Mathematica 7 Test Results

For Integration Problems Involving Inverse Trig Functions

Problems involving inverse sines

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcSin}[a+b x]^2}{x^2}, x, 10, 0\right\}$$

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

$$
\begin{aligned}
& b\left(-\frac{\text{ArcSin}[a+b\,x]^2}{b\,x}+\right.\\
& \quad 2\left(\frac{\pi\,\text{ArcTan}\left[\frac{1-a\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[a+b\,x]\right]}{\sqrt{-1+a^2}}\right]}{\sqrt{-1+a^2}}+\frac{1}{\sqrt{1-a^2}}\left(-2\,\text{ArcCos}[a]\,\text{ArcTanh}\left[\frac{(1+a)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]-\right.\right.\\
& \qquad (\pi-2\,\text{ArcSin}[a+b\,x])\,\text{ArcTanh}\left[\frac{(-1+a)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]+\left(\text{ArcCos}[a]-\right.\\
& \qquad\quad \left.2\,i\left(\text{ArcTanh}\left[\frac{(1+a)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]+\text{ArcTanh}\left[\frac{(-1+a)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]\right)\right)\\
& \qquad \text{Log}\left[\frac{\left(\frac{1}{2}+\frac{i}{2}\right)\sqrt{1-a^2}\;e^{-\frac{1}{2}i\,\text{ArcSin}[a+b\,x]}}{\sqrt{b\,x}}\right]+\left(\text{ArcCos}[a]+2\,i\,\text{ArcTanh}\left[\frac{(1+a)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]+\right.\\
& \qquad\quad \left.2\,i\,\text{ArcTanh}\left[\frac{(-1+a)\,\text{Tan}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]\right)\text{Log}\left[\frac{\left(\frac{1}{2}-\frac{i}{2}\right)\sqrt{1-a^2}\;e^{\frac{1}{2}i\,\text{ArcSin}[a+b\,x]}}{\sqrt{b\,x}}\right]-\\
& \qquad \left(\text{ArcCos}[a]-2\,i\,\text{ArcTanh}\left[\frac{(1+a)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]\right)\\
& \qquad \text{Log}\left[-\frac{(-1+a)\left(i+i\,a+\sqrt{1-a^2}\right)\left(-i+\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]\right)}{1-a+\sqrt{1-a^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}\right]-\\
& \qquad \left(\text{ArcCos}[a]+2\,i\,\text{ArcTanh}\left[\frac{(1+a)\,\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}{\sqrt{1-a^2}}\right]\right)\\
& \qquad \text{Log}\left[-\frac{(-1+a)\left(-i-i\,a+\sqrt{1-a^2}\right)\left(i+\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]\right)}{1-a+\sqrt{1-a^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}\right]+\\
& \qquad i\left(-\text{PolyLog}\left[2,\frac{\left(a-i\sqrt{1-a^2}\right)\left(-1+a+\sqrt{1-a^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]\right)}{1-a+\sqrt{1-a^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}\right]+\right.\\
& \qquad\quad \left.\left.\left.\left.\text{PolyLog}\left[2,\frac{\left(a+i\sqrt{1-a^2}\right)\left(-1+a+\sqrt{1-a^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]\right)}{1-a+\sqrt{1-a^2}\;\text{Cot}\left[\frac{1}{4}\left(\pi+2\,\text{ArcSin}[a+b\,x]\right)\right]}\right]\right)\right)\right)\right)
\end{aligned}
$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcSin}[a+b\,x]^2}{x^3},\ x,\ 15,\ 0\right\}$$

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

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

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

$$\frac{1}{-1+a^2}\,a\Bigg(\frac{\pi\,\text{ArcTan}\left[\frac{1-a\,\text{Tan}\left[\frac{1}{2}\text{ArcSin}[a+b\,x]\right]}{\sqrt{-1+a^2}}\right]}{\sqrt{-1+a^2}}+\frac{1}{\sqrt{1-a^2}}\Bigg(-2\,\text{ArcCos}[a]\,\text{ArcTanh}\left[\frac{(1+a)\,\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[a+b\,x])\right]}{\sqrt{1-a^2}}\right]-$$

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

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

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

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

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

$$\text{Log}\left[-\frac{(-1+a)\left(i+i\,a+\sqrt{1-a^2}\right)\left(-i+\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[a+b\,x])\right]\right)}{1-a+\sqrt{1-a^2}\;\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[a+b\,x])\right]}\right]-$$

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

$$\text{Log}\left[-\frac{(-1+a)\left(-i-i\,a+\sqrt{1-a^2}\right)\left(i+\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[a+b\,x])\right]\right)}{1-a+\sqrt{1-a^2}\;\text{Cot}\left[\frac{1}{4}(\pi+2\,\text{ArcSin}[a+b\,x])\right]}\right]+$$

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

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

Unable to integrate:

$$\left\{\frac{\text{ArcSin}[a+b\,x]^3}{x^2},\ x,\ 12,\ 0\right\}$$

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

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

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

$$\int\frac{\text{ArcSin}[a+b\,x]^3}{x^2}\,dx$$

Unable to integrate:

$$\left\{x^2\,\text{ArcSin}[a+b\,x]^n,\ x,\ 19,\ 0\right\}$$

$$-\frac{i\left(1+4\,a^2\right)(-i\,\text{ArcSin}[a+b\,x])^{-n}\,\text{ArcSin}[a+b\,x]^n\,\text{Gamma}[1+n,-i\,\text{ArcSin}[a+b\,x]]}{8\,b^3}+$$

$$\frac{i\left(1+4\,a^2\right)(i\,\text{ArcSin}[a+b\,x])^{-n}\,\text{ArcSin}[a+b\,x]^n\,\text{Gamma}[1+n,i\,\text{ArcSin}[a+b\,x]]}{8\,b^3}-$$

$$\frac{i\,2^{-2-n}\,a\,(-i\,\text{ArcSin}[a+b\,x])^{-1-n}\,\text{ArcSin}[a+b\,x]^{1+n}\,\text{Gamma}[1+n,-2\,i\,\text{ArcSin}[a+b\,x]]}{b^3}+$$

$$\frac{i\,2^{-2-n}\,a\,(i\,\text{ArcSin}[a+b\,x])^{-1-n}\,\text{ArcSin}[a+b\,x]^{1+n}\,\text{Gamma}[1+n,2\,i\,\text{ArcSin}[a+b\,x]]}{b^3}+$$

$$\frac{3^{-1-n}\,(-i\,\text{ArcSin}[a+b\,x])^{-1-n}\,\text{ArcSin}[a+b\,x]^{1+n}\,\text{Gamma}[1+n,-3\,i\,\text{ArcSin}[a+b\,x]]}{8\,b^3}+$$

$$\frac{3^{-1-n}\,(i\,\text{ArcSin}[a+b\,x])^{-1-n}\,\text{ArcSin}[a+b\,x]^{1+n}\,\text{Gamma}[1+n,3\,i\,\text{ArcSin}[a+b\,x]]}{8\,b^3}$$

$$\int x^2\,\text{ArcSin}[a+b\,x]^n\,dx$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\text{ArcSin}\left[\frac{a}{x}\right],\ x,\ 4,\ 0\right\}$$

$$x\,\text{ArcCsc}\left[\frac{x}{a}\right]+a\,\text{ArcTanh}\left[\sqrt{1-\frac{a^2}{x^2}}\right]$$

$$x\,\text{ArcSin}\left[\frac{a}{x}\right]-\frac{a\,\sqrt{1-\frac{a^2}{x^2}}\;x\,\text{ArcTan}\left[\frac{x}{\sqrt{a^2-x^2}}\right]}{\sqrt{a^2-x^2}}$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcSin}[a\,x^n]}{x},\ x,\ 5,\ 0\right\}$$

$$-\frac{i\,\mathrm{ArcSin}[a\,x^n]^2}{2\,n}+\frac{\mathrm{ArcSin}[a\,x^n]\,\mathrm{Log}\left[1-e^{2\,i\,\mathrm{ArcSin}[a\,x^n]}\right]}{n}-\frac{i\,\mathrm{PolyLog}\left[2,\,e^{2\,i\,\mathrm{ArcSin}[a\,x^n]}\right]}{2\,n}$$

$$\mathrm{ArcSin}[a\,x^n]\,\mathrm{Log}[x]+\frac{1}{2\sqrt{-a^2}\,n}a\left(\mathrm{ArcSinh}\left[\sqrt{-a^2}\;x^n\right]^2+\right.$$
$$\left.2\,\mathrm{ArcSinh}\left[\sqrt{-a^2}\;x^n\right]\mathrm{Log}\left[1-e^{-2\,\mathrm{ArcSinh}\left[\sqrt{-a^2}\;x^n\right]}\right]-2\,n\,\mathrm{Log}[x]\,\mathrm{Log}\left[\sqrt{-a^2}\;x^n+\sqrt{1-a^2\,x^{2\,n}}\right]-\mathrm{PolyLog}\left[2,\,e^{-2\,\mathrm{ArcSinh}\left[\sqrt{-a^2}\;x^n\right]}\right]\right)$$

Unable to integrate:

$$\left\{\mathrm{ArcSin}\left[c\,e^{a+b\,x}\right],\,x,\,6,\,0\right\}$$

$$-\frac{i\,\mathrm{ArcSin}\left[c\,e^{a+b\,x}\right]^2}{2\,b}+\frac{\mathrm{ArcSin}\left[c\,e^{a+b\,x}\right]\mathrm{Log}\left[1-e^{2\,i\,\mathrm{ArcSin}\left[c\,e^{a+b\,x}\right]}\right]}{b}-\frac{i\,\mathrm{PolyLog}\left[2,\,e^{2\,i\,\mathrm{ArcSin}\left[c\,e^{a+b\,x}\right]}\right]}{2\,b}$$

$$\int\mathrm{ArcSin}\left[c\,e^{a+b\,x}\right]\,dx$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\mathrm{ArcSin}\left[\frac{c}{a+b\,x}\right],\,x,\,4,\,0\right\}$$

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

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

Problems involving inverse cosines

Valid but unnecessarily complicated antiderivative:

$$\left\{\text{ArcCos}\left[\frac{a}{x}\right],\ x,\ 4,\ 0\right\}$$

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

$$x\,\text{ArcCos}\left[\frac{a}{x}\right]+\frac{a\sqrt{1-\frac{a^2}{x^2}}\ x\,\text{ArcTan}\left[\frac{x}{\sqrt{a^2-x^2}}\right]}{\sqrt{a^2-x^2}}$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCos}[a\,x^n]}{x},\ x,\ 5,\ 0\right\}$$

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

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

Unable to integrate:

$$\left\{\text{ArcCos}\left[c\,e^{a+b\,x}\right],\ x,\ 6,\ 0\right\}$$

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

$$\int\text{ArcCos}\left[c\,e^{a+b\,x}\right]dx$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\text{ArcCos}\left[\frac{c}{a+b\,x}\right],\ x,\ 4,\ 0\right\}$$

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

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

Problems involving inverse tangents

Unable to integrate:

$$\left\{\frac{\text{ArcTan}\left[\frac{\sqrt{1-a x}}{\sqrt{1+a x}}\right]}{1-a^2 x^2},\ x,\ -5,\ 0\right\}$$

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

$$\int \frac{\text{ArcTan}\left[\frac{\sqrt{1-a x}}{\sqrt{1+a x}}\right]}{1-a^2 x^2}\,dx$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTan}[1+x]}{2+2 x},\ x,\ 5,\ 0\right\}$$

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

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

Unable to integrate:

$$\left\{\frac{\text{ArcTan}[x]}{a+b x+c x^2},\ x,\ 7,\ 0\right\}$$

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

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

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

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

Unable to integrate:

$$\left\{\frac{\text{ArcTan}[d+e x]}{a+b x^2},\ x,\ 8,\ 0\right\}$$

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

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

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

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

Unable to integrate:

$$\left\{\frac{\text{ArcTan}[d+e\,x]}{a+b\,x+c\,x^2},\ x,\ 7,\ 0\right\}$$

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

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

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

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTan}[b\,x]}{1+x^2},\ x,\ 9,\ 0\right\}$$

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

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

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

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

Unable to integrate:

$$\left\{\frac{\text{ArcTan}[a+b\, x]}{1+x^2}, x, 9, 0\right\}$$

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

$$\int \frac{\text{ArcTan}[a+b\, x]}{1+x^2}\, dx$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTan}[x]}{\left(a+b\, x^2\right)^{3/2}}, x, 3, 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\mathrm{ArcTan}[x]}{\left(a+b x^2\right)^{5/2}},\ x,\ 8,\ 0\right\}$$

$$-\frac{1}{3 a (a-b) \sqrt{a+b x^2}}+\frac{x \left(3 a+2 b x^2\right) \mathrm{ArcTan}[x]}{3 a^2 \left(a+b x^2\right)^{3/2}}+\frac{(3 a-2 b) \mathrm{ArcTanh}\left[\frac{\sqrt{a+b x^2}}{\sqrt{a-b}}\right]}{3 a^2 (a-b)^{3/2}}$$

$$\frac{-\frac{2 a}{(a-b) \sqrt{a+b x^2}}+\frac{2 x \left(3 a+2 b x^2\right) \mathrm{ArcTan}[x]}{\left(a+b x^2\right)^{3/2}}+\frac{(3 a-2 b) \mathrm{Log}\left[-\frac{12 a^2 \sqrt{a-b} \left(a-\mathbb{i} b x+\sqrt{a-b} \sqrt{a+b x^2}\right)}{(3 a-2 b) (\mathbb{i}+x)}\right]}{(a-b)^{3/2}}+\frac{(3 a-2 b) \mathrm{Log}\left[-\frac{12 a^2 \sqrt{a-b} \left(a+\mathbb{i} b x+\sqrt{a-b} \sqrt{a+b x^2}\right)}{(3 a-2 b) (-\mathbb{i}+x)}\right]}{(a-b)^{3/2}}}{6 a^2}$$

Unable to integrate:

$$\left\{\mathrm{ArcTan}\left[a+b f^{c+d x}\right],\ x,\ 5,\ 0\right\}$$

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

$$\int \mathrm{ArcTan}\left[a+b f^{c+d x}\right] dx$$

Unable to integrate:

$$\left\{x \mathrm{ArcTan}\left[a+b f^{c+d x}\right],\ x,\ 7,\ 0\right\}$$

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

$$\int x \mathrm{ArcTan}\left[a+b f^{c+d x}\right] dx$$

Unable to integrate:

$$\left\{x^2 \mathrm{ArcTan}\left[a+b f^{c+d x}\right],\ x,\ 9,\ 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\{\mathrm{ArcTan}[b \mathrm{Tan}[x]],\ x,\ 12,\ 0\}$$

$$x \mathrm{ArcTan}[b \mathrm{Tan}[x]]+\frac{1}{2} \mathbb{i} x \mathrm{Log}\left[1+\frac{\left(1-b^2\right) e^{2 \mathbb{i} x}}{1-2 b+b^2}\right]-$$
$$\frac{1}{2} \mathbb{i} x \mathrm{Log}\left[1+\frac{\left(1-b^2\right) e^{2 \mathbb{i} x}}{1+2 b+b^2}\right]+\frac{1}{4} \mathrm{PolyLog}\left[2,-\frac{\left(1-b^2\right) e^{2 \mathbb{i} x}}{1-2 b+b^2}\right]-\frac{1}{4} \mathrm{PolyLog}\left[2,-\frac{\left(1-b^2\right) e^{2 \mathbb{i} x}}{1+2 b+b^2}\right]$$

$$x\,\mathrm{ArcTan}[b\,\mathrm{Tan}[x]]+\frac{1}{4\sqrt{-b^2}}\,b\left(-4\,x\,\mathrm{ArcTanh}\left[\frac{\mathrm{Cot}[x]}{\sqrt{-b^2}}\right]+2\,\mathrm{ArcCos}\left[\frac{1+b^2}{-1+b^2}\right]\mathrm{ArcTanh}\left[\sqrt{-b^2}\,\mathrm{Tan}[x]\right]+\right.$$

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

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

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

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

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

Timed out after 60 seconds:

{ArcTan[a + b Tan[x]], x, 10, 0}

$$\frac{1}{4}\,\mathrm{Log}\left[\frac{i\,b\,(i-\mathrm{Tan}[x])}{i\,(i+a)-b}\right]\mathrm{Log}[-i\,(i+a)-i\,b\,\mathrm{Tan}[x]]-$$

$$\frac{1}{4}\,\mathrm{Log}\left[-\frac{i\,b\,(i+\mathrm{Tan}[x])}{i\,(i+a)+b}\right]\mathrm{Log}[-i\,(i+a)-i\,b\,\mathrm{Tan}[x]]-\frac{1}{4}\,\mathrm{Log}\left[\frac{i\,b\,(i-\mathrm{Tan}[x])}{1+i\,a-b}\right]\mathrm{Log}[1+i\,a+i\,b\,\mathrm{Tan}[x]]+$$

$$\frac{1}{4}\,\mathrm{Log}\left[-\frac{i\,b\,(i+\mathrm{Tan}[x])}{1+i\,a+b}\right]\mathrm{Log}[1+i\,a+i\,b\,\mathrm{Tan}[x]]-\frac{1}{4}\,\mathrm{PolyLog}\left[2,\frac{1+i\,a+i\,b\,\mathrm{Tan}[x]}{1+i\,a-b}\right]+$$

$$\frac{1}{4}\,\mathrm{PolyLog}\left[2,\frac{1+i\,a+i\,b\,\mathrm{Tan}[x]}{1+i\,a+b}\right]+\frac{1}{4}\,\mathrm{PolyLog}\left[2,\frac{i\,(i+a+b\,\mathrm{Tan}[x])}{i\,(i+a)-b}\right]-\frac{1}{4}\,\mathrm{PolyLog}\left[2,\frac{i\,(i+a+b\,\mathrm{Tan}[x])}{i\,(i+a)+b}\right]$$

???

Valid but unnecessarily complicated antiderivative:

{ArcTan[b Cot[x]], x, 12, 0}

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

$$\frac{1}{2}\,i\,x\,\mathrm{Log}\left[1-\frac{\left(1-b^2\right)e^{2 i x}}{1+2\,b+b^2}\right]-\frac{1}{4}\,\mathrm{PolyLog}\left[2,\frac{\left(1-b^2\right)e^{2 i x}}{1-2\,b+b^2}\right]+\frac{1}{4}\,\mathrm{PolyLog}\left[2,\frac{\left(1-b^2\right)e^{2 i x}}{1+2\,b+b^2}\right]$$

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

Valid but unnecessarily complicated antiderivative:

$$\left\{x^2\,\text{ArcTan}[\text{Sinh}[x]],\ x,\ 9,\ 0\right\}$$

$$-\frac{2}{3}x^3\,\text{ArcTan}[e^x] + \frac{1}{3}x^3\,\text{ArcTan}[\text{Sinh}[x]] + i\,x^2\,\text{PolyLog}[2,\ -i\,e^x] - i\,x^2\,\text{PolyLog}[2,\ i\,e^x] -$$
$$2\,i\,x\,\text{PolyLog}[3,\ -i\,e^x] + 2\,i\,x\,\text{PolyLog}[3,\ i\,e^x] + 2\,i\,\text{PolyLog}[4,\ -i\,e^x] - 2\,i\,\text{PolyLog}[4,\ i\,e^x]$$

$$\frac{1}{192}\,i\left(7\,\pi^4 + 8\,i\,\pi^3\,x + 24\,\pi^2\,x^2 - 32\,i\,\pi\,x^3 - 16\,x^4 - 64\,i\,x^3\,\text{ArcTan}[\text{Sinh}[x]] + 8\,i\,\pi^3\,\text{Log}[1+i\,e^{-x}] + 48\,\pi^2\,x\,\text{Log}[1+i\,e^{-x}] - \right.$$
$$96\,i\,\pi\,x^2\,\text{Log}[1+i\,e^{-x}] - 64\,x^3\,\text{Log}[1+i\,e^{-x}] - 48\,\pi^2\,x\,\text{Log}[1-i\,e^x] + 96\,i\,\pi\,x^2\,\text{Log}[1-i\,e^x] - 8\,i\,\pi^3\,\text{Log}[1+i\,e^x] +$$
$$64\,x^3\,\text{Log}[1+i\,e^x] + 8\,i\,\pi^3\,\text{Log}\left[\text{Tan}\left[\frac{1}{4}(\pi+2\,i\,x)\right]\right] - 48\,(\pi-2\,i\,x)^2\,\text{PolyLog}[2,\ -i\,e^{-x}] + 192\,x^2\,\text{PolyLog}[2,\ -i\,e^x] -$$
$$48\,\pi^2\,\text{PolyLog}[2,\ i\,e^x] + 192\,i\,\pi\,x\,\text{PolyLog}[2,\ i\,e^x] + 192\,i\,\pi\,\text{PolyLog}[3,\ -i\,e^{-x}] + 384\,x\,\text{PolyLog}[3,\ -i\,e^{-x}] -$$
$$\left.384\,x\,\text{PolyLog}[3,\ -i\,e^x] - 192\,i\,\pi\,\text{PolyLog}[3,\ i\,e^x] + 384\,\text{PolyLog}[4,\ -i\,e^{-x}] + 384\,\text{PolyLog}[4,\ -i\,e^x]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTan}[a+b\,x]}{\frac{a\,d}{b}+d\,x},\ x,\ 6,\ 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcTan}[a\,x^n]}{x},\ x,\ 3,\ 0\right\}$$

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

$$\frac{a\,x^n\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\,\frac{1}{2},\,1\right\},\,\left\{\frac{3}{2},\,\frac{3}{2}\right\},\,-a^2\,x^{2\,n}\right]}{n}$$

Problems involving inverse cotangents

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCot}[1+x]}{2+2x},\ x,\ 5,\ 0\right\}$$

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

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

Unable to integrate:

$$\left\{\frac{\text{ArcCot}[x]}{a+bx+cx^2},\ x,\ 31,\ 0\right\}$$

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

$$\int\frac{\text{ArcCot}[x]}{a+bx+cx^2}\,dx$$

Unable to integrate:

$$\left\{\frac{\text{ArcCot}[d+ex]}{a+bx^2},\ x,\ 27,\ 0\right\}$$

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

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

$$\frac{i\,\text{Log}\left[a+\sqrt{-a}\,\sqrt{b}\,x\right]\,\text{Log}\left[1-\frac{i}{d+e\,x}\right]}{4\sqrt{-a}\,\sqrt{b}}+\frac{i\,\text{Log}\left[a-\sqrt{-a}\,\sqrt{b}\,x\right]\,\text{Log}\left[1+\frac{i}{d+e\,x}\right]}{4\sqrt{-a}\,\sqrt{b}}-\frac{i\,\text{Log}\left[a+\sqrt{-a}\,\sqrt{b}\,x\right]\,\text{Log}\left[1+\frac{i}{d+e\,x}\right]}{4\sqrt{-a}\,\sqrt{b}}-$$

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

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

Unable to integrate:

$$\left\{\frac{\text{ArcCot}[d+e\,x]}{a+b\,x+c\,x^2},\ x,\ 27,\ 0\right\}$$

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

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

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

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

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCot}[x]}{\left(a+b\,x^2\right)^{3/2}},\ x,\ 3,\ 0\right\}$$

$$\frac{x\,\text{ArcCot}[x]}{a\,\sqrt{a+b\,x^2}}-\frac{\text{ArcTanh}\Big[\frac{\sqrt{a+b\,x^2}}{\sqrt{a-b}}\Big]}{a\,\sqrt{a-b}}$$

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

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Valid but unnecessarily complicated antiderivative:
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$$\Big\{\frac{\text{ArcCot}[x]}{\left(a+b\,x^2\right)^{5/2}},\ x,\ 8,\ 0\Big\}$$

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

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

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Unable to integrate:
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$$\left\{\text{ArcCot}\left[a+b\,f^{c+d\,x}\right],\ x,\ -15,\ 0\right\}$$

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

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

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Unable to integrate:
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$$\left\{x\,\text{ArcCot}\left[a+b\,f^{c+d\,x}\right],\ x,\ 25,\ 0\right\}$$

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

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

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Unable to integrate:
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$$\left\{x^2\,\text{ArcCot}\left[a+b\,f^{c+d\,x}\right],\ x,\ 29,\ 0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

{ArcCot[b Tan[x]], x, 12, 0}

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

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

Valid but unnecessarily complicated antiderivative:

{ArcCot[b Cot[x]], x, 12, 0}

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{e^{\text{ArcCot}[x]}}{\left(a+a\,x^2\right)^{7/2}},x,7,0\right\}$$

$$\frac{e^{\text{ArcCot}[x]}\left(-9+17\,x-14\,x^2+18\,x^3-6\,x^4+6\,x^5\right)}{26\,a\left(a\left(1+x^2\right)\right)^{5/2}}$$

$$\frac{1}{416\,a^3\sqrt{a\left(1+x^2\right)}}e^{\text{ArcCot}[x]}\left(-130+130\,x-39\sqrt{1+\frac{1}{x^2}}\,x\,\text{Cos}[3\,\text{ArcCot}[x]]+\right.$$
$$\left.5\sqrt{1+\frac{1}{x^2}}\,x\,\text{Cos}[5\,\text{ArcCot}[x]]+13\sqrt{1+\frac{1}{x^2}}\,x\,\text{Sin}[3\,\text{ArcCot}[x]]-\sqrt{1+\frac{1}{x^2}}\,x\,\text{Sin}[5\,\text{ArcCot}[x]]\right)$$

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCot}[a+b\,x]}{\frac{a\,d}{b}+d\,x},x,6,0\right\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCot}[a\,x^n]}{x},\ x,\ 3,\ 0\right\}$$

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

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

Problems involving inverse secants

Valid but unnecessarily complicated antiderivative:

{ArcSec[a + b x], x, 3, 0}

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

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

Valid but unnecessarily complicated antiderivative:

$\{\mathrm{ArcSec}[c\,e^{a+b\,x}],\ x,\ 7,\ 0\}$

$$\frac{i\,\mathrm{ArcSec}[c\,e^{a+b\,x}]^2}{2\,b}-\frac{\mathrm{ArcSec}[c\,e^{a+b\,x}]\,\mathrm{Log}\left[1+e^{2\,i\,\mathrm{ArcSec}[c\,e^{a+b\,x}]}\right]}{b}+\frac{i\,\mathrm{PolyLog}\left[2,-e^{2\,i\,\mathrm{ArcSec}[c\,e^{a+b\,x}]}\right]}{2\,b}$$

$$x\,\mathrm{ArcSec}[c\,e^{a+b\,x}]-\frac{1}{8\,b\,c\sqrt{1-\frac{e^{-2\,(a+b\,x)}}{c^2}}}\,e^{-a-b\,x}\left(4\sqrt{-1+c^2\,e^{2\,(a+b\,x)}}\,\mathrm{ArcTan}\left[\sqrt{-1+c^2\,e^{2\,(a+b\,x)}}\right]\left(2\,b\,x-\mathrm{Log}\left[c^2\,e^{2\,(a+b\,x)}\right]\right)+\right.$$
$$\sqrt{1-c^2\,e^{2\,(a+b\,x)}}\left(\mathrm{Log}\left[c^2\,e^{2\,(a+b\,x)}\right]^2-4\,\mathrm{Log}\left[c^2\,e^{2\,(a+b\,x)}\right]\mathrm{Log}\left[\frac{1}{2}\left(1+\sqrt{1-c^2\,e^{2\,(a+b\,x)}}\right)\right]+2\,\mathrm{Log}\left[\frac{1}{2}\left(1+\sqrt{1-c^2\,e^{2\,(a+b\,x)}}\right)\right]^2\right)-$$
$$\left.4\sqrt{1-c^2\,e^{2\,(a+b\,x)}}\,\mathrm{PolyLog}\left[2,\frac{1}{2}\left(1-\sqrt{1-c^2\,e^{2\,(a+b\,x)}}\right)\right]\right)$$

Valid but unnecessarily complicated antiderivative:

$\left\{\frac{\mathrm{ArcSec}[a\,x^n]}{x},\ x,\ 7,\ 0\right\}$

$$\frac{i\,\mathrm{ArcSec}[a\,x^n]^2}{2\,n}-\frac{\mathrm{ArcSec}[a\,x^n]\,\mathrm{Log}\left[1+e^{2\,i\,\mathrm{ArcSec}[a\,x^n]}\right]}{n}+\frac{i\,\mathrm{PolyLog}\left[2,-e^{2\,i\,\mathrm{ArcSec}[a\,x^n]}\right]}{2\,n}$$

$$\frac{x^{-n}\,\mathrm{HypergeometricPFQ}\left[\left\{\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\},\left\{\frac{3}{2},\frac{3}{2}\right\},\frac{x^{-2\,n}}{a^2}\right]}{a\,n}+\left(\mathrm{ArcSec}[a\,x^n]+\mathrm{ArcSin}\left[\frac{x^{-n}}{a}\right]\right)\mathrm{Log}[x]$$

Problems involving inverse cosecants

Valid but unnecessarily complicated antiderivative:

$$\{\text{ArcCsc}[a+b\,x],\,x,\,3,\,0\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\{\text{ArcCsc}[c\,e^{a+b\,x}],\,x,\,7,\,0\}$$

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

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

Valid but unnecessarily complicated antiderivative:

$$\left\{\frac{\text{ArcCsc}[a\,x^n]}{x},\,x,\,7,\,0\right\}$$

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

$$-\frac{x^{-n}\,\text{HypergeometricPFQ}\left[\left\{\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\},\left\{\frac{3}{2},\frac{3}{2}\right\},\frac{x^{-2\,n}}{a^2}\right]}{a\,n}+\left(\text{ArcCsc}[a\,x^n]-\text{ArcSin}\left[\frac{x^{-n}}{a}\right]\right)\text{Log}[x]$$