Mathematica 11.3 Integration Test Results

Test results for the 234 problems in "5.4.1 Inverse cotangent functions.m"

Problem 46: Result more than twice size of optimal antiderivative.

$$\int \frac{x^2 \text{ArcCot}[c\,x]}{1+x^2}\,dx$$

Optimal (type 4, 206 leaves, 28 steps):

$$x\,\text{ArcCot}[c\,x] - \frac{1}{2}\,i\,\text{ArcTan}[x]\,\text{Log}\left[1-\frac{i}{c\,x}\right] + \frac{1}{2}\,i\,\text{ArcTan}[x]\,\text{Log}\left[1+\frac{i}{c\,x}\right] + \frac{1}{2}\,i\,\text{ArcTan}[x]\,\text{Log}\left[-\frac{2\,i\,(i-c\,x)}{(1-c)\,(1-i\,x)}\right] - \frac{1}{2}\,i\,\text{ArcTan}[x]\,\text{Log}\left[-\frac{2\,i\,(i+c\,x)}{(1+c)\,(1-i\,x)}\right] + \frac{\text{Log}\left[1+c^2\,x^2\right]}{2\,c} + \frac{1}{4}\,\text{PolyLog}\left[2,\,1+\frac{2\,i\,(i-c\,x)}{(1-c)\,(1-i\,x)}\right] - \frac{1}{4}\,\text{PolyLog}\left[2,\,1+\frac{2\,i\,(i+c\,x)}{(1+c)\,(1-i\,x)}\right]$$

Result (type 4, 626 leaves):

$$\frac{1}{c}\left(c\,x\,\text{ArcCot}[c\,x]-\text{Log}\left[\frac{1}{c\sqrt{1+\frac{1}{c^2x^2}}\;x}\right]+\right.$$

$$\frac{1}{4}\sqrt{-c^2}\left(2\,\text{ArcCos}\left[\frac{1+c^2}{-1+c^2}\right]\text{ArcTanh}\left[\frac{\sqrt{-c^2}}{c\,x}\right]-4\,\text{ArcCot}[c\,x]\,\text{ArcTanh}\left[\frac{c\,x}{\sqrt{-c^2}}\right]-\right.$$

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

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

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

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

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

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

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

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

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

$$\int\frac{\text{ArcCot}[c\,x]}{1+x^2}\,dx$$

Optimal (type 4, 183 leaves, 25 steps) :

$$\frac{1}{2} \, i \, \text{ArcTan}[x] \, \text{Log}\left[1-\frac{i}{c\,x}\right]-\frac{1}{2} \, i \, \text{ArcTan}[x] \, \text{Log}\left[1+\frac{i}{c\,x}\right]-\frac{1}{2} \, i \, \text{ArcTan}[x] \, \text{Log}\left[-\frac{2\,i\,(i-c\,x)}{(1-c)\,(1-i\,x)}\right]+\frac{1}{2} \, i \, \text{ArcTan}[x] \, \text{Log}\left[-\frac{2\,i\,(i+c\,x)}{(1+c)\,(1-i\,x)}\right]-\frac{1}{4}\,\text{PolyLog}\left[2,1+\frac{2\,i\,(i-c\,x)}{(1-c)\,(1-i\,x)}\right]+\frac{1}{4}\,\text{PolyLog}\left[2,1+\frac{2\,i\,(i+c\,x)}{(1+c)\,(1-i\,x)}\right]$$

Result (type 4, 592 leaves):

$$\frac{1}{4\sqrt{-c^2}} c \left(2\,\text{ArcCos}\left[\frac{1+c^2}{-1+c^2}\right] \text{ArcTanh}\left[\frac{\sqrt{-c^2}}{c\,x}\right]-4\,\text{ArcCot}[c\,x]\,\text{ArcTanh}\left[\frac{c\,x}{\sqrt{-c^2}}\right]-\left(\text{ArcCos}\left[\frac{1+c^2}{-1+c^2}\right]-2\,i\,\text{ArcTanh}\left[\frac{\sqrt{-c^2}}{c\,x}\right]\right)\text{Log}\left[-\frac{2\left(c^2+i\sqrt{-c^2}\right)(-i+c\,x)}{(-1+c^2)\left(\sqrt{-c^2}-c\,x\right)}\right]-\left(\text{ArcCos}\left[\frac{1+c^2}{-1+c^2}\right]+2\,i\,\text{ArcTanh}\left[\frac{\sqrt{-c^2}}{c\,x}\right]\right)\text{Log}\left[\frac{2\,i\left(i\,c^2+\sqrt{-c^2}\right)(i+c\,x)}{(-1+c^2)\left(\sqrt{-c^2}-c\,x\right)}\right]+\left(\text{ArcCos}\left[\frac{1+c^2}{-1+c^2}\right]-2\,i\,\text{ArcTanh}\left[\frac{\sqrt{-c^2}}{c\,x}\right]+2\,i\,\text{ArcTanh}\left[\frac{c\,x}{\sqrt{-c^2}}\right]\right)\text{Log}\left[\frac{\sqrt{2}\,\sqrt{-c^2}\,e^{-i\,\text{ArcCot}[c\,x]}}{\sqrt{-1+c^2}\,\sqrt{-1-c^2+(-1+c^2)\,\text{Cos}[2\,\text{ArcCot}[c\,x]]}}\right]+\left(\text{ArcCos}\left[\frac{1+c^2}{-1+c^2}\right]+2\,i\,\text{ArcTanh}\left[\frac{\sqrt{-c^2}}{c\,x}\right]-2\,i\,\text{ArcTanh}\left[\frac{c\,x}{\sqrt{-c^2}}\right]\right)\text{Log}\left[\frac{\sqrt{2}\,\sqrt{-c^2}\,e^{i\,\text{ArcCot}[c\,x]}}{\sqrt{-1+c^2}\,\sqrt{-1-c^2+(-1+c^2)\,\text{Cos}[2\,\text{ArcCot}[c\,x]]}}\right]+i\left(-\text{PolyLog}\left[2,\frac{\left(1+c^2-2\,i\sqrt{-c^2}\right)\left(\sqrt{-c^2}+c\,x\right)}{(-1+c^2)\left(\sqrt{-c^2}-c\,x\right)}\right]+\text{PolyLog}\left[2,\frac{\left(1+c^2+2\,i\sqrt{-c^2}\right)\left(\sqrt{-c^2}+c\,x\right)}{(-1+c^2)\left(\sqrt{-c^2}-c\,x\right)}\right]\right)\right)$$

Problem 50: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{ArcCot}[c\,x]}{x^2\,(1+x^2)}\,dx$$

Optimal (type 4, 212 leaves, 31 steps):

$$-\frac{\text{ArcCot}[c\,x]}{x}-\frac{1}{2}\,i\,\text{ArcTan}[x]\,\text{Log}\left[1-\frac{i}{c\,x}\right]+\frac{1}{2}\,i\,\text{ArcTan}[x]\,\text{Log}\left[1+\frac{i}{c\,x}\right]-c\,\text{Log}[x]+$$
$$\frac{1}{2}\,i\,\text{ArcTan}[x]\,\text{Log}\left[-\frac{2\,i\,(i-c\,x)}{(1-c)\,(1-i\,x)}\right]-\frac{1}{2}\,i\,\text{ArcTan}[x]\,\text{Log}\left[-\frac{2\,i\,(i+c\,x)}{(1+c)\,(1-i\,x)}\right]+$$
$$\frac{1}{2}\,c\,\text{Log}\left[1+c^2x^2\right]+\frac{1}{4}\,\text{PolyLog}\left[2,1+\frac{2\,i\,(i-c\,x)}{(1-c)\,(1-i\,x)}\right]-\frac{1}{4}\,\text{PolyLog}\left[2,1+\frac{2\,i\,(i+c\,x)}{(1+c)\,(1-i\,x)}\right]$$

Result (type 4, 619 leaves):

$$-\frac{\text{ArcCot}[c\,x]}{x}-c\,\text{Log}\left[\frac{1}{\sqrt{1+\frac{1}{c^2x^2}}}\right]-$$
$$\frac{1}{4\sqrt{-c^2}}\,c\,\left(2\,\text{ArcCos}\left[\frac{1+c^2}{-1+c^2}\right]\text{ArcTanh}\left[\frac{\sqrt{-c^2}}{c\,x}\right]-4\,\text{ArcCot}[c\,x]\,\text{ArcTanh}\left[\frac{c\,x}{\sqrt{-c^2}}\right]-\right.$$
$$\left(\text{ArcCos}\left[\frac{1+c^2}{-1+c^2}\right]-2\,i\,\text{ArcTanh}\left[\frac{\sqrt{-c^2}}{c\,x}\right]\right)\text{Log}\left[-\frac{2\left(c^2+i\sqrt{-c^2}\right)(-i+c\,x)}{(-1+c^2)\left(\sqrt{-c^2}-c\,x\right)}\right]-$$
$$\left(\text{ArcCos}\left[\frac{1+c^2}{-1+c^2}\right]+2\,i\,\text{ArcTanh}\left[\frac{\sqrt{-c^2}}{c\,x}\right]\right)\text{Log}\left[\frac{2\,i\left(i\,c^2+\sqrt{-c^2}\right)(i+c\,x)}{(-1+c^2)\left(\sqrt{-c^2}-c\,x\right)}\right]+$$
$$\left(\text{ArcCos}\left[\frac{1+c^2}{-1+c^2}\right]-2\,i\,\text{ArcTanh}\left[\frac{\sqrt{-c^2}}{c\,x}\right]+2\,i\,\text{ArcTanh}\left[\frac{c\,x}{\sqrt{-c^2}}\right]\right)$$
$$\text{Log}\left[\frac{\sqrt{2}\,\sqrt{-c^2}\,e^{-i\,\text{ArcCot}[c\,x]}}{\sqrt{-1+c^2}\,\sqrt{-1-c^2+(-1+c^2)\,\text{Cos}[2\,\text{ArcCot}[c\,x]]}}\right]+$$
$$\left(\text{ArcCos}\left[\frac{1+c^2}{-1+c^2}\right]+2\,i\,\text{ArcTanh}\left[\frac{\sqrt{-c^2}}{c\,x}\right]-2\,i\,\text{ArcTanh}\left[\frac{c\,x}{\sqrt{-c^2}}\right]\right)$$
$$\text{Log}\left[\frac{\sqrt{2}\,\sqrt{-c^2}\,e^{i\,\text{ArcCot}[c\,x]}}{\sqrt{-1+c^2}\,\sqrt{-1-c^2+(-1+c^2)\,\text{Cos}[2\,\text{ArcCot}[c\,x]]}}\right]+$$
$$i\left(-\text{PolyLog}\left[2,\frac{\left(1+c^2-2\,i\sqrt{-c^2}\right)\left(\sqrt{-c^2}+c\,x\right)}{(-1+c^2)\left(\sqrt{-c^2}-c\,x\right)}\right]+\right.$$
$$\left.\left.\text{PolyLog}\left[2,\frac{\left(1+c^2+2\,i\sqrt{-c^2}\right)\left(\sqrt{-c^2}+c\,x\right)}{(-1+c^2)\left(\sqrt{-c^2}-c\,x\right)}\right]\right)\right)$$

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

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

Optimal (type 3, 66 leaves, 5 steps):

$$\frac{x\,\text{ArcCot}[a\,x]}{c\,\sqrt{c+d\,x^2}}-\frac{\text{ArcTanh}\left[\frac{a\,\sqrt{c+d\,x^2}}{\sqrt{a^2\,c-d}}\right]}{c\,\sqrt{a^2\,c-d}}$$

Result (type 3, 169 leaves):

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

Problem 62: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 134 leaves, 7 steps):

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

Result (type 3, 262 leaves):

$$-\frac{1}{6\,c^2}\left(-\frac{2\,a\,c}{\left(a^2\,c-d\right)\,\sqrt{c+d\,x^2}}-\frac{2\,x\,\left(3\,c+2\,d\,x^2\right)\,\text{ArcCot}[a\,x]}{\left(c+d\,x^2\right)^{3/2}}+\frac{\left(3\,a^2\,c-2\,d\right)\,\text{Log}\left[\frac{12\,a\,c^2\,\sqrt{a^2\,c-d}\,\left(a\,c-i\,d\,x+\sqrt{a^2\,c-d}\,\sqrt{c+d\,x^2}\right)}{\left(3\,a^2\,c-2\,d\right)\,(i+a\,x)}\right]}{\left(a^2\,c-d\right)^{3/2}}+\frac{\left(3\,a^2\,c-2\,d\right)\,\text{Log}\left[\frac{12\,a\,c^2\,\sqrt{a^2\,c-d}\,\left(a\,c+i\,d\,x+\sqrt{a^2\,c-d}\,\sqrt{c+d\,x^2}\right)}{\left(3\,a^2\,c-2\,d\right)\,(-i+a\,x)}\right]}{\left(a^2\,c-d\right)^{3/2}}\right)$$

Problem 63: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 208 leaves, 8 steps):

$$\frac{a}{15 c \left(a^2 c-d\right) \left(c+d x^2\right)^{3/2}}+\frac{a \left(7 a^2 c-4 d\right)}{15 c^2 \left(a^2 c-d\right)^2 \sqrt{c+d x^2}}+\frac{x \,\text{ArcCot}[a x]}{5 c \left(c+d x^2\right)^{5/2}}+$$
$$\frac{4 x \,\text{ArcCot}[a x]}{15 c^2 \left(c+d x^2\right)^{3/2}}+\frac{8 x \,\text{ArcCot}[a x]}{15 c^3 \sqrt{c+d x^2}}-\frac{\left(15 a^4 c^2-20 a^2 c d+8 d^2\right) \text{ArcTanh}\left[\frac{a \sqrt{c+d x^2}}{\sqrt{a^2 c-d}}\right]}{15 c^3 \left(a^2 c-d\right)^{5/2}}$$

Result (type 3, 345 leaves):

$$-\frac{1}{30 c^3}\left(-\frac{2 a c \left(-d \left(5 c+4 d x^2\right)+a^2 c \left(8 c+7 d x^2\right)\right)}{\left(-a^2 c+d\right)^2 \left(c+d x^2\right)^{3/2}}-\right.$$
$$\frac{2 x \left(15 c^2+20 c d x^2+8 d^2 x^4\right) \text{ArcCot}[a x]}{\left(c+d x^2\right)^{5/2}}+\frac{1}{\left(a^2 c-d\right)^{5/2}}\left(15 a^4 c^2-20 a^2 c d+8 d^2\right)$$
$$\text{Log}\left[\frac{60 a c^3 \left(a^2 c-d\right)^{3/2} \left(a c-i d x+\sqrt{a^2 c-d} \sqrt{c+d x^2}\right)}{\left(15 a^4 c^2-20 a^2 c d+8 d^2\right) (i+a x)}\right]+\frac{1}{\left(a^2 c-d\right)^{5/2}}$$
$$\left.\left(15 a^4 c^2-20 a^2 c d+8 d^2\right) \text{Log}\left[\frac{60 a c^3 \left(a^2 c-d\right)^{3/2} \left(a c+i d x+\sqrt{a^2 c-d} \sqrt{c+d x^2}\right)}{\left(15 a^4 c^2-20 a^2 c d+8 d^2\right) (-i+a x)}\right]\right)$$

Problem 64: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\text{ArcCot}[a x]}{\left(c+d x^2\right)^{9/2}} \, dx$$

Optimal (type 3, 293 leaves, 8 steps):

$$\frac{a}{35 c \left(a^2 c-d\right) \left(c+d x^2\right)^{5/2}}+\frac{a \left(11 a^2 c-6 d\right)}{105 c^2 \left(a^2 c-d\right)^2 \left(c+d x^2\right)^{3/2}}+$$
$$\frac{a \left(19 a^4 c^2-22 a^2 c d+8 d^2\right)}{35 c^3 \left(a^2 c-d\right)^3 \sqrt{c+d x^2}}+\frac{x \,\text{ArcCot}[a x]}{7 c \left(c+d x^2\right)^{7/2}}+\frac{6 x \,\text{ArcCot}[a x]}{35 c^2 \left(c+d x^2\right)^{5/2}}+\frac{8 x \,\text{ArcCot}[a x]}{35 c^3 \left(c+d x^2\right)^{3/2}}+$$
$$\frac{16 x \,\text{ArcCot}[a x]}{35 c^4 \sqrt{c+d x^2}}-\frac{\left(35 a^6 c^3-70 a^4 c^2 d+56 a^2 c d^2-16 d^3\right) \text{ArcTanh}\left[\frac{a \sqrt{c+d x^2}}{\sqrt{a^2 c-d}}\right]}{35 c^4 \left(a^2 c-d\right)^{7/2}}$$

Result (type 3, 450 leaves):

$$\frac{1}{210\,c^4}\Bigg(\Big(2\,a\,c\,\big(3\,c^2\,(-a^2\,c+d)^2+c\,(11\,a^2\,c-6\,d)\,(a^2\,c-d)\,(c+d\,x^2)+3\,(19\,a^4\,c^2-22\,a^2\,c\,d+8\,d^2)\,(c+d\,x^2)^2\big)\Big)\Big/\Big((a^2\,c-d)^3\,(c+d\,x^2)^{5/2}\Big)+\frac{6\,x\,(35\,c^3+70\,c^2\,d\,x^2+56\,c\,d^2\,x^4+16\,d^3\,x^6)\,\text{ArcCot}[a\,x]}{(c+d\,x^2)^{7/2}}-\frac{1}{(a^2\,c-d)^{7/2}}3\,(35\,a^6\,c^3-70\,a^4\,c^2\,d+56\,a^2\,c\,d^2-16\,d^3)\,\text{Log}\Big[\frac{140\,a\,c^4\,(a^2\,c-d)^{5/2}\,\big(a\,c-i\,d\,x+\sqrt{a^2\,c-d}\,\sqrt{c+d\,x^2}\big)}{(35\,a^6\,c^3-70\,a^4\,c^2\,d+56\,a^2\,c\,d^2-16\,d^3)\,(i+a\,x)}\Big]-\frac{1}{(a^2\,c-d)^{7/2}}3\,(35\,a^6\,c^3-70\,a^4\,c^2\,d+56\,a^2\,c\,d^2-16\,d^3)\,\text{Log}\Big[\frac{140\,a\,c^4\,(a^2\,c-d)^{5/2}\,\big(a\,c+i\,d\,x+\sqrt{a^2\,c-d}\,\sqrt{c+d\,x^2}\big)}{(35\,a^6\,c^3-70\,a^4\,c^2\,d+56\,a^2\,c\,d^2-16\,d^3)\,(-i+a\,x)}\Big]\Bigg)$$

Problem 97: Result unnecessarily involves higher level functions.

$$\int \frac{\text{ArcCot}[a\,x^n]}{x}\,dx$$

Optimal (type 4, 47 leaves, 4 steps):

$$-\frac{i\,\text{PolyLog}\big[2,-\frac{i\,x^{-n}}{a}\big]}{2\,n}+\frac{i\,\text{PolyLog}\big[2,\frac{i\,x^{-n}}{a}\big]}{2\,n}$$

Result (type 5, 52 leaves):

$$-\frac{a\,x^n\,\text{HypergeometricPFQ}\big[\{\frac{1}{2},\frac{1}{2},1\},\{\frac{3}{2},\frac{3}{2}\},-a^2\,x^{2\,n}\big]}{n}+\big(\text{ArcCot}[a\,x^n]+\text{ArcTan}[a\,x^n]\big)\,\text{Log}[x]$$

Problem 103: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{ArcCot}[a+b\,x]}{x}\,dx$$

Optimal (type 4, 120 leaves, 5 steps):

$$-\text{ArcCot}[a+b\,x]\,\text{Log}\Big[\frac{2}{1-i\,(a+b\,x)}\Big]+\text{ArcCot}[a+b\,x]\,\text{Log}\Big[\frac{2\,b\,x}{(i-a)\,(1-i\,(a+b\,x))}\Big]-\frac{1}{2}\,i\,\text{PolyLog}\Big[2,1-\frac{2}{1-i\,(a+b\,x)}\Big]+\frac{1}{2}\,i\,\text{PolyLog}\Big[2,1-\frac{2\,b\,x}{(i-a)\,(1-i\,(a+b\,x))}\Big]$$

Result (type 4, 256 leaves):

$$(\text{ArcCot}[a+b x]+\text{ArcTan}[a+b x])\,\text{Log}[x]+\text{ArcTan}[a+b x]\left(\text{Log}\left[\frac{1}{\sqrt{1+(a+b x)^2}}\right]-\text{Log}[-\text{Sin}[\text{ArcTan}[a]-\text{ArcTan}[a+b x]]]\right)+\frac{1}{2}\left(\frac{1}{4}\,i\,(\pi-2\,\text{ArcTan}[a+b x])^2+i\,(\text{ArcTan}[a]-\text{ArcTan}[a+b x])^2-(\pi-2\,\text{ArcTan}[a+b x])\,\text{Log}\left[1+e^{-2 i \text{ArcTan}[a+b x]}\right]+2\,(\text{ArcTan}[a]-\text{ArcTan}[a+b x])\,\text{Log}\left[1-e^{2 i (-\text{ArcTan}[a]+\text{ArcTan}[a+b x])}\right]+(\pi-2\,\text{ArcTan}[a+b x])\,\text{Log}\left[\frac{2}{\sqrt{1+(a+b x)^2}}\right]+2\,(-\text{ArcTan}[a]+\text{ArcTan}[a+b x])\,\text{Log}[-2\,\text{Sin}[\text{ArcTan}[a]-\text{ArcTan}[a+b x]]]+i\,\text{PolyLog}\left[2,-e^{-2 i \text{ArcTan}[a+b x]}\right]+i\,\text{PolyLog}\left[2,e^{2 i (-\text{ArcTan}[a]+\text{ArcTan}[a+b x])}\right]\right)$$

Problem 107: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{ArcCot}[a+b x]}{c+d x^2}\,dx$$

Optimal (type 4, 642 leaves, 15 steps):

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

Result (type 4, 1530 leaves):

$$\frac{1}{4\left(1+a^2\right)\sqrt{c}\;d\,(a+b x)^2\left(1+\frac{1}{(a+b x)^2}\right)}\left(1+(a+b x)^2\right)\left(4\left(1+a^2\right)\sqrt{d}\,\text{ArcCot}[a+b x]\,\text{ArcTan}\left[\frac{\sqrt{d}\,x}{\sqrt{c}}\right]+\right.$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$2\mathrm{i}\sqrt{d}\,\text{ArcTan}\left[\frac{(-\mathrm{i}+a)\sqrt{d}}{b\sqrt{c}}\right]\text{Log}\left[-\text{Sin}\left[\text{ArcTan}\left[\frac{(-\mathrm{i}+a)\sqrt{d}}{b\sqrt{c}}\right]+\text{ArcTan}\left[\frac{\sqrt{d}\,x}{\sqrt{c}}\right]\right]\right]+$$

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

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

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

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

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

Problem 108: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{ArcCot}[a+b\,x]}{c+d\,x}\,dx$$

Optimal (type 4, 152 leaves, 5 steps):

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

Result (type 4, 325 leaves):

$$\frac{1}{d}\Bigg((\text{ArcCot}[a+b\,x]+\text{ArcTan}[a+b\,x])\,\text{Log}[c+d\,x]+$$

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

$$\frac{1}{2}\Bigg(\frac{1}{4}\,i\,(\pi-2\,\text{ArcTan}[a+b\,x])^2+i\left(\text{ArcTan}\left[\frac{b\,c-a\,d}{d}\right]+\text{ArcTan}[a+b\,x]\right)^2-$$

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

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

$$2\left(\text{ArcTan}\left[\frac{b\,c-a\,d}{d}\right]+\text{ArcTan}[a+b\,x]\right)\text{Log}\left[2\,\text{Sin}\left[\text{ArcTan}\left[\frac{b\,c-a\,d}{d}\right]+\text{ArcTan}[a+b\,x]\right]\right]+$$

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

Problem 110: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{ArcCot}[a+b x]}{c+\frac{d}{x^2}} \, dx$$

Optimal (type 4, 735 leaves, 57 steps):

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

Result (type 4, 16 412 leaves):

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

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

$$\frac{1}{\left(-i a c+a^2 c+b^2 d\right) \sqrt{1-\frac{\left(-i a c+a^2 c+b^2 d\right)^2}{b^2 c d}}}$$

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

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

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

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

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

$$\left.\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a c-\frac{a^2 c+b^2 d}{a+b x}}{b \sqrt{c} \sqrt{d}}\right]-i \text{ArcTanh}\left[\frac{-i a c+a^2 c+b^2 d}{b \sqrt{c} \sqrt{d}}\right]\right]\right]\right)-$$

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

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

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

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

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

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

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

$$\left.\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\sqrt{c}\,\sqrt{d}}\right]-\mathrm{i}\,\text{ArcTanh}\left[\frac{-\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\sqrt{c}\,\sqrt{d}}\right]\right]\right]\right)-$$

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

$$\frac{1}{4\,b^2\,d\,\left(-\dot{\imath}\,a\,c+a^2\,c+b^2\,d\right)\,\sqrt{1-\frac{\left(-\dot{\imath}\,a\,c+a^2\,c+b^2\,d\right)^2}{b^2\,c\,d}}}\,a^4\,c^2\,\left(e^{\text{ArcTanh}\left[\frac{-\dot{\imath}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]}\right.$$

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

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

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

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

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

$$\left.\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]-\dot{\imath}\,\text{ArcTanh}\left[\frac{-\dot{\imath}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right]\right]\right)-$$

$$\left.\left.\text{PolyLog}\left[2,\,e^{2\,\left(\dot{\imath}\,\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]+\text{ArcTanh}\left[\frac{-\dot{\imath}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right)}\right]\right)\right)-$$

$$\frac{1}{2 b^2 d \left(-i a c+a^2 c+b^2 d\right) \sqrt{1-\frac{\left(-i a c+a^2 c+b^2 d\right)^2}{b^2 c d}}} i a^5 c^2 \left(e^{\text{ArcTanh}\left[\frac{-i a c+a^2 c+b^2 d}{b \sqrt{c} \sqrt{d}}\right]}\right.$$

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

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

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

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

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

$$\left.\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a c-\frac{a^2 c+b^2 d}{a+b x}}{b \sqrt{c} \sqrt{d}}\right]-i \text{ArcTanh}\left[\frac{-i a c+a^2 c+b^2 d}{b \sqrt{c} \sqrt{d}}\right]\right]\right]\right)-$$

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

$$\frac{1}{4\,b^2\,d\,\left(-\mathrm{i}\,a\,c+a^2\,c+b^2\,d\right)\sqrt{1-\frac{\left(-\mathrm{i}\,a\,c+a^2\,c+b^2\,d\right)^2}{b^2\,c\,d}}}\,a^6\,c^2\left(e^{\mathrm{ArcTanh}\left[\frac{-\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]}\right.$$

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

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

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

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

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

$$\left.\mathrm{Log}\left[\mathrm{Sin}\left[\mathrm{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]-\mathrm{i}\,\mathrm{ArcTanh}\left[\frac{-\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right]\right]\right)-$$

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

$$\frac{1}{4\left(-i a c+a^2 c+b^2 d\right)\sqrt{1-\frac{\left(-i a c+a^2 c+b^2 d\right)^2}{b^2 c d}}} b^2 d \left(e^{\text{ArcTanh}\left[\frac{-i a c+a^2 c+b^2 d}{b\sqrt{c}\sqrt{d}}\right]}\right.$$

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

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

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

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

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

$$\left.\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a c-\frac{a^2 c+b^2 d}{a+b x}}{b\sqrt{c}\sqrt{d}}\right]-i\,\text{ArcTanh}\left[\frac{-i a c+a^2 c+b^2 d}{b\sqrt{c}\sqrt{d}}\right]\right]\right]\right)-$$

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

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

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

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

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

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

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

$$\left.\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\sqrt{c}\,\sqrt{d}}\right]-\mathrm{i}\,\text{ArcTanh}\left[\frac{-\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\sqrt{c}\,\sqrt{d}}\right]\right]\right]\right)-$$

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

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

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

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

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

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

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

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

$$\left.\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]-i\,\text{ArcTanh}\left[\frac{-\,i\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right]\right]\right)-$$

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

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

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

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

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

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

$$\left.\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]-i\,\text{ArcTanh}\left[\frac{-i\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right]\right]\right)-$$

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

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

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

$$\left(\mathbb{i}\,\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]\left(-\pi+2\,\mathbb{i}\,\text{ArcTanh}\left[\frac{\mathbb{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right)-\right.$$

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

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

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

$$\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]+\mathbb{i}\,\text{ArcTanh}\left[\frac{\mathbb{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right]\right]+$$

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

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

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

$$\left(\mathbb{i}\,\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]\left(-\pi+2\,\mathbb{i}\,\text{ArcTanh}\left[\frac{\mathbb{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right)-\right.$$

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

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

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

$$\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]+i\,\text{ArcTanh}\left[\frac{i\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right]\right]+$$

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

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

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

$$\left(i\,\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]\left(-\pi+2\,i\,\text{ArcTanh}\left[\frac{i\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right)-\right.$$

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

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

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

$$\text{Log}\Big[\text{Sin}\Big[\text{ArcTan}\Big[\frac{a c-\frac{a^2 c+b^2 d}{a+b x}}{b\sqrt{c}\,\sqrt{d}}\Big]+i\,\text{ArcTanh}\Big[\frac{i a c+a^2 c+b^2 d}{b\sqrt{c}\,\sqrt{d}}\Big]\Big]\Big]+$$

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

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

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

$$\Bigg(i\,\text{ArcTan}\Big[\frac{a c-\frac{a^2 c+b^2 d}{a+b x}}{b\sqrt{c}\,\sqrt{d}}\Big]\left(-\pi+2\,i\,\text{ArcTanh}\Big[\frac{i a c+a^2 c+b^2 d}{b\sqrt{c}\,\sqrt{d}}\Big]\right)-$$

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

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

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

$$\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]+\mathrm{i}\,\text{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right]\right]+$$

$$\mathrm{i}\,\text{PolyLog}\left[2,\,e^{2\,\mathrm{i}\left(\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]+\mathrm{i}\,\text{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right)}\right]\Bigg)\Bigg)+$$

$$\frac{1}{2\,b^2\,d\,\left(\mathrm{i}\,a\,c+a^2\,c+b^2\,d\right)\sqrt{-\frac{-b^2\,c\,d+\left(\mathrm{i}\,a\,c+a^2\,c+b^2\,d\right)^2}{b^2\,c\,d}}}\,\mathrm{i}\,a^5\,c^2\left(e^{-\text{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]}\right.$$

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

$$\left(\mathrm{i}\,\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]\left(-\pi+2\,\mathrm{i}\,\text{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right)-\right.$$

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

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

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

$$\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]+\mathrm{i}\,\text{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right]\right]+$$

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

$$\frac{1}{4\,b^2\,d\,\left(\mathrm{i}\,a\,c+a^2\,c+b^2\,d\right)\sqrt{-\frac{-b^2\,c\,d+\left(\mathrm{i}\,a\,c+a^2\,c+b^2\,d\right)^2}{b^2\,c\,d}}}\,a^6\,c^2\left(e^{-\mathrm{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]}\right.$$

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

$$\left(\mathrm{i}\,\mathrm{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]\left(-\pi+2\,\mathrm{i}\,\mathrm{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right)-\right.$$

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

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

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

$$\mathrm{Log}\left[\mathrm{Sin}\left[\mathrm{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]+\mathrm{i}\,\mathrm{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right]\right]+$$

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

$$\frac{1}{4\left(\mathrm{i}\,a\,c+a^2\,c+b^2\,d\right)\sqrt{-\frac{-b^2\,c\,d+\left(\mathrm{i}\,a\,c+a^2\,c+b^2\,d\right)^2}{b^2\,c\,d}}}\,b^2\,d\left(e^{-\text{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\sqrt{c}\,\sqrt{d}}\right]}\right.$$

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

$$\left(\mathrm{i}\,\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\sqrt{c}\,\sqrt{d}}\right]\left(-\pi+2\,\mathrm{i}\,\text{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\sqrt{c}\,\sqrt{d}}\right]\right)-\right.$$

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

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

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

$$\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\sqrt{c}\,\sqrt{d}}\right]+\mathrm{i}\,\text{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\sqrt{c}\,\sqrt{d}}\right]\right]\right]+$$

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

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

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

$$\Bigg(\mathrm{i}\,\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]\left(-\pi+2\,\mathrm{i}\,\text{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right)-$$

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

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

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

$$\text{Log}\left[\text{Sin}\left[\text{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]+\mathrm{i}\,\text{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right]\right]+$$

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

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

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

$$\left(\mathrm{i}\,\mathrm{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]\left(-\pi+2\,\mathrm{i}\,\mathrm{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right)-\right.$$

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

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

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

$$\mathrm{Log}\left[\mathrm{Sin}\left[\mathrm{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]+\mathrm{i}\,\mathrm{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right]\right]+$$

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

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

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

$$\left(\mathrm{i}\,\mathrm{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]\left(-\pi+2\,\mathrm{i}\,\mathrm{ArcTanh}\left[\frac{\mathrm{i}\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right)-\right.$$

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

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

$$\mathrm{Log}\left[\mathrm{Sin}\left[\mathrm{ArcTan}\left[\frac{a\,c-\frac{a^2\,c+b^2\,d}{a+b\,x}}{b\,\sqrt{c}\,\sqrt{d}}\right]+i\,\mathrm{ArcTanh}\left[\frac{i\,a\,c+a^2\,c+b^2\,d}{b\,\sqrt{c}\,\sqrt{d}}\right]\right]\right]+$$

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

Problem 111: Result is not expressed in closed-form.

$$\int \frac{\mathrm{ArcCot}[a+b\,x]}{c+d\,\sqrt{x}}\,dx$$

Optimal (type 4, 693 leaves, 55 steps):

$$-\frac{2\,i\,\sqrt{i+a}\;\mathrm{ArcTan}\left[\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{i+a}}\right]}{\sqrt{b}\;d}+\frac{2\,i\,\sqrt{i-a}\;\mathrm{ArcTanh}\left[\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{i-a}}\right]}{\sqrt{b}\;d}-$$

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

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

$$\frac{i\,\sqrt{x}\;\mathrm{Log}\left[-\frac{i-a-b\,x}{a+b\,x}\right]}{d}-\frac{i\,c\,\mathrm{Log}\left[c+d\,\sqrt{x}\right]\mathrm{Log}\left[-\frac{i-a-b\,x}{a+b\,x}\right]}{d^2}-\frac{i\,\sqrt{x}\;\mathrm{Log}\left[\frac{i+a+b\,x}{a+b\,x}\right]}{d}+$$

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

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

Result (type 7, 313 leaves):

$$\frac{1}{2 d^2}\left(4 \text{ArcCot}[a+b x]\left(d \sqrt{x}-c \text{Log}\left[c+d \sqrt{x}\right]\right)+\frac{1}{\sqrt{b}} d \left(\frac{4 (1+i a) \text{ArcTan}\left[\frac{\sqrt{b} \sqrt{x}}{\sqrt{-i+a}}\right]}{\sqrt{-i+a}}+\frac{4 (1-i a) \text{ArcTan}\left[\frac{\sqrt{b} \sqrt{x}}{\sqrt{i+a}}\right]}{\sqrt{i+a}}-\sqrt{b}\, c\, d\, \text{RootSum}\left[b^2 c^4+2 a b c^2 d^2+d^4+a^2 d^4-4 b^2 c^3 \#1-4 a b c d^2 \#1+6 b^2 c^2 \#1^2+2 a b d^2 \#1^2-4 b^2 c \#1^3+b^2 \#1^4\&, \left(-\text{Log}\left[c+d \sqrt{x}\right]^2+2 \text{Log}\left[c+d \sqrt{x}\right] \text{Log}\left[1-\frac{c+d \sqrt{x}}{\#1}\right]+2 \text{PolyLog}\left[2, \frac{c+d \sqrt{x}}{\#1}\right]\right) \Big/ \left(b c^2+a d^2-2 b c \#1+b \#1^2\right)\&\right]\right)\right)$$

Problem 112: Unable to integrate problem.

$$\int \frac{\text{ArcCot}[a+b x]}{c+\frac{d}{\sqrt{x}}}\, dx$$

Optimal (type 4, 830 leaves, 65 steps):

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

Result (type 8, 20 leaves):

$$\int \frac{\text{ArcCot}[a + b x]}{c + \frac{d}{\sqrt{x}}} \, dx$$

Problem 113: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 367 leaves, 12 steps):

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

Result (type 1, 1 leaves):

???

Problem 126: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{ArcCot}[1 + x]}{2 + 2 x} \, dx$$

Optimal (type 4, 35 leaves, 5 steps):

$$-\frac{1}{4} i \,\text{PolyLog}\left[2, -\frac{i}{1+x}\right] + \frac{1}{4} i \,\text{PolyLog}\left[2, \frac{i}{1+x}\right]$$

Result (type 4, 157 leaves):

$$\frac{1}{16} \Big(i \pi^2 - 4 i \pi \,\text{ArcTan}[1 + x] + 8 i \,\text{ArcTan}[1 + x]^2 + \pi \,\text{Log}[16] - 4 \pi \,\text{Log}\left[1 + e^{-2 i \,\text{ArcTan}[1+x]}\right] + 8 \,\text{ArcTan}[1 + x] \,\text{Log}\left[1 + e^{-2 i \,\text{ArcTan}[1+x]}\right] - 8 \,\text{ArcTan}[1 + x] \,\text{Log}\left[1 - e^{2 i \,\text{ArcTan}[1+x]}\right] + 8 \,\text{ArcCot}[1 + x] \,\text{Log}[1 + x] + 8 \,\text{ArcTan}[1 + x] \,\text{Log}[1 + x] - 2 \pi \,\text{Log}\left[2 + 2 x + x^2\right] + 4 i \,\text{PolyLog}\left[2, -e^{-2 i \,\text{ArcTan}[1+x]}\right] + 4 i \,\text{PolyLog}\left[2, e^{2 i \,\text{ArcTan}[1+x]}\right]\Big)$$

Problem 127: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{ArcCot}[a+b\,x]}{\frac{a\,d}{b}+d\,x}\,dx$$

Optimal (type 4, 45 leaves, 5 steps):

$$-\frac{i\,\text{PolyLog}\left[2,-\frac{i}{a+b\,x}\right]}{2\,d}+\frac{i\,\text{PolyLog}\left[2,\frac{i}{a+b\,x}\right]}{2\,d}$$

Result (type 4, 195 leaves):

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

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

$$\int \frac{a+b\,\text{ArcCot}[c+d\,x]}{e+f\,x}\,dx$$

Optimal (type 4, 162 leaves, 5 steps):

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

Result (type 4, 336 leaves):

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

Problem 139: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 261 leaves, 2 steps):

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

Result (type 1, 1 leaves):

???

Problem 140: Result more than twice size of optimal antiderivative.

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

Optimal (type 4, 567 leaves, 25 steps):

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

Result (type 4, 1188 leaves):

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

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

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

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

$$\frac{c f\,\text{ArcCot}[c+d x]^2}{2\left(d^2 e^2-2 c d e f+f^2+c^2 f^2\right)}-$$

$$\left(\text{ArcCot}[c+d x]\left(2\left(d e-i f-c f\right)\text{ArcCot}[c+d x]+2 i f\,\text{ArcTan}\left[\frac{1}{c+d x}\right]-\right.\right.$$

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

$$\left(2\left(d^2 e^2-2 c d e f+\left(1+c^2\right)f^2\right)\right)-\frac{1}{2\left(d^2 e^2-2 c d e f+\left(1+c^2\right)f^2\right)}$$

$$f\left(-i\pi\,\text{ArcCot}[c+d x]+c\,\text{ArcCot}[c+d x]^2-\frac{d e\,\text{ArcCot}[c+d x]^2}{f}-\right.$$

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

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

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

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

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

$$\left(i\,\text{ArcCot}[c+d\,x]+\text{Log}\left[\text{Sin}\left[\text{ArcCot}[c+d\,x]+\text{ArcTan}\left[\frac{f}{d\,e-c\,f}\right]\right]\right]\right)+$$

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

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

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

Optimal (type 4, 565 leaves, 21 steps):

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

Result (type 4, 2336 leaves):

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

$$\text{Cos}[3\,\text{ArcCot}[c+d\,x]]-2\left(-2\,\text{ArcCot}[c+d\,x]+i\,\text{ArcCot}[c+d\,x]^2+6\,c\,\text{ArcCot}[c+d\,x]^2-\right.$$

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

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

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

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

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

$$\left.\left.i\left(\text{ArcCot}[c+d\,x]^2+\text{PolyLog}\left[2,e^{2\,i\,\text{ArcCot}[c+d\,x]}\right]\right)\right)\right)\Big/\left(d\,(c+d\,x)^2\left(1+\frac{1}{(c+d\,x)^2}\right)\right)+$$

$$\left(6\,a\,b^2\,e\,f\left(1+(c+d\,x)^2\right)\left(\frac{(c+d\,x)\,\text{ArcCot}[c+d\,x]}{d^2}-\frac{c\,(c+d\,x)\,\text{ArcCot}[c+d\,x]^2}{d^2}+\right.\right.$$

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

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

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

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

$$\left.\left.3\,i\,\text{ArcCot}[c+d\,x]\,\text{PolyLog}\left[2,e^{-2\,i\,\text{ArcCot}[c+d\,x]}\right]+\frac{3}{2}\,\text{PolyLog}\left[3,e^{-2\,i\,\text{ArcCot}[c+d\,x]}\right]\right)\right)\Big/$$

$$\left(d\,(c+d\,x)^2\left(1+\frac{1}{(c+d\,x)^2}\right)\right)+\frac{1}{4\,d^2\,(c+d\,x)^2\left(1+\frac{1}{(c+d\,x)^2}\right)}$$

$$b^3\,e\,f\left(1+(c+d\,x)^2\right)$$

$$\Big(-i\,c\,\pi^3+12\,i\,\text{ArcCot}[c+d\,x]^2+12\,(c+d\,x)\,\text{ArcCot}[c+d\,x]^2+8\,i\,c\,\text{ArcCot}[c+d\,x]^3-$$

$$8\,c\,(c+d\,x)\,\text{ArcCot}[c+d\,x]^3+4\,(c+d\,x)^2\left(1+\frac{1}{(c+d\,x)^2}\right)\text{ArcCot}[c+d\,x]^3+$$

$$24\,c\,\text{ArcCot}[c+d\,x]^2\,\text{Log}\left[1-e^{-2\,i\,\text{ArcCot}[c+d\,x]}\right]-24\,\text{ArcCot}[c+d\,x]\,\text{Log}\left[1-e^{2\,i\,\text{ArcCot}[c+d\,x]}\right]+$$

$$24\,i\,c\,\text{ArcCot}[c+d\,x]\,\text{PolyLog}\left[2,e^{-2\,i\,\text{ArcCot}[c+d\,x]}\right]+12\,i\,\text{PolyLog}\left[2,e^{2\,i\,\text{ArcCot}[c+d\,x]}\right]+$$

$$12\,c\,\text{PolyLog}\left[3,e^{-2\,i\,\text{ArcCot}[c+d\,x]}\right]\Big)-\frac{1}{d^3\,(c+d\,x)^2\left(1+\frac{1}{(c+d\,x)^2}\right)}$$

$$b^3\,f^2\left(1+(c+d\,x)^2\right)\Bigg(i\,(-1+3\,c^2)\,\text{ArcCot}[c+d\,x]\,\text{PolyLog}\left[2,e^{-2\,i\,\text{ArcCot}[c+d\,x]}\right]+$$

$$\frac{1}{96}\,(c+d\,x)^3\left(1+\frac{1}{(c+d\,x)^2}\right)^{3/2}\Bigg(\frac{3\,i\,\pi^3}{(c+d\,x)\sqrt{1+\frac{1}{(c+d\,x)^2}}}-\frac{9\,i\,c^2\,\pi^3}{(c+d\,x)\sqrt{1+\frac{1}{(c+d\,x)^2}}}-$$

$$\frac{24\,\text{ArcCot}[c+d\,x]}{\sqrt{1+\frac{1}{(c+d\,x)^2}}}+\frac{72\,c\,\text{ArcCot}[c+d\,x]^2}{\sqrt{1+\frac{1}{(c+d\,x)^2}}}-\frac{48\,\text{ArcCot}[c+d\,x]^2}{(c+d\,x)\sqrt{1+\frac{1}{(c+d\,x)^2}}}+$$

$$\frac{216\,i\,c\,\text{ArcCot}[c+d\,x]^2}{(c+d\,x)\sqrt{1+\frac{1}{(c+d\,x)^2}}}-\frac{24\,\text{ArcCot}[c+d\,x]^3}{\sqrt{1+\frac{1}{(c+d\,x)^2}}}-\frac{24\,c^2\,\text{ArcCot}[c+d\,x]^3}{\sqrt{1+\frac{1}{(c+d\,x)^2}}}-$$

$$\frac{24\,i\,\text{ArcCot}[c+d\,x]^3}{(c+d\,x)\sqrt{1+\frac{1}{(c+d\,x)^2}}}+\frac{96\,c\,\text{ArcCot}[c+d\,x]^3}{(c+d\,x)\sqrt{1+\frac{1}{(c+d\,x)^2}}}+\frac{72\,i\,c^2\,\text{ArcCot}[c+d\,x]^3}{(c+d\,x)\sqrt{1+\frac{1}{(c+d\,x)^2}}}+$$

$$24\,\text{ArcCot}[c+d\,x]\,\text{Cos}[3\,\text{ArcCot}[c+d\,x]]-72\,c\,\text{ArcCot}[c+d\,x]^2\,\text{Cos}[3\,\text{ArcCot}[c+d\,x]]-$$

$$8\,\text{ArcCot}[c+d\,x]^3\,\text{Cos}[3\,\text{ArcCot}[c+d\,x]]+24\,c^2\,\text{ArcCot}[c+d\,x]^3\,\text{Cos}[3\,\text{ArcCot}[c+d\,x]]-$$

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

$$\frac{216\,c^2\,\text{ArcCot}[c+d\,x]^2\,\text{Log}\left[1-e^{-2\,i\,\text{ArcCot}[c+d\,x]}\right]}{(c+d\,x)\sqrt{1+\frac{1}{(c+d\,x)^2}}}-$$

$$\frac{432\, c\, \text{ArcCot}[c+d\,x]\, \text{Log}\left[1-e^{2\,i\,\text{ArcCot}[c+d\,x]}\right]}{(c+d\,x)\sqrt{1+\frac{1}{(c+d\,x)^2}}}+\frac{72\,\text{Log}\left[\frac{1}{(c+d\,x)\sqrt{1+\frac{1}{(c+d\,x)^2}}}\right]}{(c+d\,x)\sqrt{1+\frac{1}{(c+d\,x)^2}}}+$$

$$\frac{288\, i\, c\, \text{PolyLog}\left[2, e^{2\,i\,\text{ArcCot}[c+d\,x]}\right]}{(c+d\,x)^3\left(1+\frac{1}{(c+d\,x)^2}\right)^{3/2}}+\frac{48\left(-1+3\,c^2\right)\text{PolyLog}\left[3, e^{-2\,i\,\text{ArcCot}[c+d\,x]}\right]}{(c+d\,x)^3\left(1+\frac{1}{(c+d\,x)^2}\right)^{3/2}}-$$

$$i\,\pi^3\,\text{Sin}[3\,\text{ArcCot}[c+d\,x]]+3\,i\,c^2\,\pi^3\,\text{Sin}[3\,\text{ArcCot}[c+d\,x]]-$$
$$72\,i\,c\,\text{ArcCot}[c+d\,x]^2\,\text{Sin}[3\,\text{ArcCot}[c+d\,x]]+8\,i\,\text{ArcCot}[c+d\,x]^3$$
$$\text{Sin}[3\,\text{ArcCot}[c+d\,x]]-24\,i\,c^2\,\text{ArcCot}[c+d\,x]^3\,\text{Sin}[3\,\text{ArcCot}[c+d\,x]]+$$
$$24\,\text{ArcCot}[c+d\,x]^2\,\text{Log}\left[1-e^{-2\,i\,\text{ArcCot}[c+d\,x]}\right]\text{Sin}[3\,\text{ArcCot}[c+d\,x]]-$$
$$72\,c^2\,\text{ArcCot}[c+d\,x]^2\,\text{Log}\left[1-e^{-2\,i\,\text{ArcCot}[c+d\,x]}\right]\text{Sin}[3\,\text{ArcCot}[c+d\,x]]+$$
$$144\,c\,\text{ArcCot}[c+d\,x]\,\text{Log}\left[1-e^{2\,i\,\text{ArcCot}[c+d\,x]}\right]\text{Sin}[3\,\text{ArcCot}[c+d\,x]]-$$
$$\left.\left.24\,\text{Log}\left[\frac{1}{(c+d\,x)\sqrt{1+\frac{1}{(c+d\,x)^2}}}\right]\text{Sin}[3\,\text{ArcCot}[c+d\,x]]\right)\right)$$

Problem 144: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 372 leaves, 2 steps):

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

Result (type 1, 1 leaves):

???

Problem 145: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 1233 leaves, 35 steps):

$$\frac{3\,i\,a\,b^2\,d\,\text{ArcCot}[c+d\,x]^2}{d^2\,e^2-2\,c\,d\,e\,f+(1+c^2)\,f^2}+\frac{3\,a\,b^2\,d\,(d\,e-c\,f)\,\text{ArcCot}[c+d\,x]^2}{f\,(d^2\,e^2-2\,c\,d\,e\,f+(1+c^2)\,f^2)}+\frac{i\,b^3\,d\,\text{ArcCot}[c+d\,x]^3}{d^2\,e^2-2\,c\,d\,e\,f+(1+c^2)\,f^2}+\frac{b^3\,d\,(d\,e-c\,f)\,\text{ArcCot}[c+d\,x]^3}{f\,(d^2\,e^2-2\,c\,d\,e\,f+(1+c^2)\,f^2)}-\frac{(a+b\,\text{ArcCot}[c+d\,x])^3}{f\,(e+f\,x)}-$$

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

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

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

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

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

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

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

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

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

Result (type 1, 1 leaves):

???

Problem 146: Unable to integrate problem.

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

Optimal (type 5, 177 leaves, 6 steps):

$$\frac{(e+f x)^{1+m} (a+b \text{ArcCot}[c+d x])}{f (1+m)}+\frac{i b d (e+f x)^{2+m} \text{Hypergeometric2F1}\left[1,2+m,3+m,\frac{d (e+f x)}{d e+i f-c f}\right]}{2 f (d e+(i-c) f) (1+m) (2+m)}-\frac{i b d (e+f x)^{2+m} \text{Hypergeometric2F1}\left[1,2+m,3+m,\frac{d (e+f x)}{d e-(i+c) f}\right]}{2 f (d e-(i+c) f) (1+m) (2+m)}$$

Result (type 8, 20 leaves):

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

Problem 152: Unable to integrate problem.

$$\int \frac{\left(a+b \text{ArcCot}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right)^3}{1-c^2 x^2} \, dx$$

Optimal (type 4, 488 leaves, 9 steps):

$$-\frac{2 \left(a+b \text{ArcCot}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right)^3 \text{ArcCoth}\left[1-\frac{2}{1+\frac{i \sqrt{1-c x}}{\sqrt{1+c x}}}\right]}{c}+\frac{3 i b \left(a+b \text{ArcCot}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right)^2 \text{PolyLog}\left[2,1-\frac{2 i}{i+\frac{\sqrt{1-c x}}{\sqrt{1+c x}}}\right]}{2 c}-\frac{3 i b \left(a+b \text{ArcCot}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right)^2 \text{PolyLog}\left[2,1-\frac{2 \sqrt{1-c x}}{\sqrt{1+c x} \left(i+\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right)}\right]}{2 c}+\frac{3 b^2 \left(a+b \text{ArcCot}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right) \text{PolyLog}\left[3,1-\frac{2 i}{i+\frac{\sqrt{1-c x}}{\sqrt{1+c x}}}\right]}{2 c}-\frac{3 b^2 \left(a+b \text{ArcCot}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right) \text{PolyLog}\left[3,1-\frac{2 \sqrt{1-c x}}{\sqrt{1+c x} \left(i+\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right)}\right]}{2 c}-\frac{3 i b^3 \text{PolyLog}\left[4,1-\frac{2 i}{i+\frac{\sqrt{1-c x}}{\sqrt{1+c x}}}\right]}{4 c}+\frac{3 i b^3 \text{PolyLog}\left[4,1-\frac{2 \sqrt{1-c x}}{\sqrt{1+c x} \left(i+\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right)}\right]}{4 c}$$

Result (type 8, 42 leaves):

$$\int \frac{\left(a + b \operatorname{ArcCot}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right)^3}{1 - c^2 x^2} \, dx$$

Problem 153: Unable to integrate problem.

$$\int \frac{\left(a + b \operatorname{ArcCot}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right)^2}{1 - c^2 x^2} \, dx$$

Optimal (type 4, 321 leaves, 7 steps):

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

Result (type 8, 42 leaves):

$$\int \frac{\left(a + b \operatorname{ArcCot}\left[\frac{\sqrt{1-c x}}{\sqrt{1+c x}}\right]\right)^2}{1 - c^2 x^2} \, dx$$

Problem 160: Result more than twice size of optimal antiderivative.

$$\int \operatorname{ArcCot}[c + d \operatorname{Tan}[a + b x]] \, dx$$

Optimal (type 4, 198 leaves, 7 steps):

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

Result (type 4, 418 leaves):

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

Problem 173: Result more than twice size of optimal antiderivative.

$$\int \text{ArcCot}[c+d\,\text{Cot}[a+b\,x]]\,dx$$

Optimal (type 4, 198 leaves, 7 steps):

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

Result (type 4, 416 leaves):

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

Problem 183: Result more than twice size of optimal antiderivative.

$$\int (e+f\,x)^3\,\text{ArcCot}[\text{Tanh}[a+b\,x]]\,dx$$

Optimal (type 4, 299 leaves, 12 steps):

$$\frac{(e+f x)^4 \text{ArcCot}[\text{Tanh}[a+b x]]}{4 f}+\frac{(e+f x)^4 \text{ArcTan}\left[e^{2 a+2 b x}\right]}{4 f}-\frac{i (e+f x)^3 \text{PolyLog}\left[2,-i e^{2 a+2 b x}\right]}{4 b}+\frac{i (e+f x)^3 \text{PolyLog}\left[2,i e^{2 a+2 b x}\right]}{4 b}+\frac{3 i f (e+f x)^2 \text{PolyLog}\left[3,-i e^{2 a+2 b x}\right]}{8 b^2}-\frac{3 i f (e+f x)^2 \text{PolyLog}\left[3,i e^{2 a+2 b x}\right]}{8 b^2}-\frac{3 i f^2 (e+f x) \text{PolyLog}\left[4,-i e^{2 a+2 b x}\right]}{8 b^3}+\frac{3 i f^2 (e+f x) \text{PolyLog}\left[4,i e^{2 a+2 b x}\right]}{8 b^3}+\frac{3 i f^3 \text{PolyLog}\left[5,-i e^{2 a+2 b x}\right]}{16 b^4}-\frac{3 i f^3 \text{PolyLog}\left[5,i e^{2 a+2 b x}\right]}{16 b^4}$$

Result (type 4, 600 leaves):

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

Problem 190: Result more than twice size of optimal antiderivative.

$$\int \text{ArcCot}[c+d \text{Tanh}[a+b x]] \, dx$$

Optimal (type 4, 174 leaves, 7 steps):

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

Result (type 4, 365 leaves):

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

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

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

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

Problem 200: Result more than twice size of optimal antiderivative.

$$\int (e+f\,x)^3\,\text{ArcCot}[\text{Coth}[a+b\,x]]\,dx$$

Optimal (type 4, 299 leaves, 12 steps):

$$\frac{(e+f\,x)^4\,\text{ArcCot}[\text{Coth}[a+b\,x]]}{4\,f}-\frac{(e+f\,x)^4\,\text{ArcTan}\left[e^{2\,a+2\,b\,x}\right]}{4\,f}+$$
$$\frac{i\,(e+f\,x)^3\,\text{PolyLog}\left[2,-i\,e^{2\,a+2\,b\,x}\right]}{4\,b}-\frac{i\,(e+f\,x)^3\,\text{PolyLog}\left[2,i\,e^{2\,a+2\,b\,x}\right]}{4\,b}-$$
$$\frac{3\,i\,f\,(e+f\,x)^2\,\text{PolyLog}\left[3,-i\,e^{2\,a+2\,b\,x}\right]}{8\,b^2}+\frac{3\,i\,f\,(e+f\,x)^2\,\text{PolyLog}\left[3,i\,e^{2\,a+2\,b\,x}\right]}{8\,b^2}+$$
$$\frac{3\,i\,f^2\,(e+f\,x)\,\text{PolyLog}\left[4,-i\,e^{2\,a+2\,b\,x}\right]}{8\,b^3}-\frac{3\,i\,f^2\,(e+f\,x)\,\text{PolyLog}\left[4,i\,e^{2\,a+2\,b\,x}\right]}{8\,b^3}-$$
$$\frac{3\,i\,f^3\,\text{PolyLog}\left[5,-i\,e^{2\,a+2\,b\,x}\right]}{16\,b^4}+\frac{3\,i\,f^3\,\text{PolyLog}\left[5,i\,e^{2\,a+2\,b\,x}\right]}{16\,b^4}$$

Result (type 4, 600 leaves):

$$\frac{1}{4}\,x\left(4\,e^3+6\,e^2\,f\,x+4\,e\,f^2\,x^2+f^3\,x^3\right)\text{ArcCot}[\text{Coth}[a+b\,x]]-$$
$$\frac{1}{16\,b^4}\,i\left(8\,b^4\,e^3\,x\,\text{Log}\left[1-i\,e^{2\,(a+b\,x)}\right]+12\,b^4\,e^2\,f\,x^2\,\text{Log}\left[1-i\,e^{2\,(a+b\,x)}\right]+\right.$$
$$8\,b^4\,e\,f^2\,x^3\,\text{Log}\left[1-i\,e^{2\,(a+b\,x)}\right]+2\,b^4\,f^3\,x^4\,\text{Log}\left[1-i\,e^{2\,(a+b\,x)}\right]-8\,b^4\,e^3\,x\,\text{Log}\left[1+i\,e^{2\,(a+b\,x)}\right]-$$
$$12\,b^4\,e^2\,f\,x^2\,\text{Log}\left[1+i\,e^{2\,(a+b\,x)}\right]-8\,b^4\,e\,f^2\,x^3\,\text{Log}\left[1+i\,e^{2\,(a+b\,x)}\right]-$$
$$2\,b^4\,f^3\,x^4\,\text{Log}\left[1+i\,e^{2\,(a+b\,x)}\right]-4\,b^3\,(e+f\,x)^3\,\text{PolyLog}\left[2,-i\,e^{2\,(a+b\,x)}\right]+$$
$$4\,b^3\,(e+f\,x)^3\,\text{PolyLog}\left[2,i\,e^{2\,(a+b\,x)}\right]+6\,b^2\,e^2\,f\,\text{PolyLog}\left[3,-i\,e^{2\,(a+b\,x)}\right]+$$
$$12\,b^2\,e\,f^2\,x\,\text{PolyLog}\left[3,-i\,e^{2\,(a+b\,x)}\right]+6\,b^2\,f^3\,x^2\,\text{PolyLog}\left[3,-i\,e^{2\,(a+b\,x)}\right]-$$
$$6\,b^2\,e^2\,f\,\text{PolyLog}\left[3,i\,e^{2\,(a+b\,x)}\right]-12\,b^2\,e\,f^2\,x\,\text{PolyLog}\left[3,i\,e^{2\,(a+b\,x)}\right]-$$
$$6\,b^2\,f^3\,x^2\,\text{PolyLog}\left[3,i\,e^{2\,(a+b\,x)}\right]-6\,b\,e\,f^2\,\text{PolyLog}\left[4,-i\,e^{2\,(a+b\,x)}\right]-$$
$$6\,b\,f^3\,x\,\text{PolyLog}\left[4,-i\,e^{2\,(a+b\,x)}\right]+6\,b\,e\,f^2\,\text{PolyLog}\left[4,i\,e^{2\,(a+b\,x)}\right]+$$
$$\left.6\,b\,f^3\,x\,\text{PolyLog}\left[4,i\,e^{2\,(a+b\,x)}\right]+3\,f^3\,\text{PolyLog}\left[5,-i\,e^{2\,(a+b\,x)}\right]-3\,f^3\,\text{PolyLog}\left[5,i\,e^{2\,(a+b\,x)}\right]\right)$$

Problem 207: Result more than twice size of optimal antiderivative.

$$\int \text{ArcCot}[c+d\,\text{Coth}[a+b\,x]]\,dx$$

Optimal (type 4, 174 leaves, 7 steps):

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

Result (type 4, 365 leaves):

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

Problem 217: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 187 leaves, 13 steps):

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

Result (type 5, 132 leaves):

$$\frac{b\,c\,e\,m\,x^n\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\frac{1}{2},\frac{1}{2},1\right\},\left\{\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\},-c^2\,x^{2\,n}\right]}{n^2}-\frac{1}{n}$$

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

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

Problem 224: Attempted integration timed out after 120 seconds.

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

Optimal (type 4, 196 leaves, 6 steps):

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

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

Result (type 1, 1 leaves):

???

Problem 225: Unable to integrate problem.

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

Optimal (type 4, 250 leaves, 25 steps):

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

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

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

Result (type 8, 16 leaves):

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

Problem 226: Unable to integrate problem.

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

Optimal (type 4, 313 leaves, 29 steps):

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

Result (type 8, 18 leaves):

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

Problem 230: Result is not expressed in closed-form.

$$\int e^{c\,(a+b\,x)}\,\text{ArcCot}[\text{Cosh}[a\,c+b\,c\,x]]\,dx$$

Optimal (type 3, 103 leaves, 8 steps):

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

Result (type 7, 146 leaves):

$$\frac{1}{2\,b\,c}\left(4\,c\,(a+b\,x)+2\,e^{c\,(a+b\,x)}\,\text{ArcCot}\left[\frac{1}{2}\,e^{-c\,(a+b\,x)}\,\left(1+e^{2\,c\,(a+b\,x)}\right)\right]+\text{RootSum}\left[1+6\,\#1^2+\#1^4\,\&,\frac{1}{1+3\,\#1^2}\left(-a\,c-b\,c\,x+\text{Log}\left[e^{c\,(a+b\,x)}-\#1\right]-7\,a\,c\,\#1^2-7\,b\,c\,x\,\#1^2+7\,\text{Log}\left[e^{c\,(a+b\,x)}-\#1\right]\,\#1^2\right)\,\&\right]\right)$$

Problem 231: Result is not expressed in closed-form.

$$\int e^{c\,(a+b\,x)}\,\text{ArcCot}[\text{Tanh}[a\,c+b\,c\,x]]\,dx$$

Optimal (type 3, 180 leaves, 13 steps):

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

Result (type 7, 89 leaves):

$$\frac{1}{2\,b\,c}\left(2\,e^{c\,(a+b\,x)}\,\text{ArcCot}\left[\frac{-1+e^{2\,c\,(a+b\,x)}}{1+e^{2\,c\,(a+b\,x)}}\right]+\text{RootSum}\left[1+\#1^4\,\&,\frac{-a\,c-b\,c\,x+\text{Log}\left[e^{c\,(a+b\,x)}-\#1\right]}{\#1}\,\&\right]\right)$$

Problem 232: Result is not expressed in closed-form.

$$\int e^{c\,(a+b\,x)}\,\text{ArcCot}[\text{Coth}[a\,c+b\,c\,x]]\,dx$$

Optimal (type 3, 180 leaves, 13 steps):

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

Result (type 7, 89 leaves):

$$\frac{1}{2\,b\,c}\left(2\,e^{c\,(a+b\,x)}\,\text{ArcCot}\left[\frac{1+e^{2\,c\,(a+b\,x)}}{-1+e^{2\,c\,(a+b\,x)}}\right]+\text{RootSum}\left[1+\#1^4\,\&,\,\frac{a\,c+b\,c\,x-\text{Log}\left[e^{c\,(a+b\,x)}-\#1\right]}{\#1}\,\&\right]\right)$$

Problem 233: Result is not expressed in closed-form.

$$\int e^{c\,(a+b\,x)}\,\text{ArcCot}[\text{Sech}[a\,c+b\,c\,x]]\,dx$$

Optimal (type 3, 103 leaves, 8 steps):

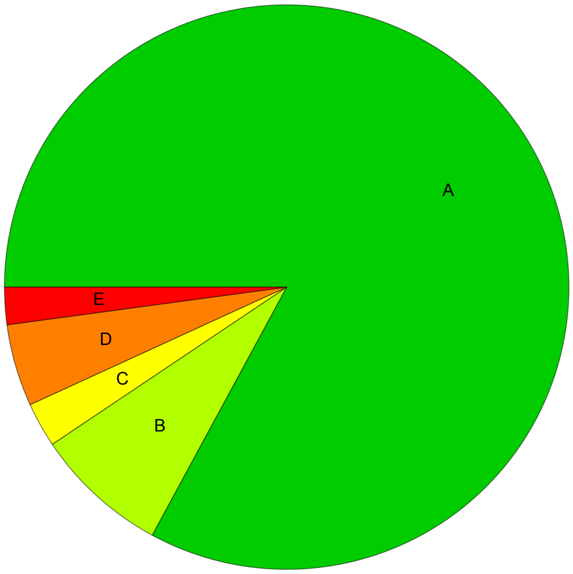
$$\frac{e^{a\,c+b\,c\,x}\,\text{ArcCot}\left[\text{Sech}\left[c\,\left(a+b\,x\right)\right]\right]}{b\,c}-\frac{\left(1-\sqrt{2}\right)\,\text{Log}\left[3-2\,\sqrt{2}\,+e^{2\,c\,(a+b\,x)}\right]}{2\,b\,c}-\frac{\left(1+\sqrt{2}\right)\,\text{Log}\left[3+2\,\sqrt{2}\,+e^{2\,c\,(a+b\,x)}\right]}{2\,b\,c}$$

Result (type 7, 145 leaves):

$$\frac{1}{2\,b\,c}\left(-4\,c\,\left(a+b\,x\right)+2\,e^{c\,(a+b\,x)}\,\text{ArcCot}\left[\frac{2\,e^{c\,(a+b\,x)}}{1+e^{2\,c\,(a+b\,x)}}\right]+\text{RootSum}\left[1+6\,\#1^2+\#1^4\,\&,\,\frac{1}{1+3\,\#1^2}\left(a\,c+b\,c\,x-\text{Log}\left[e^{c\,(a+b\,x)}-\#1\right]+7\,a\,c\,\#1^2+7\,b\,c\,x\,\#1^2-7\,\text{Log}\left[e^{c\,(a+b\,x)}-\#1\right]\,\#1^2\right)\,\&\right]\right)$$

Summary of Integration Test Results

234 integration problems



A - 194 optimal antiderivatives

B - 18 more than twice size of optimal antiderivatives

C - 6 unnecessarily complex antiderivatives

D - 11 unable to integrate problems

E - 5 integration timeouts