Mathematica 11.3 Integration Test Results

Test results for the 474 problems in "5.1.5 Inverse sine functions.m"

Problem 7: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 135 leaves, 4 steps):

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

Result (type 3, 207 leaves):

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

Problem 13: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 347 leaves, 10 steps):

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

Result (type 4, 2763 leaves):

$$\frac{a^2\,\text{Log}[d+e\,x]}{e}+\frac{1}{4\,e}a\,b$$
$$\left(i\,\left(\pi-2\,\text{ArcSin}[c\,x]\right)^2-32\,i\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right]\,\text{ArcTan}\left[\frac{\left(c\,d-e\right)\,\text{Cot}\left[\frac{1}{4}\,\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{c^2\,d^2-e^2}}\right]-\right.$$
$$4\left(\pi+4\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right]-2\,\text{ArcSin}[c\,x]\right)\,\text{Log}\left[1-\frac{i\,\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)\,e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]-$$
$$4\left(\pi-4\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right]-2\,\text{ArcSin}[c\,x]\right)\,\text{Log}\left[1+\frac{i\,\left(c\,d+\sqrt{c^2\,d^2-e^2}\right)\,e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]+$$
$$4\,\left(\pi-2\,\text{ArcSin}[c\,x]\right)\,\text{Log}[c\,d+c\,e\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,d+c\,e\,x]+$$
$$8\,i\left(\text{PolyLog}\left[2,\frac{i\,\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)\,e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]+\right.$$
$$\left.\left.\text{PolyLog}\left[2,-\frac{i\,\left(c\,d+\sqrt{c^2\,d^2-e^2}\right)\,e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]\right)\right)+\frac{1}{3\,e\,\sqrt{-\left(-c^2\,d^2+e^2\right)^2}}$$

$$b^2 \Bigg(-i \sqrt{-\left(-c^2 d^2+e^2\right)^2}\ \text{ArcSin}[c x]^3 - 24 i \sqrt{-\left(-c^2 d^2+e^2\right)^2}\ \text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right] \text{ArcSin}[c x]$$

$$\text{ArcTan}\left[\frac{(c d-e)\ \text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{c^2 d^2-e^2}}\right] + 24 i \sqrt{-\left(-c^2 d^2+e^2\right)^2}\ \text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right]$$

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

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

$$12\sqrt{-\left(-c^2 d^2+e^2\right)^2}\ \text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right] \text{ArcSin}[c x]$$

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

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

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

$$12\sqrt{-\left(-c^2 d^2+e^2\right)^2}\ \text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right] \text{ArcSin}[c x]$$

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

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

$$3 c d\sqrt{-c^2 d^2+e^2}\ \text{ArcSin}[c x]^2\ \text{Log}\left[1+\frac{i e\, e^{i\,\text{ArcSin}[c x]}}{-c d+\sqrt{c^2 d^2-e^2}}\right] -$$

$$3 c d\sqrt{-c^2 d^2+e^2}\ \text{ArcSin}[c x]^2\ \text{Log}\left[1-\frac{i e\, e^{i\,\text{ArcSin}[c x]}}{c d+\sqrt{c^2 d^2-e^2}}\right] -$$

$$3 i c d\sqrt{c^2 d^2-e^2}\ \text{ArcSin}[c x]^2\ \text{Log}\left[1+\frac{e\, e^{i\,\text{ArcSin}[c x]}}{i c d-\sqrt{-c^2 d^2+e^2}}\right] +$$

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

$$3\,\mathrm{i}\,c\,d\,\sqrt{c^2 d^2 - e^2}\;\text{ArcSin}[c\,x]^2\,\text{Log}\left[1 + \frac{e\,\mathrm{e}^{\mathrm{i}\,\text{ArcSin}[c\,x]}}{\mathrm{i}\,c\,d + \sqrt{-c^2 d^2 + e^2}}\right] +$$

$$3\,\sqrt{-\left(-c^2 d^2 + e^2\right)^2}\;\text{ArcSin}[c\,x]^2\,\text{Log}\left[1 + \frac{e\,\mathrm{e}^{\mathrm{i}\,\text{ArcSin}[c\,x]}}{\mathrm{i}\,c\,d + \sqrt{-c^2 d^2 + e^2}}\right] +$$

$$3\,\sqrt{-\left(-c^2 d^2 + e^2\right)^2}\;\pi\,\text{ArcSin}[c\,x]\,\text{Log}\left[1 + \frac{\left(c\,d - \sqrt{c^2 d^2 - e^2}\right)\left(c\,x + \mathrm{i}\,\sqrt{1 - c^2 x^2}\right)}{e}\right] +$$

$$12\,\sqrt{-\left(-c^2 d^2 + e^2\right)^2}\;\text{ArcSin}\left[\frac{\sqrt{1 + \frac{c\,d}{e}}}{\sqrt{2}}\right]\text{ArcSin}[c\,x]$$

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

$$3\,\sqrt{-\left(-c^2 d^2 + e^2\right)^2}\;\text{ArcSin}[c\,x]^2\,\text{Log}\left[1 + \frac{\left(c\,d - \sqrt{c^2 d^2 - e^2}\right)\left(c\,x + \mathrm{i}\,\sqrt{1 - c^2 x^2}\right)}{e}\right] +$$

$$3\,\sqrt{-\left(-c^2 d^2 + e^2\right)^2}\;\pi\,\text{ArcSin}[c\,x]\,\text{Log}\left[1 + \frac{\left(c\,d + \sqrt{c^2 d^2 - e^2}\right)\left(c\,x + \mathrm{i}\,\sqrt{1 - c^2 x^2}\right)}{e}\right] -$$

$$12\,\sqrt{-\left(-c^2 d^2 + e^2\right)^2}\;\text{ArcSin}\left[\frac{\sqrt{1 + \frac{c\,d}{e}}}{\sqrt{2}}\right]\text{ArcSin}[c\,x]$$

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

$$3\,\sqrt{-\left(-c^2 d^2 + e^2\right)^2}\;\text{ArcSin}[c\,x]^2\,\text{Log}\left[1 + \frac{\left(c\,d + \sqrt{c^2 d^2 - e^2}\right)\left(c\,x + \mathrm{i}\,\sqrt{1 - c^2 x^2}\right)}{e}\right] -$$

$$6\,\mathrm{i}\,c\,d\,\sqrt{-c^2 d^2 + e^2}\;\text{ArcSin}[c\,x]\,\text{PolyLog}\left[2, \frac{\mathrm{i}\,e\,\mathrm{e}^{\mathrm{i}\,\text{ArcSin}[c\,x]}}{c\,d - \sqrt{c^2 d^2 - e^2}}\right] +$$

$$6\,\mathrm{i}\,c\,d\,\sqrt{-c^2 d^2 + e^2}\;\text{ArcSin}[c\,x]\,\text{PolyLog}\left[2, \frac{\mathrm{i}\,e\,\mathrm{e}^{\mathrm{i}\,\text{ArcSin}[c\,x]}}{c\,d + \sqrt{c^2 d^2 - e^2}}\right] -$$

$$6\,c\,d\,\sqrt{c^2 d^2 - e^2}\;\text{ArcSin}[c\,x]\,\text{PolyLog}\left[2, \frac{e\,\mathrm{e}^{\mathrm{i}\,\text{ArcSin}[c\,x]}}{-\mathrm{i}\,c\,d + \sqrt{-c^2 d^2 + e^2}}\right] -$$

$$6\,\mathrm{i}\,\sqrt{-\left(-c^2 d^2 + e^2\right)^2}\;\text{ArcSin}[c\,x]\,\text{PolyLog}\left[2, \frac{e\,\mathrm{e}^{\mathrm{i}\,\text{ArcSin}[c\,x]}}{-\mathrm{i}\,c\,d + \sqrt{-c^2 d^2 + e^2}}\right] +$$

$$6\,c\,d\,\sqrt{c^2 d^2 - e^2}\;\text{ArcSin}[c\,x]\,\text{PolyLog}\left[2, -\frac{e\,\mathrm{e}^{\mathrm{i}\,\text{ArcSin}[c\,x]}}{\mathrm{i}\,c\,d + \sqrt{-c^2 d^2 + e^2}}\right] -$$

$$6\,\mathrm{i}\,\sqrt{-\left(-c^2 d^2 + e^2\right)^2}\;\text{ArcSin}[c\,x]\,\text{PolyLog}\left[2, -\frac{e\,\mathrm{e}^{\mathrm{i}\,\text{ArcSin}[c\,x]}}{\mathrm{i}\,c\,d + \sqrt{-c^2 d^2 + e^2}}\right] +$$

$$6\,c\,d\,\sqrt{-c^2 d^2 + e^2}\;\text{PolyLog}\left[3, \frac{\mathrm{i}\,e\,\mathrm{e}^{\mathrm{i}\,\text{ArcSin}[c\,x]}}{c\,d - \sqrt{c^2 d^2 - e^2}}\right] - 6\,c\,d\,\sqrt{-c^2 d^2 + e^2}$$

$$\text{PolyLog}\left[3, \frac{i\, e\, e^{i\, \text{ArcSin}[c\, x]}}{c\, d + \sqrt{c^2 d^2 - e^2}}\right] - 6\, i\, c\, d\, \sqrt{c^2 d^2 - e^2}\, \text{PolyLog}\left[3, \frac{e\, e^{i\, \text{ArcSin}[c\, x]}}{-i\, c\, d + \sqrt{-c^2 d^2 + e^2}}\right] +$$

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

$$\left.\text{PolyLog}\left[3, -\frac{e\, e^{i\, \text{ArcSin}[c\, x]}}{i\, c\, d + \sqrt{-c^2 d^2 + e^2}}\right] + 6 \sqrt{-\left(-c^2 d^2 + e^2\right)^2}\, \text{PolyLog}\left[3, -\frac{e\, e^{i\, \text{ArcSin}[c\, x]}}{i\, c\, d + \sqrt{-c^2 d^2 + e^2}}\right]\right)$$

Problem 14: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 309 leaves, 10 steps):

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

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

$$\frac{2\, b^2\, c\, \text{PolyLog}\left[2, \frac{i\, e\, e^{i\, \text{ArcSin}[c\, x]}}{c\, d - \sqrt{c^2 d^2 - e^2}}\right]}{e\, \sqrt{c^2 d^2 - e^2}} + \frac{2\, b^2\, c\, \text{PolyLog}\left[2, \frac{i\, e\, e^{i\, \text{ArcSin}[c\, x]}}{c\, d + \sqrt{c^2 d^2 - e^2}}\right]}{e\, \sqrt{c^2 d^2 - e^2}}$$

Result (type 6, 1152 leaves):

$$-\frac{a^2}{e\, \left(d + e\, x\right)} + 2\, a\, b\, \left(-\frac{1}{e^2 \sqrt{1 - c^2 x^2}}\, c\, \sqrt{1 + \frac{-d - \sqrt{\frac{1}{c^2}}\, e}{d + e\, x}}\, \sqrt{1 + \frac{-d + \sqrt{\frac{1}{c^2}}\, e}{d + e\, x}}\right.$$

$$\left.\text{AppellF1}\left[1, \frac{1}{2}, \frac{1}{2}, 2, -\frac{-d + \sqrt{\frac{1}{c^2}}\, e}{d + e\, x}, -\frac{-d - \sqrt{\frac{1}{c^2}}\, e}{d + e\, x}\right] - \frac{\text{ArcSin}[c\, x]}{e\, \left(d + e\, x\right)}\right) +$$

$$\frac{1}{e} b^2 c \left(-\frac{\text{ArcSin}[c\,x]^2}{c\,d + c\,e\,x} + \frac{2\,\pi\,\text{ArcTan}\left[\frac{e + c\,d\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[c\,x]\right]}{\sqrt{c^2 d^2 - e^2}}\right]}{\sqrt{c^2 d^2 - e^2}} + \right.$$

$$\frac{1}{\sqrt{-c^2 d^2 + e^2}} 2 \left(2\,\text{ArcCos}\left[-\frac{c\,d}{e}\right] \text{ArcTanh}\left[\frac{(c\,d - e)\,\text{Cot}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2 d^2 + e^2}}\right] + \right.$$

$$(\pi - 2\,\text{ArcSin}[c\,x])\,\text{ArcTanh}\left[\frac{(c\,d + e)\,\text{Tan}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2 d^2 + e^2}}\right] +$$

$$\left(\text{ArcCos}\left[-\frac{c\,d}{e}\right] + 2\,\mathrm{i}\left(\text{ArcTanh}\left[\frac{(c\,d - e)\,\text{Cot}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2 d^2 + e^2}}\right] + \text{ArcTanh}\left[\right.\right.\right.$$

$$\left.\left.\left.\frac{(c\,d + e)\,\text{Tan}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2 d^2 + e^2}}\right]\right)\right) \text{Log}\left[\frac{\sqrt{-c^2 d^2 + e^2}\,e^{\frac{1}{4}\mathrm{i}(\pi - 2\,\text{ArcSin}[c\,x])}}{\sqrt{2}\,\sqrt{e}\,\sqrt{c\,d + c\,e\,x}}\right] +$$

$$\left(\text{ArcCos}\left[-\frac{c\,d}{e}\right] - 2\,\mathrm{i}\,\text{ArcTanh}\left[\frac{(c\,d - e)\,\text{Cot}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2 d^2 + e^2}}\right] - 2\,\mathrm{i}\,\text{ArcTanh}\left[\right.\right.$$

$$\left.\left.\frac{(c\,d + e)\,\text{Tan}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2 d^2 + e^2}}\right]\right) \text{Log}\left[\frac{\left(\frac{1}{2} - \frac{\mathrm{i}}{2}\right)\sqrt{-c^2 d^2 + e^2}\,e^{\frac{1}{2}\mathrm{i}\,\text{ArcSin}[c\,x]}}{\sqrt{e}\,\sqrt{c\,d + c\,e\,x}}\right] -$$

$$\left(\text{ArcCos}\left[-\frac{c\,d}{e}\right] + 2\,\mathrm{i}\,\text{ArcTanh}\left[\frac{(c\,d - e)\,\text{Cot}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2 d^2 + e^2}}\right]\right)$$

$$\text{Log}\left[\left((c\,d + e)\left(-c\,d + e - \mathrm{i}\sqrt{-c^2 d^2 + e^2}\right)\left(1 + \mathrm{i}\,\text{Cot}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]\right)\right) \Big/ \right.$$

$$\left.\left(e\left(c\,d + e + \sqrt{-c^2 d^2 + e^2}\,\text{Cot}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]\right)\right)\right] -$$

$$\left(\text{ArcCos}\left[-\frac{c\,d}{e}\right] - 2\,\mathrm{i}\,\text{ArcTanh}\left[\frac{(c\,d - e)\,\text{Cot}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2 d^2 + e^2}}\right]\right)$$

$$\text{Log}\left[\left((c\,d + e)\left(\mathrm{i}\,c\,d - \mathrm{i}\,e + \sqrt{-c^2 d^2 + e^2}\right)\left(\mathrm{i} + \text{Cot}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]\right)\right) \Big/ \right.$$

$$\left.\left(e\left(c\,d + e + \sqrt{-c^2 d^2 + e^2}\,\text{Cot}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]\right)\right)\right] + \mathrm{i}\left(\text{PolyLog}\left[2,\right.\right.$$

$$\left(\left(c\,d - \mathrm{i}\sqrt{-c^2 d^2 + e^2}\right)\left(c\,d + e - \sqrt{-c^2 d^2 + e^2}\,\text{Cot}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]\right)\right) \Big/$$

$$\left.\left(e\left(c\,d + e + \sqrt{-c^2 d^2 + e^2}\,\text{Cot}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]\right)\right)\right] - \text{PolyLog}\left[2,\right.$$

$$\left(\left(c\,d + \mathrm{i}\sqrt{-c^2 d^2 + e^2}\right)\left(c\,d + e - \sqrt{-c^2 d^2 + e^2}\,\text{Cot}\left[\frac{1}{4}(\pi + 2\,\text{ArcSin}[c\,x])\right]\right)\right) \Big/$$

$$\left.\left.\left(e\left(c\,d+e+\sqrt{-c^2 d^2+e^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]\right)\right)\right)\right)$$

Problem 15: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 401 leaves, 13 steps):

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

Result (type 6, 1363 leaves):

$$-\frac{a^2}{2\,e\,(d+e\,x)^2}+2\,a\,b\left(-\left(\left(c\,\sqrt{1+\frac{-d-\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\,\sqrt{1+\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\,\text{AppellF1}\left[2,\frac{1}{2},\frac{1}{2},3,-\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x},-\frac{-d-\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}\right]\right)\Big/\left(4\,e^2\,(d+e\,x)\,\sqrt{1-c^2 x^2}\right)\right)-\frac{\text{ArcSin}[c\,x]}{2\,e\,(d+e\,x)^2}\right)+$$

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

$$\frac{1}{e\,(-c^2 d^2+e^2)}\,c d\left(\frac{\pi\,\text{ArcTan}\left[\frac{e+c d\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[c x]\right]}{\sqrt{c^2 d^2-e^2}}\right]}{\sqrt{c^2 d^2-e^2}}+\right.$$

$$\frac{1}{\sqrt{-c^2 d^2+e^2}}\left(2\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\text{ArcTanh}\left[\frac{(c d+e)\,\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]-\right.$$

$$2\,\text{ArcCos}\left[-\frac{c d}{e}\right]\text{ArcTanh}\left[\frac{(-c d+e)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c d}{e}\right]-2\,\mathrm{i}\left(\text{ArcTanh}\left[\frac{(c d+e)\,\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]-\right.\right.$$

$$\left.\left.\text{ArcTanh}\left[\frac{(-c d+e)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]\right)\right)$$

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

$$2\,\mathrm{i}\left(\text{ArcTanh}\left[\frac{(c d+e)\,\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]-\text{ArcTanh}\left[\right.\right.$$

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

$$\left(\text{ArcCos}\left[-\frac{c d}{e}\right]+2\,\mathrm{i}\,\text{ArcTanh}\left[\frac{(-c d+e)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]\right)$$

$$\text{Log}\left[1-\left(\left(c d-\mathrm{i}\sqrt{-c^2 d^2+e^2}\right)\left(c d+e-\sqrt{-c^2 d^2+e^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]\right)\right)\Big/\right.$$

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

$$\left(-\text{ArcCos}\left[-\frac{c d}{e}\right]+2\,\mathrm{i}\,\text{ArcTanh}\left[\frac{(-c d+e)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]\right)$$

$$\text{Log}\left[1-\left(\left(c d+\mathrm{i}\sqrt{-c^2 d^2+e^2}\right)\left(c d+e-\sqrt{-c^2 d^2+e^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]\right)\right)\Big/\right.$$

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

$$\left(\left(c\,d-i\sqrt{-c^2 d^2+e^2}\right)\left(c\,d+e-\sqrt{-c^2 d^2+e^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big/$$
$$\left(e\left(c\,d+e+\sqrt{-c^2 d^2+e^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big]-\text{PolyLog}\Big[2,$$
$$\left(\left(c\,d+i\sqrt{-c^2 d^2+e^2}\right)\left(c\,d+e-\sqrt{-c^2 d^2+e^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big/$$
$$\left(e\left(c\,d+e+\sqrt{-c^2 d^2+e^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big]\Bigg)\Bigg)\Bigg)$$

Problem 28: Unable to integrate problem.

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

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

$$-\left(\left(b\,c\,(d+e\,x)^{2+m}\sqrt{1-\frac{c\,(d+e\,x)}{c\,d-e}}\sqrt{1-\frac{c\,(d+e\,x)}{c\,d+e}}\,\text{AppellF1}\left[2+m,\frac{1}{2},\frac{1}{2},3+m,\frac{c\,(d+e\,x)}{c\,d-e},\frac{c\,(d+e\,x)}{c\,d+e}\right]\right)\Big/\left(e^2\,(1+m)\,(2+m)\sqrt{1-c^2 x^2}\right)\right)+\frac{(d+e\,x)^{1+m}\,(a+b\,\text{ArcSin}[c\,x])}{e\,(1+m)}$$

Result (type 8, 18 leaves):

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

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

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

Optimal (type 4, 1073 leaves, 29 steps):

$$-\frac{a\,d\,(c\,f-g)\,(c\,f+g)\,\sqrt{d-c^2\,d\,x^2}}{g^3}-\frac{b\,c\,d\,x\,\sqrt{d-c^2\,d\,x^2}}{3\,g\,\sqrt{1-c^2\,x^2}}+\frac{b\,c\,d\,(c\,f-g)\,(c\,f+g)\,x\,\sqrt{d-c^2\,d\,x^2}}{g^3\,\sqrt{1-c^2\,x^2}}-$$
$$\frac{b\,c^3\,d\,f\,x^2\,\sqrt{d-c^2\,d\,x^2}}{4\,g^2\,\sqrt{1-c^2\,x^2}}+\frac{b\,c^3\,d\,x^3\,\sqrt{d-c^2\,d\,x^2}}{9\,g\,\sqrt{1-c^2\,x^2}}-\frac{b\,d\,(c\,f-g)\,(c\,f+g)\,\sqrt{d-c^2\,d\,x^2}\,\text{ArcSin}[c\,x]}{g^3}+$$
$$\frac{c^2\,d\,f\,x\,\sqrt{d-c^2\,d\,x^2}\,(a+b\,\text{ArcSin}[c\,x])}{2\,g^2}+\frac{d\,(1-c^2\,x^2)\,\sqrt{d-c^2\,d\,x^2}\,(a+b\,\text{ArcSin}[c\,x])}{3\,g}+$$
$$\frac{c\,d\,f\,\sqrt{d-c^2\,d\,x^2}\,(a+b\,\text{ArcSin}[c\,x])^2}{4\,b\,g^2\,\sqrt{1-c^2\,x^2}}-\frac{c\,d\,(c\,f-g)\,(c\,f+g)\,x\,\sqrt{d-c^2\,d\,x^2}\,(a+b\,\text{ArcSin}[c\,x])^2}{2\,b\,g^3\,\sqrt{1-c^2\,x^2}}-$$
$$\frac{d\,(c^2\,f^2-g^2)^2\,\sqrt{d-c^2\,d\,x^2}\,(a+b\,\text{ArcSin}[c\,x])^2}{2\,b\,c\,g^4\,(f+g\,x)\,\sqrt{1-c^2\,x^2}}-$$
$$\frac{d\,(c\,f-g)\,(c\,f+g)\,\sqrt{1-c^2\,x^2}\,\sqrt{d-c^2\,d\,x^2}\,(a+b\,\text{ArcSin}[c\,x])^2}{2\,b\,c\,g^2\,(f+g\,x)}+$$
$$\frac{a\,d\,(c^2\,f^2-g^2)^{3/2}\,\sqrt{d-c^2\,d\,x^2}\,\text{ArcTan}\left[\frac{g+c^2\,f\,x}{\sqrt{c^2\,f^2-g^2}\,\sqrt{1-c^2\,x^2}}\right]}{g^4\,\sqrt{1-c^2\,x^2}}-$$
$$\frac{i\,b\,d\,(c^2\,f^2-g^2)^{3/2}\,\sqrt{d-c^2\,d\,x^2}\,\text{ArcSin}[c\,x]\,\text{Log}\left[1-\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2\,f^2-g^2}}\right]}{g^4\,\sqrt{1-c^2\,x^2}}+$$
$$\frac{i\,b\,d\,(c^2\,f^2-g^2)^{3/2}\,\sqrt{d-c^2\,d\,x^2}\,\text{ArcSin}[c\,x]\,\text{Log}\left[1-\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2\,f^2-g^2}}\right]}{g^4\,\sqrt{1-c^2\,x^2}}-$$
$$\frac{b\,d\,(c^2\,f^2-g^2)^{3/2}\,\sqrt{d-c^2\,d\,x^2}\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2\,f^2-g^2}}\right]}{g^4\,\sqrt{1-c^2\,x^2}}+$$
$$\frac{b\,d\,(c^2\,f^2-g^2)^{3/2}\,\sqrt{d-c^2\,d\,x^2}\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2\,f^2-g^2}}\right]}{g^4\,\sqrt{1-c^2\,x^2}}$$

Result (type 4, 3456 leaves) :

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

$$\frac{1}{2 g^2} b d \sqrt{d \left(1 - c^2 x^2\right)} \left(- \frac{2 c g x}{\sqrt{1 - c^2 x^2}} + 2 g \text{ArcSin}[c x] + \frac{c f \text{ArcSin}[c x]^2}{\sqrt{1 - c^2 x^2}} + \right.$$

$$\frac{1}{\sqrt{1 - c^2 x^2}} 2 (-c f + g) (c f + g) \left(\frac{\pi \text{ArcTan}\left[\frac{g + c f \text{Tan}\left[\frac{1}{2} \text{ArcSin}[c x]\right]}{\sqrt{c^2 f^2 - g^2}}\right]}{\sqrt{c^2 f^2 - g^2}} + \right.$$

$$\frac{1}{\sqrt{-c^2 f^2 + g^2}} \left(2 \text{ArcCos}\left[-\frac{c f}{g}\right] \text{ArcTanh}\left[\frac{(c f - g) \text{Cot}\left[\frac{1}{4} (\pi + 2 \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2 + g^2}}\right] + \right.$$

$$(\pi - 2 \text{ArcSin}[c x]) \text{ArcTanh}\left[\frac{(c f + g) \text{Tan}\left[\frac{1}{4} (\pi + 2 \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2 + g^2}}\right] +$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right] + 2 i \left(\text{ArcTanh}\left[\frac{(c f - g) \text{Cot}\left[\frac{1}{4} (\pi + 2 \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2 + g^2}}\right] + \right.\right.$$

$$\left.\left.\text{ArcTanh}\left[\frac{(c f + g) \text{Tan}\left[\frac{1}{4} (\pi + 2 \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2 + g^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{e^{\frac{1}{4} i (\pi - 2 \text{ArcSin}[c x])} \sqrt{-c^2 f^2 + g^2}}{\sqrt{2} \sqrt{g} \sqrt{c f + c g x}}\right] + \left(\text{ArcCos}\left[-\frac{c f}{g}\right] - 2 i\right.$$

$$\text{ArcTanh}\left[\frac{(c f - g) \text{Cot}\left[\frac{1}{4} (\pi + 2 \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2 + g^2}}\right] - 2$$

$$\left. i \text{ArcTanh}\left[\frac{(c f + g) \text{Tan}\left[\frac{1}{4} (\pi + 2 \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2 + g^2}}\right]\right)$$

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

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right] + 2 i \text{ArcTanh}\left[\frac{(c f - g) \text{Cot}\left[\frac{1}{4} (\pi + 2 \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2 + g^2}}\right]\right)$$

$$\text{Log}\left[\left((c f + g) \left(-c f + g - i \sqrt{-c^2 f^2 + g^2}\right) \left(1 + i \text{Cot}\left[\frac{1}{4} (\pi + 2 \text{ArcSin}[c x])\right]\right)\right) \Big/\right.$$

$$\left.\left(g \left(c f + g + \sqrt{-c^2 f^2 + g^2} \text{Cot}\left[\frac{1}{4} (\pi + 2 \text{ArcSin}[c x])\right]\right)\right)\right] -$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right] - 2 i \text{ArcTanh}\left[\frac{(c f - g) \text{Cot}\left[\frac{1}{4} (\pi + 2 \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2 + g^2}}\right]\right)$$

$$\text{Log}\Big[\Big(\big(c f+g\big)\left(i c f-i g+\sqrt{-c^2 f^2+g^2}\right)\left(i+\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\Big)\Big/$$

$$\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\Big]+i\,\Big(\text{PolyLog}\Big[2,$$

$$\Big(\left(c f-i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\Big)\Big/$$

$$\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\Big]-\text{PolyLog}\Big[2,$$

$$\Big(\left(c f+i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\Big)\Big/$$

$$\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\Big]\Big)\Big)\Big)+$$

$$b\,d\left(-\frac{1}{8\sqrt{1-c^2 x^2}}\sqrt{d\left(1-c^2 x^2\right)}\left(\frac{\pi\,\text{ArcTan}\left[\frac{g+c f\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[c x]\right]}{\sqrt{c^2 f^2-g^2}}\right]}{\sqrt{c^2 f^2-g^2}}+\frac{1}{\sqrt{-c^2 f^2+g^2}}\right.\right.$$

$$\left(2\,\text{ArcCos}\left[-\frac{c f}{g}\right]\text{ArcTanh}\left[\frac{\left(c f-g\right)\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]+\right.$$

$$\left(\pi-2\,\text{ArcSin}[c x]\right)\text{ArcTanh}\left[\frac{\left(c f+g\right)\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]+2\,i\left(\text{ArcTanh}\left[\frac{\left(c f-g\right)\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]+\right.\right.$$

$$\left.\left.\text{ArcTanh}\left[\frac{\left(c f+g\right)\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{e^{\frac{1}{4}i\left(\pi-2\,\text{ArcSin}[c x]\right)}\sqrt{-c^2 f^2+g^2}}{\sqrt{2}\sqrt{g}\sqrt{c f+c g x}}\right]+\left(\text{ArcCos}\left[-\frac{c f}{g}\right]-2\,i\right.$$

$$\text{ArcTanh}\left[\frac{\left(c f-g\right)\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]-2$$

$$\left.i\,\text{ArcTanh}\left[\frac{\left(c f+g\right)\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)$$

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

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]+2 i \,\text{ArcTanh}\left[\frac{(c f-g)\, \text{Cot}\left[\frac{1}{4}\left(\pi+2 \,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)$$

$$\text{Log}\left[\left((c f+g)\left(-c f+g-i\sqrt{-c^2 f^2+g^2}\right)\left(1+i\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\Big/\right.$$
$$\left.\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\right]-$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]-2 i \,\text{ArcTanh}\left[\frac{(c f-g)\, \text{Cot}\left[\frac{1}{4}\left(\pi+2 \,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)$$

$$\text{Log}\left[\left((c f+g)\left(i c f-i g+\sqrt{-c^2 f^2+g^2}\right)\left(i+\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\Big/\right.$$
$$\left.\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\right]+i\left(\text{PolyLog}\left[2,\right.\right.$$
$$\left(\left(c f-i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\Big/$$
$$\left.\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\right]-\text{PolyLog}\left[2,\right.$$
$$\left(\left(c f+i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\Big/$$
$$\left.\left.\left.\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\right]\right)\right)+$$

$$\frac{1}{72 g^4\sqrt{1-c^2 x^2}}\sqrt{d\left(1-c^2 x^2\right)}\left(-18 c g\left(-4 c^2 f^2+g^2\right) x+18 g\left(-4 c^2 f^2+g^2\right)\right.$$
$$\sqrt{1-c^2 x^2}\;\text{ArcSin}[c x]-$$
$$18 c f\left(2 c^2 f^2-g^2\right)\text{ArcSin}[c x]^2+9 c f g^2\,\text{Cos}[2\,\text{ArcSin}[c x]]+$$
$$6 g^3\,\text{ArcSin}[c x]\,\text{Cos}[3\,\text{ArcSin}[c x]]+$$
$$9\left(8 c^4 f^4-8 c^2 f^2 g^2+g^4\right)\left(\frac{\pi\,\text{ArcTan}\left[\frac{g+c f\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[c x]\right]}{\sqrt{c^2 f^2-g^2}}\right]}{\sqrt{c^2 f^2-g^2}}+\right.$$
$$\frac{1}{\sqrt{-c^2 f^2+g^2}}\left(2\,\text{ArcCos}\left[-\frac{c f}{g}\right]\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]+\right.$$
$$\left(\pi-2\,\text{ArcSin}[c x]\right)\text{ArcTanh}\left[\frac{(c f+g)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]+2\,i\left(\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]+\right.\right.$$

$$\left.\left.\text{ArcTanh}\left[\frac{(c\,f+g)\,\text{Tan}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{e^{\frac{1}{4}\,i\,(\pi-2\,\text{ArcSin}[c\,x])}\,\sqrt{-c^2\,f^2+g^2}}{\sqrt{2}\,\sqrt{g}\,\sqrt{c\,f+c\,g\,x}}\right]+\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]-\right.$$

$$2\,i\,\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]-$$

$$\left.2\,i\,\text{ArcTanh}\left[\frac{(c\,f+g)\,\text{Tan}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\right)\text{Log}\Big[$$

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

$$\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]+2\,i\,\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\right)\text{Log}\Big[$$

$$\left((c\,f+g)\left(-c\,f+g-i\,\sqrt{-c^2\,f^2+g^2}\right)\left(1+i\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big/$$

$$\left(g\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big]-$$

$$\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]-2\,i\,\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\right)\text{Log}\Big[$$

$$\left((c\,f+g)\left(i\,c\,f-i\,g+\sqrt{-c^2\,f^2+g^2}\right)\left(i+\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big/$$

$$\left(g\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big]+i\,\Big(\text{PolyLog}\Big[2,$$

$$\left(\left(c\,f-i\,\sqrt{-c^2\,f^2+g^2}\right)\left(c\,f+g-\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big/$$

$$\left(g\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big]-\text{PolyLog}\Big[2,$$

$$\left(\left(c\,f+i\,\sqrt{-c^2\,f^2+g^2}\right)\left(c\,f+g-\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big/$$

$$\left.\left(g\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big]\Big)\right)+$$

$$18\, c\, f\, g^2\, \text{ArcSin}[c\, x]\, \text{Sin}[2\, \text{ArcSin}[c\, x]] - 2\, g^3\, \text{Sin}[3\, \text{ArcSin}[c\, x]]\Bigg)\Bigg)$$

Problem 43: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 1648 leaves, 37 steps):

$$\frac{a\, d^2\, \left(c^2\, f^2 - g^2\right)^2\, \sqrt{d - c^2\, d\, x^2}}{g^5} + \frac{2\, b\, c\, d^2\, x\, \sqrt{d - c^2\, d\, x^2}}{15\, g\, \sqrt{1 - c^2\, x^2}} + \frac{b\, c\, d^2\, \left(c^2\, f^2 - 2\, g^2\right)\, x\, \sqrt{d - c^2\, d\, x^2}}{3\, g^3\, \sqrt{1 - c^2\, x^2}} -$$

$$\frac{b\, c\, d^2\, \left(c^2\, f^2 - g^2\right)^2\, x\, \sqrt{d - c^2\, d\, x^2}}{g^5\, \sqrt{1 - c^2\, x^2}} - \frac{b\, c^3\, d^2\, f\, x^2\, \sqrt{d - c^2\, d\, x^2}}{16\, g^2\, \sqrt{1 - c^2\, x^2}} + \frac{b\, c^3\, d^2\, f\, \left(c^2\, f^2 - 2\, g^2\right)\, x^2\, \sqrt{d - c^2\, d\, x^2}}{4\, g^4\, \sqrt{1 - c^2\, x^2}} +$$

$$\frac{b\, c^3\, d^2\, x^3\, \sqrt{d - c^2\, d\, x^2}}{45\, g\, \sqrt{1 - c^2\, x^2}} - \frac{b\, c^3\, d^2\, \left(c^2\, f^2 - 2\, g^2\right)\, x^3\, \sqrt{d - c^2\, d\, x^2}}{9\, g^3\, \sqrt{1 - c^2\, x^2}} + \frac{b\, c^5\, d^2\, f\, x^4\, \sqrt{d - c^2\, d\, x^2}}{16\, g^2\, \sqrt{1 - c^2\, x^2}} -$$

$$\frac{b\, c^5\, d^2\, x^5\, \sqrt{d - c^2\, d\, x^2}}{25\, g\, \sqrt{1 - c^2\, x^2}} + \frac{b\, d^2\, \left(c^2\, f^2 - g^2\right)^2\, \sqrt{d - c^2\, d\, x^2}\, \text{ArcSin}[c\, x]}{g^5} +$$

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

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

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

$$\frac{d^2\, \left(1 - c^2\, x^2\right)^2\, \sqrt{d - c^2\, d\, x^2}\, \left(a + b\, \text{ArcSin}[c\, x]\right)}{5\, g} - \frac{c\, d^2\, f\, \sqrt{d - c^2\, d\, x^2}\, \left(a + b\, \text{ArcSin}[c\, x]\right)^2}{16\, b\, g^2\, \sqrt{1 - c^2\, x^2}} -$$

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

$$\frac{c\, d^2\, \left(c^2\, f^2 - g^2\right)^2\, x\, \sqrt{d - c^2\, d\, x^2}\, \left(a + b\, \text{ArcSin}[c\, x]\right)^2}{2\, b\, g^5\, \sqrt{1 - c^2\, x^2}} +$$

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

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

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

$$\frac{i\, b\, d^2 \left(c^2 f^2-g^2\right)^{5/2} \sqrt{d-c^2 d x^2}\, \text{ArcSin}[c\, x]\, \text{Log}\left[1-\frac{i\, e^{i\, \text{ArcSin}[c x]}\, g}{c f-\sqrt{c^2 f^2-g^2}}\right]}{g^6 \sqrt{1-c^2 x^2}}-$$

$$\frac{i\, b\, d^2 \left(c^2 f^2-g^2\right)^{5/2} \sqrt{d-c^2 d x^2}\, \text{ArcSin}[c\, x]\, \text{Log}\left[1-\frac{i\, e^{i\, \text{ArcSin}[c x]}\, g}{c f+\sqrt{c^2 f^2-g^2}}\right]}{g^6 \sqrt{1-c^2 x^2}}+$$

$$\frac{b\, d^2 \left(c^2 f^2-g^2\right)^{5/2} \sqrt{d-c^2 d x^2}\, \text{PolyLog}\left[2, \frac{i\, e^{i\, \text{ArcSin}[c x]}\, g}{c f-\sqrt{c^2 f^2-g^2}}\right]}{g^6 \sqrt{1-c^2 x^2}}-$$

$$\frac{b\, d^2 \left(c^2 f^2-g^2\right)^{5/2} \sqrt{d-c^2 d x^2}\, \text{PolyLog}\left[2, \frac{i\, e^{i\, \text{ArcSin}[c x]}\, g}{c f+\sqrt{c^2 f^2-g^2}}\right]}{g^6 \sqrt{1-c^2 x^2}}$$

Result (type 4, 8113 leaves):

$$\sqrt{-d \left(-1+c^2 x^2\right)} \left(\frac{a\, d^2 \left(15 c^4 f^4-35 c^2 f^2 g^2+23 g^4\right)}{15 g^5}-\right.$$
$$\left.\frac{a\, c^2 d^2 f \left(4 c^2 f^2-9 g^2\right) x}{8 g^4}-\frac{a\, c^2 d^2 \left(-5 c^2 f^2+11 g^2\right) x^2}{15 g^3}-\frac{a\, c^4 d^2 f x^3}{4 g^2}+\frac{a\, c^4 d^2 x^4}{5 g}\right)-$$

$$\frac{a\, c\, d^{5/2} f \left(8 c^4 f^4-20 c^2 f^2 g^2+15 g^4\right) \text{ArcTan}\left[\frac{c x \sqrt{-d \left(-1+c^2 x^2\right)}}{\sqrt{d} \left(-1+c^2 x^2\right)}\right]}{8 g^6}+$$

$$\frac{a\, d^{5/2} \left(-c^2 f^2+g^2\right)^{5/2} \text{Log}[f+g x]}{g^6}-\frac{1}{g^6}$$
$$a\, d^{5/2} \left(-c^2 f^2+g^2\right)^{5/2} \text{Log}\left[d g+c^2 d f x+\sqrt{d} \sqrt{-c^2 f^2+g^2} \sqrt{-d \left(-1+c^2 x^2\right)}\right]+$$

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

$$\frac{1}{\sqrt{1-c^2 x^2}} 2 \left(-c f+g\right) \left(c f+g\right) \left(\frac{\pi\, \text{ArcTan}\left[\frac{g+c f \text{Tan}\left[\frac{1}{2} \text{ArcSin}[c x]\right]}{\sqrt{c^2 f^2-g^2}}\right]}{\sqrt{c^2 f^2-g^2}}+\right.$$

$$\frac{1}{\sqrt{-c^2 f^2+g^2}} \left(2\, \text{ArcCos}\left[-\frac{c f}{g}\right] \text{ArcTanh}\left[\frac{\left(c f-g\right) \text{Cot}\left[\frac{1}{4} \left(\pi+2\, \text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]+\right.$$

$$\left(\pi-2\,\text{ArcSin}[c\,x]\right)\,\text{ArcTanh}\left[\frac{(c\,f+g)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2\,f^2+g^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]+2\,i\,\left(\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2\,f^2+g^2}}\right]+\right.\right.$$

$$\left.\left.\text{ArcTanh}\left[\frac{(c\,f+g)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{e^{\frac{1}{4}\,i\,(\pi-2\,\text{ArcSin}[c\,x])}\,\sqrt{-c^2\,f^2+g^2}}{\sqrt{2}\,\sqrt{g}\,\sqrt{c\,f+c\,g\,x}}\right]+\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]-2\,i\right.$$

$$\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2\,f^2+g^2}}\right]-2$$

$$\left.i\,\text{ArcTanh}\left[\frac{(c\,f+g)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\right)$$

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

$$\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]+2\,i\,\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\right)$$

$$\text{Log}\left[\left((c\,f+g)\,\left(-c\,f+g-i\,\sqrt{-c^2\,f^2+g^2}\right)\,\left(1+i\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big/\right.$$

$$\left.\left(g\,\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]\right)\right)\right]-$$

$$\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]-2\,i\,\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\right)$$

$$\text{Log}\left[\left((c\,f+g)\,\left(i\,c\,f-i\,g+\sqrt{-c^2\,f^2+g^2}\right)\,\left(i+\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big/\right.$$

$$\left.\left(g\,\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]\right)\right)\right]+i\,\left(\text{PolyLog}\left[2,\right.\right.$$

$$\left(\left(c\,f-i\,\sqrt{-c^2\,f^2+g^2}\right)\,\left(c\,f+g-\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big/$$

$$\left.\left(g\,\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]\right)\right)\right]-\text{PolyLog}\left[2,\right.$$

$$\left(\left(c\,f+i\,\sqrt{-c^2\,f^2+g^2}\right)\,\left(c\,f+g-\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big/$$

$$\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\ \text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)+$$

$$2\,b\,d^2\left(-\frac{1}{8\sqrt{1-c^2x^2}}\sqrt{d\left(1-c^2x^2\right)}\left(\frac{\pi\,\text{ArcTan}\left[\frac{g+c f\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[c x]\right]}{\sqrt{c^2f^2-g^2}}\right]}{\sqrt{c^2f^2-g^2}}+\right.\right.$$

$$\frac{1}{\sqrt{-c^2f^2+g^2}}\left(2\,\text{ArcCos}\left[-\frac{c f}{g}\right]\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2f^2+g^2}}\right]+\right.$$

$$\left(\pi-2\,\text{ArcSin}[c x]\right)\text{ArcTanh}\left[\frac{(c f+g)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2f^2+g^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]+2\,i\left(\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2f^2+g^2}}\right]+\right.\right.$$

$$\left.\left.\text{ArcTanh}\left[\frac{(c f+g)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2f^2+g^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{e^{\frac{1}{4}i\left(\pi-2\,\text{ArcSin}[c x]\right)}\sqrt{-c^2f^2+g^2}}{\sqrt{2}\sqrt{g}\sqrt{c f+c g x}}\right]+\left(\text{ArcCos}\left[-\frac{c f}{g}\right]-2\,i\right.$$

$$\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2f^2+g^2}}\right]-2$$

$$\left.i\,\text{ArcTanh}\left[\frac{(c f+g)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2f^2+g^2}}\right]\right)$$

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

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]+2\,i\,\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2f^2+g^2}}\right]\right)$$

$$\text{Log}\left[\left((c f+g)\left(-c f+g-i\sqrt{-c^2f^2+g^2}\right)\left(1+i\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\Big/\right.$$

$$\left.\left(g\left(c f+g+\sqrt{-c^2f^2+g^2}\ \text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\right]-$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]-2\,i\,\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2f^2+g^2}}\right]\right)$$

$$\text{Log}\Big[\Big(\big(c f+g\big)\big(i c f-i g+\sqrt{-c^2 f^2+g^2}\big)\big(i+\text{Cot}\big[\tfrac{1}{4}\big(\pi+2\,\text{ArcSin}[c x]\big)\big]\big)\Big)\Big/$$
$$\Big(g\Big(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\big[\tfrac{1}{4}\big(\pi+2\,\text{ArcSin}[c x]\big)\big]\Big)\Big)\Big]+i\Big(\text{PolyLog}\Big[2,$$
$$\Big(\Big(c f-i\sqrt{-c^2 f^2+g^2}\Big)\Big(c f+g-\sqrt{-c^2 f^2+g^2}\,\text{Cot}\big[\tfrac{1}{4}\big(\pi+2\,\text{ArcSin}[c x]\big)\big]\Big)\Big)\Big/$$
$$\Big(g\Big(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\big[\tfrac{1}{4}\big(\pi+2\,\text{ArcSin}[c x]\big)\big]\Big)\Big)\Big]-\text{PolyLog}\Big[2,$$
$$\Big(\Big(c f+i\sqrt{-c^2 f^2+g^2}\Big)\Big(c f+g-\sqrt{-c^2 f^2+g^2}\,\text{Cot}\big[\tfrac{1}{4}\big(\pi+2\,\text{ArcSin}[c x]\big)\big]\Big)\Big)\Big/$$
$$\Big(g\Big(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\big[\tfrac{1}{4}\big(\pi+2\,\text{ArcSin}[c x]\big)\big]\Big)\Big)\Big]\Big)\Big)\Big)+$$

$$\frac{1}{72 g^4\sqrt{1-c^2 x^2}}\sqrt{d\big(1-c^2 x^2\big)}\Bigg(-18 c g\big(-4 c^2 f^2+g^2\big) x+18 g\big(-4 c^2 f^2+g^2\big)$$
$$\sqrt{1-c^2 x^2}\,\text{ArcSin}[c x]-$$
$$18 c f\big(2 c^2 f^2-g^2\big)\text{ArcSin}[c x]^2+9 c f g^2\,\text{Cos}[2\,\text{ArcSin}[c x]]+$$
$$6 g^3\,\text{ArcSin}[c x]\,\text{Cos}[3\,\text{ArcSin}[c x]]+$$
$$9\big(8 c^4 f^4-8 c^2 f^2 g^2+g^4\big)\Bigg(\frac{\pi\,\text{ArcTan}\Big[\frac{g+c f\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[c x]\right]}{\sqrt{c^2 f^2-g^2}}\Big]}{\sqrt{c^2 f^2-g^2}}+$$
$$\frac{1}{\sqrt{-c^2 f^2+g^2}}\Bigg(2\,\text{ArcCos}\Big[-\frac{c f}{g}\Big]\,\text{ArcTanh}\Big[\frac{\big(c f-g\big)\text{Cot}\big[\frac{1}{4}\big(\pi+2\,\text{ArcSin}[c x]\big)\big]}{\sqrt{-c^2 f^2+g^2}}\Big]+$$
$$\big(\pi-2\,\text{ArcSin}[c x]\big)\,\text{ArcTanh}\Big[\frac{\big(c f+g\big)\text{Tan}\big[\frac{1}{4}\big(\pi+2\,\text{ArcSin}[c x]\big)\big]}{\sqrt{-c^2 f^2+g^2}}\Big]+$$
$$\Bigg(\text{ArcCos}\Big[-\frac{c f}{g}\Big]+2 i\Bigg(\text{ArcTanh}\Big[\frac{\big(c f-g\big)\text{Cot}\big[\frac{1}{4}\big(\pi+2\,\text{ArcSin}[c x]\big)\big]}{\sqrt{-c^2 f^2+g^2}}\Big]+$$
$$\text{ArcTanh}\Big[\frac{\big(c f+g\big)\text{Tan}\big[\frac{1}{4}\big(\pi+2\,\text{ArcSin}[c x]\big)\big]}{\sqrt{-c^2 f^2+g^2}}\Big]\Bigg)\Bigg)$$
$$\text{Log}\Big[\frac{e^{\frac{1}{4} i\,(\pi-2\,\text{ArcSin}[c x])}\sqrt{-c^2 f^2+g^2}}{\sqrt{2}\,\sqrt{g}\,\sqrt{c f+c g x}}\Big]+\Bigg(\text{ArcCos}\Big[-\frac{c f}{g}\Big]-$$

$$2\,i\,\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]-$$

$$2\,i\,\text{ArcTanh}\left[\frac{(c f+g)\,\text{Tan}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]\Bigg)\,\text{Log}\Big[$$

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

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]+2\,i\,\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)\text{Log}\Big[$$

$$\left((c f+g)\left(-c f+g-i\sqrt{-c^2 f^2+g^2}\right)\left(1+i\,\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big/$$

$$\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big]-$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]-2\,i\,\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)\text{Log}\Big[$$

$$\left((c f+g)\left(i c f-i g+\sqrt{-c^2 f^2+g^2}\right)\left(i+\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big/$$

$$\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big]+i\,\Big(\text{PolyLog}\Big[2,$$

$$\left(\left(c f-i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big/$$

$$\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big]-\text{PolyLog}\Big[2,$$

$$\left(\left(c f+i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big/$$

$$\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big]\Big)\Bigg)\Bigg)+$$

$$18\,c f g^2\,\text{ArcSin}[c x]\,\text{Sin}[2\,\text{ArcSin}[c x]]-2\,g^3\,\text{Sin}[3\,\text{ArcSin}[c x]]\Bigg)\Bigg)-$$

$$b\,d^2\left(\frac{1}{32\,g^2\sqrt{1-c^2 x^2}}\sqrt{d\left(1-c^2 x^2\right)}\left(-2\,c g x+2\,g\sqrt{1-c^2 x^2}\,\text{ArcSin}[c x]+\right.\right.$$

$$c f\,\text{ArcSin}[c x]^2+$$

$$\left(-2 c^2 f^2+g^2\right) \left(\frac{\pi \operatorname{ArcTan}\left[\frac{g+c f \operatorname{Tan}\left[\frac{1}{2} \operatorname{ArcSin}[c x]\right]}{\sqrt{c^2 f^2-g^2}}\right]}{\sqrt{c^2 f^2-g^2}}+\right.$$

$$\frac{1}{\sqrt{-c^2 f^2+g^2}} \left(2 \operatorname{ArcCos}\left[-\frac{c f}{g}\right] \operatorname{ArcTanh}\left[\frac{(c f-g) \operatorname{Cot}\left[\frac{1}{4} (\pi+2 \operatorname{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]+\right.$$

$$(\pi-2 \operatorname{ArcSin}[c x]) \operatorname{ArcTanh}\left[\frac{(c f+g) \operatorname{Tan}\left[\frac{1}{4} (\pi+2 \operatorname{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]+$$

$$\left(\operatorname{ArcCos}\left[-\frac{c f}{g}\right]+2 i \left(\operatorname{ArcTanh}\left[\frac{(c f-g) \operatorname{Cot}\left[\frac{1}{4} (\pi+2 \operatorname{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]+\right.\right.$$

$$\left.\left.\operatorname{ArcTanh}\left[\frac{(c f+g) \operatorname{Tan}\left[\frac{1}{4} (\pi+2 \operatorname{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)\right)$$

$$\operatorname{Log}\left[\frac{e^{\frac{1}{4} i (\pi-2 \operatorname{ArcSin}[c x])} \sqrt{-c^2 f^2+g^2}}{\sqrt{2} \sqrt{g} \sqrt{c f+c g x}}\right]+\left(\operatorname{ArcCos}\left[-\frac{c f}{g}\right]-\right.$$

$$2 i \operatorname{ArcTanh}\left[\frac{(c f-g) \operatorname{Cot}\left[\frac{1}{4} (\pi+2 \operatorname{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]-$$

$$\left.2 i \operatorname{ArcTanh}\left[\frac{(c f+g) \operatorname{Tan}\left[\frac{1}{4} (\pi+2 \operatorname{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right) \operatorname{Log}\left[\right.$$

$$\left.\frac{\left(\frac{1}{2}-\frac{i}{2}\right) e^{\frac{1}{2} i \operatorname{ArcSin}[c x]} \sqrt{-c^2 f^2+g^2}}{\sqrt{g} \sqrt{c f+c g x}}\right]-$$

$$\left(\operatorname{ArcCos}\left[-\frac{c f}{g}\right]+2 i \operatorname{ArcTanh}\left[\frac{(c f-g) \operatorname{Cot}\left[\frac{1}{4} (\pi+2 \operatorname{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right) \operatorname{Log}\left[\right.$$

$$\left((c f+g) \left(-c f+g-i \sqrt{-c^2 f^2+g^2}\right) \left(1+i \operatorname{Cot}\left[\frac{1}{4} (\pi+2 \operatorname{ArcSin}[c x])\right]\right)\right)\Big/$$

$$\left.\left(g \left(c f+g+\sqrt{-c^2 f^2+g^2} \operatorname{Cot}\left[\frac{1}{4} (\pi+2 \operatorname{ArcSin}[c x])\right]\right)\right)\right]-$$

$$\left(\operatorname{ArcCos}\left[-\frac{c f}{g}\right]-2 i \operatorname{ArcTanh}\left[\frac{(c f-g) \operatorname{Cot}\left[\frac{1}{4} (\pi+2 \operatorname{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right) \operatorname{Log}\left[\right.$$

$$\left((c f+g) \left(i c f-i g+\sqrt{-c^2 f^2+g^2}\right) \left(i+\operatorname{Cot}\left[\frac{1}{4} (\pi+2 \operatorname{ArcSin}[c x])\right]\right)\right)\Big/$$

$$\left.\left(g \left(c f+g+\sqrt{-c^2 f^2+g^2} \operatorname{Cot}\left[\frac{1}{4} (\pi+2 \operatorname{ArcSin}[c x])\right]\right)\right)\right]+i \left(\operatorname{PolyLog}\left[2,\right.\right.$$

$$\left(\left(\left(c f-i \sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\, \text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big/\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\, \text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\right]-\text{PolyLog}\Big[2,$$

$$\left(\left(c f+i \sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\, \text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big/\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\, \text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big]\Bigg)\Bigg)\Bigg)-$$

$$\frac{1}{16 \sqrt{1-c^2 x^2}} \sqrt{d\left(1-c^2 x^2\right)}\left(\frac{\pi\, \text{ArcTan}\left[\frac{g+c f \text{Tan}\left[\frac{1}{2} \text{ArcSin}[c x]\right]}{\sqrt{c^2 f^2-g^2}}\right]}{\sqrt{c^2 f^2-g^2}}+\frac{1}{\sqrt{-c^2 f^2+g^2}}\right.$$

$$\left(2\, \text{ArcCos}\left[-\frac{c f}{g}\right] \text{ArcTanh}\left[\frac{(c f-g)\, \text{Cot}\left[\frac{1}{4}(\pi+2\, \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]+\right.$$

$$(\pi-2\, \text{ArcSin}[c x])\, \text{ArcTanh}\left[\frac{(c f+g)\, \text{Tan}\left[\frac{1}{4}(\pi+2\, \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]+2 i\left(\text{ArcTanh}\left[\frac{(c f-g)\, \text{Cot}\left[\frac{1}{4}(\pi+2\, \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]+\right.\right.$$

$$\left.\left.\text{ArcTanh}\left[\frac{(c f+g)\, \text{Tan}\left[\frac{1}{4}(\pi+2\, \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{e^{\frac{1}{4} i (\pi-2\, \text{ArcSin}[c x])} \sqrt{-c^2 f^2+g^2}}{\sqrt{2} \sqrt{g} \sqrt{c f+c g x}}\right]+\left(\text{ArcCos}\left[-\frac{c f}{g}\right]-\right.$$

$$2 i\, \text{ArcTanh}\left[\frac{(c f-g)\, \text{Cot}\left[\frac{1}{4}(\pi+2\, \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]-$$

$$\left.2 i\, \text{ArcTanh}\left[\frac{(c f+g)\, \text{Tan}\left[\frac{1}{4}(\pi+2\, \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)$$

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

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]+2 i\, \text{ArcTanh}\left[\frac{(c f-g)\, \text{Cot}\left[\frac{1}{4}(\pi+2\, \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)$$

$$\text{Log}\Big[\Big((c f+g)\left(-c f+g-i\sqrt{-c^2 f^2+g^2}\right)\left(1+i\,\text{Cot}\Big[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\Big]\right)\Big)\Big/$$
$$\Big(g\Big(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\Big[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\Big]\Big)\Big)\Big]-$$
$$\left(\text{ArcCos}\Big[-\frac{c f}{g}\Big]-2 i\,\text{ArcTanh}\Big[\frac{(c f-g)\,\text{Cot}\big[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\big]}{\sqrt{-c^2 f^2+g^2}}\Big]\right)$$
$$\text{Log}\Big[\Big((c f+g)\left(i c f-i g+\sqrt{-c^2 f^2+g^2}\right)\left(i+\text{Cot}\Big[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\Big]\right)\Big)\Big/$$
$$\Big(g\Big(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\Big[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\Big]\Big)\Big)\Big]+i\,\Big(\text{PolyLog}\Big[2,$$
$$\Big(\Big(c f-i\sqrt{-c^2 f^2+g^2}\Big)\Big(c f+g-\sqrt{-c^2 f^2+g^2}\,\text{Cot}\Big[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\Big]\Big)\Big)\Big/$$
$$\Big(g\Big(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\Big[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\Big]\Big)\Big)\Big]-\text{PolyLog}\Big[2,$$
$$\Big(\Big(c f+i\sqrt{-c^2 f^2+g^2}\Big)\Big(c f+g-\sqrt{-c^2 f^2+g^2}\,\text{Cot}\Big[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\Big]\Big)\Big)\Big/$$
$$\Big(g\Big(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\Big[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\Big]\Big)\Big)\Big]\Big)\Big)\Bigg)+$$

$$\frac{1}{144 g^4\sqrt{1-c^2 x^2}}\sqrt{d\left(1-c^2 x^2\right)}\Bigg(-18 c g\left(-4 c^2 f^2+g^2\right) x+18 g\left(-4 c^2 f^2+g^2\right)$$
$$\sqrt{1-c^2 x^2}\,\text{ArcSin}[c x]-$$
$$18 c f\left(2 c^2 f^2-g^2\right)\text{ArcSin}[c x]^2+9 c f g^2\,\text{Cos}[2\,\text{ArcSin}[c x]]+$$
$$6 g^3\,\text{ArcSin}[c x]\,\text{Cos}[3\,\text{ArcSin}[c x]]+$$
$$9\left(8 c^4 f^4-8 c^2 f^2 g^2+g^4\right)$$
$$\left(\frac{\pi\,\text{ArcTan}\Big[\frac{g+c f\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[c x]\right]}{\sqrt{c^2 f^2-g^2}}\Big]}{\sqrt{c^2 f^2-g^2}}+\right.$$
$$\frac{1}{\sqrt{-c^2 f^2+g^2}}\left(2\,\text{ArcCos}\Big[-\frac{c f}{g}\Big]\,\text{ArcTanh}\Big[\frac{(c f-g)\,\text{Cot}\big[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\big]}{\sqrt{-c^2 f^2+g^2}}\Big]+\right.$$
$$(\pi-2\,\text{ArcSin}[c x])\,\text{ArcTanh}\Big[\frac{(c f+g)\,\text{Tan}\big[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\big]}{\sqrt{-c^2 f^2+g^2}}\Big]+$$
$$\left(\text{ArcCos}\Big[-\frac{c f}{g}\Big]+2 i\left(\text{ArcTanh}\Big[\frac{(c f-g)\,\text{Cot}\big[\frac{1}{4}(\pi+2\,\text{ArcSin}[c x])\big]}{\sqrt{-c^2 f^2+g^2}}\Big]+\right.\right.$$

$$\text{ArcTanh}\left[\frac{(c\,f+g)\,\text{Tan}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\Bigg)\Bigg)$$

$$\text{Log}\left[\frac{e^{\frac{1}{4}\,i\,(\pi-2\,\text{ArcSin}[c\,x])}\,\sqrt{-c^2\,f^2+g^2}}{\sqrt{2}\,\sqrt{g}\,\sqrt{c\,f+c\,g\,x}}\right]+\Bigg(\text{ArcCos}\left[-\frac{c\,f}{g}\right]-$$

$$2\,i\,\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]-$$

$$2\,i\,\text{ArcTanh}\left[\frac{(c\,f+g)\,\text{Tan}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\Bigg)\,\text{Log}\Bigg[$$

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

$$\Bigg(\text{ArcCos}\left[-\frac{c\,f}{g}\right]+2\,i\,\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\Bigg)\,\text{Log}\Bigg[$$

$$\left((c\,f+g)\,\left(-c\,f+g-i\,\sqrt{-c^2\,f^2+g^2}\right)\,\left(1+i\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big/$$

$$\left(g\,\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Bigg]-$$

$$\Bigg(\text{ArcCos}\left[-\frac{c\,f}{g}\right]-2\,i\,\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\Bigg)\,\text{Log}\Bigg[$$

$$\left((c\,f+g)\,\left(i\,c\,f-i\,g+\sqrt{-c^2\,f^2+g^2}\right)\,\left(i+\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big/$$

$$\left(g\,\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Bigg]+i\,\Bigg(\text{PolyLog}\Bigg[2,$$

$$\left(\left(c\,f-i\,\sqrt{-c^2\,f^2+g^2}\right)\,\left(c\,f+g-\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big/$$

$$\left(g\,\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Bigg]-\text{PolyLog}\Bigg[2,$$

$$\left(\left(c\,f+i\,\sqrt{-c^2\,f^2+g^2}\right)\,\left(c\,f+g-\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big/$$

$$\left(g\,\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Bigg]\Bigg)\Bigg)\Bigg)+$$

$$18\,c\,f\,g^2\,\text{ArcSin}[c\,x]\,\text{Sin}[2\,\text{ArcSin}[c\,x]]-2\,g^3\,\text{Sin}[3\,\text{ArcSin}[c\,x]]\Bigg)-$$

$$\frac{1}{32\sqrt{1-c^2 x^2}}\sqrt{d\left(1-c^2 x^2\right)}$$

$$\left(-\frac{32 c^5 f^4 x}{g^5}+\right.$$

$$\frac{24 c^3 f^2 x}{g^3}-$$
$$\frac{2 c x}{g}+$$
$$\frac{2\left(16 c^4 f^4-12 c^2 f^2 g^2+g^4\right)\sqrt{1-c^2 x^2}\,\text{ArcSin}[c x]}{g^5}+$$
$$\frac{16 c^5 f^5\,\text{ArcSin}[c x]^2}{g^6}-$$
$$\frac{16 c^3 f^3\,\text{ArcSin}[c x]^2}{g^4}+$$
$$\frac{3 c f\,\text{ArcSin}[c x]^2}{g^2}+$$
$$\frac{2 c f\left(-2 c^2 f^2+g^2\right)\text{Cos}[2\,\text{ArcSin}[c x]]}{g^4}-$$
$$\frac{8 c^2 f^2\,\text{ArcSin}[c x]\,\text{Cos}[3\,\text{ArcSin}[c x]]}{3 g^3}+$$
$$\frac{2\,\text{ArcSin}[c x]\,\text{Cos}[3\,\text{ArcSin}[c x]]}{3 g}+$$
$$\frac{c f\,\text{Cos}[4\,\text{ArcSin}[c x]]}{4 g^2}+$$
$$\frac{2\,\text{ArcSin}[c x]\,\text{Cos}[5\,\text{ArcSin}[c x]]}{5 g}+$$

$$\frac{1}{g^6}\left(-2 c^2 f^2+g^2\right)\left(16 c^4 f^4-16 c^2 f^2 g^2+g^4\right)\left(\frac{\pi\,\text{ArcTan}\left[\frac{g+c f\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[c x]\right]}{\sqrt{c^2 f^2-g^2}}\right]}{\sqrt{c^2 f^2-g^2}}+\right.$$

$$\frac{1}{\sqrt{-c^2 f^2+g^2}}\left(2\,\text{ArcCos}\left[-\frac{c f}{g}\right]\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]+\right.$$

$$\left(\pi-2\,\text{ArcSin}[c x]\right)\text{ArcTanh}\left[\frac{(c f+g)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]+2\,i\left(\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]+\right.\right.$$

$$\text{ArcTanh}\left[\frac{(c f+g)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\Bigg)\Bigg)$$

$$\text{Log}\left[\frac{e^{\frac{1}{4}\,i\,(\pi-2\,\text{ArcSin}[c x])}\sqrt{-c^2 f^2+g^2}}{\sqrt{2}\,\sqrt{g}\,\sqrt{c f+c g x}}\right]+\Bigg(\text{ArcCos}\left[-\frac{c f}{g}\right]-$$

$$2\,i\,\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]-$$

$$2\,i\,\text{ArcTanh}\left[\frac{(c f+g)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\Bigg)$$

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

$$2\,i\,\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\Bigg)$$

$$\text{Log}\left[\left((c f+g)\left(-c f+g-i\sqrt{-c^2 f^2+g^2}\right)\left(1+i\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\Big/\right.$$

$$\left.\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\right]-$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]-2\,i\,\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)$$

$$\text{Log}\left[\left((c f+g)\left(i\,c f-i\,g+\sqrt{-c^2 f^2+g^2}\right)\left(i+\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\Big/\right.$$

$$\left.\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\right]+i$$

$$\Bigg(\text{PolyLog}\Big[2,\,\Big(\left(c f-i\sqrt{-c^2 f^2+g^2}\right)\Big(c f+g-\sqrt{-c^2 f^2+g^2}$$

$$\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\Big)\Big)\Big/\Big(g\Big(c f+g+\sqrt{-c^2 f^2+g^2}$$

$$\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\Big)\Big)\Big]-\text{PolyLog}\Big[2,\,\Big(\left(c f+i\sqrt{-c^2 f^2+g^2}\right)$$

$$\left(c f+g-\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\Big)\Big/$$

$$\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]\right)\right)\Big]\Bigg)\Bigg)\Bigg)-$$

$$\frac{8\,c^3 f^3\,\text{ArcSin}[c x]\,\text{Sin}[2\,\text{ArcSin}[c x]]}{g^4}+\frac{4\,c f\,\text{ArcSin}[c x]\,\text{Sin}[2\,\text{ArcSin}[c x]]}{g^2}+$$

$$\frac{8 c^2 f^2 \text{Sin}[3 \text{ArcSin}[c x]]}{9 g^3} - \frac{2 \text{Sin}[3 \text{ArcSin}[c x]]}{9 g} + \frac{c f \text{ArcSin}[c x] \text{Sin}[4 \text{ArcSin}[c x]]}{g^2} - \left.\left.\frac{2 \text{Sin}[5 \text{ArcSin}[c x]]}{25 g}\right)\right)$$

Problem 47: Result more than twice size of optimal antiderivative.

$$\int \frac{a + b \text{ArcSin}[c x]}{(f + g x) \sqrt{d - c^2 d x^2}} \, dx$$

Optimal (type 4, 380 leaves, 10 steps):

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

Result (type 4, 1090 leaves):

$$\frac{a \text{Log}[f + g x]}{\sqrt{d} \sqrt{-c^2 f^2 + g^2}} - \frac{a \text{Log}\left[d (g + c^2 f x) + \sqrt{d} \sqrt{-c^2 f^2 + g^2} \sqrt{d - c^2 d x^2}\right]}{\sqrt{d} \sqrt{-c^2 f^2 + g^2}} + \frac{1}{\sqrt{d - c^2 d x^2}} b \sqrt{1 - c^2 x^2} \left(\frac{\pi \text{ArcTan}\left[\frac{g + c f \text{Tan}\left[\frac{1}{2} \text{ArcSin}[c x]\right]}{\sqrt{c^2 f^2 - g^2}}\right]}{\sqrt{c^2 f^2 - g^2}} + \right.$$

$$\frac{1}{\sqrt{-c^2 f^2 + g^2}} \left(2 \text{ArcCos}\left[-\frac{c f}{g}\right] \text{ArcTanh}\left[\frac{(c f - g) \text{Cot}\left[\frac{1}{4} (\pi + 2 \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2 + g^2}}\right] + \right.$$

$$(\pi - 2 \text{ArcSin}[c x]) \text{ArcTanh}\left[\frac{(c f + g) \text{Tan}\left[\frac{1}{4} (\pi + 2 \text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2 + g^2}}\right] +$$

$$\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]+2\,i\left(\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]+\text{ArcTanh}\left[\right.\right.\right.$$

$$\left.\left.\left.\frac{(c\,f+g)\,\text{Tan}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\right)\right)\,\text{Log}\left[\frac{e^{\frac{1}{4}\,i\,(\pi-2\,\text{ArcSin}[c\,x])}\,\sqrt{-c^2\,f^2+g^2}}{\sqrt{2}\,\sqrt{g}\,\sqrt{c\,(f+g\,x)}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]-2\,i\,\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]-2\,i\,\text{ArcTanh}\left[\right.\right.$$

$$\left.\left.\frac{(c\,f+g)\,\text{Tan}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\right)\,\text{Log}\left[\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\,e^{\frac{1}{2}\,i\,\text{ArcSin}[c\,x]}\,\sqrt{-c^2\,f^2+g^2}}{\sqrt{g}\,\sqrt{c\,(f+g\,x)}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]+2\,i\,\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\right)$$

$$\text{Log}\left[\left((c\,f+g)\,\left(-c\,f+g-i\,\sqrt{-c^2\,f^2+g^2}\right)\,\left(1+i\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big/\right.$$

$$\left.\left(g\,\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\right]-$$

$$\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]-2\,i\,\text{ArcTanh}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{-c^2\,f^2+g^2}}\right]\right)$$

$$\text{Log}\left[\left((c\,f+g)\,\left(i\,c\,f-i\,g+\sqrt{-c^2\,f^2+g^2}\right)\,\left(i+\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big/\right.$$

$$\left.\left(g\,\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\right]+i\,\left(\text{PolyLog}\left[2,\right.\right.$$

$$\left(\left(c\,f-i\,\sqrt{-c^2\,f^2+g^2}\right)\,\left(c\,f+g-\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big/$$

$$\left.\left(g\,\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\right]-\text{PolyLog}\left[2,\right.$$

$$\left(\left(c\,f+i\,\sqrt{-c^2\,f^2+g^2}\right)\,\left(c\,f+g-\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\Big/$$

$$\left.\left.\left.\left(g\,\left(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right)\right)\right]\right)\right)$$

Problem 48: Result more than twice size of optimal antiderivative.

$$\int\frac{a+b\,\text{ArcSin}[c\,x]}{(f+g\,x)^2\,\sqrt{d-c^2\,d\,x^2}}\,dx$$

Optimal (type 4, 507 leaves, 13 steps):

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

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

$$\frac{b\,c^2f\sqrt{1-c^2x^2}\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}g}{c\,f-\sqrt{c^2f^2-g^2}}\right]}{\left(c^2f^2-g^2\right)^{3/2}\sqrt{d-c^2dx^2}}+\frac{b\,c^2f\sqrt{1-c^2x^2}\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}g}{c\,f+\sqrt{c^2f^2-g^2}}\right]}{\left(c^2f^2-g^2\right)^{3/2}\sqrt{d-c^2dx^2}}$$

Result (type 4, 1414 leaves):

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

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

$$b\,c\left(\frac{g\left(1-c^2x^2\right)\text{ArcSin}[c\,x]}{(c\,f-g)(c\,f+g)(c\,f+c\,g\,x)\sqrt{d\left(1-c^2x^2\right)}}-\frac{\sqrt{1-c^2x^2}\,\text{Log}\left[1+\frac{g\,x}{f}\right]}{\left(c^2f^2-g^2\right)\sqrt{d\left(1-c^2x^2\right)}}+\right.$$

$$\frac{1}{\left(c^2f^2-g^2\right)\sqrt{d\left(1-c^2x^2\right)}}c\,f\sqrt{1-c^2x^2}\left(\frac{\pi\,\text{ArcTan}\left[\frac{g+c\,f\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[c\,x]\right]}{\sqrt{c^2f^2-g^2}}\right]}{\sqrt{c^2f^2-g^2}}+\right.$$

$$\frac{1}{\sqrt{-c^2f^2+g^2}}\left(2\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\text{ArcTanh}\left[\frac{(c\,f+g)\,\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2f^2+g^2}}\right]-\right.$$

$$2\,\text{ArcCos}\left[-\frac{c\,f}{g}\right]\text{ArcTanh}\left[\frac{(-c\,f+g)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2f^2+g^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]-2\,i\left(\text{ArcTanh}\left[\frac{(c\,f+g)\,\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2f^2+g^2}}\right]-\right.\right.$$

$$\left.\left.\text{ArcTanh}\left[\frac{(-c\,f+g)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2f^2+g^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{e^{-\frac{1}{2}i\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)}\sqrt{-c^2f^2+g^2}}{\sqrt{2}\sqrt{g}\sqrt{c\,f+c\,g\,x}}\right]+\left(\text{ArcCos}\left[-\frac{c\,f}{g}\right]+\right.$$

$$2\,i\left(\text{ArcTanh}\left[\frac{(c f+g)\,\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]-\text{ArcTanh}\left[\frac{(-c f+g)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)\Bigg)\right)\text{Log}\left[\frac{e^{\frac{1}{2} i \left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)}\sqrt{-c^2 f^2+g^2}}{\sqrt{2}\,\sqrt{g}\,\sqrt{c f+c g x}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-c f+g)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)$$

$$\text{Log}\left[1-\left(\left(c f-i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]\right)\right)\Big/\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]\right)\right)\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{c f}{g}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-c f+g)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)$$

$$\text{Log}\left[1-\left(\left(c f+i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]\right)\right)\Big/\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]\right)\right)\right]+i\left(\text{PolyLog}\left[2,\right.\right.$$

$$\left(\left(c f-i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]\right)\right)\Big/\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]\right)\right)\Big]-\text{PolyLog}\Big[2,$$

$$\left.\left.\left(\left(c f+i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]\right)\right)\Big/\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]\right)\right)\right]\right)\Bigg)\Bigg)$$

Problem 51: Result unnecessarily involves higher level functions.

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

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

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

Result (type 4, 147 leaves):

$$\left(\sqrt{d-c^2 d x^2}\left(2 i b c g \sqrt{1-c^2 x^2}\ \text{EllipticF}\left[i \text{ArcSinh}\left[\sqrt{-c^2}\ x\right],1\right]+\sqrt{-c^2}\left(2 a\left(g+c^2 f x\right)+2 b\left(g+c^2 f x\right) \text{ArcSin}[c x]+b c f \sqrt{1-c^2 x^2}\ \text{Log}\left[-1+c^2 x^2\right]\right)\right)\right)\Big/\left(2\left(-c^2\right)^{3/2} d^2\left(-1+c^2 x^2\right)\right)$$

Problem 52: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 654 leaves, 20 steps):

$$-\frac{\sqrt{1-c^2 x^2}\ (a+b \text{ArcSin}[c x]) \text{Cot}\left[\frac{\pi}{4}+\frac{1}{2} \text{ArcSin}[c x]\right]}{2 d (c f-g) \sqrt{d-c^2 d x^2}}+\frac{i g^2 \sqrt{1-c^2 x^2}\ (a+b \text{ArcSin}[c x]) \text{Log}\left[1-\frac{i e^{i \text{ArcSin}[c x]} g}{c f-\sqrt{c^2 f^2-g^2}}\right]}{d\left(c^2 f^2-g^2\right)^{3/2} \sqrt{d-c^2 d x^2}}-\frac{i g^2 \sqrt{1-c^2 x^2}\ (a+b \text{ArcSin}[c x]) \text{Log}\left[1-\frac{i e^{i \text{ArcSin}[c x]} g}{c f+\sqrt{c^2 f^2-g^2}}\right]}{d\left(c^2 f^2-g^2\right)^{3/2} \sqrt{d-c^2 d x^2}}+\frac{b \sqrt{1-c^2 x^2}\ \text{Log}\left[\text{Cos}\left[\frac{\pi}{4}+\frac{1}{2} \text{ArcSin}[c x]\right]\right]}{d (c f+g) \sqrt{d-c^2 d x^2}}+\frac{b \sqrt{1-c^2 x^2}\ \text{Log}\left[\text{Sin}\left[\frac{\pi}{4}+\frac{1}{2} \text{ArcSin}[c x]\right]\right]}{d (c f-g) \sqrt{d-c^2 d x^2}}+\frac{b g^2 \sqrt{1-c^2 x^2}\ \text{PolyLog}\left[2,\frac{i e^{i \text{ArcSin}[c x]} g}{c f-\sqrt{c^2 f^2-g^2}}\right]}{d\left(c^2 f^2-g^2\right)^{3/2} \sqrt{d-c^2 d x^2}}-\frac{b g^2 \sqrt{1-c^2 x^2}\ \text{PolyLog}\left[2,\frac{i e^{i \text{ArcSin}[c x]} g}{c f+\sqrt{c^2 f^2-g^2}}\right]}{d\left(c^2 f^2-g^2\right)^{3/2} \sqrt{d-c^2 d x^2}}+\frac{\sqrt{1-c^2 x^2}\ (a+b \text{ArcSin}[c x]) \text{Tan}\left[\frac{\pi}{4}+\frac{1}{2} \text{ArcSin}[c x]\right]}{2 d (c f+g) \sqrt{d-c^2 d x^2}}$$

Result (type 4, 1637 leaves):

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

$$\frac{1}{d} b \left(-\frac{g \sqrt{1-c^2 x^2}\ \text{ArcSin}[c x]}{\left(-c^2 f^2+g^2\right) \sqrt{d\left(1-c^2 x^2\right)}}-\frac{\sqrt{1-c^2 x^2}\ \text{Log}\left[\text{Cos}\left[\frac{1}{2} \text{ArcSin}[c x]\right]-\text{Sin}\left[\frac{1}{2} \text{ArcSin}[c x]\right]\right]}{(c f+g) \sqrt{d\left(1-c^2 x^2\right)}}-\right.$$

$$\frac{\sqrt{1-c^2 x^2}\ \text{Log}\left[\text{Cos}\left[\frac{1}{2}\text{ArcSin}[c x]\right]+\text{Sin}\left[\frac{1}{2}\text{ArcSin}[c x]\right]\right]}{(c f-g)\sqrt{d\left(1-c^2 x^2\right)}}-$$

$$\frac{1}{(-c f+g)(c f+g)\sqrt{d\left(1-c^2 x^2\right)}}\, g^2\sqrt{1-c^2 x^2}\left(\frac{\pi\,\text{ArcTan}\left[\frac{g+c f\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[c x]\right]}{\sqrt{c^2 f^2-g^2}}\right]}{\sqrt{c^2 f^2-g^2}}+\right.$$

$$\frac{1}{\sqrt{-c^2 f^2+g^2}}\left(2\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\text{ArcTanh}\left[\frac{(c f+g)\,\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]-\right.$$

$$2\,\text{ArcCos}\left[-\frac{c f}{g}\right]\text{ArcTanh}\left[\frac{(-c f+g)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]-2\,i\left(\text{ArcTanh}\left[\frac{(c f+g)\,\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]-\right.\right.$$

$$\left.\left.\text{ArcTanh}\left[\frac{(-c f+g)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{e^{-\frac{1}{2} i\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)}\sqrt{-c^2 f^2+g^2}}{\sqrt{2}\sqrt{g}\sqrt{c f+c g x}}\right]+\left(\text{ArcCos}\left[-\frac{c f}{g}\right]+2\,i\right.$$

$$\left(\text{ArcTanh}\left[\frac{(c f+g)\,\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]-\right.$$

$$\left.\left.\text{ArcTanh}\left[\frac{(-c f+g)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)\right)$$

$$\text{Log}\left[\frac{e^{\frac{1}{2} i\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)}\sqrt{-c^2 f^2+g^2}}{\sqrt{2}\sqrt{g}\sqrt{c f+c g x}}\right]-\left(\text{ArcCos}\left[-\frac{c f}{g}\right]+2\,i\right.$$

$$\left.\text{ArcTanh}\left[\frac{(-c f+g)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)\text{Log}\Bigg[$$

$$1-\left(\left(c f-i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\ \text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]\right)\right)\Big/$$

$$\left.\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\ \text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]\right)\right)\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{c f}{g}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-c f+g)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)\text{Log}\Bigg[$$

$$1-\left(\left(c f+i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\ \mathrm{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\mathrm{ArcSin}[c x]\right)\right]\right)\right)\Big/$$
$$\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\ \mathrm{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\mathrm{ArcSin}[c x]\right)\right]\right)\right)\Big]+i\left(\mathrm{PolyLog}\Big[2,\right.$$
$$\left(\left(c f-i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\ \mathrm{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\mathrm{ArcSin}[c x]\right)\right]\right)\right)\Big/$$
$$\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\ \mathrm{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\mathrm{ArcSin}[c x]\right)\right]\right)\right)\Big]-\mathrm{PolyLog}\Big[2,$$
$$\left(\left(c f+i\sqrt{-c^2 f^2+g^2}\right)\left(c f+g-\sqrt{-c^2 f^2+g^2}\ \mathrm{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\mathrm{ArcSin}[c x]\right)\right]\right)\right)\Big/$$
$$\left.\left.\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\ \mathrm{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\mathrm{ArcSin}[c x]\right)\right]\right)\right)\Big]\right)\right)-$$
$$\left(\sqrt{1-c^2 x^2}\ \mathrm{ArcSin}[c x]\ \mathrm{Sin}\left[\frac{1}{2}\mathrm{ArcSin}[c x]\right]\right)\Big/\left((c f+g)\sqrt{d\left(1-c^2 x^2\right)}\right.$$
$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}\mathrm{ArcSin}[c x]\right]-\mathrm{Sin}\left[\frac{1}{2}\mathrm{ArcSin}[c x]\right]\right)\right)-$$
$$\left(\sqrt{1-c^2 x^2}\ \mathrm{ArcSin}[c x]\ \mathrm{Sin}\left[\frac{1}{2}\mathrm{ArcSin}[c x]\right]\right)\Big/$$
$$\left((c f-g)\sqrt{d\left(1-c^2 x^2\right)}\right.$$
$$\left.\left(\mathrm{Cos}\left[\frac{1}{2}\mathrm{ArcSin}[c x]\right]+\mathrm{Sin}\left[\frac{1}{2}\mathrm{ArcSin}[c x]\right]\right)\right)$$

Problem 54: Result unnecessarily involves higher level functions.

$$\int\frac{(f+g x)^3\,(a+b\,\mathrm{ArcSin}[c x])}{\left(d-c^2 d x^2\right)^{5/2}}\,dx$$

Optimal (type 3, 410 leaves, 10 steps):

$$-\frac{b\,(f+g x)\left(c^2 f^2+g^2+2 c^2 f g x\right)}{6 c^3 d^2\sqrt{1-c^2 x^2}\sqrt{d-c^2 d x^2}}+$$
$$\frac{2\,(c f-g)\,(c f+g)\left(g+c^2 f x\right)(a+b\,\mathrm{ArcSin}[c x])}{3 c^4 d^2\sqrt{d-c^2 d x^2}}+\frac{\left(g+c^2 f x\right)(f+g x)^2\,(a+b\,\mathrm{ArcSin}[c x])}{3 c^2 d^2\left(1-c^2 x^2\right)\sqrt{d-c^2 d x^2}}+$$
$$\frac{b\,(c f-g)\,(c f+g)^2\sqrt{1-c^2 x^2}\ \mathrm{Log}[1-c x]}{3 c^4 d^2\sqrt{d-c^2 d x^2}}-\frac{b\,g\,(c f+g)^2\sqrt{1-c^2 x^2}\ \mathrm{Log}[1-c x]}{12 c^4 d^2\sqrt{d-c^2 d x^2}}+$$
$$\frac{b\,(c f-g)^2\,g\sqrt{1-c^2 x^2}\ \mathrm{Log}[1+c x]}{12 c^4 d^2\sqrt{d-c^2 d x^2}}+\frac{b\,(c f-g)^2\,(c f+g)\sqrt{1-c^2 x^2}\ \mathrm{Log}[1+c x]}{3 c^4 d^2\sqrt{d-c^2 d x^2}}$$

Result (type 4, 366 leaves):

$$\frac{1}{6\,c^4\,\sqrt{-c^2}\,d^3\,\left(-1+c^2\,x^2\right)^2}\sqrt{d-c^2\,d\,x^2}\,\left(\mathrm{i}\,b\,c\,g\,\left(3\,c^2\,f^2-5\,g^2\right)\,\left(1-c^2\,x^2\right)^{3/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{-c^2}\,x\right],1\right]-\sqrt{-c^2}\,\left(-6\,a\,c^2\,f^2\,g+4\,a\,g^3-6\,a\,c^4\,f^3\,x-6\,a\,c^2\,g^3\,x^2+4\,a\,c^6\,f^3\,x^3-6\,a\,c^4\,f\,g^2\,x^3+b\,c^3\,f^3\,\sqrt{1-c^2\,x^2}+3\,b\,c\,f\,g^2\,\sqrt{1-c^2\,x^2}+3\,b\,c^3\,f^2\,g\,x\,\sqrt{1-c^2\,x^2}+b\,c\,g^3\,x\,\sqrt{1-c^2\,x^2}+2\,b\,\left(2\,g^3+2\,c^6\,f^3\,x^3-3\,c^2\,g\,\left(f^2+g^2\,x^2\right)-3\,c^4\,f\,x\,\left(f^2+g^2\,x^2\right)\right)\,\text{ArcSin}[c\,x]-b\,c\,f\,\left(2\,c^2\,f^2-3\,g^2\right)\,\left(1-c^2\,x^2\right)^{3/2}\,\text{Log}\left[-1+c^2\,x^2\right]\right)\right)$$

Problem 55: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 271 leaves, 10 steps):

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

Result (type 4, 285 leaves):

$$\frac{1}{6\,\left(-c^2\right)^{5/2}\,d^3\,\left(-1+c^2\,x^2\right)^2}c\,\sqrt{d-c^2\,d\,x^2}\,\left(2\,\mathrm{i}\,b\,c^2\,f\,g\,\left(1-c^2\,x^2\right)^{3/2}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{-c^2}\,x\right],1\right]-\sqrt{-c^2}\,\left(-4\,a\,c\,f\,g-6\,a\,c^3\,f^2\,x+4\,a\,c^5\,f^2\,x^3-2\,a\,c^3\,g^2\,x^3+b\,c^2\,f^2\,\sqrt{1-c^2\,x^2}+b\,g^2\,\sqrt{1-c^2\,x^2}+2\,b\,c^2\,f\,g\,x\,\sqrt{1-c^2\,x^2}+2\,b\,c\,\left(-2\,f\,g-c^2\,g^2\,x^3+c^2\,f^2\,x\,\left(-3+2\,c^2\,x^2\right)\right)\,\text{ArcSin}[c\,x]-b\,\left(2\,c^2\,f^2-g^2\right)\,\left(1-c^2\,x^2\right)^{3/2}\,\text{Log}\left[-1+c^2\,x^2\right]\right)\right)$$

Problem 56: Result unnecessarily involves higher level functions.

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

Optimal (type 3, 228 leaves, 6 steps):

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

Result (type 4, 208 leaves):

$$-\left(\left(\sqrt{d-c^2\,d\,x^2}\,\left(\text{i}\,b\,c\,g\,(1-c^2\,x^2)^{3/2}\,\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[\sqrt{-c^2}\,x\right],1\right]+\sqrt{-c^2}\,\left(2\,a\,g+6\,a\,c^2\,f\,x-4\,a\,c^4\,f\,x^3-b\,c\,f\,\sqrt{1-c^2\,x^2}-b\,c\,g\,x\,\sqrt{1-c^2\,x^2}+2\,b\,(g+c^2\,f\,x\,(3-2\,c^2\,x^2))\,\text{ArcSin}[c\,x]+2\,b\,c\,f\,(1-c^2\,x^2)^{3/2}\,\text{Log}\left[-1+c^2\,x^2\right]\right)\right)\right)\Big/\left(6\,(-c^2)^{3/2}\,d^3\,(-1+c^2\,x^2)^2\right)\right)$$

Problem 61: Unable to integrate problem.

$$\int\frac{\sqrt{d-c^2\,d\,x^2}\,(a+b\,\text{ArcSin}[c\,x])^2}{f+g\,x}\,dx$$

Optimal (type 4, 1442 leaves, 38 steps):

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

$$\frac{2\,i\,a\,b\,\sqrt{c^2 f^2-g^2}\;\sqrt{d-c^2 d\,x^2}\;\text{ArcSin}[c\,x]\;\text{Log}\Big[1-\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2 f^2-g^2}}\Big]}{g^2\sqrt{1-c^2 x^2}}-$$

$$\frac{i\,b^2\,\sqrt{c^2 f^2-g^2}\;\sqrt{d-c^2 d\,x^2}\;\text{ArcSin}[c\,x]^2\;\text{Log}\Big[1-\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2 f^2-g^2}}\Big]}{g^2\sqrt{1-c^2 x^2}}+$$

$$\frac{2\,a\,b\,\sqrt{c^2 f^2-g^2}\;\sqrt{d-c^2 d\,x^2}\;\text{PolyLog}\Big[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2 f^2-g^2}}\Big]}{g^2\sqrt{1-c^2 x^2}}+$$

$$\frac{2\,b^2\,\sqrt{c^2 f^2-g^2}\;\sqrt{d-c^2 d\,x^2}\;\text{ArcSin}[c\,x]\;\text{PolyLog}\Big[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2 f^2-g^2}}\Big]}{g^2\sqrt{1-c^2 x^2}}-$$

$$\frac{2\,a\,b\,\sqrt{c^2 f^2-g^2}\;\sqrt{d-c^2 d\,x^2}\;\text{PolyLog}\Big[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2 f^2-g^2}}\Big]}{g^2\sqrt{1-c^2 x^2}}-$$

$$\frac{2\,b^2\,\sqrt{c^2 f^2-g^2}\;\sqrt{d-c^2 d\,x^2}\;\text{ArcSin}[c\,x]\;\text{PolyLog}\Big[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2 f^2-g^2}}\Big]}{g^2\sqrt{1-c^2 x^2}}+$$

$$\frac{2\,i\,b^2\,\sqrt{c^2 f^2-g^2}\;\sqrt{d-c^2 d\,x^2}\;\text{PolyLog}\Big[3,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2 f^2-g^2}}\Big]}{g^2\sqrt{1-c^2 x^2}}-$$

$$\frac{2\,i\,b^2\,\sqrt{c^2 f^2-g^2}\;\sqrt{d-c^2 d\,x^2}\;\text{PolyLog}\Big[3,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2 f^2-g^2}}\Big]}{g^2\sqrt{1-c^2 x^2}}$$

Result (type 8, 35 leaves):

$$\int\frac{\sqrt{d-c^2 d\,x^2}\;(a+b\,\text{ArcSin}[c\,x])^2}{f+g\,x}\,dx$$

Problem 65: Unable to integrate problem.

$$\int\frac{(d-c^2 d\,x^2)^{3/2}\;(a+b\,\text{ArcSin}[c\,x])^2}{f+g\,x}\,dx$$

Optimal (type 4, 1992 leaves, 50 steps):

$$-\frac{4\,b^2\,d\,\sqrt{d-c^2 d\,x^2}}{9\,g}-\frac{a^2\,d\,(c\,f-g)\,(c\,f+g)\,\sqrt{d-c^2 d\,x^2}}{g^3}+\frac{2\,b^2\,d\,(c\,f-g)\,(c\,f+g)\,\sqrt{d-c^2 d\,x^2}}{g^3}-$$

$$\frac{b^2\,c^2\,d\,f\,x\,\sqrt{d-c^2 d\,x^2}}{4\,g^2}+\frac{2\,a\,b\,c\,d\,(c\,f-g)\,(c\,f+g)\,x\,\sqrt{d-c^2 d\,x^2}}{g^3\sqrt{1-c^2 x^2}}-$$

$$\frac{2 b^2 d \left(1-c^2 x^2\right) \sqrt{d-c^2 d x^2}}{27 g}-\frac{2 a b d (c f-g) (c f+g) \sqrt{d-c^2 d x^2}\, \text{ArcSin}[c x]}{g^3}+$$

$$\frac{b^2 c d f \sqrt{d-c^2 d x^2}\, \text{ArcSin}[c x]}{4 g^2 \sqrt{1-c^2 x^2}}+\frac{2 b^2 c d (c f-g) (c f+g) x \sqrt{d-c^2 d x^2}\, \text{ArcSin}[c x]}{g^3 \sqrt{1-c^2 x^2}}-$$

$$\frac{b^2 d (c f-g) (c f+g) \sqrt{d-c^2 d x^2}\, \text{ArcSin}[c x]^2}{g^3}-\frac{2 b c d x \sqrt{d-c^2 d x^2} (a+b \text{ArcSin}[c x])}{3 g \sqrt{1-c^2 x^2}}-$$

$$\frac{b c^3 d f x^2 \sqrt{d-c^2 d x^2} (a+b \text{ArcSin}[c x])}{2 g^2 \sqrt{1-c^2 x^2}}+\frac{2 b c^3 d x^3 \sqrt{d-c^2 d x^2} (a+b \text{ArcSin}[c x])}{9 g \sqrt{1-c^2 x^2}}+$$

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

$$\frac{c d f \sqrt{d-c^2 d x^2} (a+b \text{ArcSin}[c x])^3}{6 b g^2 \sqrt{1-c^2 x^2}}-\frac{c d (c f-g) (c f+g) x \sqrt{d-c^2 d x^2} (a+b \text{ArcSin}[c x])^3}{3 b g^3 \sqrt{1-c^2 x^2}}-$$

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

$$\frac{d (c f-g) (c f+g) \sqrt{1-c^2 x^2} \sqrt{d-c^2 d x^2} (a+b \text{ArcSin}[c x])^3}{3 b c g^2 (f+g x)}+$$

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

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

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

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

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

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

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

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

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

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

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

Result (type 8, 35 leaves):

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

Problem 69: Unable to integrate problem.

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

Optimal (type 4, 2989 leaves, 74 steps):

$$\frac{52\,b^2\,d^2\,\sqrt{d-c^2\,d\,x^2}}{225\,g}+\frac{4\,b^2\,d^2\,\left(c^2\,f^2-2\,g^2\right)\,\sqrt{d-c^2\,d\,x^2}}{9\,g^3}+$$

$$\frac{a^2\,d^2\,\left(c^2\,f^2-g^2\right)^2\,\sqrt{d-c^2\,d\,x^2}}{g^5}-\frac{2\,b^2\,d^2\,\left(c^2\,f^2-g^2\right)^2\,\sqrt{d-c^2\,d\,x^2}}{g^5}-\frac{b^2\,c^2\,d^2\,f\,x\,\sqrt{d-c^2\,d\,x^2}}{64\,g^2}+$$

$$\frac{b^2\,c^2\,d^2\,f\,\left(c^2\,f^2-2\,g^2\right)\,x\,\sqrt{d-c^2\,d\,x^2}}{4\,g^4}+\frac{b^2\,c^4\,d^2\,f\,x^3\,\sqrt{d-c^2\,d\,x^2}}{32\,g^2}+\frac{4\,a\,b\,c\,d^2\,x\,\sqrt{d-c^2\,d\,x^2}}{15\,g\,\sqrt{1-c^2\,x^2}}-$$

$$\frac{2\,a\,b\,c\,d^2\,\left(c^2\,f^2-g^2\right)^2\,x\,\sqrt{d-c^2\,d\,x^2}}{g^5\,\sqrt{1-c^2\,x^2}}+\frac{26\,b^2\,d^2\,\left(1-c^2\,x^2\right)\,\sqrt{d-c^2\,d\,x^2}}{675\,g}+$$

$$\frac{2\,b^2\,d^2\,\left(c^2\,f^2-2\,g^2\right)\,\left(1-c^2\,x^2\right)\,\sqrt{d-c^2\,d\,x^2}}{27\,g^3}-\frac{2\,b^2\,d^2\,\left(1-c^2\,x^2\right)^2\,\sqrt{d-c^2\,d\,x^2}}{125\,g}+$$

$$\frac{2\,a\,b\,d^2\,\left(c^2\,f^2-g^2\right)^2\,\sqrt{d-c^2\,d\,x^2}\;\text{ArcSin}[c\,x]}{g^5}+\frac{b^2\,c\,d^2\,f\,\sqrt{d-c^2\,d\,x^2}\;\text{ArcSin}[c\,x]}{64\,g^2\,\sqrt{1-c^2\,x^2}}-$$

$$\frac{b^2\,c\,d^2\,f\,\left(c^2\,f^2-2\,g^2\right)\,\sqrt{d-c^2\,d\,x^2}\;\text{ArcSin}[c\,x]}{4\,g^4\,\sqrt{1-c^2\,x^2}}+\frac{4\,b^2\,c\,d^2\,x\,\sqrt{d-c^2\,d\,x^2}\;\text{ArcSin}[c\,x]}{15\,g\,\sqrt{1-c^2\,x^2}}-$$

$$\frac{2\,b^2\,c\,d^2\,\left(c^2\,f^2-g^2\right)^2\,x\,\sqrt{d-c^2\,d\,x^2}\;\text{ArcSin}[c\,x]}{g^5\,\sqrt{1-c^2\,x^2}}+\frac{b^2\,d^2\,\left(c^2\,f^2-g^2\right)^2\,\sqrt{d-c^2\,d\,x^2}\;\text{ArcSin}[c\,x]^2}{g^5}+$$

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

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

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

$$\frac{2\,b\,c^3 d^2 x^3\sqrt{d-c^2 d x^2}\left(a+b\,\text{ArcSin}[c x]\right)}{45 g\sqrt{1-c^2 x^2}}-$$

$$\frac{2\,b\,c^3 d^2\left(c^2 f^2-2 g^2\right) x^3\sqrt{d-c^2 d x^2}\left(a+b\,\text{ArcSin}[c x]\right)}{9 g^3\sqrt{1-c^2 x^2}}+$$

$$\frac{b\,c^5 d^2 f x^4\sqrt{d-c^2 d x^2}\left(a+b\,\text{ArcSin}[c x]\right)}{8 g^2\sqrt{1-c^2 x^2}}-\frac{2\,b\,c^5 d^2 x^5\sqrt{d-c^2 d x^2}\left(a+b\,\text{ArcSin}[c x]\right)}{25 g\sqrt{1-c^2 x^2}}-$$

$$\frac{2 d^2\sqrt{d-c^2 d x^2}\left(a+b\,\text{ArcSin}[c x]\right)^2}{15 g}+\frac{c^2 d^2 f x\sqrt{d-c^2 d x^2}\left(a+b\,\text{ArcSin}[c x]\right)^2}{8 g^2}-$$

$$\frac{c^2 d^2 f\left(c^2 f^2-2 g^2\right) x\sqrt{d-c^2 d x^2}\left(a+b\,\text{ArcSin}[c x]\right)^2}{2 g^4}-\frac{c^2 d^2 x^2\sqrt{d-c^2 d x^2}\left(a+b\,\text{ArcSin}[c x]\right)^2}{15 g}-$$

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

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

$$\frac{c\,d^2 f\sqrt{d-c^2 d x^2}\left(a+b\,\text{ArcSin}[c x]\right)^3}{24 b g^2\sqrt{1-c^2 x^2}}-\frac{c\,d^2 f\left(c^2 f^2-2 g^2\right)\sqrt{d-c^2 d x^2}\left(a+b\,\text{ArcSin}[c x]\right)^3}{6 b g^4\sqrt{1-c^2 x^2}}+$$

$$\frac{c\,d^2\left(c^2 f^2-g^2\right)^2 x\sqrt{d-c^2 d x^2}\left(a+b\,\text{ArcSin}[c x]\right)^3}{3 b g^5\sqrt{1-c^2 x^2}}+$$

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

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

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

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

$$\frac{1}{g^6\sqrt{1-c^2 x^2}}\,i\,b^2 d^2\left(c^2 f^2-g^2\right)^{5/2}\sqrt{d-c^2 d x^2}\,\text{ArcSin}[c x]^2\,\text{Log}\left[1-\frac{i\,e^{i\,\text{ArcSin}[c x]} g}{c f-\sqrt{c^2 f^2-g^2}}\right]-$$

$$\frac{1}{g^6\sqrt{1-c^2x^2}}2\,i\,a\,b\,d^2\left(c^2f^2-g^2\right)^{5/2}\sqrt{d-c^2dx^2}\,\text{ArcSin}[c\,x]\,\text{Log}\left[1-\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2f^2-g^2}}\right]-$$

$$\frac{1}{g^6\sqrt{1-c^2x^2}}i\,b^2\,d^2\left(c^2f^2-g^2\right)^{5/2}\sqrt{d-c^2dx^2}\,\text{ArcSin}[c\,x]^2\,\text{Log}\left[1-\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2f^2-g^2}}\right]+$$

$$\frac{2\,a\,b\,d^2\left(c^2f^2-g^2\right)^{5/2}\sqrt{d-c^2dx^2}\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2f^2-g^2}}\right]}{g^6\sqrt{1-c^2x^2}}+\frac{1}{g^6\sqrt{1-c^2x^2}}$$

$$2\,b^2\,d^2\left(c^2f^2-g^2\right)^{5/2}\sqrt{d-c^2dx^2}\,\text{ArcSin}[c\,x]\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2f^2-g^2}}\right]-$$

$$\frac{2\,a\,b\,d^2\left(c^2f^2-g^2\right)^{5/2}\sqrt{d-c^2dx^2}\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2f^2-g^2}}\right]}{g^6\sqrt{1-c^2x^2}}-\frac{1}{g^6\sqrt{1-c^2x^2}}$$

$$2\,b^2\,d^2\left(c^2f^2-g^2\right)^{5/2}\sqrt{d-c^2dx^2}\,\text{ArcSin}[c\,x]\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2f^2-g^2}}\right]+$$

$$\frac{2\,i\,b^2\,d^2\left(c^2f^2-g^2\right)^{5/2}\sqrt{d-c^2dx^2}\,\text{PolyLog}\left[3,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2f^2-g^2}}\right]}{g^6\sqrt{1-c^2x^2}}-$$

$$\frac{2\,i\,b^2\,d^2\left(c^2f^2-g^2\right)^{5/2}\sqrt{d-c^2dx^2}\,\text{PolyLog}\left[3,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2f^2-g^2}}\right]}{g^6\sqrt{1-c^2x^2}}$$

Result (type 8, 35 leaves) :

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

Problem 73: Unable to integrate problem.

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

Optimal (type 4, 589 leaves, 12 steps) :

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

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

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

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

$$\frac{2\,i\,b^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left[3,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2f^2-g^2}}\right]}{\sqrt{c^2f^2-g^2}\,\sqrt{d-c^2d\,x^2}}+\frac{2\,i\,b^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left[3,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2f^2-g^2}}\right]}{\sqrt{c^2f^2-g^2}\,\sqrt{d-c^2d\,x^2}}$$

Result (type 8, 35 leaves):

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

Problem 74: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 1113 leaves, 20 steps):

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

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

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

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

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

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

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

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

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

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

Result (type 1, 1 leaves):

???

Problem 78: Unable to integrate problem.

$$\int \frac{\left(a+b \operatorname{ArcSin}[c x]\right)^2}{(f+g x)\left(d-c^2 d x^2\right)^{3/2}} \, dx$$

Optimal (type 4, 1137 leaves, 28 steps):

$$-\frac{i\sqrt{1-c^2x^2}\,(a+b\,\text{ArcSin}[c\,x])^2}{2\,d\,(c\,f-g)\,\sqrt{d-c^2\,d\,x^2}}+\frac{i\sqrt{1-c^2x^2}\,(a+b\,\text{ArcSin}[c\,x])^2}{2\,d\,(c\,f+g)\,\sqrt{d-c^2\,d\,x^2}}-$$

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

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

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

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

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

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

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

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

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

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

Result (type 8, 35 leaves):

$$\int\frac{(a+b\,\text{ArcSin}[c\,x])^2}{(f+g\,x)\,(d-c^2\,d\,x^2)^{3/2}}\,dx$$

Problem 83: Unable to integrate problem.

$$\int\frac{(a+b\,\text{ArcSin}[c\,x])^3\,\text{Log}\left[h\,(f+g\,x)^m\right]}{\sqrt{1-c^2\,x^2}}\,dx$$

Optimal (type 4, 634 leaves, 15 steps):

$$\frac{i\,m\,(a+b\,\text{ArcSin}[c\,x])^5}{20\,b^2\,c}-\frac{m\,(a+b\,\text{ArcSin}[c\,x])^4\,\text{Log}\left[1-\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2\,f^2-g^2}}\right]}{4\,b\,c}-\frac{m\,(a+b\,\text{ArcSin}[c\,x])^4\,\text{Log}\left[1-\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2\,f^2-g^2}}\right]}{4\,b\,c}+\frac{(a+b\,\text{ArcSin}[c\,x])^4\,\text{Log}\left[h\,(f+g\,x)^m\right]}{4\,b\,c}+\frac{i\,m\,(a+b\,\text{ArcSin}[c\,x])^3\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2\,f^2-g^2}}\right]}{c}+\frac{i\,m\,(a+b\,\text{ArcSin}[c\,x])^3\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2\,f^2-g^2}}\right]}{c}-\frac{3\,b\,m\,(a+b\,\text{ArcSin}[c\,x])^2\,\text{PolyLog}\left[3,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2\,f^2-g^2}}\right]}{c}-\frac{3\,b\,m\,(a+b\,\text{ArcSin}[c\,x])^2\,\text{PolyLog}\left[3,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2\,f^2-g^2}}\right]}{c}-\frac{6\,i\,b^2\,m\,(a+b\,\text{ArcSin}[c\,x])\,\text{PolyLog}\left[4,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2\,f^2-g^2}}\right]}{c}-\frac{6\,i\,b^2\,m\,(a+b\,\text{ArcSin}[c\,x])\,\text{PolyLog}\left[4,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2\,f^2-g^2}}\right]}{c}+\frac{6\,b^3\,m\,\text{PolyLog}\left[5,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2\,f^2-g^2}}\right]}{c}+\frac{6\,b^3\,m\,\text{PolyLog}\left[5,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2\,f^2-g^2}}\right]}{c}$$

Result (type 8, 37 leaves):

$$\int \frac{(a+b\,\text{ArcSin}[c\,x])^3\,\text{Log}\left[h\,(f+g\,x)^m\right]}{\sqrt{1-c^2\,x^2}}\,dx$$

Problem 84: Unable to integrate problem.

$$\int \frac{(a+b\,\text{ArcSin}[c\,x])^2\,\text{Log}\left[h\,(f+g\,x)^m\right]}{\sqrt{1-c^2\,x^2}}\,dx$$

Optimal (type 4, 514 leaves, 13 steps):

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

Result (type 8, 37 leaves):

$$\int \frac{(a+b\, \text{ArcSin}[c\, x])^2\, \text{Log}\left[h\, (f+g\, x)^m\right]}{\sqrt{1-c^2\, x^2}}\, dx$$

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

$$\int \frac{(a+b\, \text{ArcSin}[c\, x])\, \text{Log}\left[h\, (f+g\, x)^m\right]}{\sqrt{1-c^2\, x^2}}\, dx$$

Optimal (type 4, 390 leaves, 11 steps):

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

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

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

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

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

Result (type 4, 5941 leaves):

$$\frac{m\,\text{ArcSin}[c\,x]\,(2\, a+b\,\text{ArcSin}[c\,x])\,\text{Log}[f+g\,x]}{2\, c}+$$

$$\frac{a\,\text{ArcSin}[c\,x]\,\left(-m\,\text{Log}[f+g\,x]+\text{Log}\left[h\,(f+g\,x)^m\right]\right)}{c}-$$

$$a\, c\, g\, m\left(-\frac{1}{2\, c^3\left(-\frac{1}{c}-\frac{f}{g}\right)\, g}\left(\frac{3}{2}\, i\,\pi\,\text{ArcSin}[c\,x]-\frac{1}{2}\, i\,\text{ArcSin}[c\,x]^2+2\,\pi\,\text{Log}\left[1+e^{-i\,\text{ArcSin}[c\,x]}\right]-\pi\,\text{Log}\left[\right.\right.\right.$$

$$1+i\, e^{i\,\text{ArcSin}[c\,x]}\left.\right]+2\,\text{ArcSin}[c\,x]\,\text{Log}\left[1+i\, e^{i\,\text{ArcSin}[c\,x]}\right]-2\,\pi\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,\text{ArcSin}[c\,x]\right]\right]+$$

$$\left.\pi\,\text{Log}\left[-\text{Cos}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right]-2\, i\,\text{PolyLog}\left[2,-i\, e^{i\,\text{ArcSin}[c\,x]}\right]\right)+\frac{1}{2\, c^3\left(\frac{1}{c}-\frac{f}{g}\right)\, g}$$

$$\left(\frac{1}{2}\, i\,\pi\,\text{ArcSin}[c\,x]-\frac{1}{2}\, i\,\text{ArcSin}[c\,x]^2+2\,\pi\,\text{Log}\left[1+e^{-i\,\text{ArcSin}[c\,x]}\right]+\pi\,\text{Log}\left[1-i\, e^{i\,\text{ArcSin}[c\,x]}\right]+\right.$$

$$2\,\text{ArcSin}[c\,x]\,\text{Log}\left[1-i\, e^{i\,\text{ArcSin}[c\,x]}\right]-2\,\pi\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,\text{ArcSin}[c\,x]\right]\right]-$$

$$\left.\pi\,\text{Log}\left[\text{Sin}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right]-2\, i\,\text{PolyLog}\left[2,\, i\, e^{i\,\text{ArcSin}[c\,x]}\right]\right)+$$

$$\frac{1}{8\, c^2\left(-\frac{1}{c}-\frac{f}{g}\right)\left(\frac{1}{c}-\frac{f}{g}\right)\, g^3}\, f^2\left(i\,(\pi-2\,\text{ArcSin}[c\,x])^2-\right.$$

$$32\,i\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,f}{g}}}{\sqrt{2}}\right]\,\text{ArcTan}\left[\frac{(c\,f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{c^2\,f^2-g^2}}\right]-$$

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

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

$$4\,(\pi-2\,\text{ArcSin}[c\,x])\,\text{Log}[c\,f+c\,g\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,f+c\,g\,x]+$$

$$8\,i\left(\text{PolyLog}\left[2,\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(-c\,f+\sqrt{c^2\,f^2-g^2}\right)}{g}\right]+\right.$$

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

$$\frac{1}{c}\,a\,g\,m\left(-\frac{1}{2\,c\,\left(-\frac{1}{c}-\frac{f}{g}\right)\,g}\left(\frac{3}{2}\,i\,\pi\,\text{ArcSin}[c\,x]-\frac{1}{2}\,i\,\text{ArcSin}[c\,x]^2+2\,\pi\,\text{Log}\left[1+e^{-i\,\text{ArcSin}[c\,x]}\right]-\pi\,\text{Log}\left[\right.\right.\right.$$

$$\left.1+i\,e^{i\,\text{ArcSin}[c\,x]}\right]+2\,\text{ArcSin}[c\,x]\,\text{Log}\left[1+i\,e^{i\,\text{ArcSin}[c\,x]}\right]-2\,\pi\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,\text{ArcSin}[c\,x]\right]\right]+$$

$$\left.\pi\,\text{Log}\left[-\text{Cos}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right]-2\,i\,\text{PolyLog}\left[2,-i\,e^{i\,\text{ArcSin}[c\,x]}\right]\right)+\frac{1}{2\,c\,\left(\frac{1}{c}-\frac{f}{g}\right)\,g}$$

$$\left(\frac{1}{2}\,i\,\pi\,\text{ArcSin}[c\,x]-\frac{1}{2}\,i\,\text{ArcSin}[c\,x]^2+2\,\pi\,\text{Log}\left[1+e^{-i\,\text{ArcSin}[c\,x]}\right]+\pi\,\text{Log}\left[1-i\,e^{i\,\text{ArcSin}[c\,x]}\right]+\right.$$

$$2\,\text{ArcSin}[c\,x]\,\text{Log}\left[1-i\,e^{i\,\text{ArcSin}[c\,x]}\right]-2\,\pi\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,\text{ArcSin}[c\,x]\right]\right]-$$

$$\left.\pi\,\text{Log}\left[\text{Sin}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]\right]-2\,i\,\text{PolyLog}\left[2,i\,e^{i\,\text{ArcSin}[c\,x]}\right]\right)+$$

$$\frac{1}{8 c^2 \left(-\frac{1}{c}-\frac{f}{g}\right)\left(\frac{1}{c}-\frac{f}{g}\right) g}\Bigg(i\left(\pi-2\,\text{ArcSin}[c\,x]\right)^2-$$

$$32\,i\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c f}{g}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{c^2 f^2-g^2}}\right]-$$

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

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

$$4\left(\pi-2\,\text{ArcSin}[c\,x]\right)\text{Log}[c f+c g x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c f+c g x]+$$

$$8\,i\left(\text{PolyLog}\left[2,\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(-c f+\sqrt{c^2 f^2-g^2}\right)}{g}\right]+\right.$$

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

$$b\,f\left(-m\,\text{Log}[f+g x]+\text{Log}\left[h\,(f+g x)^m\right]\right)\left(\frac{\pi\,\text{ArcTan}\left[\frac{g+c f\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[c\,x]\right]}{\sqrt{c^2 f^2-g^2}}\right]}{\sqrt{c^2 f^2-g^2}}+\right.$$

$$\frac{1}{\sqrt{-c^2 f^2+g^2}}\left(2\,\text{ArcCos}\left[-\frac{c f}{g}\right]\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]+\right.$$

$$\left(\pi-2\,\text{ArcSin}[c\,x]\right)\text{ArcTanh}\left[\frac{(c f+g)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]+2\,i\left(\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]+\text{ArcTanh}\right[\right.\right.$$

$$\frac{(c f+g)\,\text{Tan}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\Big]\Big)\Big)\,\text{Log}\left[\frac{e^{\frac{1}{4}\,i\,(\pi-2\,\text{ArcSin}[c x])}\,\sqrt{-c^2 f^2+g^2}}{\sqrt{2}\,\sqrt{g}\,\sqrt{c f+c g x}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]-2\,i\,\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]-2\,i\,\text{ArcTanh}\Big[\right.$$

$$\left.\frac{(c f+g)\,\text{Tan}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\Big]\right)\,\text{Log}\left[\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\,e^{\frac{1}{2}\,i\,\text{ArcSin}[c x]}\,\sqrt{-c^2 f^2+g^2}}{\sqrt{g}\,\sqrt{c f+c g x}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]+2\,i\,\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)$$

$$\text{Log}\Big[\Big((c f+g)\,\left(-c f+g-i\,\sqrt{-c^2 f^2+g^2}\right)\,\left(1+i\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c x])\right]\right)\Big)\Big/$$

$$\left(g\,\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big]-$$

$$\left(\text{ArcCos}\left[-\frac{c f}{g}\right]-2\,i\,\text{ArcTanh}\left[\frac{(c f-g)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c x])\right]}{\sqrt{-c^2 f^2+g^2}}\right]\right)$$

$$\text{Log}\Big[\Big((c f+g)\,\left(i\,c f-i\,g+\sqrt{-c^2 f^2+g^2}\right)\,\left(i+\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c x])\right]\right)\Big)\Big/$$

$$\left(g\,\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big]+i\,\Big(\text{PolyLog}\Big[2,$$

$$\Big(\left(c f-i\,\sqrt{-c^2 f^2+g^2}\right)\,\left(c f+g-\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c x])\right]\right)\Big)\Big/$$

$$\left(g\,\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big]-\text{PolyLog}\Big[2,$$

$$\Big(\left(c f+i\,\sqrt{-c^2 f^2+g^2}\right)\,\left(c f+g-\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c x])\right]\right)\Big)\Big/$$

$$\left.\left.\left(g\,\left(c f+g+\sqrt{-c^2 f^2+g^2}\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c x])\right]\right)\right)\Big]\Big)\right)\right)+$$

$$\frac{1}{c}\,b\,g\,\left(-m\,\text{Log}[f+g x]+\text{Log}\left[h\,(f+g x)^m\right]\right)\,\left(\frac{\text{ArcSin}[c x]^2}{2\,g}-\frac{1}{g}\,c f\,\left(\frac{\pi\,\text{ArcTan}\left[\frac{g+c f\,\text{Tan}\left[\frac{1}{2}\,\text{ArcSin}[c x]\right]}{\sqrt{c^2 f^2-g^2}}\right]}{\sqrt{c^2 f^2-g^2}}+\right.\right.$$

$$\frac{1}{\sqrt{-c^2 f^2+g^2}}\,\left(2\,\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\,\text{ArcTanh}\left[\frac{(c f+g)\,\text{Cot}\left[\frac{1}{2}\,\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]}{\sqrt{-c^2 f^2+g^2}}\right]-\right.$$

$$2\,\text{ArcCos}\Big[-\frac{c\,f}{g}\Big]\,\text{ArcTanh}\Big[\frac{(-c\,f+g)\,\text{Tan}\big[\frac{1}{2}\big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\big)\big]}{\sqrt{-c^2\,f^2+g^2}}\Big]+$$

$$\Big(\text{ArcCos}\Big[-\frac{c\,f}{g}\Big]-2\,i\,\Big(\text{ArcTanh}\Big[\frac{(c\,f+g)\,\text{Cot}\big[\frac{1}{2}\big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\big)\big]}{\sqrt{-c^2\,f^2+g^2}}\Big]-$$

$$\text{ArcTanh}\Big[\frac{(-c\,f+g)\,\text{Tan}\big[\frac{1}{2}\big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\big)\big]}{\sqrt{-c^2\,f^2+g^2}}\Big]\Big)\Big)$$

$$\text{Log}\Big[\frac{e^{-\frac{1}{2}\,i\,\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)}\,\sqrt{-c^2\,f^2+g^2}}{\sqrt{2}\,\sqrt{g}\,\sqrt{c\,f+c\,g\,x}}\Big]+\Big(\text{ArcCos}\Big[-\frac{c\,f}{g}\Big]+2\,i$$

$$\Big(\text{ArcTanh}\Big[\frac{(c\,f+g)\,\text{Cot}\big[\frac{1}{2}\big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\big)\big]}{\sqrt{-c^2\,f^2+g^2}}\Big]-$$

$$\text{ArcTanh}\Big[\frac{(-c\,f+g)\,\text{Tan}\big[\frac{1}{2}\big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\big)\big]}{\sqrt{-c^2\,f^2+g^2}}\Big]\Big)\Big)$$

$$\text{Log}\Big[\frac{e^{\frac{1}{2}\,i\,\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)}\,\sqrt{-c^2\,f^2+g^2}}{\sqrt{2}\,\sqrt{g}\,\sqrt{c\,f+c\,g\,x}}\Big]-\Big(\text{ArcCos}\Big[-\frac{c\,f}{g}\Big]+2\,i$$

$$\text{ArcTanh}\Big[\frac{(-c\,f+g)\,\text{Tan}\big[\frac{1}{2}\big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\big)\big]}{\sqrt{-c^2\,f^2+g^2}}\Big]\Big)\,\text{Log}\Big[$$

$$1-\Big(\Big(c\,f-i\,\sqrt{-c^2\,f^2+g^2}\Big)\,\Big(c\,f+g-\sqrt{-c^2\,f^2+g^2}\,\text{Tan}\Big[\frac{1}{2}\Big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\Big)\Big]\Big)\Big)\Big/$$

$$\Big(g\,\Big(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Tan}\Big[\frac{1}{2}\Big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\Big)\Big]\Big)\Big)\Big]+$$

$$\Big(-\text{ArcCos}\Big[-\frac{c\,f}{g}\Big]+2\,i\,\text{ArcTanh}\Big[\frac{(-c\,f+g)\,\text{Tan}\big[\frac{1}{2}\big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\big)\big]}{\sqrt{-c^2\,f^2+g^2}}\Big]\Big)\,\text{Log}\Big[$$

$$1-\Big(\Big(c\,f+i\,\sqrt{-c^2\,f^2+g^2}\Big)\,\Big(c\,f+g-\sqrt{-c^2\,f^2+g^2}\,\text{Tan}\Big[\frac{1}{2}\Big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\Big)\Big]\Big)\Big)\Big/$$

$$\Big(g\,\Big(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Tan}\Big[\frac{1}{2}\Big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\Big)\Big]\Big)\Big)\Big]+i\,\Big(\text{PolyLog}\Big[2,$$

$$\Big(\Big(c\,f-i\,\sqrt{-c^2\,f^2+g^2}\Big)\,\Big(c\,f+g-\sqrt{-c^2\,f^2+g^2}\,\text{Tan}\Big[\frac{1}{2}\Big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\Big)\Big]\Big)\Big)\Big/$$

$$\Big(g\,\Big(c\,f+g+\sqrt{-c^2\,f^2+g^2}\,\text{Tan}\Big[\frac{1}{2}\Big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\Big)\Big]\Big)\Big)\Big]-\text{PolyLog}\Big[2,$$

$$\Big(\Big(c\,f+i\,\sqrt{-c^2\,f^2+g^2}\Big)\,\Big(c\,f+g-\sqrt{-c^2\,f^2+g^2}\,\text{Tan}\Big[\frac{1}{2}\Big(\frac{\pi}{2}-\text{ArcSin}[c\,x]\Big)\Big]\Big)\Big)\Big/$$

$$\left(g\left(c f+g+\sqrt{-c^2 f^2+g^2}\ \text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c x]\right)\right]\right)\right]\Bigg)\Bigg)\Bigg)\Bigg) -$$

$$\frac{1}{6 c \sqrt{-\left(-c^2 f^2+g^2\right)^2}} b m \Bigg(-i \sqrt{-\left(-c^2 f^2+g^2\right)^2}\ \text{ArcSin}[c x]^3 -$$

$$24 i \sqrt{-\left(-c^2 f^2+g^2\right)^2}$$

$$\text{ArcSin}\left[\frac{\sqrt{1+\frac{c f}{g}}}{\sqrt{2}}\right] \text{ArcSin}[c x]$$

$$\text{ArcTan}\left[\frac{(c f-g)\ \text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c x]\right)\right]}{\sqrt{c^2 f^2-g^2}}\right] +$$

$$24 i \sqrt{-\left(-c^2 f^2+g^2\right)^2}\ \text{ArcSin}\left[\frac{\sqrt{1+\frac{c f}{g}}}{\sqrt{2}}\right] \text{ArcSin}[c x]$$

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

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

$$3 \sqrt{-\left(-c^2 f^2+g^2\right)^2}\ \pi\, \text{ArcSin}[c x]$$

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

$$12 \sqrt{-\left(-c^2 f^2+g^2\right)^2}\ \text{ArcSin}\left[\frac{\sqrt{1+\frac{c f}{g}}}{\sqrt{2}}\right] \text{ArcSin}[c x]$$

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

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

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

$$3\,\sqrt{-\left(-c^2 f^2+g^2\right)^2}\;\pi\,\text{ArcSin}[c\,x]\;\text{Log}\left[1+\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(c\,f+\sqrt{c^2 f^2-g^2}\right)}{g}\right]+$$

$$12\,\sqrt{-\left(-c^2 f^2+g^2\right)^2}\;\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,f}{g}}}{\sqrt{2}}\right]\text{ArcSin}[c\,x]\;\text{Log}\left[1+\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(c\,f+\sqrt{c^2 f^2-g^2}\right)}{g}\right]+$$

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

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

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

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

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

$$3\,\sqrt{-\left(-c^2 f^2+g^2\right)^2}\;\pi\,\text{ArcSin}[c\,x]\;\text{Log}\left[1+\frac{\left(c\,f-\sqrt{c^2 f^2-g^2}\right)\left(c\,x+i\,\sqrt{1-c^2 x^2}\right)}{g}\right]+$$

$$12\,\sqrt{-\left(-c^2 f^2+g^2\right)^2}\;\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,f}{g}}}{\sqrt{2}}\right]\text{ArcSin}[c\,x]\;\text{Log}\left[1+\frac{\left(c\,f-\sqrt{c^2 f^2-g^2}\right)\left(c\,x+i\,\sqrt{1-c^2 x^2}\right)}{g}\right]-$$

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

$$3\sqrt{-\left(-c^2 f^2+g^2\right)^2}\ \pi\,\text{ArcSin}[c\,x]$$

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

$$12\sqrt{-\left(-c^2 f^2+g^2\right)^2}\ \text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,f}{g}}}{\sqrt{2}}\right]\text{ArcSin}[c\,x]$$

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

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

$$6\,i\,c\,f\sqrt{-c^2 f^2+g^2}\ \text{ArcSin}[c\,x]\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2 f^2-g^2}}\right]+$$

$$6\,i\,c\,f\sqrt{-c^2 f^2+g^2}\ \text{ArcSin}[c\,x]\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2 f^2-g^2}}\right]-$$

$$6\,c\,f\sqrt{c^2 f^2-g^2}\ \text{ArcSin}[c\,x]\,\text{PolyLog}\left[2,\frac{e^{i\,\text{ArcSin}[c\,x]}\,g}{-i\,c\,f+\sqrt{-c^2 f^2+g^2}}\right]-$$

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

$$6\,c\,f\sqrt{c^2 f^2-g^2}\ \text{ArcSin}[c\,x]\,\text{PolyLog}\left[2,-\frac{e^{i\,\text{ArcSin}[c\,x]}\,g}{i\,c\,f+\sqrt{-c^2 f^2+g^2}}\right]-$$

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

$$6\,c\,f\sqrt{-c^2 f^2+g^2}\ \text{PolyLog}\left[3,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2 f^2-g^2}}\right]-$$

$$6\,c\,f\sqrt{-c^2 f^2+g^2}\ \text{PolyLog}\left[3,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2 f^2-g^2}}\right]-$$

$$6\,i\,c\,f\sqrt{c^2 f^2-g^2}\ \text{PolyLog}\left[3,\frac{e^{i\,\text{ArcSin}[c\,x]}\,g}{-i\,c\,f+\sqrt{-c^2 f^2+g^2}}\right]+$$

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

Problem 86: Attempted integration timed out after 120 seconds.

$$\int\frac{\text{Log}\left[h\,(f+g\,x)^m\right]}{\sqrt{1-c^2 x^2}}\,dx$$

Optimal (type 4, 237 leaves, 9 steps):

$$\frac{i\,m\,\text{ArcSin}[c\,x]^2}{2\,c}-\frac{m\,\text{ArcSin}[c\,x]\,\text{Log}\left[1-\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2 f^2-g^2}}\right]}{c}-\frac{m\,\text{ArcSin}[c\,x]\,\text{Log}\left[1-\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2 f^2-g^2}}\right]}{c}+$$
$$\frac{\text{ArcSin}[c\,x]\,\text{Log}\left[h\,(f+g\,x)^m\right]}{c}+\frac{i\,m\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f-\sqrt{c^2 f^2-g^2}}\right]}{c}+\frac{i\,m\,\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,g}{c\,f+\sqrt{c^2 f^2-g^2}}\right]}{c}$$

Result (type 1, 1 leaves):

???

Problem 91: Result more than twice size of optimal antiderivative.

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

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

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

Result (type 4, 750 leaves):

$$\frac{1}{8 e^2}\left(8 a e g x+8 a (e f-d g) \text{Log}[d+e x]+b e f\left(\text{i} (\pi-2 \text{ArcSin}[c x])^2-\right.\right.$$

$$32 \text{i} \text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right] \text{ArcTan}\left[\frac{(c d-e) \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[c x])\right]}{\sqrt{c^2 d^2-e^2}}\right]-$$

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

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

$$4 (\pi-2 \text{ArcSin}[c x]) \text{Log}[c (d+e x)]+8 \text{ArcSin}[c x] \text{Log}[c (d+e x)]+$$

$$8 \text{i}\left(\text{PolyLog}\left[2,\frac{\text{i}\left(-c d+\sqrt{c^2 d^2-e^2}\right) e^{-\text{i} \text{ArcSin}[c x]}}{e}\right]+\right.$$

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

$$b g\left(\frac{8 e \sqrt{1-c^2 x^2}}{c}+8 e x \text{ArcSin}[c x]-d\left(\text{i} (\pi-2 \text{ArcSin}[c x])^2-\right.\right.$$

$$32 \text{i} \text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right] \text{ArcTan}\left[\frac{(c d-e) \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[c x])\right]}{\sqrt{c^2 d^2-e^2}}\right]-$$

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

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

Problem 92: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 358 leaves, 15 steps):

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

Result (type 6, 590 leaves):

$$\frac{1}{8 e^2}\left(\frac{8 a (-e f+d g)}{d+e x}-8 b f\left(\frac{1}{\sqrt{1-c^2 x^2}} c \sqrt{\frac{e\left(-\sqrt{\frac{1}{c^2}}+x\right)}{d+e x}} \sqrt{\frac{e\left(\sqrt{\frac{1}{c^2}}+x\right)}{d+e x}}\right.\right.$$

$$\left.\text{AppellF1}\left[1,\frac{1}{2},\frac{1}{2},2,\frac{d-\sqrt{\frac{1}{c^2}}\, e}{d+e x},\frac{d+\sqrt{\frac{1}{c^2}}\, e}{d+e x}\right]+\frac{e \,\text{ArcSin}[c x]}{d+e x}\right)+$$

$$8 a g \,\text{Log}[d+e x]+b g\left(\mathbb{i}\,(\pi-2 \,\text{ArcSin}[c x])^2+\frac{8 d \,\text{ArcSin}[c x]}{d+e x}-\right.$$

$$32\, \mathbb{i}\, \text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right] \text{ArcTan}\left[\frac{(c d-e) \cot\left[\frac{1}{4}(\pi+2 \,\text{ArcSin}[c x])\right]}{\sqrt{c^2 d^2-e^2}}\right]-$$

$$4\left(\pi+4 \,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right]-2 \,\text{ArcSin}[c x]\right) \text{Log}\left[1-\frac{\mathbb{i}\left(-c d+\sqrt{c^2 d^2-e^2}\right) e^{-\mathbb{i}\, \text{ArcSin}[c x]}}{e}\right]-$$

$$4\left(\pi-4 \,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right]-2 \,\text{ArcSin}[c x]\right) \text{Log}\left[1+\frac{\mathbb{i}\left(c d+\sqrt{c^2 d^2-e^2}\right) e^{-\mathbb{i}\, \text{ArcSin}[c x]}}{e}\right]+$$

$$4 (\pi-2 \,\text{ArcSin}[c x]) \,\text{Log}[c (d+e x)]+8 \,\text{ArcSin}[c x] \,\text{Log}[c (d+e x)]-$$

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

$$8\, \mathbb{i}\left(\text{PolyLog}\left[2, \frac{\mathbb{i}\left(-c d+\sqrt{c^2 d^2-e^2}\right) e^{-\mathbb{i}\, \text{ArcSin}[c x]}}{e}\right]+\right.$$

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

Problem 100: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 459 leaves, 15 steps):

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

Result (type 4, 1436 leaves):

$$\frac{a\,\left(e\,g-d\,h\right)\,x}{e^2}+\frac{a\,h\,x^2}{2\,e}+\frac{\left(a\,e^2\,f-a\,d\,e\,g+a\,d^2\,h\right)\,\text{Log}[d+e\,x]}{e^3}+\frac{1}{8\,e}\,b\,f\,\left(i\,\left(\pi-2\,\text{ArcSin}[c\,x]\right)^2-32\,i\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right]\,\text{ArcTan}\left[\frac{\left(c\,d-e\right)\,\text{Cot}\left[\frac{1}{4}\,\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{c^2\,d^2-e^2}}\right]-\right.$$

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

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

$$4\,\left(\pi-2\,\text{ArcSin}[c\,x]\right)\,\text{Log}[c\,d+c\,e\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,d+c\,e\,x]+$$

$$8\,i\left(\text{PolyLog}\left[2,\frac{i\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]+\right.$$

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

$$\frac{1}{c\,e}\,b\,g\left(\sqrt{1-c^2\,x^2}+c\,x\,\text{ArcSin}[c\,x]-\frac{1}{8\,e}\,c\,d\left(i\,(\pi-2\,\text{ArcSin}[c\,x])^2-\right.\right.$$

$$32\,i\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(c\,d-e)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{c^2\,d^2-e^2}}\right]-$$

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

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

$$4\,(\pi-2\,\text{ArcSin}[c\,x])\,\text{Log}[c\,d+c\,e\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,d+c\,e\,x]+$$

$$8\,i\left(\text{PolyLog}\left[2,\frac{i\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]+\right.$$

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

$$\frac{1}{8\,c^2\,e^3}\,b\,h\left(i\,c^2\,d^2\,\pi^2-8\,c\,d\,e\,\sqrt{1-c^2\,x^2}-4\,i\,c^2\,d^2\,\pi\,\text{ArcSin}[c\,x]-\right.$$

$$8\,c^2\,d\,e\,x\,\text{ArcSin}[c\,x]+4\,i\,c^2\,d^2\,\text{ArcSin}[c\,x]^2-$$

$$32\,i\,c^2 d^2 \,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right] \text{ArcTan}\left[\frac{(c\,d-e)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{c^2 d^2-e^2}}\right] -$$

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

$$16\,c^2 d^2\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right] \text{Log}\left[1-\frac{i\left(-c\,d+\sqrt{c^2 d^2-e^2}\right) e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] +$$

$$8\,c^2 d^2\,\text{ArcSin}[c\,x]\,\text{Log}\left[1-\frac{i\left(-c\,d+\sqrt{c^2 d^2-e^2}\right) e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] -$$

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

$$16\,c^2 d^2\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right] \text{Log}\left[1+\frac{i\left(c\,d+\sqrt{c^2 d^2-e^2}\right) e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] +$$

$$8\,c^2 d^2\,\text{ArcSin}[c\,x]\,\text{Log}\left[1+\frac{i\left(c\,d+\sqrt{c^2 d^2-e^2}\right) e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] +$$

$$4\,c^2 d^2\,\pi\,\text{Log}[c\,d+c\,e\,x] + 8\,i\,c^2 d^2\,\text{PolyLog}\left[2,\frac{i\left(-c\,d+\sqrt{c^2 d^2-e^2}\right) e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] +$$

$$8\,i\,c^2 d^2\,\text{PolyLog}\left[2,-\frac{i\left(c\,d+\sqrt{c^2 d^2-e^2}\right) e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] + e^2\,\text{Sin}[2\,\text{ArcSin}[c\,x]]\Bigg)$$

Problem 101: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 460 leaves, 16 steps):

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

Result (type 6, 1119 leaves):

$$\frac{a\,h\,x}{e^2}+\frac{-a\,e^2 f+a\,d\,e\,g-a\,d^2 h}{e^3\,(d+e\,x)}+$$
$$b\,f\left(-\frac{1}{e^2\,\sqrt{1-c^2 x^2}}c\,\sqrt{1+\frac{-d-\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\,\sqrt{1+\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.1,\frac{1}{2},\frac{1}{2},2,-\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x},-\frac{-d-\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}\right]-\frac{\text{ArcSin}[c\,x]}{e\,(d+e\,x)}\right)+$$
$$\frac{(a\,e\,g-2\,a\,d\,h)\,\text{Log}[d+e\,x]}{e^3}+b\,h\left(\frac{\sqrt{1-c^2 x^2}+c\,x\,\text{ArcSin}[c\,x]}{c\,e^2}+\right.$$
$$\frac{d^2\left(-\frac{\text{ArcSin}[c\,x]}{d+e\,x}+\frac{c\,\left(\text{Log}[d+e\,x]-\text{Log}\left[e+c^2 d\,x+\sqrt{-c^2 d^2+e^2}\,\sqrt{1-c^2 x^2}\right]\right)}{\sqrt{-c^2 d^2+e^2}}\right)}{e^3}-\frac{1}{4\,e^3}d\left(i\,(\pi-2\,\text{ArcSin}[c\,x])^2-\right.$$

$$32\,i\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right]\,\text{ArcTan}\left[\frac{(c\,d-e)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{c^2\,d^2-e^2}}\right]-$$

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

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

$$4\,(\pi-2\,\text{ArcSin}[c\,x])\,\text{Log}[c\,d+c\,e\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,d+c\,e\,x]+$$

$$8\,i\left(\text{PolyLog}\left[2,\frac{i\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)\,e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]+\right.$$

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

$$b\,g\left(-\frac{d\left(-\frac{\text{ArcSin}[c\,x]}{d+e\,x}+\frac{c\left(\text{Log}[d+e\,x]-\text{Log}\left[e+c^2\,d\,x+\sqrt{-c^2\,d^2+e^2}\,\sqrt{1-c^2\,x^2}\right]\right)}{\sqrt{-c^2\,d^2+e^2}}\right)}{e^2}+\frac{1}{8\,e^2}\left(i\,(\pi-2\,\text{ArcSin}[c\,x])^2-\right.\right.$$

$$32\,i\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right]\,\text{ArcTan}\left[\frac{(c\,d-e)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{c^2\,d^2-e^2}}\right]-$$

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

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

$$4\left(\pi-2\,\text{ArcSin}[c\,x]\right)\text{Log}[c\,d+c\,e\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,d+c\,e\,x]+$$

$$8\,i\left(\text{PolyLog}\left[2,\frac{i\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]+\right.$$

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

Problem 102: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 488 leaves, 16 steps):

$$\frac{b\,c\left(e^2\,f-d\,e\,g+d^2\,h\right)\sqrt{1-c^2\,x^2}}{2\,e^2\left(c^2\,d^2-e^2\right)(d+e\,x)}-\frac{i\,b\,h\,\text{ArcSin}[c\,x]^2}{2\,e^3}-$$

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

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

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

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

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

Result (type 6, 1144 leaves):

$$\frac{-a\,e^2\,f+a\,d\,e\,g-a\,d^2\,h}{2\,e^3\,(d+e\,x)^2}+\frac{-a\,e\,g+2\,a\,d\,h}{e^3\,(d+e\,x)}+$$

$$b\,f\left(-\left(\left(c\sqrt{1+\frac{-d-\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\,\sqrt{1+\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\,\text{AppellF1}\left[2,\frac{1}{2},\frac{1}{2},3,-\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x},\right.\right.\right.\right.$$

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

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

$$\left.\left.\left.\left.\left.\left(\mathbb{i}\,e+\mathbb{i}\,c^2\,d\,x+\sqrt{c^2\,d^2-e^2}\,\sqrt{1-c^2\,x^2}\right)\right]\right)\right)\Big/\left((c\,d-e)\,e\,(c\,d+e)\,\sqrt{c^2\,d^2-e^2}\right)\right)+$$

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

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

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

$$\frac{2\,d\left(-\frac{\text{ArcSin}[c\,x]}{d+e\,x}+\frac{c\left(\text{Log}[d+e\,x]-\text{Log}\left[e+c^2\,d\,x+\sqrt{-c^2\,d^2+e^2}\,\sqrt{1-c^2\,x^2}\right]\right)}{\sqrt{-c^2\,d^2+e^2}}\right)}{e^3}+\frac{1}{8\,e^3}\left(\mathbb{i}\,(\pi-2\,\text{ArcSin}[c\,x])^2-\right.$$

$$32\,i\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(c\,d-e)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{c^2\,d^2-e^2}}\right]-$$

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

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

$$4\,(\pi-2\,\text{ArcSin}[c\,x])\,\text{Log}[c\,d+c\,e\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,d+c\,e\,x]+$$

$$8\,i\left(\text{PolyLog}\left[2,\frac{i\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]+\right.$$

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

Problem 109: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(f+g\,x+h\,x^2+i\,x^3\right)\,(a+b\,\text{ArcSin}[c\,x])}{d+e\,x}\,dx$$

Optimal (type 4, 623 leaves, 16 steps):

$$\frac{b\, i\, x^2 \sqrt{1-c^2 x^2}}{9\, c\, e}+\frac{b \left(4 \left(2 e^2 i+9 c^2 \left(e^2 g-d e h+d^2 i\right)\right)+9 c^2 e \left(e h-d i\right) x\right) \sqrt{1-c^2 x^2}}{36\, c^3 e^3}-$$
$$\frac{b \left(e h-d i\right) \text{ArcSin}[c x]}{4 c^2 e^2}-\frac{i\, b \left(e^3 f-d e^2 g+d^2 e h-d^3 i\right) \text{ArcSin}[c x]^2}{2 e^4}+$$
$$\frac{\left(e^2 g-d e h+d^2 i\right) x \left(a+b\, \text{ArcSin}[c x]\right)}{e^3}+\frac{\left(e h-d i\right) x^2 \left(a+b\, \text{ArcSin}[c x]\right)}{2 e^2}+$$
$$\frac{i\, x^3 \left(a+b\, \text{ArcSin}[c x]\right)}{3 e}+\frac{b \left(e^3 f-d e^2 g+d^2 e h-d^3 i\right) \text{ArcSin}[c x] \text{Log}\left[1-\frac{i\, e\, e^{i \text{ArcSin}[c x]}}{c d-\sqrt{c^2 d^2-e^2}}\right]}{e^4}+$$
$$\frac{b \left(e^3 f-d e^2 g+d^2 e h-d^3 i\right) \text{ArcSin}[c x] \text{Log}\left[1-\frac{i\, e\, e^{i \text{ArcSin}[c x]}}{c d+\sqrt{c^2 d^2-e^2}}\right]}{e^4}-$$
$$\frac{b \left(e^3 f-d e^2 g+d^2 e h-d^3 i\right) \text{ArcSin}[c x] \text{Log}[d+e x]}{e^4}+$$
$$\frac{\left(e^3 f-d e^2 g+d^2 e h-d^3 i\right) \left(a+b\, \text{ArcSin}[c x]\right) \text{Log}[d+e x]}{e^4}-$$
$$\frac{i\, b \left(e^3 f-d e^2 g+d^2 e h-d^3 i\right) \text{PolyLog}\left[2, \frac{i\, e\, e^{i \text{ArcSin}[c x]}}{c d-\sqrt{c^2 d^2-e^2}}\right]}{e^4}-$$
$$\frac{i\, b \left(e^3 f-d e^2 g+d^2 e h-d^3 i\right) \text{PolyLog}\left[2, \frac{i\, e\, e^{i \text{ArcSin}[c x]}}{c d+\sqrt{c^2 d^2-e^2}}\right]}{e^4}$$

Result (type 4, 2189 leaves) :

$$\frac{a \left(e^2 g-d e h+d^2 i\right) x}{e^3}+\frac{a \left(e h-d i\right) x^2}{2 e^2}+\frac{a\, i\, x^3}{3 e}+$$
$$\frac{\left(a e^3 f-a d e^2 g+a d^2 e h-a d^3 i\right) \text{Log}[d+e x]}{e^4}+\frac{1}{8 e} b f$$
$$\Bigg(i \left(\pi-2 \text{ArcSin}[c x]\right)^2-32\, i\, \text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right] \text{ArcTan}\left[\frac{\left(c d-e\right) \text{Cot}\left[\frac{1}{4} \left(\pi+2 \text{ArcSin}[c x]\right)\right]}{\sqrt{c^2 d^2-e^2}}\right]-$$
$$4 \left(\pi+4 \text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right]-2 \text{ArcSin}[c x]\right) \text{Log}\left[1-\frac{i \left(-c d+\sqrt{c^2 d^2-e^2}\right) e^{-i \text{ArcSin}[c x]}}{e}\right]-$$
$$4 \left(\pi-4 \text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right]-2 \text{ArcSin}[c x]\right) \text{Log}\left[1+\frac{i \left(c d+\sqrt{c^2 d^2-e^2}\right) e^{-i \text{ArcSin}[c x]}}{e}\right]+$$

$$4\left(\pi-2\,\text{ArcSin}[c\,x]\right)\text{Log}[c\,d+c\,e\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,d+c\,e\,x]+$$

$$8\,i\left(\text{PolyLog}\left[2,\frac{i\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]+\text{PolyLog}\left[2,-\frac{i\left(c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]\right)\Bigg)+$$

$$\frac{1}{c\,e}\,b\,g\left(\sqrt{1-c^2\,x^2}+c\,x\,\text{ArcSin}[c\,x]-\frac{1}{8\,e}\,c\,d\left(i\left(\pi-2\,\text{ArcSin}[c\,x]\right)^2-\right.\right.$$

$$32\,i\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(c\,d-e)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{c^2\,d^2-e^2}}\right]-$$

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

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

$$4\left(\pi-2\,\text{ArcSin}[c\,x]\right)\text{Log}[c\,d+c\,e\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,d+c\,e\,x]+$$

$$\left.\left.8\,i\left(\text{PolyLog}\left[2,\frac{i\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]+\text{PolyLog}\left[2,-\frac{i\left(c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]\right)\right)\right)+$$

$$\frac{1}{8\,c^2\,e^3}\,b\,h\left(i\,c^2\,d^2\,\pi^2-8\,c\,d\,e\,\sqrt{1-c^2\,x^2}-4\,i\,c^2\,d^2\,\pi\,\text{ArcSin}[c\,x]-\right.$$

$$8\,c^2\,d\,e\,x\,\text{ArcSin}[c\,x]+4\,i\,c^2\,d^2\,\text{ArcSin}[c\,x]^2-$$

$$32\, i\, c^2 d^2 \text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right] \text{ArcTan}\left[\frac{(c\,d-e)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{c^2 d^2-e^2}}\right] -$$

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

$$16\, c^2 d^2 \text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right] \text{Log}\left[1-\frac{i\left(-c\,d+\sqrt{c^2 d^2-e^2}\right) e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] +$$

$$8\, c^2 d^2 \text{ArcSin}[c\,x]\,\text{Log}\left[1-\frac{i\left(-c\,d+\sqrt{c^2 d^2-e^2}\right) e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] -$$

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

$$16\, c^2 d^2 \text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right] \text{Log}\left[1+\frac{i\left(c\,d+\sqrt{c^2 d^2-e^2}\right) e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] +$$

$$8\, c^2 d^2 \text{ArcSin}[c\,x]\,\text{Log}\left[1+\frac{i\left(c\,d+\sqrt{c^2 d^2-e^2}\right) e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] +$$

$$4\, c^2 d^2 \pi\, \text{Log}[c\,d+c\,e\,x] + 8\, i\, c^2 d^2 \text{PolyLog}\left[2, \frac{i\left(-c\,d+\sqrt{c^2 d^2-e^2}\right) e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] +$$

$$\left. 8\, i\, c^2 d^2 \text{PolyLog}\left[2, -\frac{i\left(c\,d+\sqrt{c^2 d^2-e^2}\right) e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] + e^2 \text{Sin}[2\,\text{ArcSin}[c\,x]]\right) -$$

$$\frac{1}{72\, c^3 e^4}\, b\, i \left(9\, i\, c^3 d^3 \pi^2 - 72\, c^2 d^2 e \sqrt{1-c^2 x^2} - 18\, e^3 \sqrt{1-c^2 x^2} - 36\, i\, c^3 d^3 \pi\, \text{ArcSin}[c\,x] -\right.$$

$$72\, c^3 d^2 e\, x\, \text{ArcSin}[c\,x] - 18\, c\, e^3 x\, \text{ArcSin}[c\,x] + 36\, i\, c^3 d^3 \text{ArcSin}[c\,x]^2 -$$

$$288\, i\, c^3 d^3 \text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right] \text{ArcTan}\left[\frac{(c\,d-e)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{c^2 d^2-e^2}}\right] -$$

$$18\, c\, d\, e^2 \text{ArcSin}[c\,x]\,\text{Cos}[2\,\text{ArcSin}[c\,x]] + 2\, e^3 \text{Cos}[3\,\text{ArcSin}[c\,x]] -$$

$$36\, c^3 d^3 \pi\, \text{Log}\left[1-\frac{i\left(-c\,d+\sqrt{c^2 d^2-e^2}\right) e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] -$$

$$144\, c^3\, d^3\, \text{ArcSin}\left[\frac{\sqrt{1+\frac{c\, d}{e}}}{\sqrt{2}}\right]\, \text{Log}\left[1-\frac{i\, \left(-c\, d+\sqrt{c^2\, d^2-e^2}\right)\, e^{-i\, \text{ArcSin}[c\, x]}}{e}\right]+$$

$$72\, c^3\, d^3\, \text{ArcSin}[c\, x]\, \text{Log}\left[1-\frac{i\, \left(-c\, d+\sqrt{c^2\, d^2-e^2}\right)\, e^{-i\, \text{ArcSin}[c\, x]}}{e}\right]-$$

$$36\, c^3\, d^3\, \pi\, \text{Log}\left[1+\frac{i\, \left(c\, d+\sqrt{c^2\, d^2-e^2}\right)\, e^{-i\, \text{ArcSin}[c\, x]}}{e}\right]+$$

$$144\, c^3\, d^3\, \text{ArcSin}\left[\frac{\sqrt{1+\frac{c\, d}{e}}}{\sqrt{2}}\right]\, \text{Log}\left[1+\frac{i\, \left(c\, d+\sqrt{c^2\, d^2-e^2}\right)\, e^{-i\, \text{ArcSin}[c\, x]}}{e}\right]+$$

$$72\, c^3\, d^3\, \text{ArcSin}[c\, x]\, \text{Log}\left[1+\frac{i\, \left(c\, d+\sqrt{c^2\, d^2-e^2}\right)\, e^{-i\, \text{ArcSin}[c\, x]}}{e}\right]+$$

$$36\, c^3\, d^3\, \pi\, \text{Log}[c\, d+c\, e\, x]+72\, i\, c^3\, d^3\, \text{PolyLog}\left[2,\frac{i\, \left(-c\, d+\sqrt{c^2\, d^2-e^2}\right)\, e^{-i\, \text{ArcSin}[c\, x]}}{e}\right]+$$

$$72\, i\, c^3\, d^3\, \text{PolyLog}\left[2,-\frac{i\, \left(c\, d+\sqrt{c^2\, d^2-e^2}\right)\, e^{-i\, \text{ArcSin}[c\, x]}}{e}\right]+$$

$$\left.9\, c\, d\, e^2\, \text{Sin}[2\, \text{ArcSin}[c\, x]]+6\, e^3\, \text{ArcSin}[c\, x]\, \text{Sin}[3\, \text{ArcSin}[c\, x]]\right)$$

Problem 110: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\left(f+g\, x+h\, x^2+i\, x^3\right)\, \left(a+b\, \text{ArcSin}[c\, x]\right)}{(d+e\, x)^2}\, dx$$

Optimal (type 4, 617 leaves, 18 steps):

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

Result (type 6, 1688 leaves):

$$\frac{a\,(e\,h-2\,d\,i)\,x}{e^3}+\frac{a\,i\,x^2}{2\,e^2}+\frac{-a\,e^3\,f+a\,d\,e^2\,g-a\,d^2\,e\,h+a\,d^3\,i}{e^4\,(d+e\,x)}+$$
$$b\,f\left(-\frac{1}{e^2\,\sqrt{1-c^2\,x^2}}c\,\sqrt{1+\frac{-d-\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\,\sqrt{1+\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\right.$$
$$\left.\text{AppellF1}\left[1,\frac{1}{2},\frac{1}{2},2,-\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x},-\frac{-d-\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}\right]-\frac{\text{ArcSin}[c\,x]}{e\,(d+e\,x)}\right)+$$

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

$$\frac{\frac{1}{2} \left(\frac{1}{2} c x \sqrt{1-c^2 x^2}-\frac{1}{2} \text{ArcSin}[c x]\right)+\frac{1}{2} c^2 x^2 \text{ArcSin}[c x]}{c^2 e^2}-$$

$$\frac{d^3 \left(-\frac{\text{ArcSin}[c x]}{d+e x}+\frac{c \left(\text{Log}[d+e x]-\text{Log}\left[e+c^2 d x+\sqrt{-c^2 d^2+e^2} \sqrt{1-c^2 x^2}\right]\right)}{\sqrt{-c^2 d^2+e^2}}\right)}{e^4}+\frac{1}{8 e^4} 3 d^2 \left(\mathbb{i} \left(\pi-2 \text{ArcSin}[c x]\right)^2-\right.$$

$$32\, \mathbb{i}\, \text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right] \text{ArcTan}\left[\frac{(c d-e) \text{Cot}\left[\frac{1}{4} \left(\pi+2 \text{ArcSin}[c x]\right)\right]}{\sqrt{c^2 d^2-e^2}}\right]-$$

$$4 \left(\pi+4 \text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right]-2 \text{ArcSin}[c x]\right) \text{Log}\left[1-\frac{\mathbb{i} \left(-c d+\sqrt{c^2 d^2-e^2}\right) e^{-\mathbb{i} \text{ArcSin}[c x]}}{e}\right]-$$

$$4 \left(\pi-4 \text{ArcSin}\left[\frac{\sqrt{1+\frac{c d}{e}}}{\sqrt{2}}\right]-2 \text{ArcSin}[c x]\right) \text{Log}\left[1+\frac{\mathbb{i} \left(c d+\sqrt{c^2 d^2-e^2}\right) e^{-\mathbb{i} \text{ArcSin}[c x]}}{e}\right]+$$

$$4 \left(\pi-2 \text{ArcSin}[c x]\right) \text{Log}[c d+c e x]+8 \text{ArcSin}[c x] \text{Log}[c d+c e x]+$$

$$8\, \mathbb{i} \left(\text{PolyLog}\left[2,\frac{\mathbb{i} \left(-c d+\sqrt{c^2 d^2-e^2}\right) e^{-\mathbb{i} \text{ArcSin}[c x]}}{e}\right]+\right.$$

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

$$b\,h\left(\frac{\sqrt{1-c^2x^2}+c\,x\,\text{ArcSin}[c\,x]}{c\,e^2}+\frac{d^2\left(-\frac{\text{ArcSin}[c\,x]}{d+e\,x}+\frac{c\left(\text{Log}[d+e\,x]-\text{Log}\left[e+c^2\,d\,x+\sqrt{-c^2\,d^2+e^2}\,\sqrt{1-c^2x^2}\right]\right)}{\sqrt{-c^2\,d^2+e^2}}\right)}{e^3}-\right.$$

$$\frac{1}{4\,e^3}d\left(\text{i}\,(\pi-2\,\text{ArcSin}[c\,x])^2-\right.$$

$$32\,\text{i}\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(c\,d-e)\,\text{Cot}\left[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\right]}{\sqrt{c^2\,d^2-e^2}}\right]-$$

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

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

$$4\,(\pi-2\,\text{ArcSin}[c\,x])\,\text{Log}[c\,d+c\,e\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,d+c\,e\,x]+$$

$$8\,\text{i}\left(\text{PolyLog}\left[2,\frac{\text{i}\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-\text{i}\,\text{ArcSin}[c\,x]}}{e}\right]+\right.$$

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

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

$$\frac{1}{8 e^2}\left(i\,(\pi - 2\,\text{ArcSin}[c\,x])^2 - 32\,i\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(c\,d-e)\,\text{Cot}\left[\frac{1}{4}\,(\pi + 2\,\text{ArcSin}[c\,x])\right]}{\sqrt{c^2 d^2 - e^2}}\right] - 4\left(\pi + 4\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right] - 2\,\text{ArcSin}[c\,x]\right)\text{Log}\left[1 - \frac{i\left(-c\,d + \sqrt{c^2 d^2 - e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] - 4\left(\pi - 4\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right] - 2\,\text{ArcSin}[c\,x]\right)\text{Log}\left[1 + \frac{i\left(c\,d + \sqrt{c^2 d^2 - e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] + 4\,(\pi - 2\,\text{ArcSin}[c\,x])\,\text{Log}[c\,d + c\,e\,x] + 8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,d + c\,e\,x] + 8\,i\left(\text{PolyLog}\left[2, \frac{i\left(-c\,d + \sqrt{c^2 d^2 - e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] + \text{PolyLog}\left[2, -\frac{i\left(c\,d + \sqrt{c^2 d^2 - e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]\right)\right)$$

Problem 111: Result unnecessarily involves higher level functions.

$$\int \frac{\left(f + g\,x + h\,x^2 + i\,x^3\right)\,(a + b\,\text{ArcSin}[c\,x])}{(d + e\,x)^3}\,dx$$

Optimal (type 4, 1016 leaves, 30 steps):

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

Result (type 6, 1844 leaves):

$$\frac{a\,i\,x}{e^3}+\frac{-a\,e^3f+a\,d\,e^2g-a\,d^2e\,h+a\,d^3i}{2\,e^4\,(d+e\,x)^2}+$$
$$\frac{-a\,e^2g+2\,a\,d\,e\,h-3\,a\,d^2i}{e^4\,(d+e\,x)}+b\,f\left(-\left(\left(\left(c\,\sqrt{1+\frac{-d-\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\,\sqrt{1+\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\right.\right.\right.\right.$$
$$\left.\text{AppellF1}\left[2,\frac{1}{2},\frac{1}{2},3,-\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x},-\frac{-d-\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}\right]\right)\Big/\left(4\,e^2\,(d+e\,x)\,\sqrt{1-c^2x^2}\right)-$$

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

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

$$\left.\left.\left.\left.\left(i\,e+i\,c^2\,d\,x+\sqrt{c^2\,d^2-e^2}\,\sqrt{1-c^2\,x^2}\right)\Big]\right)\right)\Big/\left((c\,d-e)\,e\,(c\,d+e)\,\sqrt{c^2\,d^2-e^2}\right)\right)+$$

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

$$\left(\frac{\sqrt{1-c^2\,x^2}+c\,x\,\text{ArcSin}[c\,x]}{c\,e^3}-\frac{1}{2\,e^3}d^3\left(\frac{c\,\sqrt{1-c^2\,x^2}}{(c^2\,d^2-e^2)\,(d+e\,x)}-\frac{\text{ArcSin}[c\,x]}{e\,(d+e\,x)^2}-\right.\right.$$

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

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

$$\frac{1}{8\,e^4}\,3\,d\left(i\,(\pi-2\,\text{ArcSin}[c\,x])^2-\right.$$

$$32\,i\,\text{ArcSin}\Big[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\Big]\,\text{ArcTan}\Big[\frac{(c\,d-e)\,\text{Cot}\big[\frac{1}{4}\,(\pi+2\,\text{ArcSin}[c\,x])\big]}{\sqrt{c^2\,d^2-e^2}}\Big]-$$

$$4\left(\pi+4\,\text{ArcSin}\Big[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\Big]-2\,\text{ArcSin}[c\,x]\right)\text{Log}\Big[1-\frac{i\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\Big]-$$

$$4\left(\pi-4\,\text{ArcSin}\Big[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\Big]-2\,\text{ArcSin}[c\,x]\right)\text{Log}\Big[1+\frac{i\left(c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\Big]+$$

$$4\,(\pi-2\,\text{ArcSin}[c\,x])\,\text{Log}[c\,d+c\,e\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,d+c\,e\,x]+$$

$$8\,i\left(\text{PolyLog}\Big[2,\frac{i\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\Big]+\text{PolyLog}\Big[2,-\frac{i\left(c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\Big]\right)\Bigg)\Bigg)+$$

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

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

$$\frac{1}{8 e^3}\left(i\,(\pi - 2\,\text{ArcSin}[c\,x])^2 - \right.$$

$$32\,i\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(c\,d-e)\,\text{Cot}\left[\frac{1}{4}\,(\pi + 2\,\text{ArcSin}[c\,x])\right]}{\sqrt{c^2\,d^2-e^2}}\right] -$$

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

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

$$4\,(\pi - 2\,\text{ArcSin}[c\,x])\,\text{Log}[c\,d + c\,e\,x] + 8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,d + c\,e\,x] +$$

$$8\,i\left(\text{PolyLog}\left[2, \frac{i\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right] + \right.$$

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

Problem 112: Result unnecessarily involves higher level functions.

$$\int \frac{\left(f + g\,x + h\,x^2 + i\,x^3\right)\,(a + b\,\text{ArcSin}[c\,x])}{(d + e\,x)^4}\,dx$$

Optimal (type 4, 1278 leaves, 29 steps):

$$\frac{b\,c\,\left(2\,e^2\,f-3\,d\,e\,g+6\,d^2\,h\right)\,\sqrt{1-c^2\,x^2}}{12\,e^2\,\left(c^2\,d^2-e^2\right)\,\left(d+e\,x\right)^2}-\frac{11\,b\,c\,d^3\,i\,\sqrt{1-c^2\,x^2}}{12\,e^3\,\left(c^2\,d^2-e^2\right)\,\left(d+e\,x\right)^2}+$$
$$\frac{b\,c\,d^2\,\left(2\,e\,h+27\,d\,i\right)\,\sqrt{1-c^2\,x^2}}{12\,e^3\,\left(c^2\,d^2-e^2\right)\,\left(d+e\,x\right)^2}+\frac{b\,c\,d\,\left(e^2\,g-6\,d\,e\,h-18\,d^2\,i\right)\,\sqrt{1-c^2\,x^2}}{12\,e^3\,\left(c^2\,d^2-e^2\right)\,\left(d+e\,x\right)^2}-$$
$$\frac{b\,c\,\left(2\,e^2\,\left(e\,g-4\,d\,h\right)-c^2\,d\,\left(2\,e^2\,f-d\,e\,g-2\,d^2\,h\right)\right)\,\sqrt{1-c^2\,x^2}}{4\,e^2\,\left(c^2\,d^2-e^2\right)^2\,\left(d+e\,x\right)}-$$
$$\frac{11\,b\,c^3\,d^4\,i\,\sqrt{1-c^2\,x^2}}{4\,e^3\,\left(c^2\,d^2-e^2\right)^2\,\left(d+e\,x\right)}+\frac{b\,c\,d^2\,\left(18\,e^2\,i+c^2\,d\,\left(2\,e\,h+9\,d\,i\right)\right)\,\sqrt{1-c^2\,x^2}}{4\,e^3\,\left(c^2\,d^2-e^2\right)^2\,\left(d+e\,x\right)}-$$
$$\frac{b\,c\,d\,\left(4\,e^2\,\left(e\,h+6\,d\,i\right)-c^2\,d\,\left(e^2\,g-2\,d\,e\,h+6\,d^2\,i\right)\right)\,\sqrt{1-c^2\,x^2}}{4\,e^3\,\left(c^2\,d^2-e^2\right)^2\,\left(d+e\,x\right)}-$$
$$\frac{\mathrm{i}\,b\,i\,\text{ArcSin}[c\,x]^2}{2\,e^4}-\frac{\left(e^3\,f-d\,e^2\,g+d^2\,e\,h-d^3\,i\right)\,\left(a+b\,\text{ArcSin}[c\,x]\right)}{3\,e^4\,\left(d+e\,x\right)^3}-$$
$$\frac{\left(e^2\,g-2\,d\,e\,h+3\,d^2\,i\right)\,\left(a+b\,\text{ArcSin}[c\,x]\right)}{2\,e^4\,\left(d+e\,x\right)^2}-\frac{\left(e\,h-3\,d\,i\right)\,\left(a+b\,\text{ArcSin}[c\,x]\right)}{e^4\,\left(d+e\,x\right)}+$$
$$\left(b\,c\,\left(4\,c^4\,d^2\,f+12\,e^2\,h+c^2\,\left(2\,e^2\,f-9\,d\,e\,g+6\,d^2\,h\right)\right)\,\text{ArcTan}\left[\frac{e+c^2\,d\,x}{\sqrt{c^2\,d^2-e^2}\,\sqrt{1-c^2\,x^2}}\right]\right)\Big/$$
$$\left(12\,e\,\left(c^2\,d^2-e^2\right)^{5/2}\right)-\frac{11\,b\,c^3\,d^3\,\left(2\,c^2\,d^2+e^2\right)\,i\,\text{ArcTan}\left[\frac{e+c^2\,d\,x}{\sqrt{c^2\,d^2-e^2}\,\sqrt{1-c^2\,x^2}}\right]}{12\,e^4\,\left(c^2\,d^2-e^2\right)^{5/2}}+$$
$$\frac{b\,c^3\,d^2\,\left(4\,c^2\,d^2\,h+e\,\left(2\,e\,h+81\,d\,i\right)\right)\,\text{ArcTan}\left[\frac{e+c^2\,d\,x}{\sqrt{c^2\,d^2-e^2}\,\sqrt{1-c^2\,x^2}}\right]}{12\,e^3\,\left(c^2\,d^2-e^2\right)^{5/2}}+$$
$$\left(b\,c\,d\,\left(2\,c^4\,d^2\,g-36\,e^2\,i+c^2\,\left(e^2\,g-18\,d\,e\,h-18\,d^2\,i\right)\right)\,\text{ArcTan}\left[\frac{e+c^2\,d\,x}{\sqrt{c^2\,d^2-e^2}\,\sqrt{1-c^2\,x^2}}\right]\right)\Big/$$
$$\left(12\,e^2\,\left(c^2\,d^2-e^2\right)^{5/2}\right)+\frac{b\,i\,\text{ArcSin}[c\,x]\,\text{Log}\left[1-\frac{\mathrm{i}\,e\,e^{i\,\text{ArcSin}[c\,x]}}{c\,d-\sqrt{c^2\,d^2-e^2}}\right]}{e^4}+$$
$$\frac{b\,i\,\text{ArcSin}[c\,x]\,\text{Log}\left[1-\frac{\mathrm{i}\,e\,e^{i\,\text{ArcSin}[c\,x]}}{c\,d+\sqrt{c^2\,d^2-e^2}}\right]}{e^4}-\frac{b\,i\,\text{ArcSin}[c\,x]\,\text{Log}[d+e\,x]}{e^4}+$$
$$\frac{i\,\left(a+b\,\text{ArcSin}[c\,x]\right)\,\text{Log}[d+e\,x]}{e^4}-\frac{\mathrm{i}\,b\,i\,\text{PolyLog}\left[2,\frac{\mathrm{i}\,e\,e^{i\,\text{ArcSin}[c\,x]}}{c\,d-\sqrt{c^2\,d^2-e^2}}\right]}{e^4}-\frac{\mathrm{i}\,b\,i\,\text{PolyLog}\left[2,\frac{\mathrm{i}\,e\,e^{i\,\text{ArcSin}[c\,x]}}{c\,d+\sqrt{c^2\,d^2-e^2}}\right]}{e^4}$$

Result (type 6, 2069 leaves):

$$\frac{-a\,e^3\,f+a\,d\,e^2\,g-a\,d^2\,e\,h+a\,d^3\,i}{3\,e^4\,\left(d+e\,x\right)^3}+\frac{-a\,e^2\,g+2\,a\,d\,e\,h-3\,a\,d^2\,i}{2\,e^4\,\left(d+e\,x\right)^2}+\frac{-a\,e\,h+3\,a\,d\,i}{e^4\,\left(d+e\,x\right)}+$$

$$b\,f\left(-\left(\left(c\sqrt{1+\frac{-d-\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\sqrt{1+\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\,\text{AppellF1}\left[3,\frac{1}{2},\frac{1}{2},4,-\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x},\right.\right.\right.\right.$$

$$\left.\left.\left.\left.-\frac{-d-\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}\right]\right)\Big/\left(9\,e^2\,(d+e\,x)^2\sqrt{1-c^2\,x^2}\right)\right)-\frac{\text{ArcSin}[c\,x]}{3\,e\,(d+e\,x)^3}\right)+\frac{a\,i\,\text{Log}[d+e\,x]}{e^4}+$$

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

$$\left.\left.\left.\left.\left.\left(\mathbb{i}\,e+\mathbb{i}\,c^2\,d\,x+\sqrt{c^2\,d^2-e^2}\sqrt{1-c^2\,x^2}\right)\right]\right)\right)\Big/\left((c\,d-e)\,e\,(c\,d+e)\sqrt{c^2\,d^2-e^2}\right)\right)+$$

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

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

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

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

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

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

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

$$b\,i\left(\frac{1}{2e^3}3d^2\left(\frac{c\sqrt{1-c^2x^2}}{\left(c^2d^2-e^2\right)\left(d+ex\right)}-\frac{\text{ArcSin}[c\,x]}{e\left(d+ex\right)^2}-\right.\right.$$

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

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

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

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

$$32\,i\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,d}{e}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{\left(c\,d-e\right)\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{c^2d^2-e^2}}\right]-$$

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

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

$$4\,(\pi-2\,\text{ArcSin}[c\,x])\,\text{Log}[c\,d+c\,e\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,d+c\,e\,x]+$$

$$8\,i\left(\text{PolyLog}\left[2,\frac{i\left(-c\,d+\sqrt{c^2\,d^2-e^2}\right)e^{-i\,\text{ArcSin}[c\,x]}}{e}\right]+\right.$$

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

Problem 113: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 935 leaves, 33 steps):

$$\frac{a\,b\,c\,(e\,f-d\,g)\,\sqrt{1-c^2\,x^2}}{e\,(c^2\,d^2-e^2)\,(d+e\,x)}+\frac{a\,b\,g^2\,\text{ArcSin}[c\,x]}{e^2\,(e\,f-d\,g)}+$$

$$\frac{b^2\,c\,(e\,f-d\,g)\,\sqrt{1-c^2\,x^2}\,\text{ArcSin}[c\,x]}{e\,(c^2\,d^2-e^2)\,(d+e\,x)}+\frac{b^2\,g^2\,\text{ArcSin}[c\,x]^2}{2\,e^2\,(e\,f-d\,g)}-$$

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

$$\frac{2\,i\,b^2\,c\,g\,\text{ArcSin}[c\,x]\,\text{Log}\left[1-\frac{i\,e\,e^{i\,\text{ArcSin}[c\,x]}}{c\,d-\sqrt{c^2\,d^2-e^2}}\right]}{e^2\,\sqrt{c^2\,d^2-e^2}}-$$

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

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

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

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

Result (type 6, 3976 leaves):

$$\frac{-a^2\,e\,f+a^2\,d\,g}{2\,e^2\,(d+e\,x)^2}-\frac{a^2\,g}{e^2\,(d+e\,x)}+$$

$$2\,a\,b\,f\left(-\left(\left(c\,\sqrt{1+\frac{-d-\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\,\sqrt{1+\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x}}\,\text{AppellF1}\left[2,\frac{1}{2},\frac{1}{2},3,-\frac{-d+\sqrt{\frac{1}{c^2}}\,e}{d+e\,x},\right.\right.\right.\right.$$

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

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

$$\left.\left.\left.\left.\left.\left(i\,e+i\,c^2\,d\,x+\sqrt{c^2d^2-e^2}\sqrt{1-c^2x^2}\right)\right]\right)\right)\Big/\left(\left(c\,d-e\right)e\left(c\,d+e\right)\sqrt{c^2d^2-e^2}\right)\right)+$$

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

$$\left(-c\,d\,e\sqrt{1-c^2x^2}\,\text{ArcSin}[c\,x]-c^2d^2\,\text{ArcSin}[c\,x]^2+e^2\,\text{ArcSin}[c\,x]^2\right)\Big/$$

$$\left(\left(c\,d-e\right)e^2\left(c\,d+e\right)\left(c\,d+c\,e\,x\right)\right)-$$

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

$$\frac{1}{\sqrt{-c^2d^2+e^2}}\left(2\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\text{ArcTanh}\left[\frac{\left(c\,d+e\right)\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2d^2+e^2}}\right]-\right.$$

$$2\,\text{ArcCos}\left[-\frac{c\,d}{e}\right]\text{ArcTanh}\left[\frac{\left(-c\,d+e\right)\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2d^2+e^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c\,d}{e}\right]-2\,i\left(\text{ArcTanh}\left[\frac{\left(c\,d+e\right)\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2d^2+e^2}}\right]-\right.\right.$$

$$\left.\left.\text{ArcTanh}\left[\frac{\left(-c\,d+e\right)\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2d^2+e^2}}\right]\right)\right)$$

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

$$2\,i\left(\text{ArcTanh}\left[\frac{\left(c\,d+e\right)\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2d^2+e^2}}\right]-\text{ArcTanh}\left[\right.\right.$$

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

$$\left(\text{ArcCos}\left[-\frac{c\,d}{e}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-c\,d+e)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2\,d^2+e^2}}\right]\right)$$

$$\text{Log}\left[1-\left(\left(c\,d-i\sqrt{-c^2\,d^2+e^2}\right)\left(c\,d+e-\sqrt{-c^2\,d^2+e^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big/\left(e\left(c\,d+e+\sqrt{-c^2\,d^2+e^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{c\,d}{e}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-c\,d+e)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2\,d^2+e^2}}\right]\right)$$

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

$$\left(\left(c\,d-i\sqrt{-c^2\,d^2+e^2}\right)\left(c\,d+e-\sqrt{-c^2\,d^2+e^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big/\left(e\left(c\,d+e+\sqrt{-c^2\,d^2+e^2}\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big]-\text{PolyLog}\Big[2,$$

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

$$\frac{1}{e^2\left(-c^2\,d^2+e^2\right)}c^2\,d^2\left(\frac{\pi\,\text{ArcTan}\left[\frac{e+c\,d\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[c\,x]\right]}{\sqrt{c^2\,d^2-e^2}}\right]}{\sqrt{c^2\,d^2-e^2}}+\frac{1}{\sqrt{-c^2\,d^2+e^2}}\right.$$

$$\left(2\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\text{ArcTanh}\left[\frac{(c\,d+e)\,\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2\,d^2+e^2}}\right]-\right.$$

$$2\,\text{ArcCos}\left[-\frac{c\,d}{e}\right]\text{ArcTanh}\left[\frac{(-c\,d+e)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2\,d^2+e^2}}\right]+$$

$$\left(\text{ArcCos}\left[-\frac{c\,d}{e}\right]-2\,i\left(\text{ArcTanh}\left[\frac{(c\,d+e)\,\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2\,d^2+e^2}}\right]-\right.\right.$$

$$\left.\left.\text{ArcTanh}\left[\frac{(-c\,d+e)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2\,d^2+e^2}}\right]\right)\right)$$

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

$$2\,i\left(\text{ArcTanh}\left[\frac{(c\,d+e)\,\text{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]-\text{ArcTanh}\left[\frac{(-c\,d+e)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]\right)\text{Log}\left[\frac{\sqrt{-c^2 d^2+e^2}\;e^{\frac{1}{2} i\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)}}{\sqrt{2}\sqrt{e}\sqrt{c\,d+c\,e\,x}}\right]-$$

$$\left(\text{ArcCos}\left[-\frac{c\,d}{e}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-c\,d+e)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]\right)$$

$$\text{Log}\left[1-\left(\left(c\,d-i\sqrt{-c^2 d^2+e^2}\right)\left(c\,d+e-\sqrt{-c^2 d^2+e^2}\;\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big/\left(e\left(c\,d+e+\sqrt{-c^2 d^2+e^2}\;\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\right]+$$

$$\left(-\text{ArcCos}\left[-\frac{c\,d}{e}\right]+2\,i\,\text{ArcTanh}\left[\frac{(-c\,d+e)\,\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]\right)$$

$$\text{Log}\left[1-\left(\left(c\,d+i\sqrt{-c^2 d^2+e^2}\right)\left(c\,d+e-\sqrt{-c^2 d^2+e^2}\;\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big/\left(e\left(c\,d+e+\sqrt{-c^2 d^2+e^2}\;\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\right]+i\left(\text{PolyLog}\left[2,\right.\right.$$

$$\left.\left(\left(c\,d-i\sqrt{-c^2 d^2+e^2}\right)\left(c\,d+e-\sqrt{-c^2 d^2+e^2}\;\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big/\left(e\left(c\,d+e+\sqrt{-c^2 d^2+e^2}\;\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\right]-\text{PolyLog}\left[2,\right.$$

$$\left.\left.\left.\left(\left(c\,d+i\sqrt{-c^2 d^2+e^2}\right)\left(c\,d+e-\sqrt{-c^2 d^2+e^2}\;\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\Big/\left(e\left(c\,d+e+\sqrt{-c^2 d^2+e^2}\;\text{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\text{ArcSin}[c\,x]\right)\right]\right)\right)\right]\right)\right)\right)+$$

$$b^2 c^2 f\left(\frac{\sqrt{1-c^2 x^2}\;\text{ArcSin}[c\,x]}{(c\,d-e)\,(c\,d+e)\,(c\,d+c\,e\,x)}-\frac{\text{ArcSin}[c\,x]^2}{2\,e\,(c\,d+c\,e\,x)^2}+\right.$$

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

$$\frac{1}{e\left(-c^2 d^2+e^2\right)}$$

c

d

$$\left(\frac{\pi \operatorname{ArcTan}\left[\frac{e+c\,d\operatorname{Tan}\left[\frac{1}{2}\operatorname{ArcSin}[c\,x]\right]}{\sqrt{c^2 d^2-e^2}}\right]}{\sqrt{c^2 d^2-e^2}}+\right.$$

$$\frac{1}{\sqrt{-c^2 d^2+e^2}}\left(2\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\operatorname{ArcTanh}\left[\frac{(c\,d+e)\operatorname{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]-\right.$$

$$2\operatorname{ArcCos}\left[-\frac{c\,d}{e}\right]\operatorname{ArcTanh}\left[\frac{(-c\,d+e)\operatorname{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]+$$

$$\left(\operatorname{ArcCos}\left[-\frac{c\,d}{e}\right]-2\,i\left(\operatorname{ArcTanh}\left[\frac{(c\,d+e)\operatorname{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]-\right.\right.$$

$$\left.\left.\operatorname{ArcTanh}\left[\frac{(-c\,d+e)\operatorname{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]\right)\right)$$

$$\operatorname{Log}\left[\frac{\sqrt{-c^2 d^2+e^2}\;e^{-\frac{1}{2}i\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)}}{\sqrt{2}\,\sqrt{e}\,\sqrt{c\,d+c\,e\,x}}\right]+\left(\operatorname{ArcCos}\left[-\frac{c\,d}{e}\right]+\right.$$

$$2\,i\left(\operatorname{ArcTanh}\left[\frac{(c\,d+e)\operatorname{Cot}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]-\operatorname{ArcTanh}\left[\right.\right.$$

$$\left.\left.\left.\frac{(-c\,d+e)\operatorname{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]\right)\right)\operatorname{Log}\left[\frac{\sqrt{-c^2 d^2+e^2}\;e^{\frac{1}{2}i\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)}}{\sqrt{2}\,\sqrt{e}\,\sqrt{c\,d+c\,e\,x}}\right]-$$

$$\left(\operatorname{ArcCos}\left[-\frac{c\,d}{e}\right]+2\,i\operatorname{ArcTanh}\left[\frac{(-c\,d+e)\operatorname{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]\right)$$

$$\operatorname{Log}\left[1-\left(\left(c\,d-i\sqrt{-c^2 d^2+e^2}\right)\left(c\,d+e-\sqrt{-c^2 d^2+e^2}\operatorname{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]\right)\right)\Big/\right.$$

$$\left.\left(e\left(c\,d+e+\sqrt{-c^2 d^2+e^2}\operatorname{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]\right)\right)\right]+$$

$$\left(-\operatorname{ArcCos}\left[-\frac{c\,d}{e}\right]+2\,i\operatorname{ArcTanh}\left[\frac{(-c\,d+e)\operatorname{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]}{\sqrt{-c^2 d^2+e^2}}\right]\right)$$

$$\operatorname{Log}\left[1-\left(\left(c\,d+i\sqrt{-c^2 d^2+e^2}\right)\left(c\,d+e-\sqrt{-c^2 d^2+e^2}\operatorname{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]\right)\right)\Big/\right.$$

$$\left.\left(e\left(c\,d+e+\sqrt{-c^2 d^2+e^2}\operatorname{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]\right)\right)\right]+i\left(\operatorname{PolyLog}\left[2,\right.\right.$$

$$\left(\left(c\,d-i\sqrt{-c^2 d^2+e^2}\right)\left(c\,d+e-\sqrt{-c^2 d^2+e^2}\operatorname{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]\right)\right)\Big/$$

$$\left.\left(e\left(c\,d+e+\sqrt{-c^2 d^2+e^2}\operatorname{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]\right)\right)\right]-\operatorname{PolyLog}\left[2,\right.$$

$$\left(\left(c\,d+i\sqrt{-c^2 d^2+e^2}\right)\left(c\,d+e-\sqrt{-c^2 d^2+e^2}\operatorname{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\operatorname{ArcSin}[c\,x]\right)\right]\right)\right)\Big/$$

$$\left(e\left(c\,d+e+\sqrt{-c^2\,d^2+e^2}\;\mathrm{Tan}\left[\frac{1}{2}\left(\frac{\pi}{2}-\mathrm{ArcSin}[c\,x]\right)\right]\right)\right]\Bigg)\Bigg)\Bigg)$$

Problem 114: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 1678 leaves, 55 steps) :

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

$$\frac{4\,a\,b\,g\,(e\,f-d\,g)\,\text{ArcSin}[c\,x]}{e^3\,(d+e\,x)}+\frac{b^2\,c\,(e\,f-d\,g)^2\,\sqrt{1-c^2\,x^2}\,\text{ArcSin}[c\,x]}{e^2\,(c^2\,d^2-e^2)\,(d+e\,x)}-$$

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

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

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

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

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

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

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

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

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

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

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

$$\frac{2\,b^2\,g^2\,\text{PolyLog}\left[3,\frac{i\,e\,e^{i\,\text{ArcSin}[c\,x]}}{c\,d-\sqrt{c^2\,d^2-e^2}}\right]}{e^3}+\frac{2\,b^2\,g^2\,\text{PolyLog}\left[3,\frac{i\,e\,e^{i\,\text{ArcSin}[c\,x]}}{c\,d+\sqrt{c^2\,d^2-e^2}}\right]}{e^3}$$

Result (type 1, 1 leaves) :

???

Problem 118: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 1067 leaves, 38 steps) :

$$-\frac{a^2 (f g-e h) x}{h^2}+\frac{2 b^2 (f g-e h) x}{h^2}+\frac{a^2 f x^2}{2 h}-\frac{b^2 f x^2}{4 h}-\frac{a b (4 (f g-e h)-f h x) \sqrt{1-c^2 x^2}}{2 c h^2}-$$

$$\frac{a b f \text{ArcSin}[c x]}{2 c^2 h}-\frac{2 a b (f g-e h) x \text{ArcSin}[c x]}{h^2}+\frac{a b f x^2 \text{ArcSin}[c x]}{h}-$$

$$\frac{2 b^2 (f g-e h) \sqrt{1-c^2 x^2} \text{ArcSin}[c x]}{c h^2}+\frac{b^2 f x \sqrt{1-c^2 x^2} \text{ArcSin}[c x]}{2 c h}-\frac{b^2 f \text{ArcSin}[c x]^2}{4 c^2 h}-$$

$$\frac{i a b (f g^2-e g h+d h^2) \text{ArcSin}[c x]^2}{h^3}-\frac{b^2 (f g-e h) x \text{ArcSin}[c x]^2}{h^2}+\frac{b^2 f x^2 \text{ArcSin}[c x]^2}{2 h}-$$

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

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

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

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

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

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

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

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

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

Result (type 4, 8787 leaves):

$$\frac{a^2 (-f g+e h) x}{h^2}+\frac{a^2 f x^2}{2 h}+\frac{(a^2 f g^2-a^2 e g h+a^2 d h^2) \text{Log}[g+h x]}{h^3}+\frac{1}{4 h} a b d$$

$$\left(i (\pi-2 \text{ArcSin}[c x])^2-32 i \text{ArcSin}\left[\frac{\sqrt{1+\frac{c g}{h}}}{\sqrt{2}}\right] \text{ArcTan}\left[\frac{(c g-h) \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[c x])\right]}{\sqrt{c^2 g^2-h^2}}\right]-\right.$$

$$4\left(\pi+4\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,g}{h}}}{\sqrt{2}}\right]-2\,\text{ArcSin}[c\,x]\right)\text{Log}\left[1-\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(-c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\right]-$$

$$4\left(\pi-4\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,g}{h}}}{\sqrt{2}}\right]-2\,\text{ArcSin}[c\,x]\right)\text{Log}\left[1+\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\right]+$$

$$4\left(\pi-2\,\text{ArcSin}[c\,x]\right)\text{Log}[c\,g+c\,h\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,g+c\,h\,x]+$$

$$8\,i\left(\text{PolyLog}\left[2,\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(-c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\right]+\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2,-\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\right]\right)\right)\right)+$$

$$\frac{1}{c\,h}2\,a\,b\,e\left(\sqrt{1-c^2\,x^2}+c\,x\,\text{ArcSin}[c\,x]-\frac{1}{8\,h}c\,g\left(i\left(\pi-2\,\text{ArcSin}[c\,x]\right)^2-\right.\right.$$

$$32\,i\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,g}{h}}}{\sqrt{2}}\right]\text{ArcTan}\left[\frac{(c\,g-h)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{c^2\,g^2-h^2}}\right]-$$

$$4\left(\pi+4\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,g}{h}}}{\sqrt{2}}\right]-2\,\text{ArcSin}[c\,x]\right)\text{Log}\left[1-\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(-c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\right]-$$

$$4\left(\pi-4\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,g}{h}}}{\sqrt{2}}\right]-2\,\text{ArcSin}[c\,x]\right)\text{Log}\left[1+\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\right]+$$

$$4\left(\pi-2\,\text{ArcSin}[c\,x]\right)\text{Log}[c\,g+c\,h\,x]+8\,\text{ArcSin}[c\,x]\,\text{Log}[c\,g+c\,h\,x]+$$

$$8\,i\left(\text{PolyLog}\left[2,\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(-c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\right]+\right.$$

$$\left.\left.\left.\text{PolyLog}\left[2,-\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\right]\right)\right)\right)+$$

$$\frac{1}{3\,h\sqrt{-\left(-c^2\,g^2+h^2\right)^2}}\,b^2\,d\left(-i\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\,\text{ArcSin}[c\,x]^3-24\,i\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\right.$$

$$\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,g}{h}}}{\sqrt{2}}\right]\text{ArcSin}[c\,x]\,\text{ArcTan}\left[\frac{(c\,g-h)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{c^2\,g^2-h^2}}\right]+$$

$$24\,i\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,g}{h}}}{\sqrt{2}}\right]\text{ArcSin}[c\,x]$$

$$\text{ArcTan}\left[\frac{(c\,g-h)\left(\text{Cos}\left[\frac{1}{2}\text{ArcSin}[c\,x]\right]-\text{Sin}\left[\frac{1}{2}\text{ArcSin}[c\,x]\right]\right)}{\sqrt{c^2\,g^2-h^2}\left(\text{Cos}\left[\frac{1}{2}\text{ArcSin}[c\,x]\right]+\text{Sin}\left[\frac{1}{2}\text{ArcSin}[c\,x]\right]\right)}\right]+$$

$$3\,c\,g\sqrt{-c^2\,g^2+h^2}\,\text{ArcSin}[c\,x]^2\,\text{Log}\left[1+\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,h}{-c\,g+\sqrt{c^2\,g^2-h^2}}\right]-$$

$$3\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\,\pi\,\text{ArcSin}[c\,x]\,\text{Log}\left[1-\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(-c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\right]-$$

$$12\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\,\text{ArcSin}\left[\frac{\sqrt{1+\frac{c\,g}{h}}}{\sqrt{2}}\right]\text{ArcSin}[c\,x]$$

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

$$3\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\,\text{ArcSin}[c\,x]^2\,\text{Log}\left[1-\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(-c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\right]-$$

$$3\,c\,g\sqrt{-c^2\,g^2+h^2}\,\text{ArcSin}[c\,x]^2\,\text{Log}\left[1-\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,h}{c\,g+\sqrt{c^2\,g^2-h^2}}\right]-$$

$$3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \pi \,\text{ArcSin}[c x]\ \text{Log}\left[1+\frac{i\, e^{-i \text{ArcSin}[c x]}\left(c g+\sqrt{c^2 g^2-h^2}\right)}{h}\right]+$$

$$12\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \text{ArcSin}\left[\frac{\sqrt{1+\frac{c g}{h}}}{\sqrt{2}}\right]\text{ArcSin}[c x]$$

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

$$3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \text{ArcSin}[c x]^2\ \text{Log}\left[1+\frac{i\, e^{-i \text{ArcSin}[c x]}\left(c g+\sqrt{c^2 g^2-h^2}\right)}{h}\right]-$$

$$3 i c g\sqrt{c^2 g^2-h^2}\ \text{ArcSin}[c x]^2\ \text{Log}\left[1+\frac{e^{i \text{ArcSin}[c x]}\, h}{i c g-\sqrt{-c^2 g^2+h^2}}\right]+$$

$$3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \text{ArcSin}[c x]^2\ \text{Log}\left[1+\frac{e^{i \text{ArcSin}[c x]}\, h}{i c g-\sqrt{-c^2 g^2+h^2}}\right]+$$

$$3 i c g\sqrt{c^2 g^2-h^2}\ \text{ArcSin}[c x]^2\ \text{Log}\left[1+\frac{e^{i \text{ArcSin}[c x]}\, h}{i c g+\sqrt{-c^2 g^2+h^2}}\right]+$$

$$3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \text{ArcSin}[c x]^2\ \text{Log}\left[1+\frac{e^{i \text{ArcSin}[c x]}\, h}{i c g+\sqrt{-c^2 g^2+h^2}}\right]+$$

$$3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \pi \,\text{ArcSin}[c x]\ \text{Log}\left[1+\frac{\left(c g-\sqrt{c^2 g^2-h^2}\right)\left(c x+i\sqrt{1-c^2 x^2}\right)}{h}\right]+$$

$$12\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \text{ArcSin}\left[\frac{\sqrt{1+\frac{c g}{h}}}{\sqrt{2}}\right]\text{ArcSin}[c x]$$

$$\text{Log}\left[1+\frac{\left(c g-\sqrt{c^2 g^2-h^2}\right)\left(c x+i\sqrt{1-c^2 x^2}\right)}{h}\right]-$$

$$3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \text{ArcSin}[c x]^2\ \text{Log}\left[1+\frac{\left(c g-\sqrt{c^2 g^2-h^2}\right)\left(c x+i\sqrt{1-c^2 x^2}\right)}{h}\right]+$$

$$3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \pi \,\text{ArcSin}[c x]\ \text{Log}\left[1+\frac{\left(c g+\sqrt{c^2 g^2-h^2}\right)\left(c x+i\sqrt{1-c^2 x^2}\right)}{h}\right]-$$

$$12\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \text{ArcSin}\left[\frac{\sqrt{1+\frac{c g}{h}}}{\sqrt{2}}\right]\text{ArcSin}[c x]$$

$$\text{Log}\left[1+\frac{\left(c\,g+\sqrt{c^2\,g^2-h^2}\right)\left(c\,x+i\,\sqrt{1-c^2\,x^2}\right)}{h}\right]-$$

$$3\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\;\text{ArcSin}[c\,x]^2\,\text{Log}\left[1+\frac{\left(c\,g+\sqrt{c^2\,g^2-h^2}\right)\left(c\,x+i\,\sqrt{1-c^2\,x^2}\right)}{h}\right]-$$

$$6\,i\,c\,g\,\sqrt{-c^2\,g^2+h^2}\;\text{ArcSin}[c\,x]\;\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,h}{c\,g-\sqrt{c^2\,g^2-h^2}}\right]+$$

$$6\,i\,c\,g\,\sqrt{-c^2\,g^2+h^2}\;\text{ArcSin}[c\,x]\;\text{PolyLog}\left[2,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,h}{c\,g+\sqrt{c^2\,g^2-h^2}}\right]-$$

$$6\,c\,g\,\sqrt{c^2\,g^2-h^2}\;\text{ArcSin}[c\,x]\;\text{PolyLog}\left[2,\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{-i\,c\,g+\sqrt{-c^2\,g^2+h^2}}\right]-$$

$$6\,i\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\;\text{ArcSin}[c\,x]\;\text{PolyLog}\left[2,\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{-i\,c\,g+\sqrt{-c^2\,g^2+h^2}}\right]+$$

$$6\,c\,g\,\sqrt{c^2\,g^2-h^2}\;\text{ArcSin}[c\,x]\;\text{PolyLog}\left[2,-\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{i\,c\,g+\sqrt{-c^2\,g^2+h^2}}\right]-$$

$$6\,i\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\;\text{ArcSin}[c\,x]\;\text{PolyLog}\left[2,-\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{i\,c\,g+\sqrt{-c^2\,g^2+h^2}}\right]+$$

$$6\,c\,g\,\sqrt{-c^2\,g^2+h^2}\;\text{PolyLog}\left[3,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,h}{c\,g-\sqrt{c^2\,g^2-h^2}}\right]-$$

$$6\,c\,g\,\sqrt{-c^2\,g^2+h^2}\;\text{PolyLog}\left[3,\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,h}{c\,g+\sqrt{c^2\,g^2-h^2}}\right]-$$

$$6\,i\,c\,g\,\sqrt{c^2\,g^2-h^2}\;\text{PolyLog}\left[3,\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{-i\,c\,g+\sqrt{-c^2\,g^2+h^2}}\right]+$$

$$6\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\;\text{PolyLog}\left[3,\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{-i\,c\,g+\sqrt{-c^2\,g^2+h^2}}\right]+$$

$$6\,i\,c\,g\,\sqrt{c^2\,g^2-h^2}\;\text{PolyLog}\left[3,-\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{i\,c\,g+\sqrt{-c^2\,g^2+h^2}}\right]+$$

$$\left.6\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\;\text{PolyLog}\left[3,-\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{i\,c\,g+\sqrt{-c^2\,g^2+h^2}}\right]\right)+$$

$$\frac{1}{c} b^2 e \left(\frac{2 \sqrt{1-c^2 x^2}\, \text{ArcSin}[c x]}{h} + \frac{c x \left(-2+\text{ArcSin}[c x]^2\right)}{h} - \right.$$

$$\frac{1}{3 h^2 \sqrt{-\left(-c^2 g^2+h^2\right)^2}} c g \left(-\mathbb{i} \sqrt{-\left(-c^2 g^2+h^2\right)^2}\, \text{ArcSin}[c x]^3 - 24 \mathbb{i} \sqrt{-\left(-c^2 g^2+h^2\right)^2} \right.$$

$$\text{ArcSin}\left[\frac{\sqrt{1+\frac{c g}{h}}}{\sqrt{2}}\right] \text{ArcSin}[c x] \text{ArcTan}\left[\frac{(c g-h) \text{Cot}\left[\frac{1}{4} \left(\pi+2 \text{ArcSin}[c x]\right)\right]}{\sqrt{c^2 g^2-h^2}}\right] +$$

$$24 \mathbb{i} \sqrt{-\left(-c^2 g^2+h^2\right)^2}\, \text{ArcSin}\left[\frac{\sqrt{1+\frac{c g}{h}}}{\sqrt{2}}\right] \text{ArcSin}[c x]$$

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

$$3 c g \sqrt{-c^2 g^2+h^2}\, \text{ArcSin}[c x]^2 \text{Log}\left[1+\frac{\mathbb{i}\, e^{\mathbb{i} \text{ArcSin}[c x]} h}{-c g+\sqrt{c^2 g^2-h^2}}\right] - 3 \sqrt{-\left(-c^2 g^2+h^2\right)^2}$$

$$\pi \text{ArcSin}[c x] \text{Log}\left[1-\frac{\mathbb{i}\, e^{-\mathbb{i} \text{ArcSin}[c x]} \left(-c g+\sqrt{c^2 g^2-h^2}\right)}{h}\right] - 12 \sqrt{-\left(-c^2 g^2+h^2\right)^2}$$

$$\text{ArcSin}\left[\frac{\sqrt{1+\frac{c g}{h}}}{\sqrt{2}}\right] \text{ArcSin}[c x] \text{Log}\left[1-\frac{\mathbb{i}\, e^{-\mathbb{i} \text{ArcSin}[c x]} \left(-c g+\sqrt{c^2 g^2-h^2}\right)}{h}\right] +$$

$$3 \sqrt{-\left(-c^2 g^2+h^2\right)^2}\, \text{ArcSin}[c x]^2 \text{Log}\left[1-\frac{\mathbb{i}\, e^{-\mathbb{i} \text{ArcSin}[c x]} \left(-c g+\sqrt{c^2 g^2-h^2}\right)}{h}\right] -$$

$$3 c g \sqrt{-c^2 g^2+h^2}\, \text{ArcSin}[c x]^2 \text{Log}\left[1-\frac{\mathbb{i}\, e^{\mathbb{i} \text{ArcSin}[c x]} h}{c g+\sqrt{c^2 g^2-h^2}}\right] - 3 \sqrt{-\left(-c^2 g^2+h^2\right)^2}\, \pi$$

$$\text{ArcSin}[c x] \text{Log}\left[1+\frac{\mathbb{i}\, e^{-\mathbb{i} \text{ArcSin}[c x]} \left(c g+\sqrt{c^2 g^2-h^2}\right)}{h}\right] + 12 \sqrt{-\left(-c^2 g^2+h^2\right)^2}$$

$$\text{ArcSin}\left[\frac{\sqrt{1+\frac{c g}{h}}}{\sqrt{2}}\right] \text{ArcSin}[c x] \text{Log}\left[1+\frac{\mathbb{i}\, e^{-\mathbb{i} \text{ArcSin}[c x]} \left(c g+\sqrt{c^2 g^2-h^2}\right)}{h}\right] +$$

$$3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \text{ArcSin}[c x]^2 \text{Log}\left[1+\frac{i\, e^{-i \text{ArcSin}[c x]} \left(c g+\sqrt{c^2 g^2-h^2}\right)}{h}\right]-$$

$$3 i c g \sqrt{c^2 g^2-h^2}\ \text{ArcSin}[c x]^2 \text{Log}\left[1+\frac{e^{i \text{ArcSin}[c x]} h}{i c g-\sqrt{-c^2 g^2+h^2}}\right]+$$

$$3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \text{ArcSin}[c x]^2 \text{Log}\left[1+\frac{e^{i \text{ArcSin}[c x]} h}{i c g-\sqrt{-c^2 g^2+h^2}}\right]+$$

$$3 i c g \sqrt{c^2 g^2-h^2}\ \text{ArcSin}[c x]^2 \text{Log}\left[1+\frac{e^{i \text{ArcSin}[c x]} h}{i c g+\sqrt{-c^2 g^2+h^2}}\right]+$$

$$3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \text{ArcSin}[c x]^2 \text{Log}\left[1+\frac{e^{i \text{ArcSin}[c x]} h}{i c g+\sqrt{-c^2 g^2+h^2}}\right]+3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \pi$$

$$\text{ArcSin}[c x] \text{Log}\left[1+\frac{\left(c g-\sqrt{c^2 g^2-h^2}\right)\left(c x+i\sqrt{1-c^2 x^2}\right)}{h}\right]+12\sqrt{-\left(-c^2 g^2+h^2\right)^2}$$

$$\text{ArcSin}\left[\frac{\sqrt{1+\frac{c g}{h}}}{\sqrt{2}}\right] \text{ArcSin}[c x] \text{Log}\left[1+\frac{\left(c g-\sqrt{c^2 g^2-h^2}\right)\left(c x+i\sqrt{1-c^2 x^2}\right)}{h}\right]-$$

$$3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \text{ArcSin}[c x]^2 \text{Log}\left[1+\frac{\left(c g-\sqrt{c^2 g^2-h^2}\right)\left(c x+i\sqrt{1-c^2 x^2}\right)}{h}\right]+$$

$$3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \pi \text{ArcSin}[c x] \text{Log}\left[1+\frac{\left(c g+\sqrt{c^2 g^2-h^2}\right)\left(c x+i\sqrt{1-c^2 x^2}\right)}{h}\right]-$$

$$12\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \text{ArcSin}\left[\frac{\sqrt{1+\frac{c g}{h}}}{\sqrt{2}}\right] \text{ArcSin}[c x]$$

$$\text{Log}\left[1+\frac{\left(c g+\sqrt{c^2 g^2-h^2}\right)\left(c x+i\sqrt{1-c^2 x^2}\right)}{h}\right]-$$

$$3\sqrt{-\left(-c^2 g^2+h^2\right)^2}\ \text{ArcSin}[c x]^2 \text{Log}\left[1+\frac{\left(c g+\sqrt{c^2 g^2-h^2}\right)\left(c x+i\sqrt{1-c^2 x^2}\right)}{h}\right]-$$

$$6 i c g \sqrt{-c^2 g^2+h^2}\ \text{ArcSin}[c x] \text{PolyLog}\left[2,\frac{i\, e^{i \text{ArcSin}[c x]} h}{c g-\sqrt{c^2 g^2-h^2}}\right]+$$

$$6 i c g \sqrt{-c^2 g^2+h^2}\ \text{ArcSin}[c x] \text{PolyLog}\left[2,\frac{i\, e^{i \text{ArcSin}[c x]} h}{c g+\sqrt{c^2 g^2-h^2}}\right]-$$

$$6\,c\,g\,\sqrt{c^2 g^2-h^2}\;\text{ArcSin}[c\,x]\;\text{PolyLog}\Big[2,\;\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{-i\,c\,g+\sqrt{-c^2 g^2+h^2}}\Big]-$$

$$6\,i\,\sqrt{-\left(-c^2 g^2+h^2\right)^2}\;\text{ArcSin}[c\,x]\;\text{PolyLog}\Big[2,\;\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{-i\,c\,g+\sqrt{-c^2 g^2+h^2}}\Big]+$$

$$6\,c\,g\,\sqrt{c^2 g^2-h^2}\;\text{ArcSin}[c\,x]\;\text{PolyLog}\Big[2,\;-\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{i\,c\,g+\sqrt{-c^2 g^2+h^2}}\Big]-$$

$$6\,i\,\sqrt{-\left(-c^2 g^2+h^2\right)^2}\;\text{ArcSin}[c\,x]\;\text{PolyLog}\Big[2,\;-\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{i\,c\,g+\sqrt{-c^2 g^2+h^2}}\Big]+$$

$$6\,c\,g\,\sqrt{-c^2 g^2+h^2}\;\text{PolyLog}\Big[3,\;\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,h}{c\,g-\sqrt{c^2 g^2-h^2}}\Big]-6\,c\,g\,\sqrt{-c^2 g^2+h^2}$$

$$\text{PolyLog}\Big[3,\;\frac{i\,e^{i\,\text{ArcSin}[c\,x]}\,h}{c\,g+\sqrt{c^2 g^2-h^2}}\Big]-6\,i\,c\,g\,\sqrt{c^2 g^2-h^2}\;\text{PolyLog}\Big[3,\;\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{-i\,c\,g+\sqrt{-c^2 g^2+h^2}}\Big]+$$

$$6\,\sqrt{-\left(-c^2 g^2+h^2\right)^2}\;\text{PolyLog}\Big[3,\;\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{-i\,c\,g+\sqrt{-c^2 g^2+h^2}}\Big]+6\,i\,c\,g\,\sqrt{c^2 g^2-h^2}\;\text{PolyLog}\Big[$$

$$3,\;-\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{i\,c\,g+\sqrt{-c^2 g^2+h^2}}\Big]+6\,\sqrt{-\left(-c^2 g^2+h^2\right)^2}\;\text{PolyLog}\Big[3,\;-\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{i\,c\,g+\sqrt{-c^2 g^2+h^2}}\Big]\Bigg)\Bigg)+$$

$$\frac{1}{4\,c^2\,h^3}\,a\,b\,f\,\Bigg(i\,c^2 g^2 \pi^2-8\,c\,g\,h\,\sqrt{1-c^2 x^2}-4\,i\,c^2 g^2 \pi\,\text{ArcSin}[c\,x]-$$

$$8\,c^2\,g\,h\,x\,\text{ArcSin}[c\,x]+4\,i\,c^2 g^2\,\text{ArcSin}[c\,x]^2-$$

$$32\,i\,c^2 g^2\,\text{ArcSin}\Big[\frac{\sqrt{1+\frac{c\,g}{h}}}{\sqrt{2}}\Big]\;\text{ArcTan}\Big[\frac{(c\,g-h)\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[c\,x]\right)\right]}{\sqrt{c^2 g^2-h^2}}\Big]-$$

$$2\,h^2\,\text{ArcSin}[c\,x]\;\text{Cos}[2\,\text{ArcSin}[c\,x]]-$$

$$4\,c^2 g^2 \pi\,\text{Log}\Big[1-\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(-c\,g+\sqrt{c^2 g^2-h^2}\right)}{h}\Big]-$$

$$16\,c^2 g^2\,\text{ArcSin}\Big[\frac{\sqrt{1+\frac{c\,g}{h}}}{\sqrt{2}}\Big]\;\text{Log}\Big[1-\frac{i\,e^{-i\,\text{ArcSin}[c\,x]}\left(-c\,g+\sqrt{c^2 g^2-h^2}\right)}{h}\Big]+$$

$$8 c^2 g^2 \text{ArcSin}[c x] \text{Log}\left[1 - \frac{\mathrm{i}\, e^{-\mathrm{i} \text{ArcSin}[c x]} \left(-c g + \sqrt{c^2 g^2 - h^2}\right)}{h}\right] -$$

$$4 c^2 g^2 \pi \text{Log}\left[1 + \frac{\mathrm{i}\, e^{-\mathrm{i} \text{ArcSin}[c x]} \left(c g + \sqrt{c^2 g^2 - h^2}\right)}{h}\right] +$$

$$16 c^2 g^2 \text{ArcSin}\left[\frac{\sqrt{1 + \frac{c g}{h}}}{\sqrt{2}}\right] \text{Log}\left[1 + \frac{\mathrm{i}\, e^{-\mathrm{i} \text{ArcSin}[c x]} \left(c g + \sqrt{c^2 g^2 - h^2}\right)}{h}\right] +$$

$$8 c^2 g^2 \text{ArcSin}[c x] \text{Log}\left[1 + \frac{\mathrm{i}\, e^{-\mathrm{i} \text{ArcSin}[c x]} \left(c g + \sqrt{c^2 g^2 - h^2}\right)}{h}\right] +$$

$$4 c^2 g^2 \pi \text{Log}[c g + c h x] + 8 \mathrm{i}\, c^2 g^2 \text{PolyLog}\left[2, \frac{\mathrm{i}\, e^{-\mathrm{i} \text{ArcSin}[c x]} \left(-c g + \sqrt{c^2 g^2 - h^2}\right)}{h}\right] +$$

$$\left. 8 \mathrm{i}\, c^2 g^2 \text{PolyLog}\left[2, -\frac{\mathrm{i}\, e^{-\mathrm{i} \text{ArcSin}[c x]} \left(c g + \sqrt{c^2 g^2 - h^2}\right)}{h}\right] + h^2 \text{Sin}[2 \text{ArcSin}[c x]]\right) +$$

$$\frac{1}{c^2} b^2 f \left(-\frac{2 c g \sqrt{1 - c^2 x^2} \text{ArcSin}[c x]}{h^2} - \frac{c^2 g x \left(-2 + \text{ArcSin}[c x]^2\right)}{h^2} -\right.$$

$$\frac{\left(-1 + 2 \text{ArcSin}[c x]^2\right) \text{Cos}[2 \text{ArcSin}[c x]]}{8 h} +$$

$$\frac{1}{3 h^3 \sqrt{-\left(-c^2 g^2 + h^2\right)^2}} c^2 g^2 \left(-\mathrm{i} \sqrt{-\left(-c^2 g^2 + h^2\right)^2} \text{ArcSin}[c x]^3 - 24 \mathrm{i} \sqrt{-\left(-c^2 g^2 + h^2\right)^2}\right.$$

$$\text{ArcSin}\left[\frac{\sqrt{1 + \frac{c g}{h}}}{\sqrt{2}}\right] \text{ArcSin}[c x] \text{ArcTan}\left[\frac{(c g - h) \text{Cot}\left[\frac{1}{4} (\pi + 2 \text{ArcSin}[c x])\right]}{\sqrt{c^2 g^2 - h^2}}\right] +$$

$$24 \mathrm{i} \sqrt{-\left(-c^2 g^2 + h^2\right)^2} \text{ArcSin}\left[\frac{\sqrt{1 + \frac{c g}{h}}}{\sqrt{2}}\right] \text{ArcSin}[c x]$$

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

$$3\,c\,g\,\sqrt{-c^2\,g^2+h^2}\;\text{ArcSin}[c\,x]^2\,\text{Log}\Big[1+\frac{\mathbb{i}\,e^{\mathbb{i}\,\text{ArcSin}[c\,x]}\,h}{-c\,g+\sqrt{c^2\,g^2-h^2}}\Big]-3\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}$$

$$\pi\,\text{ArcSin}[c\,x]\,\text{Log}\Big[1-\frac{\mathbb{i}\,e^{-\mathbb{i}\,\text{ArcSin}[c\,x]}\,\left(-c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\Big]-12\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}$$

$$\text{ArcSin}\Big[\frac{\sqrt{1+\frac{c\,g}{h}}}{\sqrt{2}}\Big]\,\text{ArcSin}[c\,x]\,\text{Log}\Big[1-\frac{\mathbb{i}\,e^{-\mathbb{i}\,\text{ArcSin}[c\,x]}\,\left(-c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\Big]+$$

$$3\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\;\text{ArcSin}[c\,x]^2\,\text{Log}\Big[1-\frac{\mathbb{i}\,e^{-\mathbb{i}\,\text{ArcSin}[c\,x]}\,\left(-c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\Big]-$$

$$3\,c\,g\,\sqrt{-c^2\,g^2+h^2}\;\text{ArcSin}[c\,x]^2\,\text{Log}\Big[1-\frac{\mathbb{i}\,e^{\mathbb{i}\,\text{ArcSin}[c\,x]}\,h}{c\,g+\sqrt{c^2\,g^2-h^2}}\Big]-3\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\;\pi$$

$$\text{ArcSin}[c\,x]\,\text{Log}\Big[1+\frac{\mathbb{i}\,e^{-\mathbb{i}\,\text{ArcSin}[c\,x]}\,\left(c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\Big]+12\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}$$

$$\text{ArcSin}\Big[\frac{\sqrt{1+\frac{c\,g}{h}}}{\sqrt{2}}\Big]\,\text{ArcSin}[c\,x]\,\text{Log}\Big[1+\frac{\mathbb{i}\,e^{-\mathbb{i}\,\text{ArcSin}[c\,x]}\,\left(c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\Big]+$$

$$3\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\;\text{ArcSin}[c\,x]^2\,\text{Log}\Big[1+\frac{\mathbb{i}\,e^{-\mathbb{i}\,\text{ArcSin}[c\,x]}\,\left(c\,g+\sqrt{c^2\,g^2-h^2}\right)}{h}\Big]-$$

$$3\,\mathbb{i}\,c\,g\,\sqrt{c^2\,g^2-h^2}\;\text{ArcSin}[c\,x]^2\,\text{Log}\Big[1+\frac{e^{\mathbb{i}\,\text{ArcSin}[c\,x]}\,h}{\mathbb{i}\,c\,g-\sqrt{-c^2\,g^2+h^2}}\Big]+$$

$$3\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\;\text{ArcSin}[c\,x]^2\,\text{Log}\Big[1+\frac{e^{\mathbb{i}\,\text{ArcSin}[c\,x]}\,h}{\mathbb{i}\,c\,g-\sqrt{-c^2\,g^2+h^2}}\Big]+$$

$$3\,\mathbb{i}\,c\,g\,\sqrt{c^2\,g^2-h^2}\;\text{ArcSin}[c\,x]^2\,\text{Log}\Big[1+\frac{e^{\mathbb{i}\,\text{ArcSin}[c\,x]}\,h}{\mathbb{i}\,c\,g+\sqrt{-c^2\,g^2+h^2}}\Big]+$$

$$3\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\;\text{ArcSin}[c\,x]^2\,\text{Log}\Big[1+\frac{e^{\mathbb{i}\,\text{ArcSin}[c\,x]}\,h}{\mathbb{i}\,c\,g+\sqrt{-c^2\,g^2+h^2}}\Big]+3\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}\;\pi$$

$$\text{ArcSin}[c\,x]\,\text{Log}\Big[1+\frac{\left(c\,g-\sqrt{c^2\,g^2-h^2}\right)\,\left(c\,x+\mathbb{i}\,\sqrt{1-c^2\,x^2}\right)}{h}\Big]+12\,\sqrt{-\left(-c^2\,g^2+h^2\right)^2}$$

$$\text{ArcSin}\Big[\frac{\sqrt{1+\frac{c\,g}{h}}}{\sqrt{2}}\Big]\,\text{ArcSin}[c\,x]\,\text{Log}\Big[1+\frac{\left(c\,g-\sqrt{c^2\,g^2-h^2}\right)\,\left(c\,x+\mathbb{i}\,\sqrt{1-c^2\,x^2}\right)}{h}\Big]-$$

$$3 \sqrt{-\left(-c^2 g^2+h^2\right)^2} \text{ArcSin}[c x]^2 \text{Log}\left[1+\frac{\left(c g-\sqrt{c^2 g^2-h^2}\right)\left(c x+i \sqrt{1-c^2 x^2}\right)}{h}\right]+$$

$$3 \sqrt{-\left(-c^2 g^2+h^2\right)^2} \pi \text{ArcSin}[c x] \text{Log}\left[1+\frac{\left(c g+\sqrt{c^2 g^2-h^2}\right)\left(c x+i \sqrt{1-c^2 x^2}\right)}{h}\right]-$$

$$12 \sqrt{-\left(-c^2 g^2+h^2\right)^2} \text{ArcSin}\left[\frac{\sqrt{1+\frac{c g}{h}}}{\sqrt{2}}\right] \text{ArcSin}[c x]$$

$$\text{Log}\left[1+\frac{\left(c g+\sqrt{c^2 g^2-h^2}\right)\left(c x+i \sqrt{1-c^2 x^2}\right)}{h}\right]-$$

$$3 \sqrt{-\left(-c^2 g^2+h^2\right)^2} \text{ArcSin}[c x]^2 \text{Log}\left[1+\frac{\left(c g+\sqrt{c^2 g^2-h^2}\right)\left(c x+i \sqrt{1-c^2 x^2}\right)}{h}\right]-$$

$$6 i c g \sqrt{-c^2 g^2+h^2} \text{ArcSin}[c x] \text{PolyLog}\left[2, \frac{i e^{i \text{ArcSin}[c x]} h}{c g-\sqrt{c^2 g^2-h^2}}\right]+$$

$$6 i c g \sqrt{-c^2 g^2+h^2} \text{ArcSin}[c x] \text{PolyLog}\left[2, \frac{i e^{i \text{ArcSin}[c x]} h}{c g+\sqrt{c^2 g^2-h^2}}\right]-$$

$$6 c g \sqrt{c^2 g^2-h^2} \text{ArcSin}[c x] \text{PolyLog}\left[2, \frac{e^{i \text{ArcSin}[c x]} h}{-i c g+\sqrt{-c^2 g^2+h^2}}\right]-$$

$$6 i \sqrt{-\left(-c^2 g^2+h^2\right)^2} \text{ArcSin}[c x] \text{PolyLog}\left[2, \frac{e^{i \text{ArcSin}[c x]} h}{-i c g+\sqrt{-c^2 g^2+h^2}}\right]+$$

$$6 c g \sqrt{c^2 g^2-h^2} \text{ArcSin}[c x] \text{PolyLog}\left[2, -\frac{e^{i \text{ArcSin}[c x]} h}{i c g+\sqrt{-c^2 g^2+h^2}}\right]-$$

$$6 i \sqrt{-\left(-c^2 g^2+h^2\right)^2} \text{ArcSin}[c x] \text{PolyLog}\left[2, -\frac{e^{i \text{ArcSin}[c x]} h}{i c g+\sqrt{-c^2 g^2+h^2}}\right]+$$

$$6 c g \sqrt{-c^2 g^2+h^2} \text{PolyLog}\left[3, \frac{i e^{i \text{ArcSin}[c x]} h}{c g-\sqrt{c^2 g^2-h^2}}\right]-6 c g \sqrt{-c^2 g^2+h^2}$$

$$\text{PolyLog}\left[3, \frac{i e^{i \text{ArcSin}[c x]} h}{c g+\sqrt{c^2 g^2-h^2}}\right]-6 i c g \sqrt{c^2 g^2-h^2} \text{PolyLog}\left[3, \frac{e^{i \text{ArcSin}[c x]} h}{-i c g+\sqrt{-c^2 g^2+h^2}}\right]+$$

$$6 \sqrt{-\left(-c^2 g^2+h^2\right)^2} \text{PolyLog}\left[3, \frac{e^{i \text{ArcSin}[c x]} h}{-i c g+\sqrt{-c^2 g^2+h^2}}\right]+$$

$$6 i c g \sqrt{c^2 g^2-h^2} \text{PolyLog}\left[3, -\frac{e^{i \text{ArcSin}[c x]} h}{i c g+\sqrt{-c^2 g^2+h^2}}\right]+6 \sqrt{-\left(-c^2 g^2+h^2\right)^2}$$

$$\left.\left.\text{PolyLog}\left[3,-\frac{e^{i\,\text{ArcSin}[c\,x]}\,h}{i\,c\,g+\sqrt{-c^2\,g^2+h^2}}\right]\right)+\frac{\text{ArcSin}[c\,x]\,\text{Sin}[2\,\text{ArcSin}[c\,x]]}{4\,h}\right)$$

Problem 119: Unable to integrate problem.

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

Optimal (type 4, 1323 leaves, 45 steps):

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

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

Result (type 8, 30 leaves):

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

Problem 120: Unable to integrate problem.

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

Optimal (type 4, 520 leaves, 20 steps):

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

Result (type 8, 35 leaves):

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

Problem 121: Unable to integrate problem.

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

Optimal (type 4, 920 leaves, 32 steps):

$$-\frac{4 b^2 h^2 x}{9 c^2}-\frac{2 b^2 h \left(2 e^2 f-d^2 h\right) x}{e^2}-\frac{b^2 d h^2 x^2}{2 e}-\frac{2}{27} b^2 h^2 x^3+\frac{a b h \left(4 e^2 h+c^2 \left(36 e^2 f-25 d^2 h\right)\right) \sqrt{1-c^2 x^2}}{9 c^3 e^2}+\frac{5 a b d h^2 (d+e x) \sqrt{1-c^2 x^2}}{9 c e^2}+\frac{2 a b h^2 (d+e x)^2 \sqrt{1-c^2 x^2}}{9 c e^2}-\frac{a b d \left(2 c^2 d^2+3 e^2\right) h^2 \text{ArcSin}[c x]}{3 c^2 e^3}+\frac{4 b^2 h^2 \sqrt{1-c^2 x^2} \text{ArcSin}[c x]}{9 c^3}+\frac{2 b^2 h \left(2 e^2 f-d^2 h\right) \sqrt{1-c^2 x^2} \text{ArcSin}[c x]}{c e^2}+\frac{b^2 d h^2 x \sqrt{1-c^2 x^2} \text{ArcSin}[c x]}{c e}+\frac{2 b^2 h^2 x^2 \sqrt{1-c^2 x^2} \text{ArcSin}[c x]}{9 c}-\frac{b^2 d^3 h^2 \text{ArcSin}[c x]^2}{3 e^3}-\frac{b^2 d h^2 \text{ArcSin}[c x]^2}{2 c^2 e}+\frac{2 h \left(e^2 f-d^2 h\right) x (a+b \text{ArcSin}[c x])^2}{e^2}-\frac{\left(e^2 f-d^2 h\right)^2 (a+b \text{ArcSin}[c x])^2}{e^3 (d+e x)}+\frac{h^2 (d+e x)^3 (a+b \text{ArcSin}[c x])^2}{3 e^3}+\frac{2 a b c \left(e^2 f-d^2 h\right)^2 \text{ArcTan}\left[\frac{e+c^2 d x}{\sqrt{c^2 d^2-e^2} \sqrt{1-c^2 x^2}}\right]}{e^3 \sqrt{c^2 d^2-e^2}}-\frac{2 i b^2 c \left(e^2 f-d^2 h\right)^2 \text{ArcSin}[c x] \text{Log}\left[1-\frac{i e e^{i \text{ArcSin}[c x]}}{c d-\sqrt{c^2 d^2-e^2}}\right]}{e^3 \sqrt{c^2 d^2-e^2}}+\frac{2 i b^2 c \left(e^2 f-d^2 h\right)^2 \text{ArcSin}[c x] \text{Log}\left[1-\frac{i e e^{i \text{ArcSin}[c x]}}{c d+\sqrt{c^2 d^2-e^2}}\right]}{e^3 \sqrt{c^2 d^2-e^2}}-\frac{2 b^2 c \left(e^2 f-d^2 h\right)^2 \text{PolyLog}\left[2,\frac{i e e^{i \text{ArcSin}[c x]}}{c d-\sqrt{c^2 d^2-e^2}}\right]}{e^3 \sqrt{c^2 d^2-e^2}}+\frac{2 b^2 c \left(e^2 f-d^2 h\right)^2 \text{PolyLog}\left[2,\frac{i e e^{i \text{ArcSin}[c x]}}{c d+\sqrt{c^2 d^2-e^2}}\right]}{e^3 \sqrt{c^2 d^2-e^2}}$$

Result (type 8, 37 leaves):

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

Problem 135: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 271 leaves, 11 steps):

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

Result (type 4, 1014 leaves):

$$-\frac{1}{3}\,\mathrm{i}\,\mathrm{ArcSin}[a+b\,x]^3+$$

$$8\,\mathrm{i}\,\mathrm{ArcSin}\Big[\frac{\sqrt{1-a}}{\sqrt{2}}\Big]\,\mathrm{ArcSin}[a+b\,x]\,\mathrm{ArcTan}\Big[\frac{(1+a)\,\mathrm{Cot}\big[\frac{1}{4}\,(\pi+2\,\mathrm{ArcSin}[a+b\,x])\big]}{\sqrt{-1+a^2}}\Big]-$$

$$8\,\mathrm{i}\,\mathrm{ArcSin}\Big[\frac{\sqrt{1-a}}{\sqrt{2}}\Big]\,\mathrm{ArcSin}[a+b\,x]$$

$$\mathrm{ArcTan}\Big[\frac{(1+a)\,\big(\mathrm{Cos}\big[\frac{1}{2}\,\mathrm{ArcSin}[a+b\,x]\big]-\mathrm{Sin}\big[\frac{1}{2}\,\mathrm{ArcSin}[a+b\,x]\big]\big)}{\sqrt{-1+a^2}\,\big(\mathrm{Cos}\big[\frac{1}{2}\,\mathrm{ArcSin}[a+b\,x]\big]+\mathrm{Sin}\big[\frac{1}{2}\,\mathrm{ArcSin}[a+b\,x]\big]\big)}\Big]-$$

$$\pi\,\mathrm{ArcSin}[a+b\,x]\,\mathrm{Log}\Big[1+\mathrm{i}\,\Big(-a+\sqrt{-1+a^2}\Big)\,e^{-\mathrm{i}\,\mathrm{ArcSin}[a+b\,x]}\Big]+$$

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

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

$$\pi\,\mathrm{ArcSin}[a+b\,x]\,\mathrm{Log}\Big[1-\mathrm{i}\,\Big(a+\sqrt{-1+a^2}\Big)\,e^{-\mathrm{i}\,\mathrm{ArcSin}[a+b\,x]}\Big]-$$

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

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

$$\mathrm{ArcSin}[a+b\,x]^2\,\mathrm{Log}\Big[1+\frac{e^{\mathrm{i}\,\mathrm{ArcSin}[a+b\,x]}}{-\mathrm{i}\,a+\sqrt{1-a^2}}\Big]+\mathrm{ArcSin}[a+b\,x]^2\,\mathrm{Log}\Big[1-\frac{e^{\mathrm{i}\,\mathrm{ArcSin}[a+b\,x]}}{\mathrm{i}\,a+\sqrt{1-a^2}}\Big]+$$

$$\pi\,\mathrm{ArcSin}[a+b\,x]\,\mathrm{Log}\Big[1+\Big(a+\sqrt{-1+a^2}\Big)\,\Big(-a-b\,x-\mathrm{i}\,\sqrt{1-(a+b\,x)^2}\Big)\Big]+$$

$$4\,\mathrm{ArcSin}\Big[\frac{\sqrt{1-a}}{\sqrt{2}}\Big]\,\mathrm{ArcSin}[a+b\,x]\,\mathrm{Log}\Big[1+\Big(a+\sqrt{-1+a^2}\Big)\,\Big(-a-b\,x-\mathrm{i}\,\sqrt{1-(a+b\,x)^2}\Big)\Big]-$$

$$\mathrm{ArcSin}[a+b\,x]^2\,\mathrm{Log}\Big[1+\Big(a+\sqrt{-1+a^2}\Big)\,\Big(-a-b\,x-\mathrm{i}\,\sqrt{1-(a+b\,x)^2}\Big)\Big]+$$

$$\pi\,\mathrm{ArcSin}[a+b\,x]\,\mathrm{Log}\Big[1+\Big(-a+\sqrt{-1+a^2}\Big)\,\Big(a+b\,x+\mathrm{i}\,\sqrt{1-(a+b\,x)^2}\Big)\Big]-$$

$$4\,\mathrm{ArcSin}\Big[\frac{\sqrt{1-a}}{\sqrt{2}}\Big]\,\mathrm{ArcSin}[a+b\,x]\,\mathrm{Log}\Big[1+\Big(-a+\sqrt{-1+a^2}\Big)\,\Big(a+b\,x+\mathrm{i}\,\sqrt{1-(a+b\,x)^2}\Big)\Big]-$$

$$\mathrm{ArcSin}[a+b\,x]^2\,\mathrm{Log}\Big[1+\Big(-a+\sqrt{-1+a^2}\Big)\,\Big(a+b\,x+\mathrm{i}\,\sqrt{1-(a+b\,x)^2}\Big)\Big]-$$

$$2\,\mathrm{i}\,\mathrm{ArcSin}[a+b\,x]\,\mathrm{PolyLog}\Big[2,-\frac{e^{\mathrm{i}\,\mathrm{ArcSin}[a+b\,x]}}{-\mathrm{i}\,a+\sqrt{1-a^2}}\Big]-2\,\mathrm{i}\,\mathrm{ArcSin}[a+b\,x]\,\mathrm{PolyLog}\Big[2,\frac{e^{\mathrm{i}\,\mathrm{ArcSin}[a+b\,x]}}{\mathrm{i}\,a+\sqrt{1-a^2}}\Big]+$$

$$2\,\mathrm{PolyLog}\Big[3,-\frac{e^{\mathrm{i}\,\mathrm{ArcSin}[a+b\,x]}}{-\mathrm{i}\,a+\sqrt{1-a^2}}\Big]+2\,\mathrm{PolyLog}\Big[3,\frac{e^{\mathrm{i}\,\mathrm{ArcSin}[a+b\,x]}}{\mathrm{i}\,a+\sqrt{1-a^2}}\Big]$$

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

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

Optimal (type 4, 230 leaves, 11 steps):

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

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

Result (type 4, 789 leaves):

$$-\frac{\text{ArcSin}[a+b x]^2}{x}+\frac{2 b \pi \text{ArcTan}\left[\frac{1-a \text{Tan}\left[\frac{1}{2} \text{ArcSin}[a+b x]\right]}{\sqrt{-1+a^2}}\right]}{\sqrt{-1+a^2}}+$$

$$\frac{1}{\sqrt{1-a^2}} 2 b \left(-2 \text{ArcCos}[a] \text{ArcTanh}\left[\frac{(1+a) \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]}{\sqrt{1-a^2}}\right]-\right.$$

$$(\pi-2 \text{ArcSin}[a+b x]) \text{ArcTanh}\left[\frac{(-1+a) \text{Tan}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]}{\sqrt{1-a^2}}\right]+$$

$$\left(\text{ArcCos}[a]-2 i \left(\text{ArcTanh}\left[\frac{(1+a) \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]}{\sqrt{1-a^2}}\right]+\text{ArcTanh}\left[\right.\right.\right.$$

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

$$\left(\text{ArcCos}[a]+2 i \text{ArcTanh}\left[\frac{(1+a) \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]}{\sqrt{1-a^2}}\right]+2 i \text{ArcTanh}\left[\right.\right.$$

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

$$\left(\text{ArcCos}[a]-2 i \text{ArcTanh}\left[\frac{(1+a) \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]}{\sqrt{1-a^2}}\right]\right)$$

$$\text{Log}\left[-\left(\left((-1+a) \left(i+i a+\sqrt{1-a^2}\right) \left(-i+\text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]\right)\right)\right/$$

$$\left.\left.\left(1-a+\sqrt{1-a^2} \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]\right)\right)\right]-$$

$$\left(\text{ArcCos}[a]+2 i \text{ArcTanh}\left[\frac{(1+a) \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]}{\sqrt{1-a^2}}\right]\right)$$

$$\text{Log}\left[-\left(\left((-1+a) \left(-i-i a+\sqrt{1-a^2}\right) \left(i+\text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]\right)\right)\right/$$

$$\left.\left.\left(1-a+\sqrt{1-a^2} \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]\right)\right)\right]+$$

$$i \left(-\text{PolyLog}\left[2, \left(\left(a-i \sqrt{1-a^2}\right) \left(-1+a+\sqrt{1-a^2} \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]\right)\right)\right/\right.$$

$$\left.\left(1-a+\sqrt{1-a^2} \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]\right)\right]+$$

$$\text{PolyLog}\left[2, \left(\left(a+i \sqrt{1-a^2}\right) \left(-1+a+\sqrt{1-a^2} \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]\right)\right)\right/$$

$$\left.\left.\left.\left(1-a+\sqrt{1-a^2} \text{Cot}\left[\frac{1}{4} (\pi+2 \text{ArcSin}[a+b x])\right]\right)\right]\right)\right)$$

Problem 137: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 272 leaves, 14 steps):

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

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

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

Result (type 4, 859 leaves):

$$\frac{b\sqrt{1-(a+b\,x)^2}\;\text{ArcSin}[a+b\,x]}{(-1+a)\,(1+a)\,x}-\frac{\text{ArcSin}[a+b\,x]^2}{2\,x^2}+$$

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

$$\frac{1}{\sqrt{1-a^2}}\left(-2\,\text{ArcCos}[a]\,\text{ArcTanh}\left[\frac{(1+a)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]-\right.$$

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

$$\left(\text{ArcCos}[a]-2\,i\left(\text{ArcTanh}\left[\frac{(1+a)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]+\right.\right.$$

$$\left.\left.\text{ArcTanh}\left[\frac{(-1+a)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]\right)\right)$$

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

$$2\,i\,\text{ArcTanh}\left[\frac{(1+a)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]+2\,i\,\text{ArcTanh}\Big[$$

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

$$\left(\text{ArcCos}[a]-2\,i\,\text{ArcTanh}\left[\frac{(1+a)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]\right)$$

$$\text{Log}\Bigg[-\Bigg(\Bigg(\left(-1+a\right)\left(i+i\,a+\sqrt{1-a^2}\right)\left(-i+\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]\right)\Bigg)\Bigg/$$

$$\left(1-a+\sqrt{1-a^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]\right)\Bigg)\Bigg]-$$

$$\left(\text{ArcCos}[a]+2\,i\,\text{ArcTanh}\left[\frac{(1+a)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]\right)$$

$$\text{Log}\Bigg[-\Bigg(\Bigg(\left(-1+a\right)\left(-i-i\,a+\sqrt{1-a^2}\right)\left(i+\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]\right)\Bigg)\Bigg/$$

$$\left(1-a+\sqrt{1-a^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]\right)\Bigg)\Bigg]+$$

$$i\,\Bigg(-\text{PolyLog}\Bigg[2,\Bigg(\left(a-i\sqrt{1-a^2}\right)\left(-1+a+\sqrt{1-a^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]\right)\Bigg)\Bigg/$$

$$\left(1-a+\sqrt{1-a^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]\right)\Bigg]+$$

$$\text{PolyLog}\Bigg[2,\Bigg(\left(a+i\sqrt{1-a^2}\right)\left(-1+a+\sqrt{1-a^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]\right)\Bigg)\Bigg/$$

$$\left(1-a+\sqrt{1-a^2}\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]\right)\Bigg]\Bigg)\Bigg)$$

Problem 141: Unable to integrate problem.

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

Optimal (type 4, 365 leaves, 13 steps):

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

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

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

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

$$6\,i\,\text{PolyLog}\left[4,\frac{e^{i\,\text{ArcSin}[a+b\,x]}}{i\,a-\sqrt{1-a^2}}\right]+6\,i\,\text{PolyLog}\left[4,\frac{e^{i\,\text{ArcSin}[a+b\,x]}}{i\,a+\sqrt{1-a^2}}\right]$$

Result (type 8, 14 leaves) :

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

Problem 142: Unable to integrate problem.

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

Optimal (type 4, 316 leaves, 13 steps) :

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

Result (type 8, 14 leaves) :

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

Problem 173: Unable to integrate problem.

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

Optimal (type 4, 611 leaves, 22 steps) :

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

Result (type 8, 18 leaves) :

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

Problem 205: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 291 leaves, 16 steps) :

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

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

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

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

$$\frac{b^3\,\text{PolyLog}\left[3,\,-e^{i\,\text{ArcSin}[c+d\,x]}\right]}{d\,e^4}+\frac{b^3\,\text{PolyLog}\left[3,\,e^{i\,\text{ArcSin}[c+d\,x]}\right]}{d\,e^4}$$

Result (type 4, 732 leaves) :

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

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

$$\frac{1}{48\,d\,e^4}\,b^3\left(-24\,\text{ArcSin}[c+d\,x]\,\text{Cot}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]-4\,\text{ArcSin}[c+d\,x]^3\,\text{Cot}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]-\right.$$
$$6\,\text{ArcSin}[c+d\,x]^2\,\text{Csc}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]^2-$$
$$(c+d\,x)\,\text{ArcSin}[c+d\,x]^3\,\text{Csc}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]^4+$$
$$24\,\text{ArcSin}[c+d\,x]^2\,\text{Log}\left[1-e^{i\,\text{ArcSin}[c+d\,x]}\right]-24\,\text{ArcSin}[c+d\,x]^2\,\text{Log}\left[1+e^{i\,\text{ArcSin}[c+d\,x]}\right]+$$
$$48\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]\right]+48\,i\,\text{ArcSin}[c+d\,x]\,\text{PolyLog}\left[2,-e^{i\,\text{ArcSin}[c+d\,x]}\right]-$$
$$48\,i\,\text{ArcSin}[c+d\,x]\,\text{PolyLog}\left[2,e^{i\,\text{ArcSin}[c+d\,x]}\right]-48\,\text{PolyLog}\left[3,-e^{i\,\text{ArcSin}[c+d\,x]}\right]+$$
$$48\,\text{PolyLog}\left[3,e^{i\,\text{ArcSin}[c+d\,x]}\right]+6\,\text{ArcSin}[c+d\,x]^2\,\text{Sec}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]^2-$$
$$\frac{16\,\text{ArcSin}[c+d\,x]^3\,\text{Sin}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]^4}{(c+d\,x)^3}-$$
$$\left.24\,\text{ArcSin}[c+d\,x]\,\text{Tan}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]-4\,\text{ArcSin}[c+d\,x]^3\,\text{Tan}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]\right)$$

Problem 210: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 202 leaves, 10 steps):

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

Result (type 4, 439 leaves):

$$\frac{1}{16\,d\,e}\Bigg(16\,a^4\,\text{Log}[c+d\,x]+64\,a^3\,b\left(\text{ArcSin}[c+d\,x]\,\text{Log}\left[1-e^{2\,i\,\text{ArcSin}[c+d\,x]}\right]-\frac{1}{2}\,i\left(\text{ArcSin}[c+d\,x]^2+\text{PolyLog}\left[2,\,e^{2\,i\,\text{ArcSin}[c+d\,x]}\right]\right)\right)+$$
$$4\,a^2\,b^2\left(-i\,\pi^3+8\,i\,\text{ArcSin}[c+d\,x]^3+24\,\text{ArcSin}[c+d\,x]^2\,\text{Log}\left[1-e^{-2\,i\,\text{ArcSin}[c+d\,x]}\right]+24\,i\,\text{ArcSin}[c+d\,x]\,\text{PolyLog}\left[2,\,e^{-2\,i\,\text{ArcSin}[c+d\,x]}\right]+12\,\text{PolyLog}\left[3,\,e^{-2\,i\,\text{ArcSin}[c+d\,x]}\right]\right)-$$
$$i\,a\,b^3\left(\pi^4-16\,\text{ArcSin}[c+d\,x]^4+64\,i\,\text{ArcSin}[c+d\,x]^3\,\text{Log}\left[1-e^{-2\,i\,\text{ArcSin}[c+d\,x]}\right]-96\,\text{ArcSin}[c+d\,x]^2\,\text{PolyLog}\left[2,\,e^{-2\,i\,\text{ArcSin}[c+d\,x]}\right]+96\,i\,\text{ArcSin}[c+d\,x]\,\text{PolyLog}\left[3,\,e^{-2\,i\,\text{ArcSin}[c+d\,x]}\right]+48\,\text{PolyLog}\left[4,\,e^{-2\,i\,\text{ArcSin}[c+d\,x]}\right]\right)+$$
$$16\,b^4\left(-\frac{i\,\pi^5}{160}+\frac{1}{5}\,i\,\text{ArcSin}[c+d\,x]^5+\text{ArcSin}[c+d\,x]^4\,\text{Log}\left[1-e^{-2\,i\,\text{ArcSin}[c+d\,x]}\right]+2\,i\,\text{ArcSin}[c+d\,x]^3\,\text{PolyLog}\left[2,\,e^{-2\,i\,\text{ArcSin}[c+d\,x]}\right]+3\,\text{ArcSin}[c+d\,x]^2\,\text{PolyLog}\left[3,\,e^{-2\,i\,\text{ArcSin}[c+d\,x]}\right]-3\,i\,\text{ArcSin}[c+d\,x]\,\text{PolyLog}\left[4,\,e^{-2\,i\,\text{ArcSin}[c+d\,x]}\right]-\frac{3}{2}\,\text{PolyLog}\left[5,\,e^{-2\,i\,\text{ArcSin}[c+d\,x]}\right]\right)\Bigg)$$

Problem 211: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 270 leaves, 13 steps):

$$-\frac{(a+b\,\text{ArcSin}[c+d\,x])^4}{d\,e^2\,(c+d\,x)}-\frac{8\,b\,(a+b\,\text{ArcSin}[c+d\,x])^3\,\text{ArcTanh}\left[e^{i\,\text{ArcSin}[c+d\,x]}\right]}{d\,e^2}+\frac{12\,i\,b^2\,(a+b\,\text{ArcSin}[c+d\,x])^2\,\text{PolyLog}\left[2,-e^{i\,\text{ArcSin}[c+d\,x]}\right]}{d\,e^2}-\frac{12\,i\,b^2\,(a+b\,\text{ArcSin}[c+d\,x])^2\,\text{PolyLog}\left[2,e^{i\,\text{ArcSin}[c+d\,x]}\right]}{d\,e^2}-\frac{24\,b^3\,(a+b\,\text{ArcSin}[c+d\,x])\,\text{PolyLog}\left[3,-e^{i\,\text{ArcSin}[c+d\,x]}\right]}{d\,e^2}+\frac{24\,b^3\,(a+b\,\text{ArcSin}[c+d\,x])\,\text{PolyLog}\left[3,e^{i\,\text{ArcSin}[c+d\,x]}\right]}{d\,e^2}-\frac{24\,i\,b^4\,\text{PolyLog}\left[4,-e^{i\,\text{ArcSin}[c+d\,x]}\right]}{d\,e^2}+\frac{24\,i\,b^4\,\text{PolyLog}\left[4,e^{i\,\text{ArcSin}[c+d\,x]}\right]}{d\,e^2}$$

Result (type 4, 575 leaves):

$$\frac{1}{d\,e^2}\left(-\frac{a^4}{c+d\,x}-4\,a^3\,b\left(\frac{\text{ArcSin}[c+d\,x]}{c+d\,x}+\text{Log}\left[\frac{1}{2}\,(c+d\,x)\,\text{Csc}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]\right]-\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]\right]\right)+6\,a^2\,b^2\left(\text{ArcSin}[c+d\,x]\left(-\frac{\text{ArcSin}[c+d\,x]}{c+d\,x}+2\,\text{Log}\left[1-e^{i\,\text{ArcSin}[c+d\,x]}\right]-2\,\text{Log}\left[1+e^{i\,\text{ArcSin}[c+d\,x]}\right]\right)+2\,i\,\text{PolyLog}\left[2,-e^{i\,\text{ArcSin}[c+d\,x]}\right]-2\,i\,\text{PolyLog}\left[2,e^{i\,\text{ArcSin}[c+d\,x]}\right]\right)+4\,a\,b^3\left(-\frac{\text{ArcSin}[c+d\,x]^3}{c+d\,x}+3\,\text{ArcSin}[c+d\,x]^2\,\text{Log}\left[1-e^{i\,\text{ArcSin}[c+d\,x]}\right]-3\,\text{ArcSin}[c+d\,x]^2\,\text{Log}\left[1+e^{i\,\text{ArcSin}[c+d\,x]}\right]+6\,i\,\text{ArcSin}[c+d\,x]\,\text{PolyLog}\left[2,-e^{i\,\text{ArcSin}[c+d\,x]}\right]-6\,i\,\text{ArcSin}[c+d\,x]\,\text{PolyLog}\left[2,e^{i\,\text{ArcSin}[c+d\,x]}\right]-6\,\text{PolyLog}\left[3,-e^{i\,\text{ArcSin}[c+d\,x]}\right]+6\,\text{PolyLog}\left[3,e^{i\,\text{ArcSin}[c+d\,x]}\right]\right)+b^4\left(-\frac{i\,\pi^4}{2}+i\,\text{ArcSin}[c+d\,x]^4-\frac{\text{ArcSin}[c+d\,x]^4}{c+d\,x}+4\,\text{ArcSin}[c+d\,x]^3\,\text{Log}\left[1-e^{-i\,\text{ArcSin}[c+d\,x]}\right]-4\,\text{ArcSin}[c+d\,x]^3\,\text{Log}\left[1+e^{i\,\text{ArcSin}[c+d\,x]}\right]+12\,i\,\text{ArcSin}[c+d\,x]^2\,\text{PolyLog}\left[2,e^{-i\,\text{ArcSin}[c+d\,x]}\right]+12\,i\,\text{ArcSin}[c+d\,x]^2\,\text{PolyLog}\left[2,-e^{i\,\text{ArcSin}[c+d\,x]}\right]+24\,\text{ArcSin}[c+d\,x]\,\text{PolyLog}\left[3,e^{-i\,\text{ArcSin}[c+d\,x]}\right]-24\,\text{ArcSin}[c+d\,x]\,\text{PolyLog}\left[3,-e^{i\,\text{ArcSin}[c+d\,x]}\right]-24\,i\,\text{PolyLog}\left[4,e^{-i\,\text{ArcSin}[c+d\,x]}\right]-24\,i\,\text{PolyLog}\left[4,-e^{i\,\text{ArcSin}[c+d\,x]}\right]\right)\right)$$

Problem 213: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 439 leaves, 21 steps):

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

Result (type 4, 1274 leaves):

$$-\frac{a^4}{3 d e^4 (c + d x)^3} + \frac{1}{4 d e^4} a^2 b^2$$
$$\Bigg(8 i \text{PolyLog}[2, -e^{i \text{ArcSin}[c+d x]}] - \frac{1}{(c + d x)^3} 2 \Big(2 + 4 \text{ArcSin}[c + d x]^2 - 2 \text{Cos}[2 \text{ArcSin}[c + d x]] -$$
$$3 (c + d x) \text{ArcSin}[c + d x] \text{Log}[1 - e^{i \text{ArcSin}[c+d x]}] + 3 (c + d x) \text{ArcSin}[c + d x]$$
$$\text{Log}[1 + e^{i \text{ArcSin}[c+d x]}] + 4 i (c + d x)^3 \text{PolyLog}[2, e^{i \text{ArcSin}[c+d x]}] + 2 \text{ArcSin}[c + d x]$$
$$\text{Sin}[2 \text{ArcSin}[c + d x]] + \text{ArcSin}[c + d x] \text{Log}[1 - e^{i \text{ArcSin}[c+d x]}] \text{Sin}[3 \text{ArcSin}[c + d x]] -$$
$$\text{ArcSin}[c + d x] \text{Log}[1 + e^{i \text{ArcSin}[c+d x]}] \text{Sin}[3 \text{ArcSin}[c + d x]]\Big)\Bigg) +$$
$$\frac{1}{12 d e^4} a b^3 \Bigg(-24 \text{ArcSin}[c + d x] \text{Cot}\left[\frac{1}{2} \text{ArcSin}[c + d x]\right] - 4 \text{ArcSin}[c + d x]^3$$
$$\text{Cot}\left[\frac{1}{2} \text{ArcSin}[c + d x]\right] - 6 \text{ArcSin}[c + d x]^2 \text{Csc}\left[\frac{1}{2} \text{ArcSin}[c + d x]\right]^2 -$$
$$(c + d x) \text{ArcSin}[c + d x]^3 \text{Csc}\left[\frac{1}{2} \text{ArcSin}[c + d x]\right]^4 +$$
$$24 \text{ArcSin}[c + d x]^2 \text{Log}[1 - e^{i \text{ArcSin}[c+d x]}] - 24 \text{ArcSin}[c + d x]^2 \text{Log}[1 + e^{i \text{ArcSin}[c+d x]}] +$$
$$48 \text{Log}\left[\text{Tan}\left[\frac{1}{2} \text{ArcSin}[c + d x]\right]\right] + 48 i \text{ArcSin}[c + d x] \text{PolyLog}[2, -e^{i \text{ArcSin}[c+d x]}] -$$
$$48 i \text{ArcSin}[c + d x] \text{PolyLog}[2, e^{i \text{ArcSin}[c+d x]}] - 48 \text{PolyLog}[3, -e^{i \text{ArcSin}[c+d x]}] +$$
$$48 \text{PolyLog}[3, e^{i \text{ArcSin}[c+d x]}] + 6 \text{ArcSin}[c + d x]^2 \text{Sec}\left[\frac{1}{2} \text{ArcSin}[c + d x]\right]^2 -$$

$$\frac{16\,\text{ArcSin}[c+d\,x]^3\,\text{Sin}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]^4}{(c+d\,x)^3} -$$

$$24\,\text{ArcSin}[c+d\,x]\,\text{Tan}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right] - 4\,\text{ArcSin}[c+d\,x]^3\,\text{Tan}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]\Bigg) +$$

$$\frac{1}{24\,d\,e^4}\,b^4\,\Bigg(-2\,i\,\pi^4 + 4\,i\,\text{ArcSin}[c+d\,x]^4 - 24\,\text{ArcSin}[c+d\,x]^2\,\text{Cot}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right] -$$

$$2\,\text{ArcSin}[c+d\,x]^4\,\text{Cot}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right] - 4\,\text{ArcSin}[c+d\,x]^3\,\text{Csc}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]^2 -$$

$$\frac{1}{2}\,(c+d\,x)\,\text{ArcSin}[c+d\,x]^4\,\text{Csc}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]^4 +$$

$$16\,\text{ArcSin}[c+d\,x]^3\,\text{Log}\left[1-e^{-i\,\text{ArcSin}[c+d\,x]}\right] + 96\,\text{ArcSin}[c+d\,x]\,\text{Log}\left[1-e^{i\,\text{ArcSin}[c+d\,x]}\right] -$$

$$96\,\text{ArcSin}[c+d\,x]\,\text{Log}\left[1+e^{i\,\text{ArcSin}[c+d\,x]}\right] - 16\,\text{ArcSin}[c+d\,x]^3\,\text{Log}\left[1+e^{i\,\text{ArcSin}[c+d\,x]}\right] +$$

$$48\,i\,\text{ArcSin}[c+d\,x]^2\,\text{PolyLog}\left[2,\,e^{-i\,\text{ArcSin}[c+d\,x]}\right] +$$

$$48\,i\,\left(2+\text{ArcSin}[c+d\,x]^2\right)\,\text{PolyLog}\left[2,\,-e^{i\,\text{ArcSin}[c+d\,x]}\right] - 96\,i\,\text{PolyLog}\left[2,\,e^{i\,\text{ArcSin}[c+d\,x]}\right] +$$

$$96\,\text{ArcSin}[c+d\,x]\,\text{PolyLog}\left[3,\,e^{-i\,\text{ArcSin}[c+d\,x]}\right] - 96\,\text{ArcSin}[c+d\,x]\,\text{PolyLog}\left[3,\,-e^{i\,\text{ArcSin}[c+d\,x]}\right] -$$

$$96\,i\,\text{PolyLog}\left[4,\,e^{-i\,\text{ArcSin}[c+d\,x]}\right] - 96\,i\,\text{PolyLog}\left[4,\,-e^{i\,\text{ArcSin}[c+d\,x]}\right] +$$

$$4\,\text{ArcSin}[c+d\,x]^3\,\text{Sec}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]^2 - \frac{8\,\text{ArcSin}[c+d\,x]^4\,\text{Sin}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]^4}{(c+d\,x)^3} -$$

$$24\,\text{ArcSin}[c+d\,x]^2\,\text{Tan}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right] - 2\,\text{ArcSin}[c+d\,x]^4\,\text{Tan}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]\Bigg) +$$

$$\frac{1}{d\,e^4}\,4\,a^3\,b\,\Bigg(-\frac{1}{12}\,\text{ArcSin}[c+d\,x]\,\text{Cot}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right] - \frac{1}{24}\,\text{Csc}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]^2 -$$

$$\frac{1}{24}\,\text{ArcSin}[c+d\,x]\,\text{Cot}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]\,\text{Csc}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]^2 -$$

$$\frac{1}{6}\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]\right] + \frac{1}{6}\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]\right] +$$

$$\frac{1}{24}\,\text{Sec}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]^2 - \frac{1}{12}\,\text{ArcSin}[c+d\,x]\,\text{Tan}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right] -$$

$$\frac{1}{24}\,\text{ArcSin}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]^2\,\text{Tan}\left[\frac{1}{2}\,\text{ArcSin}[c+d\,x]\right]\Bigg)$$

Problem 214: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\text{ArcSin}[c+d\,x])^5\,dx$$

Optimal (type 3, 164 leaves, 8 steps):

$$120\,a\,b^4\,x+\frac{120\,b^5\,\sqrt{1-(c+d\,x)^2}}{d}+\frac{120\,b^5\,(c+d\,x)\,\text{ArcSin}[c+d\,x]}{d}-\frac{60\,b^3\,\sqrt{1-(c+d\,x)^2}\,(a+b\,\text{ArcSin}[c+d\,x])^2}{d}-\frac{20\,b^2\,(c+d\,x)\,(a+b\,\text{ArcSin}[c+d\,x])^3}{d}+\frac{5\,b\,\sqrt{1-(c+d\,x)^2}\,(a+b\,\text{ArcSin}[c+d\,x])^4}{d}+\frac{(c+d\,x)\,(a+b\,\text{ArcSin}[c+d\,x])^5}{d}$$

Result (type 3, 332 leaves):

$$\frac{1}{d}\Big(a\,(a^4-20\,a^2\,b^2+120\,b^4)\,(c+d\,x)+5\,b\,(a^4-12\,a^2\,b^2+24\,b^4)\,\sqrt{1-(c+d\,x)^2}+5\,b\,\Big(a^4\,(c+d\,x)-12\,a^2\,b^2\,(c+d\,x)+24\,b^4\,(c+d\,x)+4\,a^3\,b\,\sqrt{1-(c+d\,x)^2}-24\,a\,b^3\,\sqrt{1-(c+d\,x)^2}\Big)\,\text{ArcSin}[c+d\,x]-10\,b^2\,\Big(-a^3\,(c+d\,x)+6\,a\,b^2\,(c+d\,x)-3\,a^2\,b\,\sqrt{1-(c+d\,x)^2}+6\,b^3\,\sqrt{1-(c+d\,x)^2}\Big)\,\text{ArcSin}[c+d\,x]^2-10\,b^3\,\Big(-a^2\,(c+d\,x)+2\,b^2\,(c+d\,x)-2\,a\,b\,\sqrt{1-(c+d\,x)^2}\Big)\,\text{ArcSin}[c+d\,x]^3+5\,b^4\,\Big(a\,c+a\,d\,x+b\,\sqrt{1-(c+d\,x)^2}\Big)\,\text{ArcSin}[c+d\,x]^4+b^5\,(c+d\,x)\,\text{ArcSin}[c+d\,x]^5\Big)$$

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

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

Optimal (type 5, 130 leaves, 3 steps):

$$\frac{2\,(e\,(c+d\,x))^{7/2}\,(a+b\,\text{ArcSin}[c+d\,x])^2}{7\,d\,e}-\frac{1}{63\,d\,e^2}8\,b\,(e\,(c+d\,x))^{9/2}\,(a+b\,\text{ArcSin}[c+d\,x])\,\text{Hypergeometric2F1}\Big[\frac{1}{2},\frac{9}{4},\frac{13}{4},(c+d\,x)^2\Big]+\frac{1}{693\,d\,e^3}16\,b^2\,(e\,(c+d\,x))^{11/2}\,\text{HypergeometricPFQ}\Big[\Big\{1,\frac{11}{4},\frac{11}{4}\Big\},\Big\{\frac{13}{4},\frac{15}{4}\Big\},(c+d\,x)^2\Big]$$

Result (type 5, 328 leaves):

$$\frac{1}{6174\,d}\,(e\,(c+d\,x))^{5/2}\left(1764\,a^2\,(c+d\,x)+168\,a\,b\left(21\,(c+d\,x)\,\text{ArcSin}[c+d\,x]+\left(-2\,\sqrt{c+d\,x}\,\left(-5+2\,(c+d\,x)^2+3\,(c+d\,x)^4\right)+10\,(c+d\,x)\,\sqrt{1-\frac{1}{(c+d\,x)^2}}\;\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{c+d\,x}}\right],-1\right]\right)\Big/\left((c+d\,x)^{5/2}\,\sqrt{1-(c+d\,x)^2}\right)\right)+\frac{1}{(c+d\,x)^2}\,b^2\left(-1336\,(c+d\,x)+1932\,\sqrt{1-(c+d\,x)^2}\;\text{ArcSin}[c+d\,x]+1323\,(c+d\,x)\,\text{ArcSin}[c+d\,x]^2-252\,\text{ArcSin}[c+d\,x]\,\text{Cos}[3\,\text{ArcSin}[c+d\,x]]-1680\,\sqrt{1-(c+d\,x)^2}\;\text{ArcSin}[c+d\,x]\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{5}{4},(c+d\,x)^2\right]+\left(210\,\sqrt{2}\,\pi\,(c+d\,x)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{4},1\right\},\left\{\frac{5}{4},\frac{7}{4}\right\},(c+d\,x)^2\right]\right)\Big/\left(\text{Gamma}\left[\frac{5}{4}\right]\,\text{Gamma}\left[\frac{7}{4}\right]\right)+72\,\text{Sin}[3\,\text{ArcSin}[c+d\,x]]-441\,\text{ArcSin}[c+d\,x]^2\,\text{Sin}[3\,\text{ArcSin}[c+d\,x]]\right)\right)$$

Problem 294: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 130 leaves, 3 steps):

$$\frac{2\,(e\,(c+d\,x))^{3/2}\,(a+b\,\text{ArcSin}[c+d\,x])^2}{3\,d\,e}-\frac{1}{15\,d\,e^2}8\,b\,(e\,(c+d\,x))^{5/2}\,(a+b\,\text{ArcSin}[c+d\,x])\,\text{Hypergeometric2F1}\left[\frac{1}{2},\frac{5}{4},\frac{9}{4},(c+d\,x)^2\right]+\frac{1}{105\,d\,e^3}16\,b^2\,(e\,(c+d\,x))^{7/2}\,\text{HypergeometricPFQ}\left[\left\{1,\frac{7}{4},\frac{7}{4}\right\},\left\{\frac{9}{4},\frac{11}{4}\right\},(c+d\,x)^2\right]$$

Result (type 5, 267 leaves):

$$\frac{1}{27\,d}\sqrt{e\,(c+d\,x)}\,\Bigg(18\,a^2\,(c+d\,x)+36\,a\,b\,(c+d\,x)\,\text{ArcSin}[c+d\,x]+24\,b^2\,\sqrt{1-(c+d\,x)^2}\,\text{ArcSin}[c+d\,x]+2\,b^2\,(c+d\,x)\,\left(-8+9\,\text{ArcSin}[c+d\,x]^2\right)-\left(12\,a\,b\,\left(2\,\sqrt{c+d\,x}\,\left(-1+(c+d\,x)^2\right)-2\,(c+d\,x)\,\sqrt{1-\frac{1}{(c+d\,x)^2}}\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{1}{\sqrt{c+d\,x}}\right],-1\right]\right)\right)\Big/\left(\sqrt{c+d\,x}\,\sqrt{1-(c+d\,x)^2}\right)-24\,b^2\,\sqrt{1-(c+d\,x)^2}\,\text{ArcSin}[c+d\,x]\,\text{Hypergeometric2F1}\left[\frac{3}{4},1,\frac{5}{4},(c+d\,x)^2\right]+\left(3\,\sqrt{2}\,b^2\,\pi\,(c+d\,x)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{4},1\right\},\left\{\frac{5}{4},\frac{7}{4}\right\},(c+d\,x)^2\right]\right)\Big/\left(\text{Gamma}\left[\frac{5}{4}\right]\,\text{Gamma}\left[\frac{7}{4}\right]\right)\Bigg)$$

Problem 299: Result more than twice size of optimal antiderivative.

$$\int\frac{(a+b\,\text{ArcSin}[c+d\,x])^2}{(c\,e+d\,e\,x)^{9/2}}\,dx$$

Optimal (type 5, 130 leaves, 3 steps):

$$-\frac{2\,(a+b\,\text{ArcSin}[c+d\,x])^2}{7\,d\,e\,(e\,(c+d\,x))^{7/2}}-\left(8\,b\,(a+b\,\text{ArcSin}[c+d\,x])\,\text{Hypergeometric2F1}\left[-\frac{5}{4},\frac{1}{2},-\frac{1}{4},(c+d\,x)^2\right]\right)\Big/\left(35\,d\,e^2\,(e\,(c+d\,x))^{5/2}\right)-\frac{16\,b^2\,\text{HypergeometricPFQ}\left[\left\{-\frac{3}{4},-\frac{3}{4},1\right\},\left\{-\frac{1}{4},\frac{1}{4}\right\},(c+d\,x)^2\right]}{105\,d\,e^3\,(e\,(c+d\,x))^{3/2}}$$

Result (type 5, 299 leaves):

$$\frac{1}{420\,d\,\left(e\,\left(c+d\,x\right)\right)^{9/2}}\left(-120\,a^2\,\left(c+d\,x\right)+48\,a\,b\,\left(-5\,\left(c+d\,x\right)\,\text{ArcSin}[c+d\,x]+2\,\left(c+d\,x\right)^{9/2}\left(-\frac{\sqrt{1-\left(c+d\,x\right)^2}\,\left(1+3\,\left(c+d\,x\right)^2\right)}{\left(c+d\,x\right)^{5/2}}-3\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{c+d\,x}\right],-1\right]+3\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{c+d\,x}\right],-1\right]\right)\right)+b^2\,\left(c+d\,x\right)\,\left(\left(9\,\sqrt{2}\,\pi\,\left(c+d\,x\right)^6\,\text{HypergeometricPFQ}\left[\left\{1,\frac{5}{4},\frac{5}{4}\right\},\left\{\frac{7}{4},\frac{9}{4}\right\},\left(c+d\,x\right)^2\right]\right)\Big/\left(\text{Gamma}\left[\frac{7}{4}\right]\,\text{Gamma}\left[\frac{9}{4}\right]\right)-4\,\left(-46+30\,\text{ArcSin}[c+d\,x]^2+64\,\text{Cos}[2\,\text{ArcSin}[c+d\,x]]-18\,\text{Cos}[4\,\text{ArcSin}[c+d\,x]]+24\,\left(c+d\,x\right)^5\,\sqrt{1-\left(c+d\,x\right)^2}\,\text{ArcSin}[c+d\,x]\,\text{Hypergeometric2F1}\left[1,\frac{5}{4},\frac{7}{4},\left(c+d\,x\right)^2\right]+30\,\text{ArcSin}[c+d\,x]\,\text{Sin}[2\,\text{ArcSin}[c+d\,x]]-9\,\text{ArcSin}[c+d\,x]\,\text{Sin}[4\,\text{ArcSin}[c+d\,x]]\right)\right)\right)$$

Problem 300: Attempted integration timed out after 120 seconds.

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

Optimal (type 8, 82 leaves, 2 steps):

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

Result (type 1, 1 leaves):

???

Problem 304: Attempted integration timed out after 120 seconds.

$$\int\sqrt{c\,e+d\,e\,x}\,\left(a+b\,\text{ArcSin}[c+d\,x]\right)^4\,dx$$

Optimal (type 8, 84 leaves, 2 steps):

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

Result (type 1, 1 leaves):

???

Problem 310: Unable to integrate problem.

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

Optimal (type 5, 183 leaves, 3 steps):

$$\frac{(e\,(c + d\,x))^{1+m}\,(a + b\,\text{ArcSin}[c + d\,x])^2}{d\,e\,(1 + m)} - \left(2\,b\,(e\,(c + d\,x))^{2+m}\,(a + b\,\text{ArcSin}[c + d\,x])\,\text{Hypergeometric2F1}\left[\frac{1}{2}, \frac{2 + m}{2}, \frac{4 + m}{2}, (c + d\,x)^2\right]\right) \Big/ \left(d\,e^2\,(1 + m)\,(2 + m)\right) + \left(2\,b^2\,(e\,(c + d\,x))^{3+m}\,\text{HypergeometricPFQ}\left[\left\{1, \frac{3}{2} + \frac{m}{2}, \frac{3}{2} + \frac{m}{2}\right\}, \left\{2 + \frac{m}{2}, \frac{5}{2} + \frac{m}{2}\right\}, (c + d\,x)^2\right]\right) \Big/ \left(d\,e^3\,(1 + m)\,(2 + m)\,(3 + m)\right)$$

Result (type 8, 25 leaves):

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

Problem 352: Result unnecessarily involves imaginary or complex numbers.

$$\int x^6\,(a + b\,\text{ArcSin}[c\,x^2])\,dx$$

Optimal (type 4, 86 leaves, 5 steps):

$$\frac{10\,b\,x\,\sqrt{1 - c^2\,x^4}}{147\,c^3} + \frac{2\,b\,x^5\,\sqrt{1 - c^2\,x^4}}{49\,c} + \frac{1}{7}\,x^7\,(a + b\,\text{ArcSin}[c\,x^2]) - \frac{10\,b\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{c}\,x\right], -1\right]}{147\,c^{7/2}}$$

Result (type 4, 82 leaves):

$$\frac{1}{147}\left(21\,a\,x^7 + \frac{2\,b\,x\,\sqrt{1 - c^2\,x^4}\,(5 + 3\,c^2\,x^4)}{c^3} + 21\,b\,x^7\,\text{ArcSin}[c\,x^2] - \frac{10\,i\,b\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-c}\,x\right], -1\right]}{(-c)^{7/2}}\right)$$

Problem 353: Result unnecessarily involves imaginary or complex numbers.

$$\int x^4\,(a + b\,\text{ArcSin}[c\,x^2])\,dx$$

Optimal (type 4, 83 leaves, 7 steps):

$$\frac{2\,b\,x^3\,\sqrt{1-c^2\,x^4}}{25\,c}+\frac{1}{5}\,x^5\,\left(a+b\,\text{ArcSin}\left[c\,x^2\right]\right)-\frac{6\,b\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{c}\,x\right],-1\right]}{25\,c^{5/2}}+\frac{6\,b\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{c}\,x\right],-1\right]}{25\,c^{5/2}}$$

Result (type 4, 93 leaves):

$$\frac{1}{25}\left(5\,a\,x^5+\frac{2\,b\,x^3\,\sqrt{1-c^2\,x^4}}{c}+5\,b\,x^5\,\text{ArcSin}\left[c\,x^2\right]+\frac{1}{(-c)^{5/2}}6\,i\,b\,\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-c}\,x\right],-1\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-c}\,x\right],-1\right]\right)\right)$$

Problem 354: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 61 leaves, 4 steps):

$$\frac{2\,b\,x\,\sqrt{1-c^2\,x^4}}{9\,c}+\frac{1}{3}\,x^3\,\left(a+b\,\text{ArcSin}\left[c\,x^2\right]\right)-\frac{2\,b\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{c}\,x\right],-1\right]}{9\,c^{3/2}}$$

Result (type 4, 72 leaves):

$$\frac{1}{9}\left(3\,a\,x^3+\frac{2\,b\,x\,\sqrt{1-c^2\,x^4}}{c}+3\,b\,x^3\,\text{ArcSin}\left[c\,x^2\right]-\frac{2\,i\,b\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-c}\,x\right],-1\right]}{(-c)^{3/2}}\right)$$

Problem 355: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 49 leaves, 7 steps):

$$a\,x+b\,x\,\text{ArcSin}\left[c\,x^2\right]-\frac{2\,b\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{c}\,x\right],-1\right]}{\sqrt{c}}+\frac{2\,b\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{c}\,x\right],-1\right]}{\sqrt{c}}$$

Result (type 4, 61 leaves):

$$a\,x+b\,x\,\text{ArcSin}\left[c\,x^2\right]-\frac{1}{(-c)^{3/2}}2\,i\,b\,c\,\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-c}\,x\right],-1\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-c}\,x\right],-1\right]\right)$$

Problem 356: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 34 leaves, 3 steps):

$$-\frac{a+b\,\text{ArcSin}\left[c\,x^2\right]}{x}+2\,b\,\sqrt{c}\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{c}\,x\right],-1\right]$$

Result (type 4, 44 leaves):

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

Problem 357: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{a+b\,\text{ArcSin}\left[c\,x^2\right]}{x^4}\,dx$$

Optimal (type 4, 81 leaves, 7 steps):

$$-\frac{2\,b\,c\,\sqrt{1-c^2\,x^4}}{3\,x}-\frac{a+b\,\text{ArcSin}\left[c\,x^2\right]}{3\,x^3}-\frac{2}{3}\,b\,c^{3/2}\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{c}\,x\right],-1\right]+\frac{2}{3}\,b\,c^{3/2}\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{c}\,x\right],-1\right]$$

Result (type 4, 91 leaves):

$$\frac{1}{3}\left(-\frac{a}{x^3}-\frac{2\,b\,c\,\sqrt{1-c^2\,x^4}}{x}-\frac{b\,\text{ArcSin}\left[c\,x^2\right]}{x^3}+2\,i\,b\,(-c)^{3/2}\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-c}\,x\right],-1\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-c}\,x\right],-1\right]\right)\right)$$

Problem 358: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{a+b\,\text{ArcSin}\left[c\,x^2\right]}{x^6}\,dx$$

Optimal (type 4, 61 leaves, 4 steps):

$$-\frac{2\,b\,c\,\sqrt{1-c^2\,x^4}}{15\,x^3}-\frac{a+b\,\text{ArcSin}\left[c\,x^2\right]}{5\,x^5}+\frac{2}{15}\,b\,c^{5/2}\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{c}\,x\right],-1\right]$$

Result (type 4, 72 leaves):

$$-\frac{1}{15\,x^5}\left(3\,a+2\,b\,c\,x^2\,\sqrt{1-c^2\,x^4}+3\,b\,\text{ArcSin}\left[c\,x^2\right]-2\,i\,b\,(-c)^{5/2}\,x^5\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-c}\,x\right],-1\right]\right)$$

Problem 359: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{a+b\,\text{ArcSin}\left[c\,x^2\right]}{x^8}\,dx$$

Optimal (type 4, 106 leaves, 8 steps):

$$-\frac{2\,b\,c\,\sqrt{1-c^2\,x^4}}{35\,x^5}-\frac{6\,b\,c^3\,\sqrt{1-c^2\,x^4}}{35\,x}-\frac{a+b\,\text{ArcSin}\left[c\,x^2\right]}{7\,x^7}-\frac{6}{35}\,b\,c^{7/2}\,\text{EllipticE}\left[\text{ArcSin}\left[\sqrt{c}\,x\right],-1\right]+\frac{6}{35}\,b\,c^{7/2}\,\text{EllipticF}\left[\text{ArcSin}\left[\sqrt{c}\,x\right],-1\right]$$

Result (type 4, 100 leaves) :

$$\frac{1}{35}\left(-\frac{5\,a}{x^7}-\frac{2\,b\,\sqrt{1-c^2\,x^4}\,\left(c+3\,c^3\,x^4\right)}{x^5}-\frac{5\,b\,\text{ArcSin}\left[c\,x^2\right]}{x^7}+6\,i\,b\,(-c)^{7/2}\,\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{-c}\,x\right],-1\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{-c}\,x\right],-1\right]\right)\right)$$

Problem 373: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 31 leaves, 6 steps) :

$$a\,x+b\,x\,\text{ArcCsc}\left[\frac{x}{c}\right]+b\,c\,\text{ArcTanh}\left[\sqrt{1-\frac{c^2}{x^2}}\right]$$

Result (type 3, 89 leaves) :

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

Problem 383: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 75 leaves, 7 steps) :

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

Result (type 4, 157 leaves) :

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

Problem 389: Unable to integrate problem.

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

Optimal (type 4, 214 leaves, 12 steps):

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

Result (type 8, 18 leaves):

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

Problem 393: Unable to integrate problem.

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

Optimal (type 4, 336 leaves, 8 steps):

$$-\frac{16 \, b \, c \, x \sqrt{1 - c^2 - 2 \, c \, d \, x^2 - d^2 \, x^4}}{75 \, d^2} + \frac{2 \, b \, x^3 \sqrt{1 - c^2 - 2 \, c \, d \, x^2 - d^2 \, x^4}}{25 \, d} + \frac{1}{5} \, x^5 \left(a + b \, \text{ArcSin}\left[c + d \, x^2\right]\right) - \left(2 \, b \sqrt{1 - c} \, (1 + c) \left(9 + 23 \, c^2\right) \sqrt{1 - \frac{d \, x^2}{1 - c}} \sqrt{1 + \frac{d \, x^2}{1 + c}} \, \text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{d} \, x}{\sqrt{1 - c}}\right], -\frac{1 - c}{1 + c}\right]\right) \Big/ \left(75 \, d^{5/2} \sqrt{1 - c^2 - 2 \, c \, d \, x^2 - d^2 \, x^4}\right) + \left(2 \, b \sqrt{1 - c} \, (1 + c) \left(9 + 8 \, c + 15 \, c^2\right) \sqrt{1 - \frac{d \, x^2}{1 - c}} \sqrt{1 + \frac{d \, x^2}{1 + c}} \, \text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{d} \, x}{\sqrt{1 - c}}\right], -\frac{1 - c}{1 + c}\right]\right) \Big/ \left(75 \, d^{5/2} \sqrt{1 - c^2 - 2 \, c \, d \, x^2 - d^2 \, x^4}\right)$$

Result (type 8, 18 leaves):

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

Problem 394: Unable to integrate problem.

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

Optimal (type 4, 287 leaves, 7 steps):

$$\frac{2\,b\,x\,\sqrt{1-c^2-2\,c\,d\,x^2-d^2\,x^4}}{9\,d}+\frac{1}{3}\,x^3\,\left(a+b\,\text{ArcSin}\left[c+d\,x^2\right]\right)+$$
$$\left(8\,b\,\sqrt{1-c}\,\,c\,\left(1+c\right)\,\sqrt{1-\frac{d\,x^2}{1-c}}\,\,\sqrt{1+\frac{d\,x^2}{1+c}}\,\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{d}\,\,x}{\sqrt{1-c}}\right],\,-\frac{1-c}{1+c}\right]\right)\Big/$$
$$\left(9\,d^{3/2}\,\sqrt{1-c^2-2\,c\,d\,x^2-d^2\,x^4}\right)-$$
$$\left(2\,b\,\sqrt{1-c}\,\,\left(1+c\right)\,\left(1+3\,c\right)\,\sqrt{1-\frac{d\,x^2}{1-c}}\,\,\sqrt{1+\frac{d\,x^2}{1+c}}\,\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{d}\,\,x}{\sqrt{1-c}}\right],\,-\frac{1-c}{1+c}\right]\right)\Big/$$
$$\left(9\,d^{3/2}\,\sqrt{1-c^2-2\,c\,d\,x^2-d^2\,x^4}\right)$$

Result (type 8, 18 leaves):

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

Problem 395: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 237 leaves, 7 steps):

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

Result (type 4, 155 leaves):

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

Problem 396: Result unnecessarily involves imaginary or complex numbers.

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

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

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

Result (type 4, 140 leaves):

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

Problem 397: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 284 leaves, 8 steps):

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

Result (type 4, 243 leaves):

$$-\frac{a}{3 x^3}+\frac{2 b d \sqrt{1-c^2-2 c d x^2-d^2 x^4}}{3 \left(-1+c^2\right) x}-\frac{b \operatorname{ArcSin}\left[c+d x^2\right]}{3 x^3}+$$
$$\left(2 i b (1-c) d^2 \sqrt{1-\frac{d x^2}{-1-c}} \sqrt{1-\frac{d x^2}{1-c}} \left(\operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{d}{-1-c}} x\right],\frac{-1-c}{1-c}\right]-\right.\right.$$
$$\left.\left.\operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{-\frac{d}{-1-c}} x\right],\frac{-1-c}{1-c}\right]\right)\right)\Big/$$
$$\left(3 (-1+c) (1+c) \sqrt{-\frac{d}{-1-c}} \sqrt{1-c^2-2 c d x^2-d^2 x^4}\right)$$

Problem 398: Unable to integrate problem.

$$\int \frac{a+b \operatorname{ArcSin}\left[c+d x^2\right]}{x^6} \, dx$$

Optimal (type 4, 355 leaves, 8 steps):

$$-\frac{2 b d \sqrt{1-c^2-2 c d x^2-d^2 x^4}}{15 \left(1-c^2\right) x^3}-\frac{8 b c d^2 \sqrt{1-c^2-2 c d x^2-d^2 x^4}}{15 \left(1-c^2\right)^2 x}-$$
$$\frac{a+b \operatorname{ArcSin}\left[c+d x^2\right]}{5 x^5}-\frac{8 b c d^{5/2} \sqrt{1-\frac{d x^2}{1-c}} \sqrt{1+\frac{d x^2}{1+c}} \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{d} x}{\sqrt{1-c}}\right],-\frac{1-c}{1+c}\right]}{15 \sqrt{1-c} \left(1-c^2\right) \sqrt{1-c^2-2 c d x^2-d^2 x^4}}+$$
$$\left(2 b (1+3 c) d^{5/2} \sqrt{1-\frac{d x^2}{1-c}} \sqrt{1+\frac{d x^2}{1+c}} \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{d} x}{\sqrt{1-c}}\right],-\frac{1-c}{1+c}\right]\right)\Big/$$
$$\left(15 \sqrt{1-c} \left(1-c^2\right) \sqrt{1-c^2-2 c d x^2-d^2 x^4}\right)$$

Result (type 8, 18 leaves):

$$\int \frac{a+b \operatorname{ArcSin}\left[c+d x^2\right]}{x^6} \, dx$$

Problem 432: Unable to integrate problem.

$$\int \frac{\left(a+b \operatorname{ArcSin}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right)^3}{1-c^2 x^2} \, dx$$

Optimal (type 4, 275 leaves, 8 steps):

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

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

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

Result (type 8, 42 leaves):

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

Problem 433: Unable to integrate problem.

$$\int\frac{\left(a+b\,\text{ArcSin}\left[\frac{\sqrt{1-c\,x}}{\sqrt{1+c\,x}}\right]\right)^2}{1-c^2\,x^2}\,dx$$

Optimal (type 4, 205 leaves, 7 steps):

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

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

Result (type 8, 42 leaves):

$$\int\frac{\left(a+b\,\text{ArcSin}\left[\frac{\sqrt{1-c\,x}}{\sqrt{1+c\,x}}\right]\right)^2}{1-c^2\,x^2}\,dx$$

Problem 434: Unable to integrate problem.

$$\int\frac{a+b\,\text{ArcSin}\left[\frac{\sqrt{1-c\,x}}{\sqrt{1+c\,x}}\right]}{1-c^2\,x^2}\,dx$$

Optimal (type 4, 141 leaves, 6 steps):

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

Result (type 8, 40 leaves):

$$\int\frac{a+b\,\text{ArcSin}\left[\frac{\sqrt{1-c\,x}}{\sqrt{1+c\,x}}\right]}{1-c^2\,x^2}\,dx$$

Problem 438: Attempted integration timed out after 120 seconds.

$$\int\text{ArcSin}\left[c\,e^{a+b\,x}\right]\,dx$$

Optimal (type 4, 84 leaves, 6 steps):

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

Result (type 1, 1 leaves):

???

Problem 467: Result more than twice size of optimal antiderivative.

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

Optimal (type 5, 45 leaves, 4 steps):

$$\frac{1}{a}\left(\frac{4}{5}-\frac{8\,i}{5}\right)e^{(1+2\,i)\,\text{ArcSin}[a\,x]}\,\text{Hypergeometric2F1}\left[1-\frac{i}{2},2,2-\frac{i}{2},-e^{2\,i\,\text{ArcSin}[a\,x]}\right]$$

Result (type 5, 101 leaves):

$$\frac{1}{a}\left(\frac{2}{5}+\frac{i}{5}\right)e^{\text{ArcSin}[a\,x]}\left(\frac{(2-i)\,a\,x}{\sqrt{1-a^2\,x^2}}-(1+2\,i)\,\text{Hypergeometric2F1}\left[-\frac{i}{2},1,1-\frac{i}{2},-e^{2\,i\,\text{ArcSin}[a\,x]}\right]+e^{2\,i\,\text{ArcSin}[a\,x]}\,\text{Hypergeometric2F1}\left[1,1-\frac{i}{2},2-\frac{i}{2},-e^{2\,i\,\text{ArcSin}[a\,x]}\right]\right)$$

Problem 469: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\text{ArcSin}\left[\frac{c}{a+b\,x}\right]\,dx$$

Optimal (type 3, 47 leaves, 6 steps):

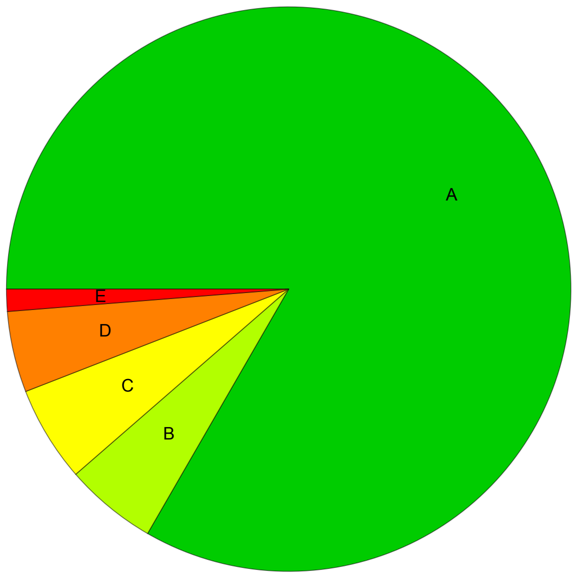
$$\frac{(a+b\,x)\;\text{ArcCsc}\left[\frac{a}{c}+\frac{b\,x}{c}\right]}{b}+\frac{c\;\text{ArcTanh}\left[\sqrt{1-\frac{c^2}{(a+b\,x)^2}}\right]}{b}$$

Result (type 3, 166 leaves) :

$$x\;\text{ArcSin}\left[\frac{c}{a+b\,x}\right]+\left((a+b\,x)\sqrt{\frac{a^2-c^2+2\,a\,b\,x+b^2\,x^2}{(a+b\,x)^2}}\left(\mathrm{i}\;a\;\text{Log}\left[-\frac{2\,b^2\left(-\mathrm{i}\;c+\sqrt{a^2-c^2+2\,a\,b\,x+b^2\,x^2}\right)}{a\;(a+b\,x)}\right]+c\;\text{Log}\left[a+b\,x+\sqrt{a^2-c^2+2\,a\,b\,x+b^2\,x^2}\right]\right)\right)\Big/\left(b\sqrt{a^2-c^2+2\,a\,b\,x+b^2\,x^2}\right)$$

Summary of Integration Test Results

474 integration problems



A - 395 optimal antiderivatives

B - 25 more than twice size of optimal antiderivatives

C - 26 unnecessarily complex antiderivatives

D - 22 unable to integrate problems

E - 6 integration timeouts