,d}\right]-2\,\text{Log}[x]\,\text{Log}\left[1+\frac{d x}{c}\right]-2\,\text{PolyLog}\left[2,-\frac{d x}{c}\right]+\text{PolyLog}\left[2,\frac{d\left(\sqrt{a}-i\sqrt{b}\,x\right)}{i\sqrt{b}\,c+\sqrt{a}\,d}\right]+\text{PolyLog}\left[2,\frac{d\left(\sqrt{a}+i\sqrt{b}\,x\right)}{-i\sqrt{b}\,c+\sqrt{a}\,d}\right]\right)$$

Problem 411: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2}{x}\,dx$$

Optimal (type 4, 93 leaves, 5 steps):

$$2\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2\text{Log}\left[-\frac{e\sqrt{x}}{d}\right]+4\,b\,n\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)\text{PolyLog}\left[2,1+\frac{e\sqrt{x}}{d}\right]-4\,b^2n^2\,\text{PolyLog}\left[3,1+\frac{e\sqrt{x}}{d}\right]$$

Result (type 4, 195 leaves):

$$\left(a-b\,n\,\text{Log}\left[d+e\sqrt{x}\right]+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2\text{Log}[x]+$$
$$2\,b\,n\left(a-b\,n\,\text{Log}\left[d+e\sqrt{x}\right]+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)\left(\left(\text{Log}\left[d+e\sqrt{x}\right]-\text{Log}\left[1+\frac{e\sqrt{x}}{d}\right]\right)\text{Log}[x]-2\,\text{PolyLog}\left[2,-\frac{e\sqrt{x}}{d}\right]\right)+$$
$$2\,b^2n^2\left(\text{Log}\left[d+e\sqrt{x}\right]^2\text{Log}\left[-\frac{e\sqrt{x}}{d}\right]+2\,\text{Log}\left[d+e\sqrt{x}\right]\text{PolyLog}\left[2,1+\frac{e\sqrt{x}}{d}\right]-2\,\text{PolyLog}\left[3,1+\frac{e\sqrt{x}}{d}\right]\right)$$

Problem 418: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^3}{x}\,dx$$

Optimal (type 4, 135 leaves, 6 steps):

$$2\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^3\text{Log}\left[-\frac{e\sqrt{x}}{d}\right]+6\,b\,n\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2\text{PolyLog}\left[2,1+\frac{e\sqrt{x}}{d}\right]-$$
$$12\,b^2n^2\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)\text{PolyLog}\left[3,1+\frac{e\sqrt{x}}{d}\right]+12\,b^3n^3\,\text{PolyLog}\left[4,1+\frac{e\sqrt{x}}{d}\right]$$

Result (type 4, 333 leaves):

$$\left(a-b\,n\,\text{Log}\left[d+e\sqrt{x}\right]+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^3\text{Log}[x]+$$
$$3\,b\,n\left(a-b\,n\,\text{Log}\left[d+e\sqrt{x}\right]+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2\left(\left(\text{Log}\left[d+e\sqrt{x}\right]-\text{Log}\left[1+\frac{e\sqrt{x}}{d}\right]\right)\text{Log}[x]-2\,\text{PolyLog}\left[2,-\frac{e\sqrt{x}}{d}\right]\right)+$$
$$6\,b^2n^2\left(a-b\,n\,\text{Log}\left[d+e\sqrt{x}\right]+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)$$
$$\left(\text{Log}\left[d+e\sqrt{x}\right]^2\text{Log}\left[-\frac{e\sqrt{x}}{d}\right]+2\,\text{Log}\left[d+e\sqrt{x}\right]\text{PolyLog}\left[2,1+\frac{e\sqrt{x}}{d}\right]-2\,\text{PolyLog}\left[3,1+\frac{e\sqrt{x}}{d}\right]\right)+2\,b^3n^3$$
$$\left(\text{Log}\left[d+e\sqrt{x}\right]^3\text{Log}\left[-\frac{e\sqrt{x}}{d}\right]+3\,\text{Log}\left[d+e\sqrt{x}\right]^2\text{PolyLog}\left[2,1+\frac{e\sqrt{x}}{d}\right]-6\,\text{Log}\left[d+e\sqrt{x}\right]\text{PolyLog}\left[3,1+\frac{e\sqrt{x}}{d}\right]+6\,\text{PolyLog}\left[4,1+\frac{e\sqrt{x}}{d}\right]\right)$$

Problem 419: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^3}{x^2}\,dx$$

Optimal (type 4, 263 leaves, 10 steps):

$$-\frac{3\,b\,e\,n\left(d+e\sqrt{x}\right)\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2}{d^2\sqrt{x}}-\frac{3\,b\,e^2\,n\,\text{Log}\left[1-\frac{d}{d+e\sqrt{x}}\right]\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2}{d^2}-$$
$$\frac{\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^3}{x}+\frac{6\,b^2\,e^2\,n^2\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)\text{Log}\left[-\frac{e\sqrt{x}}{d}\right]}{d^2}+$$
$$\frac{6\,b^2\,e^2\,n^2\left(a+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)\text{PolyLog}\left[2,\frac{d}{d+e\sqrt{x}}\right]}{d^2}+\frac{6\,b^3\,e^2\,n^3\,\text{PolyLog}\left[2,1+\frac{e\sqrt{x}}{d}\right]}{d^2}+\frac{6\,b^3\,e^2\,n^3\,\text{PolyLog}\left[3,\frac{d}{d+e\sqrt{x}}\right]}{d^2}$$

Result (type 4, 536 leaves):

$$\frac{1}{d^2\,x}\left(-3\,b\,d\,e\,n\sqrt{x}\left(a-b\,n\,\text{Log}\left[d+e\sqrt{x}\right]+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2-\right.$$
$$3\,b\,d^2\,n\,\text{Log}\left[d+e\sqrt{x}\right]\left(a-b\,n\,\text{Log}\left[d+e\sqrt{x}\right]+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2+3\,b\,e^2\,n\,x\,\text{Log}\left[d+e\sqrt{x}\right]\left(a-b\,n\,\text{Log}\left[d+e\sqrt{x}\right]+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2-$$
$$d^2\left(a-b\,n\,\text{Log}\left[d+e\sqrt{x}\right]+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^3-\frac{3}{2}\,b\,e^2\,n\,x\left(a-b\,n\,\text{Log}\left[d+e\sqrt{x}\right]+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)^2\text{Log}[x]+$$
$$3\,b^2\,n^2\left(a-b\,n\,\text{Log}\left[d+e\sqrt{x}\right]+b\,\text{Log}\left[c\left(d+e\sqrt{x}\right)^n\right]\right)\left(\left(d+e\sqrt{x}\right)\text{Log}\left[d+e\sqrt{x}\right]\left(-2\,e\sqrt{x}+\left(-d+e\sqrt{x}\right)\text{Log}\left[d+e\sqrt{x}\right]\right)-\right.$$
$$\left.2\,e^2\,x\left(-1+\text{Log}\left[d+e\sqrt{x}\right]\right)\text{Log}\left[-\frac{e\sqrt{x}}{d}\right]-2\,e^2\,x\,\text{PolyLog}\left[2,1+\frac{e\sqrt{x}}{d}\right]\right)+$$
$$b^3\,n^3\left(\left(d+e\sqrt{x}\right)\text{Log}\left[d+e\sqrt{x}\right]^2\left(-3\,e\sqrt{x}+\left(-d+e\sqrt{x}\right)\text{Log}\left[d+e\sqrt{x}\right]\right)-3\,e^2\,x\left(-2+\text{Log}\left[d+e\sqrt{x}\right]\right)\text{Log}\left[d+e\sqrt{x}\right]\text{Log}\left[-\frac{e\sqrt{x}}{d}\right]-\right.$$
$$\left.\left.6\,e^2\,x\left(-1+\text{Log}\left[d+e\sqrt{x}\right]\right)\text{PolyLog}\left[2,1+\frac{e\sqrt{x}}{d}\right]+6\,e^2\,x\,\text{PolyLog}\left[3,1+\frac{e\sqrt{x}}{d}\right]\right)\right)$$

Problem 432: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2}{x}\,dx$$

Optimal (type 4, 93 leaves, 5 steps):

$$-2\left(a+b\,\mathrm{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2\mathrm{Log}\left[-\frac{e}{d\sqrt{x}}\right]-4\,b\,n\left(a+b\,\mathrm{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)\mathrm{PolyLog}\left[2,1+\frac{e}{d\sqrt{x}}\right]+4\,b^2\,n^2\,\mathrm{PolyLog}\left[3,1+\frac{e}{d\sqrt{x}}\right]$$

Result (type 4, 386 leaves):

$$\left(a-b\,n\,\mathrm{Log}\left[d+\frac{e}{\sqrt{x}}\right]+b\,\mathrm{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2\mathrm{Log}[x]+$$
$$2\,b\,n\left(a-b\,n\,\mathrm{Log}\left[d+\frac{e}{\sqrt{x}}\right]+b\,\mathrm{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)\left(\left(\mathrm{Log}\left[d+\frac{e}{\sqrt{x}}\right]-\mathrm{Log}\left[1+\frac{e}{d\sqrt{x}}\right]\right)\mathrm{Log}[x]+2\,\mathrm{PolyLog}\left[2,-\frac{e}{d\sqrt{x}}\right]\right)+$$
$$\frac{1}{12}b^2n^2\left(24\,\mathrm{Log}\left[\frac{e}{d}+\sqrt{x}\right]^2\mathrm{Log}\left[-\frac{d\sqrt{x}}{e}\right]+12\,\mathrm{Log}\left[d+\frac{e}{\sqrt{x}}\right]^2\mathrm{Log}[x]-12\,\mathrm{Log}\left[\frac{e}{d}+\sqrt{x}\right]^2\mathrm{Log}[x]-24\,\mathrm{Log}\left[d+\frac{e}{\sqrt{x}}\right]\mathrm{Log}\left[1+\frac{d\sqrt{x}}{e}\right]\mathrm{Log}[x]+\right.$$
$$24\,\mathrm{Log}\left[\frac{e}{d}+\sqrt{x}\right]\mathrm{Log}\left[1+\frac{d\sqrt{x}}{e}\right]\mathrm{Log}[x]+6\,\mathrm{Log}\left[d+\frac{e}{\sqrt{x}}\right]\mathrm{Log}[x]^2-6\,\mathrm{Log}\left[1+\frac{d\sqrt{x}}{e}\right]\mathrm{Log}[x]^2+\mathrm{Log}[x]^3+48\,\mathrm{Log}\left[\frac{e}{d}+\sqrt{x}\right]$$
$$\left.\mathrm{PolyLog}\left[2,1+\frac{d\sqrt{x}}{e}\right]-48\left(\mathrm{Log}\left[d+\frac{e}{\sqrt{x}}\right]-\mathrm{Log}\left[\frac{e}{d}+\sqrt{x}\right]\right)\mathrm{PolyLog}\left[2,-\frac{d\sqrt{x}}{e}\right]-48\,\mathrm{PolyLog}\left[3,1+\frac{d\sqrt{x}}{e}\right]-48\,\mathrm{PolyLog}\left[3,-\frac{d\sqrt{x}}{e}\right]\right)$$

Problem 438: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\mathrm{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^3}{x}\,dx$$

Optimal (type 4, 135 leaves, 6 steps):

$$-2\left(a+b\,\mathrm{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^3\mathrm{Log}\left[-\frac{e}{d\sqrt{x}}\right]-6\,b\,n\left(a+b\,\mathrm{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2\mathrm{PolyLog}\left[2,1+\frac{e}{d\sqrt{x}}\right]+$$
$$12\,b^2\,n^2\left(a+b\,\mathrm{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)\mathrm{PolyLog}\left[3,1+\frac{e}{d\sqrt{x}}\right]-12\,b^3\,n^3\,\mathrm{PolyLog}\left[4,1+\frac{e}{d\sqrt{x}}\right]$$

Result (type 4, 532 leaves):

$$\left(a-b\,n\,\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]+b\,\text{Log}\left[c\,\left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^3\,\text{Log}[x]+$$
$$3\,b\,n\,\left(a-b\,n\,\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]+b\,\text{Log}\left[c\,\left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)^2\,\left(\left(\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]-\text{Log}\left[1+\frac{e}{d\,\sqrt{x}}\right]\right)\,\text{Log}[x]+2\,\text{PolyLog}\left[2,-\frac{e}{d\,\sqrt{x}}\right]\right)+$$
$$6\,b^2\,n^2\,\left(a-b\,n\,\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]+b\,\text{Log}\left[c\,\left(d+\frac{e}{\sqrt{x}}\right)^n\right]\right)$$
$$\left(\text{Log}\left[\frac{e}{d}+\sqrt{x}\right]^2\,\text{Log}\left[-\frac{d\,\sqrt{x}}{e}\right]+\frac{1}{2}\,\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]^2\,\text{Log}[x]-\frac{1}{2}\,\text{Log}\left[\frac{e}{d}+\sqrt{x}\right]^2\,\text{Log}[x]-\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]\,\text{Log}\left[1+\frac{d\,\sqrt{x}}{e}\right]\,\text{Log}[x]+\right.$$
$$\text{Log}\left[\frac{e}{d}+\sqrt{x}\right]\,\text{Log}\left[1+\frac{d\,\sqrt{x}}{e}\right]\,\text{Log}[x]+\frac{1}{4}\,\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]\,\text{Log}[x]^2-\frac{1}{4}\,\text{Log}\left[1+\frac{d\,\sqrt{x}}{e}\right]\,\text{Log}[x]^2+\frac{\text{Log}[x]^3}{24}+2\,\text{Log}\left[\frac{e}{d}+\sqrt{x}\right]\,\text{PolyLog}\left[2,1+\frac{d\,\sqrt{x}}{e}\right]-$$
$$\left.2\,\left(\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]-\text{Log}\left[\frac{e}{d}+\sqrt{x}\right]\right)\,\text{PolyLog}\left[2,-\frac{d\,\sqrt{x}}{e}\right]-2\,\text{PolyLog}\left[3,1+\frac{d\,\sqrt{x}}{e}\right]-2\,\text{PolyLog}\left[3,-\frac{d\,\sqrt{x}}{e}\right]\right)-$$
$$2\,b^3\,n^3\,\left(\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]^3\,\text{Log}\left[-\frac{e}{d\,\sqrt{x}}\right]+3\,\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]^2\,\text{PolyLog}\left[2,1+\frac{e}{d\,\sqrt{x}}\right]-6\,\text{Log}\left[d+\frac{e}{\sqrt{x}}\right]\,\text{PolyLog}\left[3,1+\frac{e}{d\,\sqrt{x}}\right]+6\,\text{PolyLog}\left[4,1+\frac{e}{d\,\sqrt{x}}\right]\right)$$

Problem 453: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^2}{x}\,dx$$

Optimal (type 4, 93 leaves, 5 steps):

$$3\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^2\,\text{Log}\left[-\frac{e\,x^{1/3}}{d}\right]+6\,b\,n\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)\,\text{PolyLog}\left[2,1+\frac{e\,x^{1/3}}{d}\right]-6\,b^2\,n^2\,\text{PolyLog}\left[3,1+\frac{e\,x^{1/3}}{d}\right]$$

Result (type 4, 195 leaves):

$$\left(a-b\,n\,\text{Log}\left[d+e\,x^{1/3}\right]+b\,\text{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^2\,\text{Log}[x]+$$
$$2\,b\,n\,\left(a-b\,n\,\text{Log}\left[d+e\,x^{1/3}\right]+b\,\text{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)\,\left(\left(\text{Log}\left[d+e\,x^{1/3}\right]-\text{Log}\left[1+\frac{e\,x^{1/3}}{d}\right]\right)\,\text{Log}[x]-3\,\text{PolyLog}\left[2,-\frac{e\,x^{1/3}}{d}\right]\right)+$$
$$3\,b^2\,n^2\,\left(\text{Log}\left[d+e\,x^{1/3}\right]^2\,\text{Log}\left[-\frac{e\,x^{1/3}}{d}\right]+2\,\text{Log}\left[d+e\,x^{1/3}\right]\,\text{PolyLog}\left[2,1+\frac{e\,x^{1/3}}{d}\right]-2\,\text{PolyLog}\left[3,1+\frac{e\,x^{1/3}}{d}\right]\right)$$

Problem 460: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,\left(d+e\,x^{1/3}\right)^n\right]\right)^3}{x}\,dx$$

Optimal (type 4, 135 leaves, 6 steps):

$$3\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^n\right]\right)^3\text{Log}\left[-\frac{e\,x^{1/3}}{d}\right]+9\,b\,n\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^n\right]\right)^2\text{PolyLog}\left[2,1+\frac{e\,x^{1/3}}{d}\right]-18\,b^2\,n^2\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^n\right]\right)\text{PolyLog}\left[3,1+\frac{e\,x^{1/3}}{d}\right]+18\,b^3\,n^3\,\text{PolyLog}\left[4,1+\frac{e\,x^{1/3}}{d}\right]$$

Result (type 4, 333 leaves):

$$\left(a-b\,n\,\text{Log}\left[d+e\,x^{1/3}\right]+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^n\right]\right)^3\text{Log}[x]+3\,b\,n\left(a-b\,n\,\text{Log}\left[d+e\,x^{1/3}\right]+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^n\right]\right)^2\left(\left(\text{Log}\left[d+e\,x^{1/3}\right]-\text{Log}\left[1+\frac{e\,x^{1/3}}{d}\right]\right)\text{Log}[x]-3\,\text{PolyLog}\left[2,-\frac{e\,x^{1/3}}{d}\right]\right)+9\,b^2\,n^2\left(a-b\,n\,\text{Log}\left[d+e\,x^{1/3}\right]+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^n\right]\right)\left(\text{Log}\left[d+e\,x^{1/3}\right]^2\text{Log}\left[-\frac{e\,x^{1/3}}{d}\right]+2\,\text{Log}\left[d+e\,x^{1/3}\right]\text{PolyLog}\left[2,1+\frac{e\,x^{1/3}}{d}\right]-2\,\text{PolyLog}\left[3,1+\frac{e\,x^{1/3}}{d}\right]\right)+3\,b^3\,n^3\left(\text{Log}\left[d+e\,x^{1/3}\right]^3\text{Log}\left[-\frac{e\,x^{1/3}}{d}\right]+3\,\text{Log}\left[d+e\,x^{1/3}\right]^2\text{PolyLog}\left[2,1+\frac{e\,x^{1/3}}{d}\right]-6\,\text{Log}\left[d+e\,x^{1/3}\right]\text{PolyLog}\left[3,1+\frac{e\,x^{1/3}}{d}\right]+6\,\text{PolyLog}\left[4,1+\frac{e\,x^{1/3}}{d}\right]\right)$$

Problem 473: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\left(d+e\,x^{2/3}\right)^n\right]\right)^2}{x}\,dx$$

Optimal (type 4, 95 leaves, 5 steps):

$$\frac{3}{2}\left(a+b\,\text{Log}\left[c\left(d+e\,x^{2/3}\right)^n\right]\right)^2\text{Log}\left[-\frac{e\,x^{2/3}}{d}\right]+3\,b\,n\left(a+b\,\text{Log}\left[c\left(d+e\,x^{2/3}\right)^n\right]\right)\text{PolyLog}\left[2,1+\frac{e\,x^{2/3}}{d}\right]-3\,b^2\,n^2\,\text{PolyLog}\left[3,1+\frac{e\,x^{2/3}}{d}\right]$$

Result (type 4, 199 leaves):

$$\left(a-b\,n\,\text{Log}\left[d+e\,x^{2/3}\right]+b\,\text{Log}\left[c\left(d+e\,x^{2/3}\right)^n\right]\right)^2\text{Log}[x]+2\,b\,n\left(a-b\,n\,\text{Log}\left[d+e\,x^{2/3}\right]+b\,\text{Log}\left[c\left(d+e\,x^{2/3}\right)^n\right]\right)\left(\left(\text{Log}\left[d+e\,x^{2/3}\right]-\text{Log}\left[1+\frac{e\,x^{2/3}}{d}\right]\right)\text{Log}[x]-\frac{3}{2}\,\text{PolyLog}\left[2,-\frac{e\,x^{2/3}}{d}\right]\right)+\frac{3}{2}\,b^2\,n^2\left(\text{Log}\left[d+e\,x^{2/3}\right]^2\text{Log}\left[-\frac{e\,x^{2/3}}{d}\right]+2\,\text{Log}\left[d+e\,x^{2/3}\right]\text{PolyLog}\left[2,1+\frac{e\,x^{2/3}}{d}\right]-2\,\text{PolyLog}\left[3,1+\frac{e\,x^{2/3}}{d}\right]\right)$$

Problem 483: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\left(d+e\,x^{2/3}\right)^n\right]\right)^3}{x}\,dx$$

Optimal (type 4, 139 leaves, 6 steps):

$$\frac{3}{2}\left(a+b\,\text{Log}\left[c\left(d+e\,x^{2/3}\right)^n\right]\right)^3\text{Log}\left[-\frac{e\,x^{2/3}}{d}\right]+\frac{9}{2}\,b\,n\left(a+b\,\text{Log}\left[c\left(d+e\,x^{2/3}\right)^n\right]\right)^2\text{PolyLog}\left[2,1+\frac{e\,x^{2/3}}{d}\right]-9\,b^2\,n^2\left(a+b\,\text{Log}\left[c\left(d+e\,x^{2/3}\right)^n\right]\right)\text{PolyLog}\left[3,1+\frac{e\,x^{2/3}}{d}\right]+9\,b^3\,n^3\,\text{PolyLog}\left[4,1+\frac{e\,x^{2/3}}{d}\right]$$

Result (type 4, 339 leaves):

$$\left(a-b\,n\,\text{Log}\left[d+e\,x^{2/3}\right]+b\,\text{Log}\left[c\left(d+e\,x^{2/3}\right)^n\right]\right)^3\text{Log}[x]+3\,b\,n\left(a-b\,n\,\text{Log}\left[d+e\,x^{2/3}\right]+b\,\text{Log}\left[c\left(d+e\,x^{2/3}\right)^n\right]\right)^2\left(\left(\text{Log}\left[d+e\,x^{2/3}\right]-\text{Log}\left[1+\frac{e\,x^{2/3}}{d}\right]\right)\text{Log}[x]-\frac{3}{2}\text{PolyLog}\left[2,-\frac{e\,x^{2/3}}{d}\right]\right)+\frac{9}{2}\,b^2\,n^2\left(a-b\,n\,\text{Log}\left[d+e\,x^{2/3}\right]+b\,\text{Log}\left[c\left(d+e\,x^{2/3}\right)^n\right]\right)\left(\text{Log}\left[d+e\,x^{2/3}\right]^2\text{Log}\left[-\frac{e\,x^{2/3}}{d}\right]+2\,\text{Log}\left[d+e\,x^{2/3}\right]\text{PolyLog}\left[2,1+\frac{e\,x^{2/3}}{d}\right]-2\,\text{PolyLog}\left[3,1+\frac{e\,x^{2/3}}{d}\right]\right)+\frac{3}{2}\,b^3\,n^3\left(\text{Log}\left[d+e\,x^{2/3}\right]^3\text{Log}\left[-\frac{e\,x^{2/3}}{d}\right]+3\,\text{Log}\left[d+e\,x^{2/3}\right]^2\text{PolyLog}\left[2,1+\frac{e\,x^{2/3}}{d}\right]-6\,\text{Log}\left[d+e\,x^{2/3}\right]\text{PolyLog}\left[3,1+\frac{e\,x^{2/3}}{d}\right]+6\,\text{PolyLog}\left[4,1+\frac{e\,x^{2/3}}{d}\right]\right)$$

Problem 500: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2}{x}\,dx$$

Optimal (type 4, 93 leaves, 5 steps):

$$-3\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2\text{Log}\left[-\frac{e}{d\,x^{1/3}}\right]-6\,b\,n\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)\text{PolyLog}\left[2,1+\frac{e}{d\,x^{1/3}}\right]+6\,b^2\,n^2\,\text{PolyLog}\left[3,1+\frac{e}{d\,x^{1/3}}\right]$$

Result (type 4, 389 leaves):

$$\left(a-b\,n\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2\text{Log}[x]+2\,b\,n\left(a-b\,n\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)\left(\left(\text{Log}\left[d+\frac{e}{x^{1/3}}\right]-\text{Log}\left[1+\frac{e}{d\,x^{1/3}}\right]\right)\text{Log}[x]+3\,\text{PolyLog}\left[2,-\frac{e}{d\,x^{1/3}}\right]\right)+3\,b^2\,n^2\left(2\,\text{Log}\left[\frac{e}{d}+x^{1/3}\right]\text{PolyLog}\left[2,1+\frac{d\,x^{1/3}}{e}\right]-2\left(\text{Log}\left[d+\frac{e}{x^{1/3}}\right]-\text{Log}\left[\frac{e}{d}+x^{1/3}\right]\right)\text{PolyLog}\left[2,-\frac{d\,x^{1/3}}{e}\right]+\frac{1}{81}\left(81\,\text{Log}\left[\frac{e}{d}+x^{1/3}\right]^2\text{Log}\left[-\frac{d\,x^{1/3}}{e}\right]+27\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]^2\text{Log}[x]-27\,\text{Log}\left[\frac{e}{d}+x^{1/3}\right]^2\text{Log}[x]-54\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]\text{Log}\left[1+\frac{d\,x^{1/3}}{e}\right]\text{Log}[x]+54\,\text{Log}\left[\frac{e}{d}+x^{1/3}\right]\text{Log}\left[1+\frac{d\,x^{1/3}}{e}\right]\text{Log}[x]+9\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]\text{Log}[x]^2-9\,\text{Log}\left[1+\frac{d\,x^{1/3}}{e}\right]\text{Log}[x]^2+\text{Log}[x]^3-162\,\text{PolyLog}\left[3,1+\frac{d\,x^{1/3}}{e}\right]-162\,\text{PolyLog}\left[3,-\frac{d\,x^{1/3}}{e}\right]\right)\right)$$

Problem 505: Result more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^3}{x}\,dx$$

Optimal (type 4, 135 leaves, 6 steps):

$$-3\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^3\text{Log}\left[-\frac{e}{d\,x^{1/3}}\right]-9\,b\,n\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2\text{PolyLog}\left[2,1+\frac{e}{d\,x^{1/3}}\right]+18\,b^2\,n^2\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)\text{PolyLog}\left[3,1+\frac{e}{d\,x^{1/3}}\right]-18\,b^3\,n^3\,\text{PolyLog}\left[4,1+\frac{e}{d\,x^{1/3}}\right]$$

Result (type 4, 527 leaves):

$$\left(a-b\,n\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^3\text{Log}[x]+3\,b\,n\left(a-b\,n\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)^2\left(\left(\text{Log}\left[d+\frac{e}{x^{1/3}}\right]-\text{Log}\left[1+\frac{e}{d\,x^{1/3}}\right]\right)\text{Log}[x]+3\,\text{PolyLog}\left[2,-\frac{e}{d\,x^{1/3}}\right]\right)+9\,b^2\,n^2\left(a-b\,n\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^n\right]\right)\left(2\,\text{Log}\left[\frac{e}{d}+x^{1/3}\right]\text{PolyLog}\left[2,1+\frac{d\,x^{1/3}}{e}\right]-2\left(\text{Log}\left[d+\frac{e}{x^{1/3}}\right]-\text{Log}\left[\frac{e}{d}+x^{1/3}\right]\right)\text{PolyLog}\left[2,-\frac{d\,x^{1/3}}{e}\right]+\frac{1}{81}\left(81\,\text{Log}\left[\frac{e}{d}+x^{1/3}\right]^2\text{Log}\left[-\frac{d\,x^{1/3}}{e}\right]+27\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]^2\text{Log}[x]-27\,\text{Log}\left[\frac{e}{d}+x^{1/3}\right]^2\text{Log}[x]-54\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]\text{Log}\left[1+\frac{d\,x^{1/3}}{e}\right]\text{Log}[x]+54\,\text{Log}\left[\frac{e}{d}+x^{1/3}\right]\text{Log}\left[1+\frac{d\,x^{1/3}}{e}\right]\text{Log}[x]+9\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]\text{Log}[x]^2-9\,\text{Log}\left[1+\frac{d\,x^{1/3}}{e}\right]\text{Log}[x]^2+\text{Log}[x]^3-162\,\text{PolyLog}\left[3,1+\frac{d\,x^{1/3}}{e}\right]-162\,\text{PolyLog}\left[3,-\frac{d\,x^{1/3}}{e}\right]\right)\right)-3\,b^3\,n^3\left(\text{Log}\left[d+\frac{e}{x^{1/3}}\right]^3\text{Log}\left[-\frac{e}{d\,x^{1/3}}\right]+3\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]^2\text{PolyLog}\left[2,1+\frac{e}{d\,x^{1/3}}\right]-6\,\text{Log}\left[d+\frac{e}{x^{1/3}}\right]\text{PolyLog}\left[3,1+\frac{e}{d\,x^{1/3}}\right]+6\,\text{PolyLog}\left[4,1+\frac{e}{d\,x^{1/3}}\right]\right)$$

Problem 518: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{x}\,dx$$

Optimal (type 4, 95 leaves, 5 steps):

$$-\frac{3}{2}\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2\text{Log}\left[-\frac{e}{d\,x^{2/3}}\right]-3\,b\,n\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)\text{PolyLog}\left[2,1+\frac{e}{d\,x^{2/3}}\right]+3\,b^2\,n^2\,\text{PolyLog}\left[3,1+\frac{e}{d\,x^{2/3}}\right]$$

Result (type 4, 1701 leaves):

$$\left(a-b\,n\,\text{Log}\left[d+\frac{e}{x^{2/3}}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2\text{Log}[x]+$$

$$2\,b\,n\left(a-b\,n\,\text{Log}\left[d+\frac{e}{x^{2/3}}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)\left(\left(\text{Log}\left[d+\frac{e}{x^{2/3}}\right]-\text{Log}\left[1+\frac{e}{d\,x^{2/3}}\right]\right)\text{Log}[x]+\frac{3}{2}\text{PolyLog}\left[2,-\frac{e}{d\,x^{2/3}}\right]\right)+$$

$$3\,b^2\,n^2\,\Bigg(\text{Log}\left[-\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]^2\text{Log}\left[-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+2\,\text{Log}\left[-\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]\text{Log}\left[\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]\text{Log}\left[-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+$$

$$\text{Log}\left[1-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\left(-2\,\text{Log}\left[-\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]+\text{Log}\left[1-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\right)\left(\text{Log}\left[-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-\text{Log}\left[\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\right)+$$

$$\text{Log}\left[\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]^2\text{Log}\left[\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+2\,\text{Log}\left[\frac{\sqrt{e}-\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}+\mathrm{i}\sqrt{d}\,x^{1/3}}\right]\text{Log}\left[1-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\left(-\text{Log}\left[-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+\text{Log}\left[\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\right)+$$

$$\text{Log}\left[\frac{\sqrt{e}-\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}+\mathrm{i}\sqrt{d}\,x^{1/3}}\right]^2\left(\text{Log}\left[\frac{2\sqrt{e}}{\sqrt{e}+\mathrm{i}\sqrt{d}\,x^{1/3}}\right]+\text{Log}\left[-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-\text{Log}\left[\frac{2\,x^{1/3}}{-\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}}\right]\right)+$$

$$\frac{1}{3}\left(-\text{Log}\left[d+\frac{e}{x^{2/3}}\right]+\text{Log}\left[-\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]+\text{Log}\left[\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]-\frac{2\,\text{Log}[x]}{3}\right)^2\text{Log}[x]+\frac{4\,\text{Log}[x]^3}{81}+$$

$$2\,\text{Log}\left[\frac{\sqrt{e}-\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}+\mathrm{i}\sqrt{d}\,x^{1/3}}\right]\left(-\text{PolyLog}\left[2,\frac{\mathrm{i}\sqrt{e}+\sqrt{d}\,x^{1/3}}{\mathrm{i}\sqrt{e}-\sqrt{d}\,x^{1/3}}\right]+\text{PolyLog}\left[2,\frac{\mathrm{i}\sqrt{e}+\sqrt{d}\,x^{1/3}}{-\mathrm{i}\sqrt{e}+\sqrt{d}\,x^{1/3}}\right]\right)+$$

$$2\,\text{Log}\left[\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]\text{PolyLog}\left[2,1-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+2\left(\text{Log}\left[-\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]+\text{Log}\left[\frac{\sqrt{e}-\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}+\mathrm{i}\sqrt{d}\,x^{1/3}}\right]\right)\text{PolyLog}\left[2,1-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+$$

$$2\,\text{Log}\left[-\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]\text{PolyLog}\left[2,1+\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+2\left(\text{Log}\left[\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]-\text{Log}\left[\frac{\sqrt{e}-\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}+\mathrm{i}\sqrt{d}\,x^{1/3}}\right]\right)\text{PolyLog}\left[2,1+\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+$$

$$2\left(\text{Log}\left[d+\frac{e}{x^{2/3}}\right]-\text{Log}\left[-\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]-\text{Log}\left[\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]+\frac{2\,\text{Log}[x]}{3}\right)$$

$$\Bigg(\frac{1}{9}\left(3\,\text{Log}\left[-\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]+3\,\text{Log}\left[\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]-3\,\text{Log}\left[1-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-3\,\text{Log}\left[1+\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-\text{Log}[x]\right)\text{Log}[x]-\text{PolyLog}\left[2,-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-$$

$$\text{PolyLog}\left[2,\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\Bigg)+2\,\text{PolyLog}\left[3,\frac{\mathrm{i}\sqrt{e}+\sqrt{d}\,x^{1/3}}{\mathrm{i}\sqrt{e}-\sqrt{d}\,x^{1/3}}\right]-2\,\text{PolyLog}\left[3,\frac{\mathrm{i}\sqrt{e}+\sqrt{d}\,x^{1/3}}{-\mathrm{i}\sqrt{e}+\sqrt{d}\,x^{1/3}}\right]-4\,\text{PolyLog}\left[3,1-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-$$

$$4\,\text{PolyLog}\left[3,1+\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-\frac{2}{9}\Bigg(\left(\text{Log}\left[\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]-\text{Log}\left[1-\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\right)\text{Log}[x]^2+\left(\text{Log}\left[-\frac{\mathrm{i}\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]-\text{Log}\left[1+\frac{\mathrm{i}\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\right)\text{Log}[x]^2-$$

$$6\,\text{Log}[x]\,\text{PolyLog}\left[2,-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-6\,\text{Log}[x]\,\text{PolyLog}\left[2,\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+18\,\text{PolyLog}\left[3,-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+18\,\text{PolyLog}\left[3,\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\Bigg)\Bigg)$$

Problem 523: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{x^2}\,dx$$

Optimal (type 4, 361 leaves, 19 steps):

$$-\frac{8\,b^2 n^2}{9\,x}+\frac{32\,b^2 d\,n^2}{3\,e\,x^{1/3}}+\frac{32\,b^2 d^{3/2} n^2\,\text{ArcTan}\left[\frac{\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]}{3\,e^{3/2}}+\frac{4\,i\,b^2 d^{3/2} n^2\,\text{ArcTan}\left[\frac{\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]^2}{e^{3/2}}-$$
$$\frac{8\,b^2 d^{3/2} n^2\,\text{ArcTan}\left[\frac{\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\text{Log}\left[2-\frac{2\sqrt{e}}{\sqrt{e}-i\sqrt{d}\,x^{1/3}}\right]}{e^{3/2}}+\frac{4\,b\,n\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{3\,x}-\frac{4\,b\,d\,n\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{e\,x^{1/3}}-$$
$$\frac{4\,b\,d^{3/2}\,n\,\text{ArcTan}\left[\frac{\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)}{e^{3/2}}-\frac{\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2}{x}+\frac{4\,i\,b^2 d^{3/2} n^2\,\text{PolyLog}\left[2,-1+\frac{2\sqrt{e}}{\sqrt{e}-i\sqrt{d}\,x^{1/3}}\right]}{e^{3/2}}$$

Result (type 4, 797 leaves):

$$\frac{1}{9\,e^{3/2}\,x}\Bigg(6\,b\,n\left(-6\,d^{3/2}\,x\,\text{ArcTan}\left[\frac{\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+\sqrt{e}\left(2\,e-6\,d\,x^{2/3}-3\,e\,\text{Log}\left[d+\frac{e}{x^{2/3}}\right]\right)\right)\left(a-b\,n\,\text{Log}\left[d+\frac{e}{x^{2/3}}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)-$$
$$9\,e^{3/2}\left(a-b\,n\,\text{Log}\left[d+\frac{e}{x^{2/3}}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2+b^2 n^2\Bigg(-8\,e^{3/2}+96\,d\sqrt{e}\,x^{2/3}+96\,d^{3/2}\,x\,\text{ArcTan}\left[\frac{\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+12\,e^{3/2}\,\text{Log}\left[d+\frac{e}{x^{2/3}}\right]-$$
$$36\,d\sqrt{e}\,x^{2/3}\,\text{Log}\left[d+\frac{e}{x^{2/3}}\right]-36\,d^{3/2}\,x\,\text{ArcTan}\left[\frac{\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\text{Log}\left[d+\frac{e}{x^{2/3}}\right]-9\,e^{3/2}\,\text{Log}\left[d+\frac{e}{x^{2/3}}\right]^2+36\,d^{3/2}\,x\,\text{ArcTan}\left[\frac{\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\text{Log}\left[-\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]+$$
$$9\,i\,d^{3/2}\,x\,\text{Log}\left[-\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]^2+36\,d^{3/2}\,x\,\text{ArcTan}\left[\frac{\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\text{Log}\left[\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]-9\,i\,d^{3/2}\,x\,\text{Log}\left[\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]^2-$$
$$18\,i\,d^{3/2}\,x\,\text{Log}\left[-\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]\text{Log}\left[\frac{1}{2}-\frac{i\sqrt{d}\,x^{1/3}}{2\sqrt{e}}\right]+18\,i\,d^{3/2}\,x\,\text{Log}\left[\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]\text{Log}\left[\frac{1}{2}+\frac{i\sqrt{d}\,x^{1/3}}{2\sqrt{e}}\right]-24\,d^{3/2}\,x\,\text{ArcTan}\left[\frac{\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\text{Log}[x]+$$
$$12\,i\,d^{3/2}\,x\,\text{Log}\left[1-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\text{Log}[x]-12\,i\,d^{3/2}\,x\,\text{Log}\left[1+\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\text{Log}[x]+18\,i\,d^{3/2}\,x\,\text{PolyLog}\left[2,\frac{1}{2}-\frac{i\sqrt{d}\,x^{1/3}}{2\sqrt{e}}\right]-$$
$$18\,i\,d^{3/2}\,x\,\text{PolyLog}\left[2,\frac{1}{2}+\frac{i\sqrt{d}\,x^{1/3}}{2\sqrt{e}}\right]-36\,i\,d^{3/2}\,x\,\text{PolyLog}\left[2,-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+36\,i\,d^{3/2}\,x\,\text{PolyLog}\left[2,\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\Bigg)\Bigg)$$

Problem 526: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^3}{x}\,dx$$

Optimal (type 4, 139 leaves, 6 steps):

$$-\frac{3}{2}\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^3\text{Log}\left[-\frac{e}{d\,x^{2/3}}\right]-\frac{9}{2}\,b\,n\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2\text{PolyLog}\left[2,1+\frac{e}{d\,x^{2/3}}\right]+9\,b^2\,n^2\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)\text{PolyLog}\left[3,1+\frac{e}{d\,x^{2/3}}\right]-9\,b^3\,n^3\,\text{PolyLog}\left[4,1+\frac{e}{d\,x^{2/3}}\right]$$

Result (type 4, 1841 leaves):

$$\left(a-b\,n\,\text{Log}\left[d+\frac{e}{x^{2/3}}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^3\text{Log}[x]+$$
$$3\,b\,n\left(a-b\,n\,\text{Log}\left[d+\frac{e}{x^{2/3}}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)^2\left(\left(\text{Log}\left[d+\frac{e}{x^{2/3}}\right]-\text{Log}\left[1+\frac{e}{d\,x^{2/3}}\right]\right)\text{Log}[x]+\frac{3}{2}\,\text{PolyLog}\left[2,-\frac{e}{d\,x^{2/3}}\right]\right)+9\,b^2\,n^2$$
$$\left(a-b\,n\,\text{Log}\left[d+\frac{e}{x^{2/3}}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{x^{2/3}}\right)^n\right]\right)\left(\text{Log}\left[-\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]^2\text{Log}\left[-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+2\,\text{Log}\left[-\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]\text{Log}\left[\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]\text{Log}\left[-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+\right.$$
$$\text{Log}\left[1-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\left(-2\,\text{Log}\left[-\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]+\text{Log}\left[1-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\right)\left(\text{Log}\left[-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-\text{Log}\left[\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\right)+$$
$$\text{Log}\left[\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]^2\text{Log}\left[\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+2\,\text{Log}\left[\frac{\sqrt{e}-i\sqrt{d}\,x^{1/3}}{\sqrt{e}+i\sqrt{d}\,x^{1/3}}\right]\text{Log}\left[1-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\left(-\text{Log}\left[-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+\text{Log}\left[\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\right)+$$
$$\text{Log}\left[\frac{\sqrt{e}-i\sqrt{d}\,x^{1/3}}{\sqrt{e}+i\sqrt{d}\,x^{1/3}}\right]^2\left(\text{Log}\left[\frac{2\sqrt{e}}{\sqrt{e}+i\sqrt{d}\,x^{1/3}}\right]+\text{Log}\left[-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-\text{Log}\left[\frac{2\,x^{1/3}}{-\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}}\right]\right)+$$
$$\frac{1}{3}\left(-\text{Log}\left[d+\frac{e}{x^{2/3}}\right]+\text{Log}\left[-\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]+\text{Log}\left[\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]-\frac{2\,\text{Log}[x]}{3}\right)^2\text{Log}[x]+\frac{4\,\text{Log}[x]^3}{81}+$$
$$2\,\text{Log}\left[\frac{\sqrt{e}-i\sqrt{d}\,x^{1/3}}{\sqrt{e}+i\sqrt{d}\,x^{1/3}}\right]\left(-\text{PolyLog}\left[2,\frac{i\sqrt{e}+\sqrt{d}\,x^{1/3}}{i\sqrt{e}-\sqrt{d}\,x^{1/3}}\right]+\text{PolyLog}\left[2,\frac{i\sqrt{e}+\sqrt{d}\,x^{1/3}}{-i\sqrt{e}+\sqrt{d}\,x^{1/3}}\right]\right)+$$
$$2\,\text{Log}\left[\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]\text{PolyLog}\left[2,1-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+2\left(\text{Log}\left[-\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]+\text{Log}\left[\frac{\sqrt{e}-i\sqrt{d}\,x^{1/3}}{\sqrt{e}+i\sqrt{d}\,x^{1/3}}\right]\right)\text{PolyLog}\left[2,1-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+$$
$$2\,\text{Log}\left[-\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]\text{PolyLog}\left[2,1+\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+2\left(\text{Log}\left[\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]-\text{Log}\left[\frac{\sqrt{e}-i\sqrt{d}\,x^{1/3}}{\sqrt{e}+i\sqrt{d}\,x^{1/3}}\right]\right)\text{PolyLog}\left[2,1+\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+$$

$$2\left(\mathrm{Log}\left[d+\frac{e}{x^{2/3}}\right]-\mathrm{Log}\left[-\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]-\mathrm{Log}\left[\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]+\frac{2\,\mathrm{Log}[x]}{3}\right)$$

$$\left(\frac{1}{9}\left(3\,\mathrm{Log}\left[-\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]+3\,\mathrm{Log}\left[\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]-3\,\mathrm{Log}\left[1-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-3\,\mathrm{Log}\left[1+\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-\mathrm{Log}[x]\right)\mathrm{Log}[x]-\mathrm{PolyLog}\left[2,-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-\right.$$

$$\left.\mathrm{PolyLog}\left[2,\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\right)+2\,\mathrm{PolyLog}\left[3,\frac{i\sqrt{e}+\sqrt{d}\,x^{1/3}}{i\sqrt{e}-\sqrt{d}\,x^{1/3}}\right]-2\,\mathrm{PolyLog}\left[3,\frac{i\sqrt{e}+\sqrt{d}\,x^{1/3}}{-i\sqrt{e}+\sqrt{d}\,x^{1/3}}\right]-4\,\mathrm{PolyLog}\left[3,1-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-$$

$$4\,\mathrm{PolyLog}\left[3,1+\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-\frac{2}{9}\left(\left(\mathrm{Log}\left[\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]-\mathrm{Log}\left[1-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\right)\mathrm{Log}[x]^2+\left(\mathrm{Log}\left[-\frac{i\sqrt{e}}{\sqrt{d}}+x^{1/3}\right]-\mathrm{Log}\left[1+\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\right)\mathrm{Log}[x]^2-\right.$$

$$\left.6\,\mathrm{Log}[x]\,\mathrm{PolyLog}\left[2,-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]-6\,\mathrm{Log}[x]\,\mathrm{PolyLog}\left[2,\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+18\,\mathrm{PolyLog}\left[3,-\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]+18\,\mathrm{PolyLog}\left[3,\frac{i\sqrt{d}\,x^{1/3}}{\sqrt{e}}\right]\right)\Bigg)-$$

$$\frac{3}{2}b^3n^3\left(\mathrm{Log}\left[d+\frac{e}{x^{2/3}}\right]^3\mathrm{Log}\left[-\frac{e}{d\,x^{2/3}}\right]+3\,\mathrm{Log}\left[d+\frac{e}{x^{2/3}}\right]^2\mathrm{PolyLog}\left[2,1+\frac{e}{d\,x^{2/3}}\right]-6\,\mathrm{Log}\left[d+\frac{e}{x^{2/3}}\right]\mathrm{PolyLog}\left[3,1+\frac{e}{d\,x^{2/3}}\right]+6\,\mathrm{PolyLog}\left[4,1+\frac{e}{d\,x^{2/3}}\right]\right)$$

Problem 538: Unable to integrate problem.

$$\int x^3\left(a+b\,\mathrm{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]\right)^p\,dx$$

Optimal (type 4, 907 leaves, 27 steps):

$$\frac{2^{-2\,(1+p)}\, e^{-\frac{4\,a}{b}}\, \text{Gamma}\left[1+p,\, -\frac{4\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)}{b}\right]\, \left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)^p\, \left(-\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{b}\right)^{-p}}{c^4\, e^8} - \frac{1}{e^8\, \left(c\,\left(d+e\,\sqrt{x}\right)^2\right)^{7/2}}$$

$$2^{1+p}\times 7^{-p}\, d\, e^{-\frac{7\,a}{2\,b}}\, \left(d+e\,\sqrt{x}\right)^7\, \text{Gamma}\left[1+p,\, -\frac{7\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)}{2\,b}\right]\, \left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)^p\, \left(-\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{b}\right)^{-p} +$$

$$\frac{7\times 3^{-p}\, d^2\, e^{-\frac{3\,a}{b}}\, \text{Gamma}\left[1+p,\, -\frac{3\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)}{b}\right]\, \left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)^p\, \left(-\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{b}\right)^{-p}}{c^3\, e^8} - \frac{1}{e^8\, \left(c\,\left(d+e\,\sqrt{x}\right)^2\right)^{5/2}}$$

$$7\times 2^{1+p}\times 5^{-p}\, d^3\, e^{-\frac{5\,a}{2\,b}}\, \left(d+e\,\sqrt{x}\right)^5\, \text{Gamma}\left[1+p,\, -\frac{5\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)}{2\,b}\right]\, \left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)^p\, \left(-\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{b}\right)^{-p} +$$

$$\frac{35\times 2^{-1-p}\, d^4\, e^{-\frac{2\,a}{b}}\, \text{Gamma}\left[1+p,\, -\frac{2\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)}{b}\right]\, \left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)^p\, \left(-\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{b}\right)^{-p}}{c^2\, e^8} - \frac{1}{e^8\, \left(c\,\left(d+e\,\sqrt{x}\right)^2\right)^{3/2}}$$

$$7\times 2^{1+p}\times 3^{-p}\, d^5\, e^{-\frac{3\,a}{2\,b}}\, \left(d+e\,\sqrt{x}\right)^3\, \text{Gamma}\left[1+p,\, -\frac{3\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)}{2\,b}\right]\, \left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)^p\, \left(-\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{b}\right)^{-p} +$$

$$\frac{7\, d^6\, e^{-\frac{a}{b}}\, \text{Gamma}\left[1+p,\, -\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{b}\right]\, \left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)^p\, \left(-\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{b}\right)^{-p}}{c\, e^8} - \frac{1}{e^8\, \sqrt{c\,\left(d+e\,\sqrt{x}\right)^2}}$$

$$2^{1+p}\, d^7\, e^{-\frac{a}{2\,b}}\, \left(d+e\,\sqrt{x}\right)\, \text{Gamma}\left[1+p,\, -\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{2\,b}\right]\, \left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)^p\, \left(-\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{b}\right)^{-p}$$

Result (type 8, 26 leaves) :

$$\int x^3\, \left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)^p\, dx$$

Problem 539: Unable to integrate problem.

$$\int x^2 \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^2\right]\right)^p \, dx$$

Optimal (type 4, 677 leaves, 21 steps):

$$\frac{3^{-1-p}\, e^{-\frac{3a}{b}}\, \text{Gamma}\left[1+p, -\frac{3\left(a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]\right)}{b}\right] \left(a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{b}\right)^{-p}}{c^3 e^6} - \frac{1}{e^6 \left(c\left(d+e\sqrt{x}\right)^2\right)^{5/2}}$$

$$2^{1+p} \times 5^{-p}\, d\, e^{-\frac{5a}{2b}} \left(d+e\sqrt{x}\right)^5 \text{Gamma}\left[1+p, -\frac{5\left(a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]\right)}{2b}\right] \left(a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{b}\right)^{-p} +$$

$$\frac{5 \times 2^{-p}\, d^2\, e^{-\frac{2a}{b}}\, \text{Gamma}\left[1+p, -\frac{2\left(a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]\right)}{b}\right] \left(a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{b}\right)^{-p}}{c^2 e^6} - \frac{1}{e^6 \left(c\left(d+e\sqrt{x}\right)^2\right)^{3/2}}$$

$$5 \times 2^{2+p} \times 3^{-1-p}\, d^3\, e^{-\frac{3a}{2b}} \left(d+e\sqrt{x}\right)^3 \text{Gamma}\left[1+p, -\frac{3\left(a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]\right)}{2b}\right] \left(a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{b}\right)^{-p} +$$

$$\frac{5\, d^4\, e^{-\frac{a}{b}}\, \text{Gamma}\left[1+p, -\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{b}\right] \left(a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{b}\right)^{-p}}{c\, e^6} - \frac{1}{e^6 \sqrt{c\left(d+e\sqrt{x}\right)^2}}$$

$$2^{1+p}\, d^5\, e^{-\frac{a}{2b}} \left(d+e\sqrt{x}\right) \text{Gamma}\left[1+p, -\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{2b}\right] \left(a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{b}\right)^{-p}$$

Result (type 8, 26 leaves):

$$\int x^2 \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^2\right]\right)^p \, dx$$

Problem 540: Unable to integrate problem.

$$\int x \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^2\right]\right)^p \, dx$$

Optimal (type 4, 445 leaves, 15 steps):

$$\frac{2^{-1-p} e^{-\frac{2a}{b}} \operatorname{Gamma}\left[1+p, -\frac{2\left(a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]\right)}{b}\right] \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{b}\right)^{-p}}{c^2 e^4} - \frac{1}{e^4 \left(c \left(d+e\sqrt{x}\right)^2\right)^{3/2}}$$

$$2^{1+p} \times 3^{-p} d\, e^{-\frac{3a}{2b}} \left(d+e\sqrt{x}\right)^3 \operatorname{Gamma}\left[1+p, -\frac{3\left(a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]\right)}{2b}\right] \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{b}\right)^{-p} +$$

$$\frac{3 d^2 e^{-\frac{a}{b}} \operatorname{Gamma}\left[1+p, -\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{b}\right] \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{b}\right)^{-p}}{c e^4} - \frac{1}{e^4 \sqrt{c \left(d+e\sqrt{x}\right)^2}}$$

$$2^{1+p} d^3 e^{-\frac{a}{2b}} \left(d+e\sqrt{x}\right) \operatorname{Gamma}\left[1+p, -\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{2b}\right] \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c\left(d+e\sqrt{x}\right)^2\right]}{b}\right)$$

Result (type 8, 24 leaves):

$$\int x \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^2\right]\right)^p \, dx$$

Problem 541: Unable to integrate problem.

$$\int \left(a+b \operatorname{Log}\left[c \left(d+e \sqrt{x}\right)^2\right]\right)^p \, dx$$

Optimal (type 4, 213 leaves, 9 steps):

$$\frac{e^{-\frac{a}{b}}\,\text{Gamma}\left[1+p,\,-\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{b}\right]\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)^p\,\left(-\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{b}\right)^{-p}}{c\,e^2}-\frac{1}{e^2\,\sqrt{c\,\left(d+e\,\sqrt{x}\right)^2}}$$

$$2^{1+p}\,d\,e^{-\frac{a}{2\,b}}\,\left(d+e\,\sqrt{x}\right)\,\text{Gamma}\left[1+p,\,-\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{2\,b}\right]\,\left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)^p\,\left(-\frac{a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]}{b}\right)^{-p}$$

Result (type 8, 22 leaves) :

$$\int\left(a+b\,\text{Log}\left[c\,\left(d+e\,\sqrt{x}\right)^2\right]\right)^p\,dx$$

Problem 553: Unable to integrate problem.

$$\int\frac{\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p}{x^2}\,dx$$

Optimal (type 4, 213 leaves, 9 steps) :

$$-\frac{e^{-\frac{a}{b}}\,\text{Gamma}\left[1+p,\,-\frac{a+b\,\text{Log}\left[c\,\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right]\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\,\left(-\frac{a+b\,\text{Log}\left[c\,\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}}{c\,e^2}+$$

$$\frac{2^{1+p}\,d\,e^{-\frac{a}{2\,b}}\,\left(d+\frac{e}{\sqrt{x}}\right)\,\text{Gamma}\left[1+p,\,-\frac{a+b\,\text{Log}\left[c\,\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{2\,b}\right]\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\,\left(-\frac{a+b\,\text{Log}\left[c\,\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}}{e^2\,\sqrt{c\,\left(d+\frac{e}{\sqrt{x}}\right)^2}}$$

Result (type 8, 26 leaves) :

$$\int\frac{\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p}{x^2}\,dx$$

Problem 554: Unable to integrate problem.

$$\int \frac{\left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p}{x^4} \, dx$$

Optimal (type 4, 676 leaves, 21 steps):

$$-\frac{3^{-1-p} e^{-\frac{3a}{b}} \operatorname{Gamma}\left[1+p,-\frac{3\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)}{b}\right]\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}}{c^3 e^6}+\frac{1}{e^6\left(c\left(d+\frac{e}{\sqrt{x}}\right)^2\right)^{5/2}}$$

$$2^{1+p}\times 5^{-p} d\, e^{-\frac{5a}{2b}}\left(d+\frac{e}{\sqrt{x}}\right)^5 \operatorname{Gamma}\left[1+p,-\frac{5\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)}{2b}\right]\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}-$$

$$\frac{5\times 2^{-p} d^2 e^{-\frac{2a}{b}} \operatorname{Gamma}\left[1+p,-\frac{2\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)}{b}\right]\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}}{c^2 e^6}+\frac{1}{e^6\left(c\left(d+\frac{e}{\sqrt{x}}\right)^2\right)^{3/2}}$$

$$5\times 2^{2+p}\times 3^{-1-p} d^3 e^{-\frac{3a}{2b}}\left(d+\frac{e}{\sqrt{x}}\right)^3 \operatorname{Gamma}\left[1+p,-\frac{3\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)}{2b}\right]\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}-$$

$$\frac{5 d^4 e^{-\frac{a}{b}} \operatorname{Gamma}\left[1+p,-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right]\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}}{c\, e^6}+$$

$$\frac{2^{1+p} d^5 e^{-\frac{a}{2b}}\left(d+\frac{e}{\sqrt{x}}\right) \operatorname{Gamma}\left[1+p,-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{2b}\right]\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}}{e^6\sqrt{c\left(d+\frac{e}{\sqrt{x}}\right)^2}}$$

Result (type 8, 26 leaves):

$$\int \frac{\left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p}{x^4} \, dx$$

Problem 555: Unable to integrate problem.

$$\int \frac{\left(a+b \operatorname{Log}\left[c \left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p}{x^6} \, dx$$

Optimal (type 4, 1141 leaves, 33 steps):

$$-\frac{5^{-1-p} e^{-\frac{5a}{b}} \operatorname{Gamma}\left[1+p,-\frac{5\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)}{b}\right]\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}}{c^5 e^{10}}+\frac{1}{e^{10}\left(c\left(d+\frac{e}{\sqrt{x}}\right)^2\right)^{9/2}}$$

$$2^{1+p}\times 9^{-p} d\, e^{-\frac{9a}{2b}}\left(d+\frac{e}{\sqrt{x}}\right)^9 \operatorname{Gamma}\left[1+p,-\frac{9\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)}{2b}\right]\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}-$$

$$\frac{9\times 4^{-p} d^2 e^{-\frac{4a}{b}} \operatorname{Gamma}\left[1+p,-\frac{4\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)}{b}\right]\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}}{c^4 e^{10}}+\frac{1}{e^{10}\left(c\left(d+\frac{e}{\sqrt{x}}\right)^2\right)^{7/2}}$$

$$3\times 2^{3+p}\times 7^{-p} d^3 e^{-\frac{7a}{2b}}\left(d+\frac{e}{\sqrt{x}}\right)^7 \operatorname{Gamma}\left[1+p,-\frac{7\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)}{2b}\right]\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}-$$

$$\frac{14\times 3^{1-p} d^4 e^{-\frac{3a}{b}} \operatorname{Gamma}\left[1+p,-\frac{3\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)}{b}\right]\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}}{c^3 e^{10}}+\frac{1}{e^{10}\left(c\left(d+\frac{e}{\sqrt{x}}\right)^2\right)^{5/2}}$$

$$63\times 2^{2+p}\times 5^{-1-p} d^5 e^{-\frac{5a}{2b}}\left(d+\frac{e}{\sqrt{x}}\right)^5 \operatorname{Gamma}\left[1+p,-\frac{5\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)}{2b}\right]\left(a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \operatorname{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}-$$

$$\frac{21\times 2^{1-p} d^6 e^{-\frac{2a}{b}} \text{Gamma}\left[1+p,-\frac{2\left(a+b \text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)}{b}\right]\left(a+b \text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}}{c^2 e^{10}}+\frac{1}{e^{10}\left(c\left(d+\frac{e}{\sqrt{x}}\right)^2\right)^{3/2}}$$

$$2^{3+p}\times 3^{1-p} d^7 e^{-\frac{3a}{2b}}\left(d+\frac{e}{\sqrt{x}}\right)^3 \text{Gamma}\left[1+p,-\frac{3\left(a+b \text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)}{2b}\right]\left(a+b \text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}-$$

$$\frac{9 d^8 e^{-\frac{a}{b}} \text{Gamma}\left[1+p,-\frac{a+b \text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right]\left(a+b \text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}}{c\, e^{10}}+$$

$$\frac{2^{1+p} d^9 e^{-\frac{a}{2b}}\left(d+\frac{e}{\sqrt{x}}\right) \text{Gamma}\left[1+p,-\frac{a+b \text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{2b}\right]\left(a+b \text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p\left(-\frac{a+b \text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]}{b}\right)^{-p}}{e^{10}\sqrt{c\left(d+\frac{e}{\sqrt{x}}\right)^2}}$$

Result (type 8, 26 leaves):

$$\int \frac{\left(a+b \text{Log}\left[c\left(d+\frac{e}{\sqrt{x}}\right)^2\right]\right)^p}{x^6}\, dx$$

Problem 562: Unable to integrate problem.

$$\int x^3\left(a+b \text{Log}\left[c\left(d+e x^{1/3}\right)^2\right]\right)^p dx$$

Optimal (type 4, 1363 leaves, 39 steps):

$$\frac{2^{-2-p}\times 3^{-p} e^{-\frac{6a}{b}} \text{Gamma}\left[1+p,-\frac{6\left(a+b \text{Log}\left[c\left(d+e x^{1/3}\right)^2\right]\right)}{b}\right]\left(a+b \text{Log}\left[c\left(d+e x^{1/3}\right)^2\right]\right)^p\left(-\frac{a+b \text{Log}\left[c\left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}}{c^6 e^{12}}-\frac{1}{e^{12}\left(c\left(d+e x^{1/3}\right)^2\right)^{11/2}}$$

$$3\left(\frac{2}{11}\right)^p d\, e^{-\frac{11a}{2b}}\left(d+e x^{1/3}\right)^{11} \text{Gamma}\left[1+p,-\frac{11\left(a+b \text{Log}\left[c\left(d+e x^{1/3}\right)^2\right]\right)}{2b}\right]\left(a+b \text{Log}\left[c\left(d+e x^{1/3}\right)^2\right]\right)^p\left(-\frac{a+b \text{Log}\left[c\left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}+$$

$$\frac{33\times 5^{-p} d^2 e^{-\frac{5a}{b}} \text{Gamma}\left[1+p,-\frac{5\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)}{b}\right]\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]}{b}\right)^{-p}}{2\,c^5\,e^{12}}-\frac{1}{e^{12}\left(c\left(d+e\,x^{1/3}\right)^2\right)^{9/2}}$$

$$55\left(\frac{2}{9}\right)^p d^3 e^{-\frac{9a}{2b}}\left(d+e\,x^{1/3}\right)^9 \text{Gamma}\left[1+p,-\frac{9\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)}{2\,b}\right]\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]}{b}\right)^{-p}+\frac{1}{c^4\,e^{12}}495\times$$

$$2^{-2\,(1+p)}\,d^4 e^{-\frac{4a}{b}} \text{Gamma}\left[1+p,-\frac{4\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)}{b}\right]\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]}{b}\right)^{-p}-\frac{1}{e^{12}\left(c\left(d+e\,x^{1/3}\right)^2\right)^{7/2}}$$

$$99\times 2^{1+p}\times 7^{-p} d^5 e^{-\frac{7a}{2b}}\left(d+e\,x^{1/3}\right)^7 \text{Gamma}\left[1+p,-\frac{7\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)}{2\,b}\right]\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]}{b}\right)^{-p}+$$

$$\frac{77\times 3^{1-p} d^6 e^{-\frac{3a}{b}} \text{Gamma}\left[1+p,-\frac{3\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)}{b}\right]\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]}{b}\right)^{-p}}{c^3\,e^{12}}-\frac{1}{e^{12}\left(c\left(d+e\,x^{1/3}\right)^2\right)^{5/2}}$$

$$99\times 2^{1+p}\times 5^{-p} d^7 e^{-\frac{5a}{2b}}\left(d+e\,x^{1/3}\right)^5 \text{Gamma}\left[1+p,-\frac{5\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)}{2\,b}\right]\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]}{b}\right)^{-p}+\frac{1}{c^2\,e^{12}}$$

$$495\times 2^{-2-p} d^8 e^{-\frac{2a}{b}} \text{Gamma}\left[1+p,-\frac{2\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)}{b}\right]\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]}{b}\right)^{-p}-\frac{1}{e^{12}\left(c\left(d+e\,x^{1/3}\right)^2\right)^{3/2}}$$

$$55\left(\frac{2}{3}\right)^p d^9 e^{-\frac{3a}{2b}}\left(d+e\,x^{1/3}\right)^3 \text{Gamma}\left[1+p,-\frac{3\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)}{2\,b}\right]\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]}{b}\right)^{-p}+$$

$$\frac{33\,d^{10} e^{-\frac{a}{b}} \text{Gamma}\left[1+p,-\frac{a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]}{b}\right]\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]}{b}\right)^{-p}}{2\,c\,e^{12}}-\frac{1}{e^{12}\sqrt{c\left(d+e\,x^{1/3}\right)^2}}$$

$$3\times 2^p d^{11} e^{-\frac{a}{2b}}\left(d+e\,x^{1/3}\right) \text{Gamma}\left[1+p,-\frac{a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]}{2\,b}\right]\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]}{b}\right)^{-p}$$

Result (type 8, 26 leaves):

$$\int x^3\left(a+b\,\text{Log}\left[c\left(d+e\,x^{1/3}\right)^2\right]\right)^p\,dx$$

Problem 563: Unable to integrate problem.

$$\int x^2 \left(a + b \operatorname{Log}\left[c \left(d + e x^{1/3}\right)^2\right]\right)^p \, dx$$

Optimal (type 4, 1035 leaves, 30 steps) :

$$\frac{1}{e^9 \left(c \left(d+e x^{1/3}\right)^2\right)^{9/2}}$$

$$2^p \times 3^{-1-2p} e^{-\frac{9a}{2b}} \left(d+e x^{1/3}\right)^9 \text{Gamma}\left[1+p,-\frac{9 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)}{2 b}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p} -$$

$$\frac{3 \times 4^{-p} d\, e^{-\frac{4a}{b}} \text{Gamma}\left[1+p,-\frac{4 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)}{b}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}}{c^4 e^9} + \frac{1}{e^9 \left(c \left(d+e x^{1/3}\right)^2\right)^{7/2}}$$

$$3 \times 2^{2+p} \times 7^{-p} d^2 e^{-\frac{7a}{2b}} \left(d+e x^{1/3}\right)^7 \text{Gamma}\left[1+p,-\frac{7 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)}{2 b}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p} -$$

$$\frac{28 \times 3^{-p} d^3 e^{-\frac{3a}{b}} \text{Gamma}\left[1+p,-\frac{3 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)}{b}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}}{c^3 e^9} + \frac{1}{e^9 \left(c \left(d+e x^{1/3}\right)^2\right)^{5/2}}$$

$$21 \times 2^{1+p} \times 5^{-p} d^4 e^{-\frac{5a}{2b}} \left(d+e x^{1/3}\right)^5 \text{Gamma}\left[1+p,-\frac{5 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)}{2 b}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p} -$$

$$\frac{21 \times 2^{1-p} d^5 e^{-\frac{2a}{b}} \text{Gamma}\left[1+p,-\frac{2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)}{b}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}}{c^2 e^9} + \frac{1}{e^9 \left(c \left(d+e x^{1/3}\right)^2\right)^{3/2}}$$

$$7 \times 2^{2+p} \times 3^{-p} d^6 e^{-\frac{3a}{2b}} \left(d+e x^{1/3}\right)^3 \text{Gamma}\left[1+p,-\frac{3 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)}{2 b}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p} -$$

$$\frac{12 d^7 e^{-\frac{a}{b}} \text{Gamma}\left[1+p,-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}}{c\, e^9} + \frac{1}{e^9 \sqrt{c \left(d+e x^{1/3}\right)^2}}$$

$$3 \times 2^p d^8 e^{-\frac{a}{2b}} \left(d+e x^{1/3}\right) \text{Gamma}\left[1+p,-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{2 b}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}$$

Result (type 8, 26 leaves):

$$\int x^2 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \, dx$$

Problem 564: Unable to integrate problem.

$$\int x \left(a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \, dx$$

Optimal (type 4, 673 leaves, 21 steps):

$$\frac{3^{-p} e^{-\frac{3a}{b}} \operatorname{Gamma}\left[1+p,-\frac{3\left(a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)}{b}\right] \left(a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}}{2 c^3 e^6}-\frac{1}{e^6 \left(c \left(d+e x^{1/3}\right)^2\right)^{5/2}}$$

$$3 \left(\frac{2}{5}\right)^p d e^{-\frac{5a}{2b}} \left(d+e x^{1/3}\right)^5 \operatorname{Gamma}\left[1+p,-\frac{5\left(a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)}{2b}\right] \left(a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}+$$

$$\frac{15 \times 2^{-1-p} d^2 e^{-\frac{2a}{b}} \operatorname{Gamma}\left[1+p,-\frac{2\left(a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)}{b}\right] \left(a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}}{c^2 e^6}-\frac{1}{e^6 \left(c \left(d+e x^{1/3}\right)^2\right)^{3/2}}$$

$$5 \times 2^{1+p} \times 3^{-p} d^3 e^{-\frac{3a}{2b}} \left(d+e x^{1/3}\right)^3 \operatorname{Gamma}\left[1+p,-\frac{3\left(a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)}{2b}\right] \left(a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}+$$

$$\frac{15 d^4 e^{-\frac{a}{b}} \operatorname{Gamma}\left[1+p,-\frac{a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right] \left(a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}}{2 c e^6}-\frac{1}{e^6 \sqrt{c \left(d+e x^{1/3}\right)^2}}$$

$$3 \times 2^p d^5 e^{-\frac{a}{2b}} \left(d+e x^{1/3}\right) \operatorname{Gamma}\left[1+p,-\frac{a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{2b}\right] \left(a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}$$

Result (type 8, 24 leaves):

$$\int x \left(a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \, dx$$

Problem 565: Unable to integrate problem.

$$\int \left(a+b \operatorname{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \, dx$$

Optimal (type 4, 338 leaves, 12 steps):

$$\frac{1}{e^3 \left(c \left(d+e x^{1/3}\right)^2\right)^{3/2}}$$

$$\left(\frac{2}{3}\right)^p e^{-\frac{3 a}{2 b}} \left(d+e x^{1/3}\right)^3 \text{Gamma}\left[1+p,-\frac{3 \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)}{2 b}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}-$$

$$\frac{3 d e^{-\frac{a}{b}} \text{Gamma}\left[1+p,-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}}{c e^3}+\frac{1}{e^3 \sqrt{c \left(d+e x^{1/3}\right)^2}}$$

$$3 \times 2^p d^2 e^{-\frac{a}{2 b}} \left(d+e x^{1/3}\right) \text{Gamma}\left[1+p,-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{2 b}\right] \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]}{b}\right)^{-p}$$

Result (type 8, 22 leaves) :

$$\int \left(a+b \text{Log}\left[c \left(d+e x^{1/3}\right)^2\right]\right)^p \, dx$$

Problem 575: Unable to integrate problem.

$$\int x^3 \left(a+b \text{Log}\left[c \left(d+e x^{2/3}\right)^2\right]\right)^p \, dx$$

Optimal (type 4, 675 leaves, 21 steps) :

$$\frac{3^{-p} e^{-\frac{3a}{b}} \text{Gamma}\left[1+p, -\frac{3\left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)}{b}\right] \left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]}{b}\right)^{-p}}{4 c^3 e^6} - \frac{1}{e^6 \left(c\left(d+e x^{2/3}\right)^2\right)^{5/2}}$$

$$3 \times 2^{-1+p} \times 5^{-p} d\, e^{-\frac{5a}{2b}} \left(d+e x^{2/3}\right)^5 \text{Gamma}\left[1+p, -\frac{5\left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)}{2b}\right] \left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]}{b}\right)^{-p} +$$

$$\frac{15 \times 2^{-2-p} d^2 e^{-\frac{2a}{b}} \text{Gamma}\left[1+p, -\frac{2\left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)}{b}\right] \left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]}{b}\right)^{-p}}{c^2 e^6} - \frac{1}{e^6 \left(c\left(d+e x^{2/3}\right)^2\right)^{3/2}}$$

$$5 \left(\frac{2}{3}\right)^p d^3 e^{-\frac{3a}{2b}} \left(d+e x^{2/3}\right)^3 \text{Gamma}\left[1+p, -\frac{3\left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)}{2b}\right] \left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]}{b}\right)^{-p} +$$

$$\frac{15 d^4 e^{-\frac{a}{b}} \text{Gamma}\left[1+p, -\frac{a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]}{b}\right] \left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]}{b}\right)^{-p}}{4 c e^6} - \frac{1}{e^6 \sqrt{c\left(d+e x^{2/3}\right)^2}}$$

$$3 \times 2^{-1+p} d^5 e^{-\frac{a}{2b}} \left(d+e x^{2/3}\right) \text{Gamma}\left[1+p, -\frac{a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]}{2b}\right] \left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]}{b}\right)^{-p}$$

Result (type 8, 26 leaves):

$$\int x^3 \left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)^p dx$$

Problem 576: Unable to integrate problem.

$$\int x \left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)^p dx$$

Optimal (type 4, 347 leaves, 12 steps):

$$\frac{1}{e^3 \left(c \left(d+e x^{2/3}\right)^2\right)^{3/2}} 2^{-1+p}\times 3^{-p} e^{-\frac{3a}{2b}} \left(d+e x^{2/3}\right)^3 \text{Gamma}\left[1+p,-\frac{3\left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)}{2b}\right] \left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]}{b}\right)^{-p} -$$

$$\frac{3 d e^{-\frac{a}{b}} \text{Gamma}\left[1+p,-\frac{a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]}{b}\right] \left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]}{b}\right)^{-p}}{2 c e^3} + \frac{1}{e^3 \sqrt{c\left(d+e x^{2/3}\right)^2}}$$

$$3\times 2^{-1+p} d^2 e^{-\frac{a}{2b}} \left(d+e x^{2/3}\right) \text{Gamma}\left[1+p,-\frac{a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]}{2b}\right] \left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]}{b}\right)^{-p}$$

Result (type 8, 24 leaves):

$$\int x \left(a+b \text{Log}\left[c\left(d+e x^{2/3}\right)^2\right]\right)^p dx$$

Problem 591: Unable to integrate problem.

$$\int \frac{\left(a+b \text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p}{x^2} dx$$

Optimal (type 4, 339 leaves, 12 steps):

$$-\frac{1}{e^3 \left(c\left(d+\frac{e}{x^{1/3}}\right)^2\right)^{3/2}} \left(\frac{2}{3}\right)^p e^{-\frac{3a}{2b}} \left(d+\frac{e}{x^{1/3}}\right)^3 \text{Gamma}\left[1+p,-\frac{3\left(a+b \text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)}{2b}\right] \left(a+b \text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p} +$$

$$\frac{3 d e^{-\frac{a}{b}} \text{Gamma}\left[1+p,-\frac{a+b \text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right] \left(a+b \text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}}{c e^3} - \frac{1}{e^3 \sqrt{c\left(d+\frac{e}{x^{1/3}}\right)^2}}$$

$$3\times 2^p d^2 e^{-\frac{a}{2b}} \left(d+\frac{e}{x^{1/3}}\right) \text{Gamma}\left[1+p,-\frac{a+b \text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{2b}\right] \left(a+b \text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p \left(-\frac{a+b \text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}$$

Result (type 8, 26 leaves):

$$\int \frac{\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p}{x^2}\,dx$$

Problem 592: Unable to integrate problem.

$$\int \frac{\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p}{x^3}\,dx$$

Optimal (type 4, 673 leaves, 21 steps):

$$-\frac{3^{-p}\,e^{-\frac{3a}{b}}\,\text{Gamma}\left[1+p,-\frac{3\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)}{b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}}{2\,c^3\,e^6}+\frac{1}{e^6\left(c\left(d+\frac{e}{x^{1/3}}\right)^2\right)^{5/2}}$$

$$3\left(\frac{2}{5}\right)^p d\,e^{-\frac{5a}{2b}}\left(d+\frac{e}{x^{1/3}}\right)^5\text{Gamma}\left[1+p,-\frac{5\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)}{2\,b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}-$$

$$\frac{15\times 2^{-1-p}\,d^2\,e^{-\frac{2a}{b}}\,\text{Gamma}\left[1+p,-\frac{2\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)}{b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}}{c^2\,e^6}+\frac{1}{e^6\left(c\left(d+\frac{e}{x^{1/3}}\right)^2\right)^{3/2}}$$

$$5\times 2^{1+p}\times 3^{-p}\,d^3\,e^{-\frac{3a}{2b}}\left(d+\frac{e}{x^{1/3}}\right)^3\text{Gamma}\left[1+p,-\frac{3\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)}{2\,b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}-$$

$$\frac{15\,d^4\,e^{-\frac{a}{b}}\,\text{Gamma}\left[1+p,-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}}{2\,c\,e^6}+\frac{1}{e^6\sqrt{c\left(d+\frac{e}{x^{1/3}}\right)^2}}$$

$$3\times 2^p\,d^5\,e^{-\frac{a}{2b}}\left(d+\frac{e}{x^{1/3}}\right)\text{Gamma}\left[1+p,-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{2\,b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}$$

Result (type 8, 26 leaves):

$$\int \frac{\left(a+b\,\mathrm{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p}{x^3}\,dx$$

Problem 593: Unable to integrate problem.

$$\int \frac{\left(a+b\,\mathrm{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p}{x^4}\,dx$$

Optimal (type 4, 1036 leaves, 30 steps) :

$$-\frac{1}{e^9\left(c\left(d+\frac{e}{x^{1/3}}\right)^2\right)^{9/2}}2^p\times 3^{-1-2p}\,e^{-\frac{9a}{2b}}\left(d+\frac{e}{x^{1/3}}\right)^9\text{Gamma}\left[1+p,-\frac{9\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)}{2b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}+$$

$$\frac{3\times 4^{-p}\,d\,e^{-\frac{4a}{b}}\,\text{Gamma}\left[1+p,-\frac{4\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)}{b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}}{c^4\,e^9}-\frac{1}{e^9\left(c\left(d+\frac{e}{x^{1/3}}\right)^2\right)^{7/2}}$$

$$3\times 2^{2+p}\times 7^{-p}\,d^2\,e^{-\frac{7a}{2b}}\left(d+\frac{e}{x^{1/3}}\right)^7\text{Gamma}\left[1+p,-\frac{7\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)}{2b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}+$$

$$\frac{28\times 3^{-p}\,d^3\,e^{-\frac{3a}{b}}\,\text{Gamma}\left[1+p,-\frac{3\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)}{b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}}{c^3\,e^9}-\frac{1}{e^9\left(c\left(d+\frac{e}{x^{1/3}}\right)^2\right)^{5/2}}$$

$$21\times 2^{1+p}\times 5^{-p}\,d^4\,e^{-\frac{5a}{2b}}\left(d+\frac{e}{x^{1/3}}\right)^5\text{Gamma}\left[1+p,-\frac{5\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)}{2b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}+$$

$$\frac{21\times 2^{1-p}\,d^5\,e^{-\frac{2a}{b}}\,\text{Gamma}\left[1+p,-\frac{2\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)}{b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}}{c^2\,e^9}-\frac{1}{e^9\left(c\left(d+\frac{e}{x^{1/3}}\right)^2\right)^{3/2}}$$

$$7\times 2^{2+p}\times 3^{-p}\,d^6\,e^{-\frac{3a}{2b}}\left(d+\frac{e}{x^{1/3}}\right)^3\text{Gamma}\left[1+p,-\frac{3\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)}{2b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}+$$

$$\frac{12\,d^7\,e^{-\frac{a}{b}}\,\text{Gamma}\left[1+p,-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}}{c\,e^9}-\frac{1}{e^9\sqrt{c\left(d+\frac{e}{x^{1/3}}\right)^2}}$$

$$3\times 2^p\,d^8\,e^{-\frac{a}{2b}}\left(d+\frac{e}{x^{1/3}}\right)\text{Gamma}\left[1+p,-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{2b}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p\left(-\frac{a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]}{b}\right)^{-p}$$

Result (type 8, 26 leaves) :

$$\int \frac{\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{x^{1/3}}\right)^2\right]\right)^p}{x^4}\,dx$$

Problem 619: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}[f\,x^p]\,\text{Log}[1+e\,x^m]}{x}\,dx$$

Optimal (type 4, 33 leaves, 2 steps):

$$-\frac{\text{Log}[f\,x^p]\,\text{PolyLog}[2,-e\,x^m]}{m}+\frac{p\,\text{PolyLog}[3,-e\,x^m]}{m^2}$$

Result (type 4, 160 leaves):

$$\frac{1}{6\,m^2}\left(-m^3\,p\,\text{Log}[x]^3-3\,m^2\,p\,\text{Log}[x]^2\,\text{Log}\left[\frac{e+x^{-m}}{e}\right]+3\,m^2\,p\,\text{Log}[x]^2\,\text{Log}[1+e\,x^m]-6\,m\,p\,\text{Log}[x]\,\text{Log}[-e\,x^m]\,\text{Log}[1+e\,x^m]+6\,m\,\text{Log}[-e\,x^m]\,\text{Log}[f\,x^p]\,\text{Log}[1+e\,x^m]+6\,m\,p\,\text{Log}[x]\,\text{PolyLog}\left[2,-\frac{x^{-m}}{e}\right]+6\,m\,(-p\,\text{Log}[x]+\text{Log}[f\,x^p])\,\text{PolyLog}[2,1+e\,x^m]+6\,p\,\text{PolyLog}\left[3,-\frac{x^{-m}}{e}\right]\right)$$

Problem 620: Result more than twice size of optimal antiderivative.

$$\int \frac{x^{-1+m}\,\text{Log}[f\,x^p]^2}{d+e\,x^m}\,dx$$

Optimal (type 4, 75 leaves, 3 steps):

$$\frac{\text{Log}[f\,x^p]^2\,\text{Log}\left[1+\frac{e\,x^m}{d}\right]}{e\,m}+\frac{2\,p\,\text{Log}[f\,x^p]\,\text{PolyLog}\left[2,-\frac{e\,x^m}{d}\right]}{e\,m^2}-\frac{2\,p^2\,\text{PolyLog}\left[3,-\frac{e\,x^m}{d}\right]}{e\,m^3}$$

Result (type 4, 210 leaves):

$$\frac{1}{3\,e\,m^3}\left(m^3\,p^2\,\text{Log}[x]^3+3\,m^2\,p^2\,\text{Log}[x]^2\,\text{Log}\left[1+\frac{d\,x^{-m}}{e}\right]-3\,m^2\,p^2\,\text{Log}[x]^2\,\text{Log}[d+e\,x^m]+6\,m\,p^2\,\text{Log}[x]\,\text{Log}\left[-\frac{e\,x^m}{d}\right]\,\text{Log}[d+e\,x^m]-6\,m\,p\,\text{Log}\left[-\frac{e\,x^m}{d}\right]\,\text{Log}[f\,x^p]\,\text{Log}[d+e\,x^m]+3\,m^2\,\text{Log}[f\,x^p]^2\,\text{Log}[d+e\,x^m]-6\,m\,p^2\,\text{Log}[x]\,\text{PolyLog}\left[2,-\frac{d\,x^{-m}}{e}\right]+6\,m\,p\,(p\,\text{Log}[x]-\text{Log}[f\,x^p])\,\text{PolyLog}\left[2,1+\frac{e\,x^m}{d}\right]-6\,p^2\,\text{PolyLog}\left[3,-\frac{d\,x^{-m}}{e}\right]\right)$$

Problem 621: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}[f\,x^p]^3\,\left(a+b\,\text{Log}\left[c\,(d+e\,x^m)^n\right]\right)}{x}\,dx$$

Optimal (type 4, 161 leaves, 6 steps):

$$\frac{\text{Log}[f x^p]^4 \left(a+b \text{Log}\left[c \left(d+e x^m\right)^n\right]\right)}{4 p}-\frac{b n \text{Log}[f x^p]^4 \text{Log}\left[1+\frac{e x^m}{d}\right]}{4 p}-\frac{b n \text{Log}[f x^p]^3 \text{PolyLog}\left[2,-\frac{e x^m}{d}\right]}{m}+\frac{3 b n p \text{Log}[f x^p]^2 \text{PolyLog}\left[3,-\frac{e x^m}{d}\right]}{m^2}-\frac{6 b n p^2 \text{Log}[f x^p] \text{PolyLog}\left[4,-\frac{e x^m}{d}\right]}{m^3}+\frac{6 b n p^3 \text{PolyLog}\left[5,-\frac{e x^m}{d}\right]}{m^4}$$

Result (type 4, 659 leaves):

$$-\frac{3}{10} b m n p^3 \text{Log}[x]^5+\frac{3}{4} b m n p^2 \text{Log}[x]^4 \text{Log}\left[f x^p\right]-\frac{1}{2} b m n p \text{Log}[x]^3 \text{Log}\left[f x^p\right]^2+\frac{a \text{Log}[f x^p]^4}{4 p}-\frac{3}{4} b n p^3 \text{Log}[x]^4 \text{Log}\left[1+\frac{d x^{-m}}{e}\right]+2 b n p^2 \text{Log}[x]^3 \text{Log}\left[f x^p\right] \text{Log}\left[1+\frac{d x^{-m}}{e}\right]-\frac{3}{2} b n p \text{Log}[x]^2 \text{Log}\left[f x^p\right]^2 \text{Log}\left[1+\frac{d x^{-m}}{e}\right]+b n p^3 \text{Log}[x]^4 \text{Log}\left[d+e x^m\right]-\frac{b n p^3 \text{Log}[x]^3 \text{Log}\left[-\frac{e x^m}{d}\right] \text{Log}[d+e x^m]}{m}-3 b n p^2 \text{Log}[x]^3 \text{Log}\left[f x^p\right] \text{Log}\left[d+e x^m\right]+\frac{3 b n p^2 \text{Log}[x]^2 \text{Log}\left[-\frac{e x^m}{d}\right] \text{Log}[f x^p] \text{Log}[d+e x^m]}{m}+3 b n p \text{Log}[x]^2 \text{Log}\left[f x^p\right]^2 \text{Log}\left[d+e x^m\right]-\frac{3 b n p \text{Log}[x] \text{Log}\left[-\frac{e x^m}{d}\right] \text{Log}[f x^p]^2 \text{Log}[d+e x^m]}{m}-b n \text{Log}[x] \text{Log}\left[f x^p\right]^3 \text{Log}\left[d+e x^m\right]+\frac{b n \text{Log}\left[-\frac{e x^m}{d}\right] \text{Log}[f x^p]^3 \text{Log}[d+e x^m]}{m}-\frac{1}{4} b p^3 \text{Log}[x]^4 \text{Log}\left[c \left(d+e x^m\right)^n\right]+b p^2 \text{Log}[x]^3 \text{Log}\left[f x^p\right] \text{Log}\left[c \left(d+e x^m\right)^n\right]-\frac{3}{2} b p \text{Log}[x]^2 \text{Log}\left[f x^p\right]^2 \text{Log}\left[c \left(d+e x^m\right)^n\right]+b \text{Log}[x] \text{Log}\left[f x^p\right]^3 \text{Log}\left[c \left(d+e x^m\right)^n\right]+\frac{b n p \text{Log}[x] \left(p^2 \text{Log}[x]^2-3 p \text{Log}[x] \text{Log}[f x^p]+3 \text{Log}[f x^p]^2\right) \text{PolyLog}\left[2,-\frac{d x^{-m}}{e}\right]}{m}-\frac{b n \left(p \text{Log}[x]-\text{Log}[f x^p]\right)^3 \text{PolyLog}\left[2,1+\frac{e x^m}{d}\right]}{m}+\frac{3 b n p \text{Log}[f x^p]^2 \text{PolyLog}\left[3,-\frac{d x^{-m}}{e}\right]}{m^2}+\frac{6 b n p^2 \text{Log}[f x^p] \text{PolyLog}\left[4,-\frac{d x^{-m}}{e}\right]}{m^3}+\frac{6 b n p^3 \text{PolyLog}\left[5,-\frac{d x^{-m}}{e}\right]}{m^4}$$

Problem 622: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}[f x^p]^2 \left(a+b \text{Log}\left[c \left(d+e x^m\right)^n\right]\right)}{x} \, dx$$

Optimal (type 4, 132 leaves, 5 steps):

$$\frac{\text{Log}[f x^p]^3 \left(a+b \text{Log}\left[c \left(d+e x^m\right)^n\right]\right)}{3 p}-\frac{b n \text{Log}[f x^p]^3 \text{Log}\left[1+\frac{e x^m}{d}\right]}{3 p}-\frac{b n \text{Log}[f x^p]^2 \text{PolyLog}\left[2,-\frac{e x^m}{d}\right]}{m}+\frac{2 b n p \text{Log}[f x^p] \text{PolyLog}\left[3,-\frac{e x^m}{d}\right]}{m^2}-\frac{2 b n p^2 \text{PolyLog}\left[4,-\frac{e x^m}{d}\right]}{m^3}$$

Result (type 4, 456 leaves):

$$\frac{1}{4} b\,m\,n\,p^2 \operatorname{Log}[x]^4 - \frac{1}{3} b\,m\,n\,p \operatorname{Log}[x]^3 \operatorname{Log}[f\,x^p] + \frac{a \operatorname{Log}[f\,x^p]^3}{3\,p} + \frac{2}{3} b\,n\,p^2 \operatorname{Log}[x]^3 \operatorname{Log}\left[1+\frac{d\,x^{-m}}{e}\right] - b\,n\,p \operatorname{Log}[x]^2 \operatorname{Log}[f\,x^p] \operatorname{Log}\left[1+\frac{d\,x^{-m}}{e}\right] - b\,n\,p^2 \operatorname{Log}[x]^3 \operatorname{Log}[d+e\,x^m] + \frac{b\,n\,p^2 \operatorname{Log}[x]^2 \operatorname{Log}\left[-\frac{e\,x^m}{d}\right] \operatorname{Log}[d+e\,x^m]}{m} + 2\,b\,n\,p \operatorname{Log}[x]^2 \operatorname{Log}[f\,x^p] \operatorname{Log}[d+e\,x^m] - \frac{2\,b\,n\,p \operatorname{Log}[x] \operatorname{Log}\left[-\frac{e\,x^m}{d}\right] \operatorname{Log}[f\,x^p] \operatorname{Log}[d+e\,x^m]}{m} - b\,n \operatorname{Log}[x] \operatorname{Log}[f\,x^p]^2 \operatorname{Log}[d+e\,x^m] + \frac{b\,n \operatorname{Log}\left[-\frac{e\,x^m}{d}\right] \operatorname{Log}[f\,x^p]^2 \operatorname{Log}[d+e\,x^m]}{m} + \frac{1}{3} b\,p^2 \operatorname{Log}[x]^3 \operatorname{Log}\left[c\,(d+e\,x^m)^n\right] - b\,p \operatorname{Log}[x]^2 \operatorname{Log}[f\,x^p] \operatorname{Log}\left[c\,(d+e\,x^m)^n\right] + b \operatorname{Log}[x] \operatorname{Log}[f\,x^p]^2 \operatorname{Log}\left[c\,(d+e\,x^m)^n\right] - \frac{b\,n\,p \operatorname{Log}[x]\,(p \operatorname{Log}[x] - 2 \operatorname{Log}[f\,x^p]) \operatorname{PolyLog}\left[2,-\frac{d\,x^{-m}}{e}\right]}{m} + \frac{b\,n\,(-p \operatorname{Log}[x] + \operatorname{Log}[f\,x^p])^2 \operatorname{PolyLog}\left[2,1+\frac{e\,x^m}{d}\right]}{m} + \frac{2\,b\,n\,p \operatorname{Log}[f\,x^p] \operatorname{PolyLog}\left[3,-\frac{d\,x^{-m}}{e}\right]}{m^2} + \frac{2\,b\,n\,p^2 \operatorname{PolyLog}\left[4,-\frac{d\,x^{-m}}{e}\right]}{m^3}$$

Problem 623: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Log}[f\,x^p]\,\left(a + b \operatorname{Log}\left[c\,(d+e\,x^m)^n\right]\right)}{x}\,dx$$

Optimal (type 4, 102 leaves, 4 steps):

$$\frac{\operatorname{Log}[f\,x^p]^2 \left(a + b \operatorname{Log}\left[c\,(d+e\,x^m)^n\right]\right)}{2\,p} - \frac{b\,n \operatorname{Log}[f\,x^p]^2 \operatorname{Log}\left[1+\frac{e\,x^m}{d}\right]}{2\,p} - \frac{b\,n \operatorname{Log}[f\,x^p] \operatorname{PolyLog}\left[2,-\frac{e\,x^m}{d}\right]}{m} + \frac{b\,n\,p \operatorname{PolyLog}\left[3,-\frac{e\,x^m}{d}\right]}{m^2}$$

Result (type 4, 265 leaves):

$$-\frac{1}{6} b\,m\,n\,p \operatorname{Log}[x]^3 + \frac{a \operatorname{Log}[f\,x^p]^2}{2\,p} - \frac{1}{2} b\,n\,p \operatorname{Log}[x]^2 \operatorname{Log}\left[1+\frac{d\,x^{-m}}{e}\right] + b\,n\,p \operatorname{Log}[x]^2 \operatorname{Log}[d+e\,x^m] - \frac{b\,n\,p \operatorname{Log}[x] \operatorname{Log}\left[-\frac{e\,x^m}{d}\right] \operatorname{Log}[d+e\,x^m]}{m} - b\,n \operatorname{Log}[x] \operatorname{Log}[f\,x^p] \operatorname{Log}[d+e\,x^m] + \frac{b\,n \operatorname{Log}\left[-\frac{e\,x^m}{d}\right] \operatorname{Log}[f\,x^p] \operatorname{Log}[d+e\,x^m]}{m} - \frac{1}{2} b\,p \operatorname{Log}[x]^2 \operatorname{Log}\left[c\,(d+e\,x^m)^n\right] + b \operatorname{Log}[x] \operatorname{Log}[f\,x^p] \operatorname{Log}\left[c\,(d+e\,x^m)^n\right] + \frac{b\,n\,p \operatorname{Log}[x] \operatorname{PolyLog}\left[2,-\frac{d\,x^{-m}}{e}\right]}{m} - \frac{b\,n\,(p \operatorname{Log}[x] - \operatorname{Log}[f\,x^p]) \operatorname{PolyLog}\left[2,1+\frac{e\,x^m}{d}\right]}{m} + \frac{b\,n\,p \operatorname{PolyLog}\left[3,-\frac{d\,x^{-m}}{e}\right]}{m^2}$$

Problem 628: Unable to integrate problem.

$$\int \operatorname{Log}\left[c\,\left(d+e\,(f+g\,x)^p\right)^q\right]\,dx$$

Optimal (type 5, 76 leaves, 3 steps):

$$-\frac{e\,p\,q\,(f+g\,x)^{1+p}\,\text{Hypergeometric2F1}\left[1,1+\frac{1}{p},2+\frac{1}{p},-\frac{e\,(f+g\,x)^p}{d}\right]}{d\,g\,(1+p)}+\frac{(f+g\,x)\,\text{Log}\left[c\,\left(d+e\,(f+g\,x)^p\right)^q\right]}{g}$$

Result (type 8, 18 leaves):

$$\int \text{Log}\left[c\,\left(d+e\,(f+g\,x)^p\right)^q\right]\,dx$$

Problem 636: Result more than twice size of optimal antiderivative.

$$\int \left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^4\,dx$$

Optimal (type 4, 221 leaves, 8 steps):

$$-\frac{4\,b\,e\,p\,\text{Log}\left[-\frac{e}{d\,(f+g\,x)}\right]\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^3}{d\,g}+$$
$$\frac{(e+d\,(f+g\,x))\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^4}{d\,g}-\frac{12\,b^2\,e\,p^2\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^2\,\text{PolyLog}\left[2,1+\frac{e}{d\,(f+g\,x)}\right]}{d\,g}+$$
$$\frac{24\,b^3\,e\,p^3\,\left(a+b\,\text{Log}\left[c\,\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)\,\text{PolyLog}\left[3,1+\frac{e}{d\,(f+g\,x)}\right]}{d\,g}-\frac{24\,b^4\,e\,p^4\,\text{PolyLog}\left[4,1+\frac{e}{d\,(f+g\,x)}\right]}{d\,g}$$

Result (type 4, 732 leaves):

$$\frac{1}{d\,g}\Bigg(-4\,b\,p\left(d\,f\,\text{Log}[f+g\,x]-(e+d\,f)\,\text{Log}[e+d\,f+d\,g\,x]-d\,g\,x\,\text{Log}\left[\frac{e+d\,f+d\,g\,x}{f+g\,x}\right]\right)\left(a-b\,p\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^3+$$
$$d\,g\,x\left(a-b\,p\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^4+$$
$$6\,b^2\,p^2\left(a-b\,p\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^2\Bigg(d\,f\,\text{Log}\left[\frac{f}{g}+x\right]^2+(e+d\,f)\,\text{Log}\left[\frac{e+d\,f+d\,g\,x}{d\,g}\right]^2+d\,g\,x\,\text{Log}\left[\frac{e+d\,f+d\,g\,x}{f+g\,x}\right]^2-$$
$$2\,(d\,f\,\text{Log}[f+g\,x]-(e+d\,f)\,\text{Log}[e+d\,f+d\,g\,x])\left(\text{Log}\left[\frac{f}{g}+x\right]-\text{Log}\left[\frac{e+d\,f+d\,g\,x}{d\,g}\right]+\text{Log}\left[\frac{e+d\,f+d\,g\,x}{f+g\,x}\right]\right)-2\,(e+d\,f)$$
$$\left(\text{Log}\left[\frac{f}{g}+x\right]\text{Log}\left[\frac{e+d\,f+d\,g\,x}{e}\right]+\text{PolyLog}\left[2,-\frac{d\,(f+g\,x)}{e}\right]\right)-2\,d\,f\left(\text{Log}\left[-\frac{d\,(f+g\,x)}{e}\right]\text{Log}\left[\frac{e+d\,f+d\,g\,x}{d\,g}\right]+\text{PolyLog}\left[2,\frac{e+d\,f+d\,g\,x}{e}\right]\right)\Bigg)+$$
$$4\,b^3\,p^3\left(a-b\,p\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)\left(\text{Log}\left[d+\frac{e}{f+g\,x}\right]^2\left(-3\,e\,\text{Log}\left[-\frac{e}{d\,f+d\,g\,x}\right]+(e+d\,f+d\,g\,x)\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]\right)-\right.$$
$$\left.6\,e\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]\text{PolyLog}\left[2,1+\frac{e}{d\,f+d\,g\,x}\right]+6\,e\,\text{PolyLog}\left[3,1+\frac{e}{d\,f+d\,g\,x}\right]\right)-$$
$$b^4\,p^4\Bigg(4\,e\,\text{Log}\left[-\frac{e}{d\,f+d\,g\,x}\right]\text{Log}\left[d+\frac{e}{f+g\,x}\right]^3-e\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]^4-d\,(f+g\,x)\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]^4+$$
$$12\,e\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]^2\text{PolyLog}\left[2,1+\frac{e}{d\,f+d\,g\,x}\right]-24\,e\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]\text{PolyLog}\left[3,1+\frac{e}{d\,f+d\,g\,x}\right]+24\,e\,\text{PolyLog}\left[4,1+\frac{e}{d\,f+d\,g\,x}\right]\Bigg)\Bigg)$$

Problem 637: Result more than twice size of optimal antiderivative.

$$\int\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^3 dx$$

Optimal (type 4, 168 leaves, 7 steps):

$$-\frac{3\,b\,e\,p\,\text{Log}\left[-\frac{e}{d\,(f+g\,x)}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^2}{d\,g}+\frac{(e+d\,(f+g\,x))\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^3}{d\,g}-$$
$$\frac{6\,b^2\,e\,p^2\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)\text{PolyLog}\left[2,1+\frac{e}{d\,(f+g\,x)}\right]}{d\,g}+\frac{6\,b^3\,e\,p^3\,\text{PolyLog}\left[3,1+\frac{e}{d\,(f+g\,x)}\right]}{d\,g}$$

Result (type 4, 441 leaves):

$$\frac{1}{d\,g}\left(3\,b\,d\,p\,(f+g\,x)\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]\left(a-b\,p\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^2+d\,(f+g\,x)\left(a-b\,p\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^3+\right.$$
$$3\,b\,e\,p\left(a-b\,p\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^2\text{Log}[e+d\,(f+g\,x)]+3\,b^2\,p^2\left(a-b\,p\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)$$
$$\left(d\,(f+g\,x)\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]^2+e\left(\text{Log}\left[\frac{e}{d}+f+g\,x\right]^2+2\left(\text{Log}[f+g\,x]-\text{Log}\left[\frac{e}{d}+f+g\,x\right]+\text{Log}\left[d+\frac{e}{f+g\,x}\right]\right)\text{Log}[e+d\,(f+g\,x)]-\right.\right.$$
$$\left.\left.2\left(\text{Log}[f+g\,x]\,\text{Log}\left[1+\frac{d\,(f+g\,x)}{e}\right]+\text{PolyLog}\left[2,-\frac{d\,(f+g\,x)}{e}\right]\right)\right)\right)+$$
$$b^3\,p^3\left(\text{Log}\left[d+\frac{e}{f+g\,x}\right]^2\left(-3\,e\,\text{Log}\left[-\frac{e}{d\,f+d\,g\,x}\right]+(e+d\,f+d\,g\,x)\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]\right)-6\,e\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]\text{PolyLog}\left[2,1+\frac{e}{d\,f+d\,g\,x}\right]+\right.$$
$$\left.\left.6\,e\,\text{PolyLog}\left[3,1+\frac{e}{d\,f+d\,g\,x}\right]\right)\right)$$

Problem 638: Result more than twice size of optimal antiderivative.

$$\int\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^2 dx$$

Optimal (type 4, 115 leaves, 5 steps):

$$-\frac{2\,b\,e\,p\,\text{Log}\left[-\frac{e}{d\,(f+g\,x)}\right]\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)}{d\,g}+\frac{(e+d\,(f+g\,x))\left(a+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^2}{d\,g}-\frac{2\,b^2\,e\,p^2\,\text{PolyLog}\left[2,1+\frac{e}{d\,(f+g\,x)}\right]}{d\,g}$$

Result (type 4, 250 leaves):

$$\frac{1}{d\,g}\left(d\,(f+g\,x)\left(a-b\,p\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)^2+\right.$$
$$2\,b\,p\left(a-b\,p\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]+b\,\text{Log}\left[c\left(d+\frac{e}{f+g\,x}\right)^p\right]\right)\left(d\,(f+g\,x)\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]+e\,\text{Log}[e+d\,(f+g\,x)]\right)+$$
$$b^2\,p^2\left(d\,(f+g\,x)\,\text{Log}\left[d+\frac{e}{f+g\,x}\right]^2+e\left(\text{Log}\left[\frac{e}{d}+f+g\,x\right]^2+2\left(\text{Log}[f+g\,x]-\text{Log}\left[\frac{e}{d}+f+g\,x\right]+\text{Log}\left[d+\frac{e}{f+g\,x}\right]\right)\text{Log}[e+d\,(f+g\,x)]-\right.\right.$$
$$\left.\left.\left.2\left(\text{Log}[f+g\,x]\,\text{Log}\left[1+\frac{d\,(f+g\,x)}{e}\right]+\text{PolyLog}\left[2,-\frac{d\,(f+g\,x)}{e}\right]\right)\right)\right)\right)$$

Test results for the 314 problems in "3.5 Logarithm functions.m"

Problem 39: Attempted integration timed out after 120 seconds.

$$\int \frac{n\,q - \text{Log}\left[c\,x^n\right]}{\left(a\,x + b\,\text{Log}\left[c\,x^n\right]^q\right)^2}\,dx$$

Optimal (type 9, 60 leaves, 1 step):

$$-\frac{n\,(1-q)\,\text{CannotIntegrate}\left[\frac{1}{x\,\left(a\,x+b\,\text{Log}\left[c\,x^n\right]^q\right)},\,x\right]}{a}+\frac{\text{Log}\left[c\,x^n\right]}{a\,\left(a\,x+b\,\text{Log}\left[c\,x^n\right]^q\right)}$$

Result (type 1, 1 leaves):

???

Problem 40: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{2\,x\,\left(d\,\sqrt{-\frac{e}{d}}+e\,x\right)}{d+e\,x^2}\right]}{d+e\,x^2}\,dx$$

Optimal (type 4, 49 leaves, 1 step):

$$-\frac{\sqrt{-\frac{e}{d}}\,\text{PolyLog}\left[2,\,1-\frac{2\,x\,\left(d\,\sqrt{-\frac{e}{d}}+e\,x\right)}{d+e\,x^2}\right]}{2\,e}$$

Result (type 4, 686 leaves):

$$\frac{1}{4\sqrt{d}\sqrt{e}}\left(-4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}[x]+4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]+i\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]^2+4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]-i\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]^2-\right.$$

$$4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[-\frac{1}{\sqrt{-\frac{e}{d}}}+x\right]-2\,i\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}-\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]+2\,i\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}+\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]+2\,i\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]-$$

$$2\,i\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+2\,i\,\text{Log}\left[-\frac{1}{\sqrt{-\frac{e}{d}}}+x\right]\text{Log}\left[\frac{\sqrt{d}\sqrt{e}-i\,e\,x}{\sqrt{d}\sqrt{e}+i\,d\sqrt{-\frac{e}{d}}}\right]-2\,i\,\text{Log}\left[-\frac{1}{\sqrt{-\frac{e}{d}}}+x\right]\text{Log}\left[\frac{\sqrt{d}\sqrt{e}+i\,e\,x}{\sqrt{d}\sqrt{e}-i\,d\sqrt{-\frac{e}{d}}}\right]+$$

$$4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{2\,x\left(d\sqrt{-\frac{e}{d}}+e\,x\right)}{d+e\,x^2}\right]-2\,i\,\text{PolyLog}\left[2,-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{1}{2}-\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]-$$

$$\left.2\,i\,\text{PolyLog}\left[2,\frac{1}{2}+\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{d\sqrt{-\frac{e}{d}}+e\,x}{-i\sqrt{d}\sqrt{e}+d\sqrt{-\frac{e}{d}}}\right]-2\,i\,\text{PolyLog}\left[2,\frac{d\sqrt{-\frac{e}{d}}+e\,x}{i\sqrt{d}\sqrt{e}+d\sqrt{-\frac{e}{d}}}\right]\right)$$

Problem 41: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[-\frac{2\,x\left(d\sqrt{-\frac{e}{d}}-e\,x\right)}{d+e\,x^2}\right]}{d+e\,x^2}\,dx$$

Optimal (type 4, 50 leaves, 1 step):

$$\frac{\sqrt{-\frac{e}{d}}\,\text{PolyLog}\left[2,1+\frac{2\,x\left(d\sqrt{-\frac{e}{d}}-e\,x\right)}{d+e\,x^2}\right]}{2\,e}$$

Result (type 4, 674 leaves):

$$\frac{1}{4\sqrt{d}\sqrt{e}}\left(-4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}[x]+4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]+i\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]^2+4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]-i\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]^2-\right.$$

$$4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{1}{\sqrt{-\frac{e}{d}}}+x\right]-2\,i\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}-\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]+2\,i\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}+\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]+2\,i\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]-$$

$$2\,i\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]-2\,i\,\text{Log}\left[\frac{1}{\sqrt{-\frac{e}{d}}}+x\right]\text{Log}\left[\frac{-i\sqrt{d}\sqrt{e}+e\,x}{-i\sqrt{d}\sqrt{e}+d\sqrt{-\frac{e}{d}}}\right]+2\,i\,\text{Log}\left[\frac{1}{\sqrt{-\frac{e}{d}}}+x\right]\text{Log}\left[\frac{\sqrt{e}-\frac{i\,e\,x}{\sqrt{d}}}{\sqrt{e}-i\sqrt{d}\sqrt{-\frac{e}{d}}}\right]+$$

$$4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{2\,e\,x\left(\frac{1}{\sqrt{-\frac{e}{d}}}+x\right)}{d+e\,x^2}\right]-2\,i\,\text{PolyLog}\left[2,-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+$$

$$\left.2\,i\,\text{PolyLog}\left[2,\frac{\sqrt{e}\left(\frac{1}{\sqrt{-\frac{e}{d}}}+x\right)}{-i\sqrt{d}+\frac{\sqrt{e}}{\sqrt{-\frac{e}{d}}}}\right]-2\,i\,\text{PolyLog}\left[2,\frac{\sqrt{e}\left(\frac{1}{\sqrt{-\frac{e}{d}}}+x\right)}{i\sqrt{d}+\frac{\sqrt{e}}{\sqrt{-\frac{e}{d}}}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{1}{2}-\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]-2\,i\,\text{PolyLog}\left[2,\frac{1}{2}+\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]\right)$$

Problem 42: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[\frac{2\,x\left(\frac{d\sqrt{e}}{\sqrt{-d}}+e\,x\right)}{d+e\,x^2}\right]}{d+e\,x^2}\,dx$$

Optimal (type 4, 53 leaves, 1 step) :

$$-\frac{\text{PolyLog}\left[2,1+\frac{2\sqrt{e}\,x\left(\sqrt{-d}-\sqrt{e}\,x\right)}{d+e x^2}\right]}{2\sqrt{-d}\,\sqrt{e}}$$

Result (type 4, 654 leaves) :

$$\frac{1}{4\sqrt{d}\,\sqrt{e}}\left(-4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}[x]-4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[-\frac{\sqrt{-d}}{\sqrt{e}}+x\right]+4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]+i\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]^2+\right.$$
$$4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]-i\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]^2-2\,i\,\text{Log}\left[-\frac{\sqrt{-d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{-i\sqrt{d}+\sqrt{e}\,x}{\sqrt{-d}-i\sqrt{d}}\right]+2\,i\,\text{Log}\left[-\frac{\sqrt{-d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{i\sqrt{d}+\sqrt{e}\,x}{\sqrt{-d}+i\sqrt{d}}\right]-$$
$$2\,i\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}-\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]+2\,i\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}+\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]+2\,i\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]-$$
$$2\,i\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{2\left(-\sqrt{-d}\,\sqrt{e}\,x+e x^2\right)}{d+e x^2}\right]-2\,i\,\text{PolyLog}\left[2,-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]-$$
$$\left.2\,i\,\text{PolyLog}\left[2,\frac{\sqrt{-d}-\sqrt{e}\,x}{\sqrt{-d}-i\sqrt{d}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{\sqrt{-d}-\sqrt{e}\,x}{\sqrt{-d}+i\sqrt{d}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{1}{2}-\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]-2\,i\,\text{PolyLog}\left[2,\frac{1}{2}+\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]\right)$$

Problem 43: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[-\frac{2x\left(\frac{d\sqrt{e}}{\sqrt{-d}}-e x\right)}{d+e x^2}\right]}{d+e x^2}\,dx$$

Optimal (type 4, 52 leaves, 1 step) :

$$\frac{\text{PolyLog}\left[2,1-\frac{2\sqrt{e}\,x\left(\sqrt{-d}+\sqrt{e}\,x\right)}{d+e x^2}\right]}{2\sqrt{-d}\,\sqrt{e}}$$

Result (type 4, 651 leaves) :

$$\frac{1}{4\sqrt{d}\sqrt{e}}\left(-4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}[x]-4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{\sqrt{-d}}{\sqrt{e}}+x\right]+4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]+i\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]^2+\right.$$

$$4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]-i\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]^2-2\,i\,\text{Log}\left[\frac{\sqrt{-d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{i\left(\sqrt{d}+i\sqrt{e}\,x\right)}{\sqrt{-d}+i\sqrt{d}}\right]+2\,i\,\text{Log}\left[\frac{\sqrt{-d}}{\sqrt{e}}+x\right]\text{Log}\left[-\frac{i\sqrt{d}+\sqrt{e}\,x}{\sqrt{-d}-i\sqrt{d}}\right]-$$

$$2\,i\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}-\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]+2\,i\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}+\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]+2\,i\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]-$$

$$2\,i\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{2\left(\sqrt{-d}\sqrt{e}\,x+e\,x^2\right)}{d+e\,x^2}\right]-2\,i\,\text{PolyLog}\left[2,-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+$$

$$\left.2\,i\,\text{PolyLog}\left[2,\frac{\sqrt{-d}+\sqrt{e}\,x}{\sqrt{-d}-i\sqrt{d}}\right]-2\,i\,\text{PolyLog}\left[2,\frac{\sqrt{-d}+\sqrt{e}\,x}{\sqrt{-d}+i\sqrt{d}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{1}{2}-\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]-2\,i\,\text{PolyLog}\left[2,\frac{1}{2}+\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]\right)$$

Problem 44: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[\frac{2x\left(\sqrt{d}\sqrt{-e}+e\,x\right)}{d+e\,x^2}\right]}{d+e\,x^2}\,dx$$

Optimal (type 4, 49 leaves, 1 step):

$$\frac{\text{PolyLog}\left[2,1-\frac{2x\left(\sqrt{d}\sqrt{-e}+e\,x\right)}{d+e\,x^2}\right]}{2\sqrt{d}\sqrt{-e}}$$

Result (type 4, 701 leaves):

$$\frac{1}{4\sqrt{d}\,\sqrt{e}}\left(-4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}[x]+4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]+i\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]^2+4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]-i\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]^2-\right.$$

$$4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{\sqrt{d}\,e}{(-e)^{3/2}}+x\right]+2\,i\,\text{Log}\left[\frac{\sqrt{d}\,e}{(-e)^{3/2}}+x\right]\text{Log}\left[\frac{\sqrt{-e}\left(\sqrt{d}-i\sqrt{e}\,x\right)}{\sqrt{d}\left(\sqrt{-e}-i\sqrt{e}\right)}\right]-2\,i\,\text{Log}\left[\frac{\sqrt{d}\,e}{(-e)^{3/2}}+x\right]\text{Log}\left[\frac{\sqrt{-e}\left(\sqrt{d}+i\sqrt{e}\,x\right)}{\sqrt{d}\left(\sqrt{-e}+i\sqrt{e}\right)}\right]-$$

$$2\,i\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}-\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]+2\,i\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}+\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]+2\,i\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]-2\,i\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+$$

$$4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{2\,x\left(\sqrt{d}\,\sqrt{-e}+e\,x\right)}{d+e\,x^2}\right]-2\,i\,\text{PolyLog}\left[2,-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{i\sqrt{e}\left(-\sqrt{d}+\sqrt{-e}\,x\right)}{\sqrt{d}\left(\sqrt{-e}-i\sqrt{e}\right)}\right]-$$

$$\left.2\,i\,\text{PolyLog}\left[2,-\frac{i\sqrt{e}\left(-\sqrt{d}+\sqrt{-e}\,x\right)}{\sqrt{d}\left(\sqrt{-e}+i\sqrt{e}\right)}\right]+2\,i\,\text{PolyLog}\left[2,\frac{1}{2}-\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]-2\,i\,\text{PolyLog}\left[2,\frac{1}{2}+\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]\right)$$

Problem 45: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[-\frac{2\,x\left(\sqrt{d}\,\sqrt{-e}-e\,x\right)}{d+e\,x^2}\right]}{d+e\,x^2}\,dx$$

Optimal (type 4, 50 leaves, 1 step):

$$-\frac{\text{PolyLog}\left[2,1+\frac{2\,x\left(\sqrt{d}\,\sqrt{-e}-e\,x\right)}{d+e\,x^2}\right]}{2\sqrt{d}\,\sqrt{-e}}$$

Result (type 4, 695 leaves):

$$\frac{1}{4\sqrt{d}\sqrt{e}}\left(-4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}[x]-4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{\sqrt{d}}{\sqrt{-e}}+x\right]+4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]+\right.$$
$$i\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]^2+4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]-i\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]^2+2\,i\,\text{Log}\left[\frac{\sqrt{d}}{\sqrt{-e}}+x\right]\text{Log}\left[\frac{\sqrt{-e}\left(\sqrt{d}-i\sqrt{e}\,x\right)}{\sqrt{d}\left(\sqrt{-e}+i\sqrt{e}\right)}\right]-$$
$$2\,i\,\text{Log}\left[\frac{\sqrt{d}}{\sqrt{-e}}+x\right]\text{Log}\left[\frac{\sqrt{-e}\left(\sqrt{d}+i\sqrt{e}\,x\right)}{\sqrt{d}\left(\sqrt{-e}-i\sqrt{e}\right)}\right]-2\,i\,\text{Log}\left[-\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}-\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]+2\,i\,\text{Log}\left[\frac{i\sqrt{d}}{\sqrt{e}}+x\right]\text{Log}\left[\frac{1}{2}+\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]+$$
$$2\,i\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]-2\,i\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+4\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\text{Log}\left[\frac{2x\left(-\sqrt{d}\sqrt{-e}+e\,x\right)}{d+e\,x^2}\right]-$$
$$2\,i\,\text{PolyLog}\left[2,-\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{i\sqrt{e}\,x}{\sqrt{d}}\right]-2\,i\,\text{PolyLog}\left[2,-\frac{i\sqrt{e}\left(\sqrt{d}+\sqrt{-e}\,x\right)}{\sqrt{d}\left(\sqrt{-e}-i\sqrt{e}\right)}\right]+$$
$$\left.2\,i\,\text{PolyLog}\left[2,\frac{i\sqrt{e}\left(\sqrt{d}+\sqrt{-e}\,x\right)}{\sqrt{d}\left(\sqrt{-e}+i\sqrt{e}\right)}\right]+2\,i\,\text{PolyLog}\left[2,\frac{1}{2}-\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]-2\,i\,\text{PolyLog}\left[2,\frac{1}{2}+\frac{i\sqrt{e}\,x}{2\sqrt{d}}\right]\right)$$

Problem 93: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[d\left(a+b\,x+c\,x^2\right)^n\right]}{a\,e+b\,e\,x+c\,e\,x^2}\,dx$$

Optimal (type 4, 258 leaves, 8 steps):

$$\frac{2\,n\,\text{ArcTanh}\left[\frac{b+2\,c\,x}{\sqrt{b^2-4\,a\,c}}\right]^2}{\sqrt{b^2-4\,a\,c}\;e}-\frac{4\,n\,\text{ArcTanh}\left[\frac{b+2\,c\,x}{\sqrt{b^2-4\,a\,c}}\right]\text{Log}\left[\frac{2}{1-\frac{b}{\sqrt{b^2-4\,a\,c}}-\frac{2\,c\,x}{\sqrt{b^2-4\,a\,c}}}\right]}{\sqrt{b^2-4\,a\,c}\;e}-$$
$$\frac{2\,\text{ArcTanh}\left[\frac{b+2\,c\,x}{\sqrt{b^2-4\,a\,c}}\right]\text{Log}\left[d\left(a+b\,x+c\,x^2\right)^n\right]}{\sqrt{b^2-4\,a\,c}\;e}-\frac{2\,n\,\text{PolyLog}\left[2,-\frac{1+\frac{b}{\sqrt{b^2-4\,a\,c}}+\frac{2\,c\,x}{\sqrt{b^2-4\,a\,c}}}{1-\frac{b}{\sqrt{b^2-4\,a\,c}}-\frac{2\,c\,x}{\sqrt{b^2-4\,a\,c}}}\right]}{\sqrt{b^2-4\,a\,c}\;e}$$

Result (type 4, 555 leaves):

$$-\frac{1}{2\sqrt{-\left(b^2-4ac\right)^2}\,e}\left(4\sqrt{b^2-4ac}\;n\,\text{ArcTan}\left[\frac{b+2cx}{\sqrt{-b^2+4ac}}\right]\text{Log}\left[\frac{b-\sqrt{b^2-4ac}}{2c}+x\right]-\right.$$
$$\sqrt{-b^2+4ac}\;n\,\text{Log}\left[\frac{b-\sqrt{b^2-4ac}}{2c}+x\right]^2+4\sqrt{b^2-4ac}\;n\,\text{ArcTan}\left[\frac{b+2cx}{\sqrt{-b^2+4ac}}\right]\text{Log}\left[\frac{b+\sqrt{b^2-4ac}+2cx}{2c}\right]-$$
$$2\sqrt{-b^2+4ac}\;n\,\text{Log}\left[\frac{-b+\sqrt{b^2-4ac}-2cx}{2\sqrt{b^2-4ac}}\right]\text{Log}\left[\frac{b+\sqrt{b^2-4ac}+2cx}{2c}\right]+\sqrt{-b^2+4ac}\;n\,\text{Log}\left[\frac{b+\sqrt{b^2-4ac}+2cx}{2c}\right]^2+$$
$$2\sqrt{-b^2+4ac}\;n\,\text{Log}\left[\frac{b-\sqrt{b^2-4ac}}{2c}+x\right]\text{Log}\left[\frac{b+\sqrt{b^2-4ac}+2cx}{2\sqrt{b^2-4ac}}\right]-4\sqrt{b^2-4ac}\;\text{ArcTan}\left[\frac{b+2cx}{\sqrt{-b^2+4ac}}\right]\text{Log}\left[d\left(a+x\left(b+cx\right)\right)^n\right]+$$
$$\left.2\sqrt{-b^2+4ac}\;n\,\text{PolyLog}\left[2,\frac{-b+\sqrt{b^2-4ac}-2cx}{2\sqrt{b^2-4ac}}\right]-2\sqrt{-b^2+4ac}\;n\,\text{PolyLog}\left[2,\frac{b+\sqrt{b^2-4ac}+2cx}{2\sqrt{b^2-4ac}}\right]\right)$$

Problem 94: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}\left[g\left(a+bx+cx^2\right)^n\right]}{d+ex^2}\,dx$$

Optimal (type 4, 762 leaves, 20 steps):

$$-\frac{n\,\text{Log}\left[\frac{\sqrt{e}\left(b-\sqrt{b^2-4ac}+2cx\right)}{2c\sqrt{-d}+\left(b-\sqrt{b^2-4ac}\right)\sqrt{e}}\right]\text{Log}\left[\sqrt{-d}-\sqrt{e}\,x\right]}{2\sqrt{-d}\,\sqrt{e}}-\frac{n\,\text{Log}\left[\frac{\sqrt{e}\left(b+\sqrt{b^2-4ac}+2cx\right)}{2c\sqrt{-d}+\left(b+\sqrt{b^2-4ac}\right)\sqrt{e}}\right]\text{Log}\left[\sqrt{-d}-\sqrt{e}\,x\right]}{2\sqrt{-d}\,\sqrt{e}}+$$
$$\frac{n\,\text{Log}\left[-\frac{\sqrt{e}\left(b-\sqrt{b^2-4ac}+2cx\right)}{2c\sqrt{-d}-\left(b-\sqrt{b^2-4ac}\right)\sqrt{e}}\right]\text{Log}\left[\sqrt{-d}+\sqrt{e}\,x\right]}{2\sqrt{-d}\,\sqrt{e}}+\frac{n\,\text{Log}\left[-\frac{\sqrt{e}\left(b+\sqrt{b^2-4ac}+2cx\right)}{2c\sqrt{-d}-\left(b+\sqrt{b^2-4ac}\right)\sqrt{e}}\right]\text{Log}\left[\sqrt{-d}+\sqrt{e}\,x\right]}{2\sqrt{-d}\,\sqrt{e}}+$$
$$\frac{\text{Log}\left[\sqrt{-d}-\sqrt{e}\,x\right]\text{Log}\left[g\left(a+bx+cx^2\right)^n\right]}{2\sqrt{-d}\,\sqrt{e}}-\frac{\text{Log}\left[\sqrt{-d}+\sqrt{e}\,x\right]\text{Log}\left[g\left(a+bx+cx^2\right)^n\right]}{2\sqrt{-d}\,\sqrt{e}}-\frac{n\,\text{PolyLog}\left[2,\frac{2c\left(\sqrt{-d}-\sqrt{e}\,x\right)}{2c\sqrt{-d}+\left(b-\sqrt{b^2-4ac}\right)\sqrt{e}}\right]}{2\sqrt{-d}\,\sqrt{e}}-$$
$$\frac{n\,\text{PolyLog}\left[2,\frac{2c\left(\sqrt{-d}-\sqrt{e}\,x\right)}{2c\sqrt{-d}+\left(b+\sqrt{b^2-4ac}\right)\sqrt{e}}\right]}{2\sqrt{-d}\,\sqrt{e}}+\frac{n\,\text{PolyLog}\left[2,\frac{2c\left(\sqrt{-d}+\sqrt{e}\,x\right)}{2c\sqrt{-d}-\left(b-\sqrt{b^2-4ac}\right)\sqrt{e}}\right]}{2\sqrt{-d}\,\sqrt{e}}+\frac{n\,\text{PolyLog}\left[2,\frac{2c\left(\sqrt{-d}+\sqrt{e}\,x\right)}{2c\sqrt{-d}-\left(b+\sqrt{b^2-4ac}\right)\sqrt{e}}\right]}{2\sqrt{-d}\,\sqrt{e}}$$

Result (type 4, 736 leaves):

$$-\frac{1}{2\sqrt{d}\,\sqrt{e}}\left(2\,n\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}\left[\frac{b-\sqrt{b^2-4\,a\,c}}{2\,c}+x\right]+\right.$$

$$2\,n\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}\left[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,c}\right]-\mathbb{i}\,n\,\text{Log}\left[\frac{b-\sqrt{b^2-4\,a\,c}}{2\,c}+x\right]\,\text{Log}\left[\frac{2\,c\left(\sqrt{d}-\mathbb{i}\,\sqrt{e}\,x\right)}{2\,c\,\sqrt{d}-\mathbb{i}\left(-b+\sqrt{b^2-4\,a\,c}\right)\sqrt{e}}\right]-$$

$$\mathbb{i}\,n\,\text{Log}\left[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,c}\right]\,\text{Log}\left[\frac{2\,c\left(\sqrt{d}-\mathbb{i}\,\sqrt{e}\,x\right)}{2\,c\,\sqrt{d}+\mathbb{i}\left(b+\sqrt{b^2-4\,a\,c}\right)\sqrt{e}}\right]+\mathbb{i}\,n\,\text{Log}\left[\frac{b-\sqrt{b^2-4\,a\,c}}{2\,c}+x\right]\,\text{Log}\left[\frac{2\,c\left(\sqrt{d}+\mathbb{i}\,\sqrt{e}\,x\right)}{2\,c\,\sqrt{d}+\mathbb{i}\left(-b+\sqrt{b^2-4\,a\,c}\right)\sqrt{e}}\right]+$$

$$\mathbb{i}\,n\,\text{Log}\left[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,c}\right]\,\text{Log}\left[\frac{2\,c\left(\sqrt{d}+\mathbb{i}\,\sqrt{e}\,x\right)}{2\,c\,\sqrt{d}-\mathbb{i}\left(b+\sqrt{b^2-4\,a\,c}\right)\sqrt{e}}\right]-2\,\text{ArcTan}\left[\frac{\sqrt{e}\,x}{\sqrt{d}}\right]\,\text{Log}\left[g\left(a+x\left(b+c\,x\right)\right)^n\right]+$$

$$\mathbb{i}\,n\,\text{PolyLog}\left[2,\frac{\sqrt{e}\left(-b+\sqrt{b^2-4\,a\,c}-2\,c\,x\right)}{-2\,\mathbb{i}\,c\,\sqrt{d}+\left(-b+\sqrt{b^2-4\,a\,c}\right)\sqrt{e}}\right]-\mathbb{i}\,n\,\text{PolyLog}\left[2,\frac{\sqrt{e}\left(-b+\sqrt{b^2-4\,a\,c}-2\,c\,x\right)}{2\,\mathbb{i}\,c\,\sqrt{d}+\left(-b+\sqrt{b^2-4\,a\,c}\right)\sqrt{e}}\right]-$$

$$\left.\mathbb{i}\,n\,\text{PolyLog}\left[2,\frac{\sqrt{e}\left(b+\sqrt{b^2-4\,a\,c}+2\,c\,x\right)}{-2\,\mathbb{i}\,c\,\sqrt{d}+\left(b+\sqrt{b^2-4\,a\,c}\right)\sqrt{e}}\right]+\mathbb{i}\,n\,\text{PolyLog}\left[2,\frac{\sqrt{e}\left(b+\sqrt{b^2-4\,a\,c}+2\,c\,x\right)}{2\,\mathbb{i}\,c\,\sqrt{d}+\left(b+\sqrt{b^2-4\,a\,c}\right)\sqrt{e}}\right]\right)$$

Problem 97: Result more than twice size of optimal antiderivative.

$$\int \text{Log}\left[d\left(a+b\,x+c\,x^2\right)^n\right]^2\,\mathbb{d}x$$

Optimal (type 4, 587 leaves, 27 steps) :

$$8 n^2 x - \frac{4 \sqrt{b^2 - 4 a c}\; n^2 \operatorname{ArcTanh}\left[\frac{b+2 c x}{\sqrt{b^2-4 a c}}\right]}{c} - \frac{\left(b - \sqrt{b^2 - 4 a c}\right) n^2 \operatorname{Log}\left[b - \sqrt{b^2 - 4 a c} + 2 c x\right]^2}{2 c} -$$

$$\frac{\left(b + \sqrt{b^2 - 4 a c}\right) n^2 \operatorname{Log}\left[-\frac{b-\sqrt{b^2-4 a c}+2 c x}{2 \sqrt{b^2-4 a c}}\right] \operatorname{Log}\left[b + \sqrt{b^2 - 4 a c} + 2 c x\right]}{c} - \frac{\left(b + \sqrt{b^2 - 4 a c}\right) n^2 \operatorname{Log}\left[b + \sqrt{b^2 - 4 a c} + 2 c x\right]^2}{2 c} -$$

$$\frac{\left(b - \sqrt{b^2 - 4 a c}\right) n^2 \operatorname{Log}\left[b - \sqrt{b^2 - 4 a c} + 2 c x\right] \operatorname{Log}\left[\frac{b+\sqrt{b^2-4 a c}+2 c x}{2 \sqrt{b^2-4 a c}}\right]}{c} - \frac{2 b n^2 \operatorname{Log}\left[a + b x + c x^2\right]}{c} - 4 n x \operatorname{Log}\left[d \left(a + b x + c x^2\right)^n\right] +$$

$$\frac{\left(b - \sqrt{b^2 - 4 a c}\right) n \operatorname{Log}\left[b - \sqrt{b^2 - 4 a c} + 2 c x\right] \operatorname{Log}\left[d \left(a + b x + c x^2\right)^n\right]}{c} + \frac{\left(b + \sqrt{b^2 - 4 a c}\right) n \operatorname{Log}\left[b + \sqrt{b^2 - 4 a c} + 2 c x\right] \operatorname{Log}\left[d \left(a + b x + c x^2\right)^n\right]}{c} +$$

$$x \operatorname{Log}\left[d \left(a + b x + c x^2\right)^n\right]^2 - \frac{\left(b - \sqrt{b^2 - 4 a c}\right) n^2 \operatorname{PolyLog}\left[2, -\frac{b-\sqrt{b^2-4 a c}+2 c x}{2 \sqrt{b^2-4 a c}}\right]}{c} - \frac{\left(b + \sqrt{b^2 - 4 a c}\right) n^2 \operatorname{PolyLog}\left[2, \frac{b+\sqrt{b^2-4 a c}+2 c x}{2 \sqrt{b^2-4 a c}}\right]}{c}$$

Result (type 4, 1447 leaves) :

$$\frac{1}{2\,c\,\sqrt{-b^2+4\,a\,c}}\Bigg(8\,b\,\sqrt{-b^2+4\,a\,c}\;n^2+16\,c\,\sqrt{-b^2+4\,a\,c}\;n^2\,x+4\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;n^2\,\mathrm{Log}\Big[\frac{b-\sqrt{b^2-4\,a\,c}}{2\,c}+x\Big]-4\,b\,\sqrt{-b^2+4\,a\,c}\;n^2\,\mathrm{Log}\Big[\frac{b-\sqrt{b^2-4\,a\,c}}{2\,c}+x\Big]+$$

$$4\,b^2\,n^2\,\mathrm{ArcTan}\Big[\frac{b+2\,c\,x}{\sqrt{-b^2+4\,a\,c}}\Big]\,\mathrm{Log}\Big[\frac{b-\sqrt{b^2-4\,a\,c}}{2\,c}+x\Big]-16\,a\,c\,n^2\,\mathrm{ArcTan}\Big[\frac{b+2\,c\,x}{\sqrt{-b^2+4\,a\,c}}\Big]\,\mathrm{Log}\Big[\frac{b-\sqrt{b^2-4\,a\,c}}{2\,c}+x\Big]-$$

$$\sqrt{-\left(b^2-4\,a\,c\right)^2}\;n^2\,\mathrm{Log}\Big[\frac{b-\sqrt{b^2-4\,a\,c}}{2\,c}+x\Big]^2+b\,\sqrt{-b^2+4\,a\,c}\;n^2\,\mathrm{Log}\Big[\frac{b-\sqrt{b^2-4\,a\,c}}{2\,c}+x\Big]^2-4\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;n^2\,\mathrm{Log}\Big[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,c}\Big]-$$

$$4\,b\,\sqrt{-b^2+4\,a\,c}\;n^2\,\mathrm{Log}\Big[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,c}\Big]+4\,b^2\,n^2\,\mathrm{ArcTan}\Big[\frac{b+2\,c\,x}{\sqrt{-b^2+4\,a\,c}}\Big]\,\mathrm{Log}\Big[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,c}\Big]-$$

$$16\,a\,c\,n^2\,\mathrm{ArcTan}\Big[\frac{b+2\,c\,x}{\sqrt{-b^2+4\,a\,c}}\Big]\,\mathrm{Log}\Big[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,c}\Big]-2\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;n^2\,\mathrm{Log}\Big[\frac{-b+\sqrt{b^2-4\,a\,c}-2\,c\,x}{2\,\sqrt{b^2-4\,a\,c}}\Big]\,\mathrm{Log}\Big[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,c}\Big]+$$

$$2\,b\,\sqrt{-b^2+4\,a\,c}\;n^2\,\mathrm{Log}\Big[\frac{-b+\sqrt{b^2-4\,a\,c}-2\,c\,x}{2\,\sqrt{b^2-4\,a\,c}}\Big]\,\mathrm{Log}\Big[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,c}\Big]+\sqrt{-\left(b^2-4\,a\,c\right)^2}\;n^2\,\mathrm{Log}\Big[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,c}\Big]^2+$$

$$b\,\sqrt{-b^2+4\,a\,c}\;n^2\,\mathrm{Log}\Big[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,c}\Big]^2+2\,\sqrt{-\left(b^2-4\,a\,c\right)^2}\;n^2\,\mathrm{Log}\Big[\frac{b-\sqrt{b^2-4\,a\,c}}{2\,c}+x\Big]\,\mathrm{Log}\Big[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,\sqrt{b^2-4\,a\,c}}\Big]+$$

$$2\,b\,\sqrt{-b^2+4\,a\,c}\;n^2\,\mathrm{Log}\Big[\frac{b-\sqrt{b^2-4\,a\,c}}{2\,c}+x\Big]\,\mathrm{Log}\Big[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,\sqrt{b^2-4\,a\,c}}\Big]-2\,b\,\sqrt{-b^2+4\,a\,c}\;n^2\,\mathrm{Log}\Big[\frac{b-\sqrt{b^2-4\,a\,c}}{2\,c}+x\Big]\,\mathrm{Log}\big[a+x\,(b+c\,x)\big]-$$

$$2\,b\,\sqrt{-b^2+4\,a\,c}\;n^2\,\mathrm{Log}\Big[\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,c}\Big]\,\mathrm{Log}\big[a+x\,(b+c\,x)\big]-8\,c\,\sqrt{-b^2+4\,a\,c}\;n\,x\,\mathrm{Log}\big[d\,(a+x\,(b+c\,x))^n\big]-$$

$$4\,b^2\,n\,\mathrm{ArcTan}\Big[\frac{b+2\,c\,x}{\sqrt{-b^2+4\,a\,c}}\Big]\,\mathrm{Log}\big[d\,(a+x\,(b+c\,x))^n\big]+16\,a\,c\,n\,\mathrm{ArcTan}\Big[\frac{b+2\,c\,x}{\sqrt{-b^2+4\,a\,c}}\Big]\,\mathrm{Log}\big[d\,(a+x\,(b+c\,x))^n\big]+$$

$$2\,b\,\sqrt{-b^2+4\,a\,c}\;n\,\mathrm{Log}\big[a+x\,(b+c\,x)\big]\,\mathrm{Log}\big[d\,(a+x\,(b+c\,x))^n\big]+2\,c\,\sqrt{-b^2+4\,a\,c}\;x\,\mathrm{Log}\big[d\,(a+x\,(b+c\,x))^n\big]^2+$$

$$2\left(\sqrt{-\left(b^2-4\,a\,c\right)^2}+b\,\sqrt{-b^2+4\,a\,c}\right)n^2\,\mathrm{PolyLog}\Big[2,\,\frac{-b+\sqrt{b^2-4\,a\,c}-2\,c\,x}{2\,\sqrt{b^2-4\,a\,c}}\Big]-$$

$$2\left(\sqrt{-\left(b^2-4\,a\,c\right)^2}-b\,\sqrt{-b^2+4\,a\,c}\right)n^2\,\mathrm{PolyLog}\Big[2,\,\frac{b+\sqrt{b^2-4\,a\,c}+2\,c\,x}{2\,\sqrt{b^2-4\,a\,c}}\Big]\Bigg)$$

Problem 100: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[-1+x+x^2\right]^2}{x^3}\,dx$$

Optimal (type 4, 443 leaves, 34 steps):

$$\text{Log}[x]-\frac{1}{2}\left(1+\sqrt{5}\right)\text{Log}\left[1-\sqrt{5}+2x\right]+3\,\text{Log}\left[\frac{1}{2}\left(-1+\sqrt{5}\right)\right]\text{Log}\left[1-\sqrt{5}+2x\right]-\frac{1}{4}\left(3+\sqrt{5}\right)\text{Log}\left[1-\sqrt{5}+2x\right]^2-\frac{1}{2}\left(1-\sqrt{5}\right)\text{Log}\left[1+\sqrt{5}+2x\right]-\frac{1}{2}\left(3-\sqrt{5}\right)\text{Log}\left[-\frac{1-\sqrt{5}+2x}{2\sqrt{5}}\right]\text{Log}\left[1+\sqrt{5}+2x\right]-\frac{1}{4}\left(3-\sqrt{5}\right)\text{Log}\left[1+\sqrt{5}+2x\right]^2-\frac{1}{2}\left(3+\sqrt{5}\right)\text{Log}\left[1-\sqrt{5}+2x\right]\text{Log}\left[\frac{1+\sqrt{5}+2x}{2\sqrt{5}}\right]+3\,\text{Log}[x]\,\text{Log}\left[1+\frac{2x}{1+\sqrt{5}}\right]+\frac{\text{Log}\left[-1+x+x^2\right]}{x}-3\,\text{Log}[x]\,\text{Log}\left[-1+x+x^2\right]+\frac{1}{2}\left(3+\sqrt{5}\right)\text{Log}\left[1-\sqrt{5}+2x\right]\text{Log}\left[-1+x+x^2\right]+\frac{1}{2}\left(3-\sqrt{5}\right)\text{Log}\left[1+\sqrt{5}+2x\right]\text{Log}\left[-1+x+x^2\right]-\frac{\text{Log}\left[-1+x+x^2\right]^2}{2x^2}+3\,\text{PolyLog}\left[2,-\frac{2x}{1+\sqrt{5}}\right]-\frac{1}{2}\left(3+\sqrt{5}\right)\text{PolyLog}\left[2,-\frac{1-\sqrt{5}+2x}{2\sqrt{5}}\right]-\frac{1}{2}\left(3-\sqrt{5}\right)\text{PolyLog}\left[2,\frac{1+\sqrt{5}+2x}{2\sqrt{5}}\right]-3\,\text{PolyLog}\left[2,1+\frac{2x}{1-\sqrt{5}}\right]$$

Result (type 4, 955 leaves):

$$\frac{1}{20}\left(-10\,\text{Log}\left[-1+\sqrt{5}-2\,x\right]-10\,\sqrt{5}\,\text{Log}\left[-1+\sqrt{5}-2\,x\right]+20\,\text{Log}[x]+2\,\sqrt{5}\,\text{Log}[100]\,\text{Log}\left[\frac{1}{2}-\frac{\sqrt{5}}{2}+x\right]-\right.$$
$$30\,\text{Log}\left[-1+\sqrt{5}-2\,x\right]\text{Log}\left[\frac{1}{2}-\frac{\sqrt{5}}{2}+x\right]-10\,\sqrt{5}\,\text{Log}\left[-1+\sqrt{5}-2\,x\right]\text{Log}\left[\frac{1}{2}-\frac{\sqrt{5}}{2}+x\right]+60\,\text{Log}[x]\,\text{Log}\left[\frac{1}{2}-\frac{\sqrt{5}}{2}+x\right]-$$
$$60\,\text{Log}\left[\frac{2\,x}{-1+\sqrt{5}}\right]\text{Log}\left[\frac{1}{2}-\frac{\sqrt{5}}{2}+x\right]+15\,\text{Log}\left[\frac{1}{2}-\frac{\sqrt{5}}{2}+x\right]^2+5\,\sqrt{5}\,\text{Log}\left[\frac{1}{2}-\frac{\sqrt{5}}{2}+x\right]^2+\sqrt{5}\,\text{Log}[8]\,\text{Log}\left[\frac{1}{2}\left(1+\sqrt{5}\right)+x\right]-$$
$$30\,\text{Log}\left[-1+\sqrt{5}-2\,x\right]\text{Log}\left[\frac{1}{2}\left(1+\sqrt{5}\right)+x\right]-10\,\sqrt{5}\,\text{Log}\left[-1+\sqrt{5}-2\,x\right]\text{Log}\left[\frac{1}{2}\left(1+\sqrt{5}\right)+x\right]+$$
$$15\,\text{Log}\left[\frac{1}{2}\left(1+\sqrt{5}\right)+x\right]^2-2\,\sqrt{5}\,\text{Log}\left[\frac{1}{2}\left(1+\sqrt{5}\right)+x\right]^2-10\,\text{Log}\left[1+\sqrt{5}+2\,x\right]+10\,\sqrt{5}\,\text{Log}\left[1+\sqrt{5}+2\,x\right]-$$
$$30\,\text{Log}\left[\frac{1}{2}-\frac{\sqrt{5}}{2}+x\right]\text{Log}\left[1+\sqrt{5}+2\,x\right]+10\,\sqrt{5}\,\text{Log}\left[\frac{1}{2}-\frac{\sqrt{5}}{2}+x\right]\text{Log}\left[1+\sqrt{5}+2\,x\right]-30\,\text{Log}\left[\frac{1}{2}\left(1+\sqrt{5}\right)+x\right]\text{Log}\left[1+\sqrt{5}+2\,x\right]+$$
$$7\,\sqrt{5}\,\text{Log}\left[\frac{1}{2}\left(1+\sqrt{5}\right)+x\right]\text{Log}\left[1+\sqrt{5}+2\,x\right]+30\,\text{Log}\left[\frac{1}{2}-\frac{\sqrt{5}}{2}+x\right]\text{Log}\left[\frac{1+\sqrt{5}+2\,x}{2\,\sqrt{5}}\right]-6\,\sqrt{5}\,\text{Log}\left[\frac{1}{2}-\frac{\sqrt{5}}{2}+x\right]\text{Log}\left[\frac{1+\sqrt{5}+2\,x}{2\,\sqrt{5}}\right]+$$
$$30\,\text{Log}\left[\frac{1}{2}\left(1+\sqrt{5}\right)+x\right]\text{Log}\left[\frac{1}{10}\left(5-\sqrt{5}-2\,\sqrt{5}\,x\right)\right]+10\,\sqrt{5}\,\text{Log}\left[\frac{1}{2}\left(1+\sqrt{5}\right)+x\right]\text{Log}\left[\frac{1}{10}\left(5-\sqrt{5}-2\,\sqrt{5}\,x\right)\right]-$$
$$4\,\sqrt{5}\,\text{Log}\left[\frac{1}{2}-\frac{\sqrt{5}}{2}+x\right]\text{Log}\left[5+\sqrt{5}+2\,\sqrt{5}\,x\right]+60\,\text{Log}[x]\,\text{Log}\left[1+\frac{2\,x}{1+\sqrt{5}}\right]+\frac{20\,\text{Log}\left[-1+x+x^2\right]}{x}+30\,\text{Log}\left[-1+\sqrt{5}-2\,x\right]\text{Log}\left[-1+x+x^2\right]+$$
$$10\,\sqrt{5}\,\text{Log}\left[-1+\sqrt{5}-2\,x\right]\text{Log}\left[-1+x+x^2\right]-60\,\text{Log}[x]\,\text{Log}\left[-1+x+x^2\right]+30\,\text{Log}\left[1+\sqrt{5}+2\,x\right]\text{Log}\left[-1+x+x^2\right]-$$
$$10\,\sqrt{5}\,\text{Log}\left[1+\sqrt{5}+2\,x\right]\text{Log}\left[-1+x+x^2\right]-\frac{10\,\text{Log}\left[-1+x+x^2\right]^2}{x^2}-10\left(-3+\sqrt{5}\right)\text{PolyLog}\left[2,\frac{-1+\sqrt{5}-2\,x}{2\,\sqrt{5}}\right]-$$
$$\left.60\,\text{PolyLog}\left[2,\frac{-1+\sqrt{5}-2\,x}{-1+\sqrt{5}}\right]+60\,\text{PolyLog}\left[2,-\frac{2\,x}{1+\sqrt{5}}\right]+30\,\text{PolyLog}\left[2,\frac{1+\sqrt{5}+2\,x}{2\,\sqrt{5}}\right]+10\,\sqrt{5}\,\text{PolyLog}\left[2,\frac{1+\sqrt{5}+2\,x}{2\,\sqrt{5}}\right]\right)$$

Problem 108: Result unnecessarily involves imaginary or complex numbers.

$$\int x^{3/2}\,\text{Log}\left[-1+4\,x+4\,\sqrt{(-1+x)\,x}\right]dx$$

Optimal (type 3, 187 leaves, 15 steps):

$$-\frac{\sqrt{x}}{160}+\frac{x^{3/2}}{60}-\frac{2\,x^{5/2}}{25}-\frac{17\,\sqrt{-x+x^2}}{32\,\sqrt{x}}-\frac{71\left(-x+x^2\right)^{3/2}}{300\,x^{3/2}}-\frac{2\left(-x+x^2\right)^{3/2}}{25\,\sqrt{x}}-$$
$$\frac{\sqrt{-x+x^2}\,\text{ArcTan}\left[\frac{2}{3}\,\sqrt{2}\,\sqrt{-1+x}\right]}{320\,\sqrt{2}\,\sqrt{-1+x}\,\sqrt{x}}+\frac{\text{ArcTan}\left[2\,\sqrt{2}\,\sqrt{x}\right]}{320\,\sqrt{2}}+\frac{2}{5}\,x^{5/2}\,\text{Log}\left[-1+4\,x+4\,\sqrt{-x+x^2}\right]$$

Result (type 3, 232 leaves) :

$$\frac{1}{38400}\left(-240\sqrt{x}+640x^{3/2}-3072x^{5/2}-\frac{11312\sqrt{(-1+x)x}}{\sqrt{x}}-6016\sqrt{x}\sqrt{(-1+x)x}-3072x^{3/2}\sqrt{(-1+x)x}+60\sqrt{2}\,\text{ArcTan}\left[2\sqrt{2}\sqrt{x}\right]-60\sqrt{2}\,\text{ArcTan}\left[\frac{2\sqrt{2}\sqrt{(-1+x)x}}{3\sqrt{x}}\right]-30\,i\sqrt{2}\,\text{Log}\left[4(1+8x)^2\right]+15\,i\sqrt{2}\,\text{Log}\left[(1+8x)\left(1-10x-6\sqrt{(-1+x)x}\right)\right]+15360x^{5/2}\,\text{Log}\left[-1+4x+4\sqrt{(-1+x)x}\right]+15\,i\sqrt{2}\,\text{Log}\left[(1+8x)\left(1-10x+6\sqrt{(-1+x)x}\right)\right]\right)$$

Problem 109: Result unnecessarily involves imaginary or complex numbers.

$$\int\sqrt{x}\,\text{Log}\left[-1+4x+4\sqrt{(-1+x)x}\right]dx$$

Optimal (type 3, 158 leaves, 13 steps) :

$$\frac{\sqrt{x}}{12}-\frac{2x^{3/2}}{9}-\frac{11\sqrt{-x+x^2}}{12\sqrt{x}}-\frac{2(-x+x^2)^{3/2}}{9x^{3/2}}+\frac{\sqrt{-x+x^2}\,\text{ArcTan}\left[\frac{2}{3}\sqrt{2}\sqrt{-1+x}\right]}{24\sqrt{2}\sqrt{-1+x}\sqrt{x}}-\frac{\text{ArcTan}\left[2\sqrt{2}\sqrt{x}\right]}{24\sqrt{2}}+\frac{2}{3}x^{3/2}\,\text{Log}\left[-1+4x+4\sqrt{-x+x^2}\right]$$

Result (type 3, 209 leaves) :

$$\frac{1}{576}\left(48\sqrt{x}-128x^{3/2}-\frac{400\sqrt{(-1+x)x}}{\sqrt{x}}-128\sqrt{x}\sqrt{(-1+x)x}-12\sqrt{2}\,\text{ArcTan}\left[2\sqrt{2}\sqrt{x}\right]+12\sqrt{2}\,\text{ArcTan}\left[\frac{2\sqrt{2}\sqrt{(-1+x)x}}{3\sqrt{x}}\right]+6\,i\sqrt{2}\,\text{Log}\left[4(1+8x)^2\right]-3\,i\sqrt{2}\,\text{Log}\left[(1+8x)\left(1-10x-6\sqrt{(-1+x)x}\right)\right]+384x^{3/2}\,\text{Log}\left[-1+4x+4\sqrt{(-1+x)x}\right]-3\,i\sqrt{2}\,\text{Log}\left[(1+8x)\left(1-10x+6\sqrt{(-1+x)x}\right)\right]\right)$$

Problem 110: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}\left[-1+4x+4\sqrt{(-1+x)x}\right]}{\sqrt{x}}dx$$

Optimal (type 3, 118 leaves, 12 steps) :

$$-2\sqrt{x}-\frac{2\sqrt{-x+x^2}}{\sqrt{x}}-\frac{\sqrt{-x+x^2}\ \text{ArcTan}\left[\frac{2}{3}\sqrt{2}\ \sqrt{-1+x}\right]}{\sqrt{2}\ \sqrt{-1+x}\ \sqrt{x}}+\frac{\text{ArcTan}\left[2\sqrt{2}\ \sqrt{x}\right]}{\sqrt{2}}+2\sqrt{x}\ \text{Log}\left[-1+4x+4\sqrt{-x+x^2}\right]$$

Result (type 3, 186 leaves):

$$\frac{1}{8}\left(-16\sqrt{x}-\frac{16\sqrt{(-1+x)\ x}}{\sqrt{x}}+4\sqrt{2}\ \text{ArcTan}\left[2\sqrt{2}\ \sqrt{x}\right]-4\sqrt{2}\ \text{ArcTan}\left[\frac{2\sqrt{2}\ \sqrt{(-1+x)\ x}}{3\sqrt{x}}\right]-2\,i\sqrt{2}\ \text{Log}\left[4\ (1+8x)^2\right]+\right.$$
$$\left.i\sqrt{2}\ \text{Log}\left[(1+8x)\ \left(1-10x-6\sqrt{(-1+x)\ x}\right)\right]+16\sqrt{x}\ \text{Log}\left[-1+4x+4\sqrt{(-1+x)\ x}\right]+i\sqrt{2}\ \text{Log}\left[(1+8x)\ \left(1-10x+6\sqrt{(-1+x)\ x}\right)\right]\right)$$

Problem 111: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}\left[-1+4x+4\sqrt{(-1+x)\ x}\right]}{x^{3/2}}\,dx$$

Optimal (type 3, 114 leaves, 15 steps):

$$-\frac{4\sqrt{2}\ \sqrt{-x+x^2}\ \text{ArcTan}\left[\frac{2}{3}\sqrt{2}\ \sqrt{-1+x}\right]}{\sqrt{-1+x}\ \sqrt{x}}+4\sqrt{2}\ \text{ArcTan}\left[2\sqrt{2}\ \sqrt{x}\right]-8\,\text{ArcTan}\left[\frac{\sqrt{x}}{\sqrt{-x+x^2}}\right]-\frac{2\,\text{Log}\left[-1+4x+4\sqrt{-x+x^2}\right]}{\sqrt{x}}$$

Result (type 3, 177 leaves):

$$4\sqrt{2}\ \text{ArcTan}\left[2\sqrt{2}\ \sqrt{x}\right]+8\,\text{ArcTan}\left[\frac{\sqrt{(-1+x)\ x}}{\sqrt{x}}\right]-4\sqrt{2}\ \text{ArcTan}\left[\frac{2\sqrt{2}\ \sqrt{(-1+x)\ x}}{3\sqrt{x}}\right]-2\,i\sqrt{2}\ \text{Log}\left[4\ (1+8x)^2\right]+$$
$$i\sqrt{2}\ \text{Log}\left[(1+8x)\ \left(1-10x-6\sqrt{(-1+x)\ x}\right)\right]-\frac{2\,\text{Log}\left[-1+4x+4\sqrt{(-1+x)\ x}\right]}{\sqrt{x}}+i\sqrt{2}\ \text{Log}\left[(1+8x)\ \left(1-10x+6\sqrt{(-1+x)\ x}\right)\right]$$

Problem 112: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\text{Log}\left[-1+4x+4\sqrt{(-1+x)\ x}\right]}{x^{5/2}}\,dx$$

Optimal (type 3, 151 leaves, 18 steps):

$$-\frac{16}{3\sqrt{x}}+\frac{4\sqrt{-x+x^2}}{3x^{3/2}}+\frac{32\sqrt{2}\sqrt{-x+x^2}\,\text{ArcTan}\left[\frac{2}{3}\sqrt{2}\sqrt{-1+x}\right]}{3\sqrt{-1+x}\sqrt{x}}-\frac{32}{3}\sqrt{2}\,\text{ArcTan}\left[2\sqrt{2}\sqrt{x}\right]+\frac{44}{3}\text{ArcTan}\left[\frac{\sqrt{x}}{\sqrt{-x+x^2}}\right]-\frac{2\,\text{Log}\left[-1+4x+4\sqrt{-x+x^2}\right]}{3x^{3/2}}$$

Result (type 3, 204 leaves):

$$\frac{2}{3}\left(-\frac{8}{\sqrt{x}}+\frac{2\sqrt{(-1+x)\,x}}{x^{3/2}}-16\sqrt{2}\,\text{ArcTan}\left[2\sqrt{2}\sqrt{x}\right]-22\,\text{ArcTan}\left[\frac{\sqrt{(-1+x)\,x}}{\sqrt{x}}\right]+16\sqrt{2}\,\text{ArcTan}\left[\frac{2\sqrt{2}\sqrt{(-1+x)\,x}}{3\sqrt{x}}\right]+8\,i\sqrt{2}\,\text{Log}\left[4\,(1+8x)^2\right]-4\,i\sqrt{2}\,\text{Log}\left[(1+8x)\left(1-10x-6\sqrt{(-1+x)\,x}\right)\right]-\frac{\text{Log}\left[-1+4x+4\sqrt{(-1+x)\,x}\right]}{x^{3/2}}-4\,i\sqrt{2}\,\text{Log}\left[(1+8x)\left(1-10x+6\sqrt{(-1+x)\,x}\right)\right]\right)$$

Problem 118: Unable to integrate problem.

$$\int x^3\,\text{Log}\left[1+e\left(f^{c\,(a+b\,x)}\right)^n\right]\,dx$$

Optimal (type 4, 132 leaves, 5 steps):

$$-\frac{x^3\,\text{PolyLog}\left[2,-e\left(f^{c\,(a+b\,x)}\right)^n\right]}{b\,c\,n\,\text{Log}[f]}+\frac{3x^2\,\text{PolyLog}\left[3,-e\left(f^{c\,(a+b\,x)}\right)^n\right]}{b^2\,c^2\,n^2\,\text{Log}[f]^2}-\frac{6x\,\text{PolyLog}\left[4,-e\left(f^{c\,(a+b\,x)}\right)^n\right]}{b^3\,c^3\,n^3\,\text{Log}[f]^3}+\frac{6\,\text{PolyLog}\left[5,-e\left(f^{c\,(a+b\,x)}\right)^n\right]}{b^4\,c^4\,n^4\,\text{Log}[f]^4}$$

Result (type 8, 22 leaves):

$$\int x^3\,\text{Log}\left[1+e\left(f^{c\,(a+b\,x)}\right)^n\right]\,dx$$

Problem 119: Unable to integrate problem.

$$\int x^2\,\text{Log}\left[1+e\left(f^{c\,(a+b\,x)}\right)^n\right]\,dx$$

Optimal (type 4, 98 leaves, 4 steps):

$$-\frac{x^2\,\text{PolyLog}\left[2,-e\left(f^{c\,(a+b\,x)}\right)^n\right]}{b\,c\,n\,\text{Log}[f]}+\frac{2x\,\text{PolyLog}\left[3,-e\left(f^{c\,(a+b\,x)}\right)^n\right]}{b^2\,c^2\,n^2\,\text{Log}[f]^2}-\frac{2\,\text{PolyLog}\left[4,-e\left(f^{c\,(a+b\,x)}\right)^n\right]}{b^3\,c^3\,n^3\,\text{Log}[f]^3}$$

Result (type 8, 22 leaves):

$$\int x^2\,\text{Log}\left[1+e\left(f^{c\,(a+b\,x)}\right)^n\right]\,dx$$

Problem 120: Unable to integrate problem.

$$\int x \operatorname{Log}\left[1+e\left(f^{c(a+b x)}\right)^n\right] dx$$

Optimal (type 4, 63 leaves, 3 steps):

$$-\frac{x \operatorname{PolyLog}\left[2,-e\left(f^{c(a+b x)}\right)^n\right]}{b c n \operatorname{Log}[f]}+\frac{\operatorname{PolyLog}\left[3,-e\left(f^{c(a+b x)}\right)^n\right]}{b^2 c^2 n^2 \operatorname{Log}[f]^2}$$

Result (type 8, 20 leaves):

$$\int x \operatorname{Log}\left[1+e\left(f^{c(a+b x)}\right)^n\right] dx$$

Problem 121: Attempted integration timed out after 120 seconds.

$$\int \operatorname{Log}\left[1+e\left(f^{c(a+b x)}\right)^n\right] dx$$

Optimal (type 4, 31 leaves, 2 steps):

$$-\frac{\operatorname{PolyLog}\left[2,-e\left(f^{c(a+b x)}\right)^n\right]}{b c n \operatorname{Log}[f]}$$

Result (type 1, 1 leaves):

???

Problem 123: Unable to integrate problem.

$$\int x^3 \operatorname{Log}\left[d+e\left(f^{c(a+b x)}\right)^n\right] dx$$

Optimal (type 4, 193 leaves, 6 steps):

$$\frac{1}{4} x^4 \operatorname{Log}\left[d+e\left(f^{c(a+b x)}\right)^n\right]-\frac{1}{4} x^4 \operatorname{Log}\left[1+\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]-\frac{x^3 \operatorname{PolyLog}\left[2,-\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]}{b c n \operatorname{Log}[f]}+$$
$$\frac{3 x^2 \operatorname{PolyLog}\left[3,-\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]}{b^2 c^2 n^2 \operatorname{Log}[f]^2}-\frac{6 x \operatorname{PolyLog}\left[4,-\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]}{b^3 c^3 n^3 \operatorname{Log}[f]^3}+\frac{6 \operatorname{PolyLog}\left[5,-\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]}{b^4 c^4 n^4 \operatorname{Log}[f]^4}$$

Result (type 8, 22 leaves):

$$\int x^3 \operatorname{Log}\left[d+e\left(f^{c(a+b x)}\right)^n\right] dx$$

Problem 124: Unable to integrate problem.

$$\int x^2 \operatorname{Log}\left[d+e\left(f^{c(a+b x)}\right)^n\right] dx$$

Optimal (type 4, 156 leaves, 5 steps):

$$\frac{1}{3} x^3 \operatorname{Log}\left[d+e\left(f^{c(a+b x)}\right)^n\right]-\frac{1}{3} x^3 \operatorname{Log}\left[1+\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]-\frac{x^2 \operatorname{PolyLog}\left[2,-\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]}{b c n \operatorname{Log}[f]}+\frac{2 x \operatorname{PolyLog}\left[3,-\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]}{b^2 c^2 n^2 \operatorname{Log}[f]^2}-\frac{2 \operatorname{PolyLog}\left[4,-\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]}{b^3 c^3 n^3 \operatorname{Log}[f]^3}$$

Result (type 8, 22 leaves):

$$\int x^2 \operatorname{Log}\left[d+e\left(f^{c(a+b x)}\right)^n\right] dx$$

Problem 125: Unable to integrate problem.

$$\int x \operatorname{Log}\left[d+e\left(f^{c(a+b x)}\right)^n\right] dx$$

Optimal (type 4, 118 leaves, 4 steps):

$$\frac{1}{2} x^2 \operatorname{Log}\left[d+e\left(f^{c(a+b x)}\right)^n\right]-\frac{1}{2} x^2 \operatorname{Log}\left[1+\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]-\frac{x \operatorname{PolyLog}\left[2,-\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]}{b c n \operatorname{Log}[f]}+\frac{\operatorname{PolyLog}\left[3,-\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]}{b^2 c^2 n^2 \operatorname{Log}[f]^2}$$

Result (type 8, 20 leaves):

$$\int x \operatorname{Log}\left[d+e\left(f^{c(a+b x)}\right)^n\right] dx$$

Problem 126: Attempted integration timed out after 120 seconds.

$$\int \operatorname{Log}\left[d+e\left(f^{c(a+b x)}\right)^n\right] dx$$

Optimal (type 4, 75 leaves, 4 steps):

$$x \operatorname{Log}\left[d+e\left(f^{c(a+b x)}\right)^n\right]-x \operatorname{Log}\left[1+\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]-\frac{\operatorname{PolyLog}\left[2,-\frac{e\left(f^{c(a+b x)}\right)^n}{d}\right]}{b c n \operatorname{Log}[f]}$$

Result (type 1, 1 leaves):

???

Problem 128: Attempted integration timed out after 120 seconds.

$$\int \text{Log}\left[b\left(F^{e\,(c+d\,x)}\right)^n+\pi\right]\,dx$$

Optimal (type 4, 39 leaves, 3 steps):

$$x\,\text{Log}[\pi]-\frac{\text{PolyLog}\left[2,-\frac{b\left(F^{e\,(c+d\,x)}\right)^n}{\pi}\right]}{d\,e\,n\,\text{Log}[F]}$$

Result (type 1, 1 leaves):

???

Problem 131: Result more than twice size of optimal antiderivative.

$$\int \frac{(1+\text{Log}[x])^5}{x}\,dx$$

Optimal (type 3, 10 leaves, 2 steps):

$$\frac{1}{6}\,(1+\text{Log}[x])^6$$

Result (type 3, 39 leaves):

$$\text{Log}[x]+\frac{5\,\text{Log}[x]^2}{2}+\frac{10\,\text{Log}[x]^3}{3}+\frac{5\,\text{Log}[x]^4}{2}+\text{Log}[x]^5+\frac{\text{Log}[x]^6}{6}$$

Problem 134: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{x\,\sqrt{-3+\text{Log}[x]^2}}\,dx$$

Optimal (type 3, 14 leaves, 3 steps):

$$\text{ArcTanh}\left[\frac{\text{Log}[x]}{\sqrt{-3+\text{Log}[x]^2}}\right]$$

Result (type 3, 42 leaves):

$$-\frac{1}{2}\,\text{Log}\left[1-\frac{\text{Log}[x]}{\sqrt{-3+\text{Log}[x]^2}}\right]+\frac{1}{2}\,\text{Log}\left[1+\frac{\text{Log}[x]}{\sqrt{-3+\text{Log}[x]^2}}\right]$$

Problem 189: Result more than twice size of optimal antiderivative.

$$\int \text{Cos}[x]\,\text{Log}[\text{Cos}[x]]\,dx$$

Optimal (type 3, 14 leaves, 4 steps):

$$\text{ArcTanh}[\text{Sin}[x]]-\text{Sin}[x]+\text{Log}[\text{Cos}[x]]\,\text{Sin}[x]$$

Result (type 3, 43 leaves):

$$-\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]-\text{Sin}\left[\frac{x}{2}\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{x}{2}\right]+\text{Sin}\left[\frac{x}{2}\right]\right]-\text{Sin}[x]+\text{Log}[\text{Cos}[x]]\,\text{Sin}[x]$$

Problem 277: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[c\,\left(1+x^2\right)^n\right]}{1+x^2}\,dx$$

Optimal (type 4, 60 leaves, 5 steps):

$$i\,n\,\text{ArcTan}[x]^2+2\,n\,\text{ArcTan}[x]\,\text{Log}\left[\frac{2}{1+i\,x}\right]+\text{ArcTan}[x]\,\text{Log}\left[c\,\left(1+x^2\right)^n\right]+i\,n\,\text{PolyLog}\left[2,\,1-\frac{2}{1+i\,x}\right]$$

Result (type 4, 149 leaves):

$$\frac{1}{4}\left(-4\,n\,\text{ArcTan}[x]\,\text{Log}[-i+x]-i\,n\,\text{Log}[-i+x]^2+2\,i\,n\,\text{Log}[-i+x]\,\text{Log}\left[-\frac{1}{2}\,i\,\left(i+x\right)\right]-4\,n\,\text{ArcTan}[x]\,\text{Log}[i+x]-\right.$$
$$\left.2\,i\,n\,\text{Log}\left[\frac{1}{2}\,\left(1+i\,x\right)\right]\,\text{Log}[i+x]+i\,n\,\text{Log}[i+x]^2+4\,\text{ArcTan}[x]\,\text{Log}\left[c\,\left(1+x^2\right)^n\right]+2\,i\,n\,\text{PolyLog}\left[2,\,\frac{1}{2}+\frac{i\,x}{2}\right]-2\,i\,n\,\text{PolyLog}\left[2,\,-\frac{1}{2}\,i\,\left(i+x\right)\right]\right)$$

Problem 278: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Log}\left[\frac{x^2}{1+x^2}\right]}{1+x^2}\,dx$$

Optimal (type 4, 61 leaves, 5 steps):

$$i\,\text{ArcTan}[x]^2-2\,\text{ArcTan}[x]\,\text{Log}\left[2-\frac{2}{1-i\,x}\right]+\text{ArcTan}[x]\,\text{Log}\left[\frac{x^2}{1+x^2}\right]+i\,\text{PolyLog}\left[2,\,-1+\frac{2}{1-i\,x}\right]$$

Result (type 4, 182 leaves):

$$\frac{1}{4}\left(i\,\text{Log}[-i+x]^2-i\,\text{Log}[i+x]^2+4\,\text{ArcTan}[x]\left(-2\,\text{Log}[x]+\text{Log}[-i+x]+\text{Log}[i+x]+\text{Log}\left[\frac{x^2}{1+x^2}\right]\right)-\right.$$
$$2\,i\left(\text{Log}[-i+x]\,\text{Log}\left[-\frac{1}{2}\,i\,(i+x)\right]+\text{PolyLog}\left[2,\frac{1}{2}+\frac{i\,x}{2}\right]\right)-4\,i\,(\text{Log}[1+i\,x]\,\text{Log}[x]+\text{PolyLog}[2,-i\,x])+$$
$$\left.4\,i\,(\text{Log}[1-i\,x]\,\text{Log}[x]+\text{PolyLog}[2,i\,x])+2\,i\left(\text{Log}\left[\frac{1}{2}\,(1+i\,x)\right]\text{Log}[i+x]+\text{PolyLog}\left[2,-\frac{1}{2}\,i\,(i+x)\right]\right)\right)$$

Problem 279: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[\frac{c\,x^2}{a+b\,x^2}\right]}{a+b\,x^2}\,dx$$

Optimal (type 4, 165 leaves, 5 steps):

$$\frac{i\,\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right]^2}{\sqrt{a}\,\sqrt{b}}+\frac{\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right]\text{Log}\left[\frac{c\,x^2}{a+b\,x^2}\right]}{\sqrt{a}\,\sqrt{b}}-\frac{2\,\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right]\text{Log}\left[2-\frac{2\sqrt{a}}{\sqrt{a}-i\sqrt{b}\,x}\right]}{\sqrt{a}\,\sqrt{b}}+\frac{i\,\text{PolyLog}\left[2,-1+\frac{2\sqrt{a}}{\sqrt{a}-i\sqrt{b}\,x}\right]}{\sqrt{a}\,\sqrt{b}}$$

Result (type 4, 402 leaves):

$$\frac{1}{4\sqrt{a}\,\sqrt{b}}\left(-8\,\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right]\text{Log}[x]+4\,\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right]\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]+\right.$$
$$i\,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]^2+4\,\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right]\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]-i\,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]^2-2\,i\,\text{Log}\left[-\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}\left[\frac{1}{2}-\frac{i\sqrt{b}\,x}{2\sqrt{a}}\right]+$$
$$2\,i\,\text{Log}\left[\frac{i\sqrt{a}}{\sqrt{b}}+x\right]\text{Log}\left[\frac{1}{2}+\frac{i\sqrt{b}\,x}{2\sqrt{a}}\right]+4\,i\,\text{Log}[x]\,\text{Log}\left[1-\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]-4\,i\,\text{Log}[x]\,\text{Log}\left[1+\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]+4\,\text{ArcTan}\left[\frac{\sqrt{b}\,x}{\sqrt{a}}\right]\text{Log}\left[\frac{c\,x^2}{a+b\,x^2}\right]-$$
$$\left.4\,i\,\text{PolyLog}\left[2,-\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]+4\,i\,\text{PolyLog}\left[2,\frac{i\sqrt{b}\,x}{\sqrt{a}}\right]+2\,i\,\text{PolyLog}\left[2,\frac{1}{2}-\frac{i\sqrt{b}\,x}{2\sqrt{a}}\right]-2\,i\,\text{PolyLog}\left[2,\frac{1}{2}+\frac{i\sqrt{b}\,x}{2\sqrt{a}}\right]\right)$$

Problem 280: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[1+\frac{i\sqrt{1-a\,x}}{\sqrt{1+a\,x}}\right]}{1-a^2\,x^2}\,dx$$

Optimal (type 4, 29 leaves, 1 step):

$$\frac{\text{PolyLog}\left[2,-\frac{i\sqrt{1-a\,x}}{\sqrt{1+a\,x}}\right]}{a}$$

Result (type 4, 134 leaves):

$$\frac{1}{4a}\left(4\,\text{ArcTanh}[a\,x]\,\text{Log}\left[1+\frac{i\sqrt{1-a\,x}}{\sqrt{1+a\,x}}\right]+\text{PolyLog}\left[2,-e^{-2\,\text{ArcTanh}[a\,x]}\right]-2\left(\text{ArcTanh}[a\,x]\left(\text{Log}\left[1+e^{-2\,\text{ArcTanh}[a\,x]}\right]-\text{Log}\left[1-i\,e^{-\text{ArcTanh}[a\,x]}\right]+\text{Log}\left[1+i\,e^{-\text{ArcTanh}[a\,x]}\right]\right)-\text{PolyLog}\left[2,-i\,e^{-\text{ArcTanh}[a\,x]}\right]+\text{PolyLog}\left[2,i\,e^{-\text{ArcTanh}[a\,x]}\right]\right)\right)$$

Problem 281: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Log}\left[1-\frac{i\sqrt{1-a\,x}}{\sqrt{1+a\,x}}\right]}{1-a^2\,x^2}\,dx$$

Optimal (type 4, 29 leaves, 1 step):

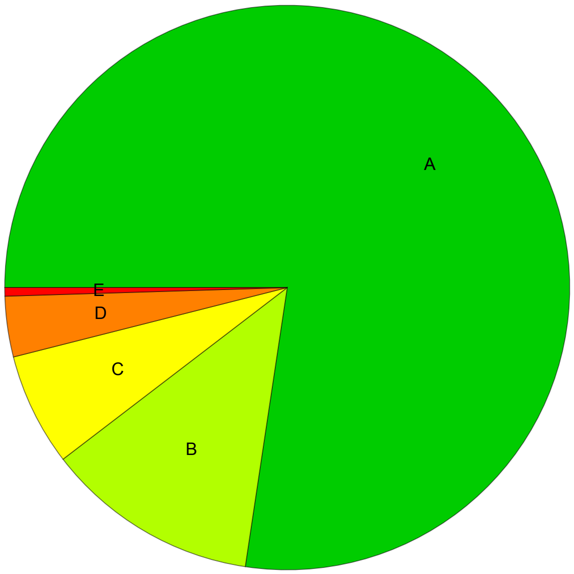
$$\frac{\text{PolyLog}\left[2,\frac{i\sqrt{1-a\,x}}{\sqrt{1+a\,x}}\right]}{a}$$

Result (type 4, 134 leaves):

$$\frac{1}{4a}\left(4\,\text{ArcTanh}[a\,x]\,\text{Log}\left[1-\frac{i\sqrt{1-a\,x}}{\sqrt{1+a\,x}}\right]+\text{PolyLog}\left[2,-e^{-2\,\text{ArcTanh}[a\,x]}\right]-2\left(\text{ArcTanh}[a\,x]\left(\text{Log}\left[1+e^{-2\,\text{ArcTanh}[a\,x]}\right]+\text{Log}\left[1-i\,e^{-\text{ArcTanh}[a\,x]}\right]-\text{Log}\left[1+i\,e^{-\text{ArcTanh}[a\,x]}\right]\right)+\text{PolyLog}\left[2,-i\,e^{-\text{ArcTanh}[a\,x]}\right]-\text{PolyLog}\left[2,i\,e^{-\text{ArcTanh}[a\,x]}\right]\right)\right)$$

Summary of Integration Test Results

3085 integration problems



A - 2387 optimal antiderivatives

B - 377 more than twice size of optimal antiderivatives

C - 199 unnecessarily complex antiderivatives

D - 107 unable to integrate problems

E - 15 integration timeouts