Mathematica 11.3 Integration Test Results

Test results for the 32 problems in "4.4.9 trig^m (a+b cot^n+c cot^(2 n))^p.m"

Problem 1: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[d+e x]^5}{\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}}\,dx$$

Optimal (type 3, 547 leaves, 15 steps):

$$-\frac{\sqrt{a-c-\sqrt{a^2+b^2-2 a c+c^2}}\ \text{ArcTanh}\left[\frac{a-c-\sqrt{a^2+b^2-2 a c+c^2}+b\,\text{Cot}[d+e x]}{\sqrt{2}\sqrt{a-c-\sqrt{a^2+b^2-2 a c+c^2}}\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}}\right]}{\sqrt{2}\sqrt{a^2+b^2-2 a c+c^2}\ e}+$$
$$\frac{\sqrt{a-c+\sqrt{a^2+b^2-2 a c+c^2}}\ \text{ArcTanh}\left[\frac{a-c+\sqrt{a^2+b^2-2 a c+c^2}+b\,\text{Cot}[d+e x]}{\sqrt{2}\sqrt{a-c+\sqrt{a^2+b^2-2 a c+c^2}}\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}}\right]}{\sqrt{2}\sqrt{a^2+b^2-2 a c+c^2}\ e}-$$
$$\frac{b\,\text{ArcTanh}\left[\frac{b+2 c\,\text{Cot}[d+e x]}{2\sqrt{c}\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}}\right]}{2 c^{3/2} e}+\frac{b\left(5 b^2-12 a c\right)\text{ArcTanh}\left[\frac{b+2 c\,\text{Cot}[d+e x]}{2\sqrt{c}\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}}\right]}{16 c^{7/2} e}+$$
$$\frac{\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}}{c e}-\frac{\text{Cot}[d+e x]^2\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}}{3 c e}-$$
$$\frac{\left(15 b^2-16 a c-10 b c\,\text{Cot}[d+e x]\right)\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}}{24 c^3 e}$$

Result (type 3, 3681 leaves):

$$\frac{1}{e}\left(\frac{-15 b^2+16 a c+32 c^2}{24 c^3}+\frac{5 b\,\text{Cot}[d+e x]}{12 c^2}-\frac{\text{Csc}[d+e x]^2}{3 c}\right)$$
$$\sqrt{\left(\frac{-a-c+a\,\text{Cos}\left[2\left(d+e x\right)\right]-c\,\text{Cos}\left[2\left(d+e x\right)\right]-b\,\text{Sin}\left[2\left(d+e x\right)\right]}{-1+\text{Cos}\left[2\left(d+e x\right)\right]}\right)}+$$
$$\Bigg(\Bigg(b\sqrt{a-i b-c}\ \sqrt{a+i b-c}\ \left(-5 b^2+4 c\left(3 a+2 c\right)\right)\text{Log}[\text{Tan}[d+e x]]-$$
$$8\sqrt{a+i b-c}\ c^{7/2}\,\text{Log}\Big[\Big(-2 c-2 i a\,\text{Tan}[d+e x]-b\left(i+\text{Tan}[d+e x]\right)+2 i\sqrt{a-i b-c}$$

$$\left.\left.\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\,\right)\Big/\left(8\,\sqrt{a-\mathrm{i}\,b-c}\,c^3\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])\right)\right]+$$

$$\sqrt{a-\mathrm{i}\,b-c}\,\Big(b\,\sqrt{a+\mathrm{i}\,b-c}\,\left(5\,b^2-4\,c\,(3\,a+2\,c)\right)\mathrm{Log}\Big[2\,c+b\,\mathrm{Tan}[d+e\,x]+$$

$$2\,\sqrt{c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\,\Big]+8\,c^{7/2}\,\mathrm{Log}\Big[\Big(2\,c+b\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])-$$

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

$$\left(8\,\sqrt{a+\mathrm{i}\,b-c}\,c^3\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])\right)\Big]\Big)\Big)$$

$$\Big(-\Big(\Big(5\,b^3\,\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\right.}$$

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

$$\left(8\,c^3\,(a+c-a\,\mathrm{Cos}[2\,(d+e\,x)]+c\,\mathrm{Cos}[2\,(d+e\,x)]+b\,\mathrm{Sin}[2\,(d+e\,x)])\right)\Big)+$$

$$\Big(3\,a\,b\,\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\right.}$$

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

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

$$\Big(b\,\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\right.}$$

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

$$\left(c\,(a+c-a\,\mathrm{Cos}[2\,(d+e\,x)]+c\,\mathrm{Cos}[2\,(d+e\,x)]+b\,\mathrm{Sin}[2\,(d+e\,x)])\right)+$$

$$\Big(\mathrm{Sin}[2\,(d+e\,x)]\,\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\right.}$$

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

$$\left(a+c-a\,\mathrm{Cos}[2\,(d+e\,x)]+c\,\mathrm{Cos}[2\,(d+e\,x)]+b\,\mathrm{Sin}[2\,(d+e\,x)]\right)\Big)$$

$$\mathrm{Tan}[d+e\,x]\,\sqrt{a+\mathrm{Cot}[d+e\,x]^2\,(c+b\,\mathrm{Tan}[d+e\,x])}\,\Big)\Big/\Big(16$$

$$\sqrt{a-\mathrm{i}\,b-c}$$
$$\sqrt{a+\mathrm{i}\,b-c}$$
$$c^{7/2}$$
$$e$$
$$\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}$$

$$\Big(-\Big(\Big(\Big(b\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{a+\mathrm{i}\,b-c}\,\left(-5\,b^2+4\,c\,(3\,a+2\,c)\right)\mathrm{Log}[\mathrm{Tan}[d+e\,x]]-$$

$$8\sqrt{a+\mathrm{i}\,b-c}\;c^{7/2}\,\mathrm{Log}\Big[\Big(-2\,c-2\,\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x]-b\,\big(\mathrm{i}+\mathrm{Tan}[d+e\,x]\big)+2\,\mathrm{i}\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{c+\mathrm{Tan}[d+e\,x]\,\big(b+a\,\mathrm{Tan}[d+e\,x]\big)}\Big)\Big/\Big(8\sqrt{a-\mathrm{i}\,b-c}\;c^{3}\,\big(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\big)\Big)\Big]+\sqrt{a-\mathrm{i}\,b-c}\;\Big(b\sqrt{a+\mathrm{i}\,b-c}\;\big(5\,b^{2}-4\,c\,(3\,a+2\,c)\big)\,\mathrm{Log}\Big[2\,c+b\,\mathrm{Tan}[d+e\,x]+2\sqrt{c}\;\sqrt{c+\mathrm{Tan}[d+e\,x]\,\big(b+a\,\mathrm{Tan}[d+e\,x]\big)}\Big]+8\,c^{7/2}\,\mathrm{Log}\Big[\Big(2\,c+b\,\big(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\big)-2\,\mathrm{i}\,\Big(a\,\mathrm{Tan}[d+e\,x]+\sqrt{a+\mathrm{i}\,b-c}\;\sqrt{c+\mathrm{Tan}[d+e\,x]\,\big(b+a\,\mathrm{Tan}[d+e\,x]\big)}\Big)\Big)\Big/\Big(8\sqrt{a+\mathrm{i}\,b-c}\;c^{3}\,\big(\mathrm{i}+\mathrm{Tan}[d+e\,x]\big)\Big)\Big]\Big)\Big)\,\mathrm{Tan}[d+e\,x]\,\Big(a\,\mathrm{Sec}[d+e\,x]^{2}\,\mathrm{Tan}[d+e\,x]+\mathrm{Sec}[d+e\,x]^{2}\,\big(b+a\,\mathrm{Tan}[d+e\,x]\big)\Big)\sqrt{a+\mathrm{Cot}[d+e\,x]^{2}\,\big(c+b\,\mathrm{Tan}[d+e\,x]\big)}\Big)\Big/\Big(32\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{a+\mathrm{i}\,b-c}\;c^{7/2}\,\Big(c+\mathrm{Tan}[d+e\,x]\,\big(b+a\,\mathrm{Tan}[d+e\,x]\big)\Big)^{3/2}\Big)\Big)+$$

$$\Big(\Big(b\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{a+\mathrm{i}\,b-c}\;\big(-5\,b^{2}+4\,c\,(3\,a+2\,c)\big)\,\mathrm{Log}[\mathrm{Tan}[d+e\,x]]-8\sqrt{a+\mathrm{i}\,b-c}\;c^{7/2}\,\mathrm{Log}\Big[\Big(-2\,c-2\,\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x]-b\,\big(\mathrm{i}+\mathrm{Tan}[d+e\,x]\big)+2\,\mathrm{i}\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{c+\mathrm{Tan}[d+e\,x]\,\big(b+a\,\mathrm{Tan}[d+e\,x]\big)}\Big)\Big/\Big(8\sqrt{a-\mathrm{i}\,b-c}\;c^{3}\,\big(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\big)\Big)\Big]+\sqrt{a-\mathrm{i}\,b-c}\;\Big(b\sqrt{a+\mathrm{i}\,b-c}\;\big(5\,b^{2}-4\,c\,(3\,a+2\,c)\big)\,\mathrm{Log}\Big[2\,c+b\,\mathrm{Tan}[d+e\,x]+2\sqrt{c}\;\sqrt{c+\mathrm{Tan}[d+e\,x]\,\big(b+a\,\mathrm{Tan}[d+e\,x]\big)}\Big]+8\,c^{7/2}\,\mathrm{Log}\Big[\Big(2\,c+b\,\big(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\big)-2\,\mathrm{i}\,\Big(a\,\mathrm{Tan}[d+e\,x]+\sqrt{a+\mathrm{i}\,b-c}\;\sqrt{c+\mathrm{Tan}[d+e\,x]\,\big(b+a\,\mathrm{Tan}[d+e\,x]\big)}\Big)\Big)\Big/\Big(8\sqrt{a+\mathrm{i}\,b-c}\;c^{3}\,\big(\mathrm{i}+\mathrm{Tan}[d+e\,x]\big)\Big)\Big]\Big)\Big)\,\mathrm{Sec}[d+e\,x]^{2}\sqrt{a+\mathrm{Cot}[d+e\,x]^{2}\,\big(c+b\,\mathrm{Tan}[d+e\,x]\big)}\Big)\Big/\Big(16\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{a+\mathrm{i}\,b-c}\;c^{7/2}\sqrt{c+\mathrm{Tan}[d+e\,x]\,\big(b+a\,\mathrm{Tan}[d+e\,x]\big)}\Big)+$$

$$\Big(\Big(b\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{a+\mathrm{i}\,b-c}\;\big(-5\,b^{2}+4\,c\,(3\,a+2\,c)\big)\,\mathrm{Log}[\mathrm{Tan}[d+e\,x]]-8\sqrt{a+\mathrm{i}\,b-c}\;c^{7/2}\,\mathrm{Log}\Big[\Big(-2\,c-2\,\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x]-b\,\big(\mathrm{i}+\mathrm{Tan}[d+e\,x]\big)+2\,\mathrm{i}\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{c+\mathrm{Tan}[d+e\,x]\,\big(b+a\,\mathrm{Tan}[d+e\,x]\big)}\Big)\Big/\Big(8\sqrt{a-\mathrm{i}\,b-c}\;c^{3}\,\big(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\big)\Big)\Big]+\sqrt{a-\mathrm{i}\,b-c}\;\Big(b\sqrt{a+\mathrm{i}\,b-c}\;\big(5\,b^{2}-4\,c\,(3\,a+2\,c)\big)\,\mathrm{Log}\Big[2\,c+b\,\mathrm{Tan}[d+e\,x]+2\sqrt{c}\;\sqrt{c+\mathrm{Tan}[d+e\,x]\,\big(b+a\,\mathrm{Tan}[d+e\,x]\big)}\Big]+8\,c^{7/2}\,\mathrm{Log}\Big[\Big(2\,c+b\,\big(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\big)-2\,\mathrm{i}\,\Big(a\,\mathrm{Tan}[d+e\,x]+\sqrt{a+\mathrm{i}\,b-c}\;\sqrt{c+\mathrm{Tan}[d+e\,x]\,\big(b+a\,\mathrm{Tan}[d+e\,x]\big)}\Big)\Big)\Big/\Big(8\sqrt{a+\mathrm{i}\,b-c}\;c^{3}\,\big(\mathrm{i}+\mathrm{Tan}[d+e\,x]\big)\Big)\Big]\Big)\Big)\,\mathrm{Tan}[d+e\,x]\,\Big(b\,\mathrm{Csc}[d+e\,x]^{2}-2\,\mathrm{Cot}[d+e\,x]\,\mathrm{Csc}[d+e\,x]^{2}\,\big(c+b\,\mathrm{Tan}[d+e\,x]\big)\Big)\Big)\Big/$$

$$\Big(32 \sqrt{a-\mathrm{i}\, b-c}\ \sqrt{a+\mathrm{i}\, b-c}\ c^{7/2} \sqrt{c+\mathrm{Tan}[d+e x]\ (b+a\, \mathrm{Tan}[d+e x])}$$

$$\sqrt{a+\mathrm{Cot}[d+e x]^2\ (c+b\, \mathrm{Tan}[d+e x])}\ \Big) +$$

$$\Big(\mathrm{Tan}[d+e x] \sqrt{a+\mathrm{Cot}[d+e x]^2\ (c+b\, \mathrm{Tan}[d+e x])}\ \Big(b \sqrt{a-\mathrm{i}\, b-c}\ \sqrt{a+\mathrm{i}\, b-c}$$

$$(-5 b^2+4 c\ (3 a+2 c))\ \mathrm{Csc}[d+e x]\ \mathrm{Sec}[d+e x]-\Big(64 \sqrt{a-\mathrm{i}\, b-c}\ \sqrt{a+\mathrm{i}\, b-c}$$

$$c^{13/2}\ (-\mathrm{i}+\mathrm{Tan}[d+e x])\ \Big(\Big(-2\, \mathrm{i}\, a\, \mathrm{Sec}[d+e x]^2-b\, \mathrm{Sec}[d+e x]^2+\Big(\mathrm{i} \sqrt{a-\mathrm{i}\, b-c}$$

$$\big(a\, \mathrm{Sec}[d+e x]^2\ \mathrm{Tan}[d+e x]+\mathrm{Sec}[d+e x]^2\ (b+a\, \mathrm{Tan}[d+e x])\big)\Big)\Big/$$

$$\Big(\sqrt{c+\mathrm{Tan}[d+e x]\ (b+a\, \mathrm{Tan}[d+e x])}\ \Big)\Big)\Big/\Big(8 \sqrt{a-\mathrm{i}\, b-c}\ c^3$$

$$(-\mathrm{i}+\mathrm{Tan}[d+e x])\Big)-\Big(\mathrm{Sec}[d+e x]^2\ \Big(-2 c-2\, \mathrm{i}\, a\, \mathrm{Tan}[d+e x]-b\ (\mathrm{i}+\mathrm{Tan}[$$

$$d+e x])+2\, \mathrm{i} \sqrt{a-\mathrm{i}\, b-c}\ \sqrt{c+\mathrm{Tan}[d+e x]\ (b+a\, \mathrm{Tan}[d+e x])}\ \Big)\Big)\Big/$$

$$\Big(8 \sqrt{a-\mathrm{i}\, b-c}\ c^3\ (-\mathrm{i}+\mathrm{Tan}[d+e x])^2\Big)\Big)\Big)\Big/\Big(-2 c-2\, \mathrm{i}\, a\, \mathrm{Tan}[d+e x]-$$

$$b\ (\mathrm{i}+\mathrm{Tan}[d+e x])+2\, \mathrm{i} \sqrt{a-\mathrm{i}\, b-c}\ \sqrt{c+\mathrm{Tan}[d+e x]\ (b+a\, \mathrm{Tan}[d+e x])}\ \Big)+$$

$$\sqrt{a-\mathrm{i}\, b-c}\ \Big(\Big(b \sqrt{a+\mathrm{i}\, b-c}\ (5 b^2-4 c\ (3 a+2 c))\ \Big(b\, \mathrm{Sec}[d+e x]^2+$$

$$\Big(\sqrt{c}\ \big(a\, \mathrm{Sec}[d+e x]^2\ \mathrm{Tan}[d+e x]+\mathrm{Sec}[d+e x]^2\ (b+a\, \mathrm{Tan}[d+e x])\big)\Big)\Big/$$

$$\Big(\sqrt{c+\mathrm{Tan}[d+e x]\ (b+a\, \mathrm{Tan}[d+e x])}\ \Big)\Big)\Big)\Big/\Big(2 c+b\, \mathrm{Tan}[d+e x]+$$

$$2 \sqrt{c}\ \sqrt{c+\mathrm{Tan}[d+e x]\ (b+a\, \mathrm{Tan}[d+e x])}\ \Big)+\Big(64 \sqrt{a+\mathrm{i}\, b-c}\ c^{13/2}\ (\mathrm{i}+\mathrm{Tan}[d+$$

$$e x])\ \Big(\Big(b\, \mathrm{Sec}[d+e x]^2-2\, \mathrm{i}\ \Big(a\, \mathrm{Sec}[d+e x]^2+\Big(\sqrt{a+\mathrm{i}\, b-c}\ \big(a\, \mathrm{Sec}[d+e x]^2$$

$$\mathrm{Tan}[d+e x]+\mathrm{Sec}[d+e x]^2\ (b+a\, \mathrm{Tan}[d+e x])\big)\Big)\Big/\Big(2$$

$$\sqrt{c+\mathrm{Tan}[d+e x]\ (b+a\, \mathrm{Tan}[d+e x])}\ \Big)\Big)\Big)\Big/\Big(8 \sqrt{a+\mathrm{i}\, b-c}\ c^3\ (\mathrm{i}+$$

$$\mathrm{Tan}[d+e x])\Big)-\Big(\mathrm{Sec}[d+e x]^2\ \Big(2 c+b\ (-\mathrm{i}+\mathrm{Tan}[d+e x])-2\, \mathrm{i}\ \Big(a\, \mathrm{Tan}[$$

$$d+e x]+\sqrt{a+\mathrm{i}\, b-c}\ \sqrt{c+\mathrm{Tan}[d+e x]\ (b+a\, \mathrm{Tan}[d+e x])}\ \Big)\Big)\Big)\Big/$$

$$\Big(8 \sqrt{a+\mathrm{i}\, b-c}\ c^3\ (\mathrm{i}+\mathrm{Tan}[d+e x])^2\Big)\Big)\Big)\Big/\Big(2 c+b\ (-\mathrm{i}+\mathrm{Tan}[d+e x])-$$

$$2\, \mathrm{i}\ \Big(a\, \mathrm{Tan}[d+e x]+\sqrt{a+\mathrm{i}\, b-c}\ \sqrt{c+\mathrm{Tan}[d+e x]\ (b+a\, \mathrm{Tan}[d+e x])}\ \Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(16 \sqrt{a-\mathrm{i}\, b-c}\ \sqrt{a+\mathrm{i}\, b-c}\ c^{7/2} \sqrt{c+\mathrm{Tan}[d+e x]\ (b+a\, \mathrm{Tan}[d+e x])}\ \Big)\Big)\Big)$$

Problem 2: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 384 leaves, 11 steps):

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

Result (type 3, 3144 leaves):

$$-\frac{\sqrt{\frac{-a-c+a \text{Cos}[2 (d+e x)]-c \text{Cos}[2 (d+e x)]-b \text{Sin}[2 (d+e x)]}{-1+\text{Cos}[2 (d+e x)]}}}{c e}-\left(\left(b \sqrt{a-i b-c} \sqrt{a+i b-c} \ \text{Log}[\text{Tan}[d+e x]]-\sqrt{a+i b-c} \ c^{3/2} \text{Log}\left[\left(-2 c-2 i a \text{Tan}[d+e x]-b (i+\text{Tan}[d+e x])+2 i \sqrt{a-i b-c} \sqrt{c+\text{Tan}[d+e x] (b+a \text{Tan}[d+e x])}\right) \Big/ \left(\sqrt{a-i b-c} \ c (-i+\text{Tan}[d+e x])\right)\right]+\sqrt{a-i b-c} \left(-b \sqrt{a+i b-c} \ \text{Log}\left[2 c+b \text{Tan}[d+e x]+2 \sqrt{c} \sqrt{c+\text{Tan}[d+e x] (b+a \text{Tan}[d+e x])}\right]+c^{3/2} \text{Log}\left[\left(2 c+b (-i+\text{Tan}[d+e x])-2 i \left(a \text{Tan}[d+e x]+\sqrt{a+i b-c} \sqrt{c+\text{Tan}[d+e x] (b+a \text{Tan}[d+e x])}\right)\right) \Big/ \left(\sqrt{a+i b-c} \ c (i+\text{Tan}[d+e x])\right)\right]\right)\right)\right.$$

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

$$\frac{c\,\text{Cos}[2\,(d+e\,x)]}{-1+\text{Cos}[2\,(d+e\,x)]}-\frac{b\,\text{Sin}[2\,(d+e\,x)]}{-1+\text{Cos}[2\,(d+e\,x)]}\Bigg)\Bigg)\Big/$$

$$\Big(c\,\big(a+c-a\,\text{Cos}[2\,(d+e\,x)]+c\,\text{Cos}[2\,(d+e\,x)]+b\,\text{Sin}[2\,(d+e\,x)]\big)\big)\Big)-$$

$$\Bigg(\text{Sin}[2\,(d+e\,x)]\sqrt{\Bigg(-\frac{a}{-1+\text{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\text{Cos}[2\,(d+e\,x)]}+}$$

$$\frac{a\,\text{Cos}[2\,(d+e\,x)]}{-1+\text{Cos}[2\,(d+e\,x)]}-\frac{c\,\text{Cos}[2\,(d+e\,x)]}{-1+\text{Cos}[2\,(d+e\,x)]}-\frac{b\,\text{Sin}[2\,(d+e\,x)]}{-1+\text{Cos}[2\,(d+e\,x)]}\Bigg)\Bigg)\Big/$$

$$\big(a+c-a\,\text{Cos}[2\,(d+e\,x)]+c\,\text{Cos}[2\,(d+e\,x)]+b\,\text{Sin}[2\,(d+e\,x)]\big)\Bigg)$$

$$\text{Tan}[d+e\,x]\,\sqrt{a+\text{Cot}[d+e\,x]^2\,(c+b\,\text{Tan}[d+e\,x])}\Bigg)\Big/\Big(2$$

$$\sqrt{a-i\,b-c}$$
$$\sqrt{a+i\,b-c}$$
$$c^{3/2}$$
$$e$$
$$\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}$$

$$\Bigg(\Bigg(\Bigg(b\,\sqrt{a-i\,b-c}\,\sqrt{a+i\,b-c}\,\text{Log}[\text{Tan}[d+e\,x]]-$$

$$\sqrt{a+i\,b-c}\,c^{3/2}\,\text{Log}\Big[\Big(-2\,c-2\,i\,a\,\text{Tan}[d+e\,x]-b\,(i+\text{Tan}[d+e\,x])+2\,i\,\sqrt{a-i\,b-c}$$

$$\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big)\Big/\Big(\sqrt{a-i\,b-c}\,c\,(-i+\text{Tan}[d+e\,x])\Big)\Big]+$$

$$\sqrt{a-i\,b-c}\,\Big(-b\,\sqrt{a+i\,b-c}\,\text{Log}\Big[2\,c+b\,\text{Tan}[d+e\,x]+2\,\sqrt{c}$$

$$\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big]+c^{3/2}\,\text{Log}\Big[\Big(2\,c+b\,(-i+\text{Tan}[d+e\,x])-$$

$$2\,i\,\Big(a\,\text{Tan}[d+e\,x]+\sqrt{a+i\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big)\Big)\Big/$$

$$\Big(\sqrt{a+i\,b-c}\,c\,(i+\text{Tan}[d+e\,x])\Big)\Big]\Big)\Bigg)\,\text{Tan}[d+e\,x]$$

$$\big(a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\text{Sec}[d+e\,x]^2\,(b+a\,\text{Tan}[d+e\,x])\big)$$

$$\sqrt{a+\text{Cot}[d+e\,x]^2\,(c+b\,\text{Tan}[d+e\,x])}\Bigg)\Big/$$

$$\Big(4\,\sqrt{a-i\,b-c}\,\sqrt{a+i\,b-c}\,c^{3/2}\,\big(c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])\big)^{3/2}\Big)-$$

$$\Bigg(\Bigg(b\,\sqrt{a-i\,b-c}\,\sqrt{a+i\,b-c}\,\text{Log}[\text{Tan}[d+e\,x]]-$$

$$\sqrt{a+i\,b-c}\,c^{3/2}\,\text{Log}\Big[\Big(-2\,c-2\,i\,a\,\text{Tan}[d+e\,x]-b\,(i+\text{Tan}[d+e\,x])+2\,i\,\sqrt{a-i\,b-c}$$

$$\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big)\Big/\Big(\sqrt{a-i\,b-c}\,c\,(-i+\text{Tan}[d+e\,x])\Big)\Big]+$$

$$\sqrt{a-i\,b-c}\,\Big(-b\,\sqrt{a+i\,b-c}\,\text{Log}\Big[2\,c+b\,\text{Tan}[d+e\,x]+2\,\sqrt{c}$$

$$\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big]+c^{3/2}\,\text{Log}\Big[\Big(2\,c+b\,(-i+\text{Tan}[d+e\,x])-$$

$$2\,i\,\Big(a\,\text{Tan}[d+e\,x]+\sqrt{a+i\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big)\Big)\Big/$$

$$\left(\sqrt{a+\mathrm{i}\,b-c}\;c\,\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\right)\Big]\Big)\Big)\;\mathrm{Sec}[d+e\,x]^2$$

$$\sqrt{a+\mathrm{Cot}[d+e\,x]^2\,\left(c+b\,\mathrm{Tan}[d+e\,x]\right)}\;\Big)\Big/\Big(2\,\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{a+\mathrm{i}\,b-c}$$

$$c^{3/2}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\;\Big)-$$

$$\Big(\Big(b\,\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{a+\mathrm{i}\,b-c}\;\mathrm{Log}[\mathrm{Tan}[d+e\,x]]-\sqrt{a+\mathrm{i}\,b-c}\;c^{3/2}$$

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

$$\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\;\Big)\Big/\left(\sqrt{a-\mathrm{i}\,b-c}\;c\,\left(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\right)\Big]+$$

$$\sqrt{a-\mathrm{i}\,b-c}\;\Big(-b\,\sqrt{a+\mathrm{i}\,b-c}\;\mathrm{Log}\Big[2\,c+b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{c}$$

$$\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\;\Big]+c^{3/2}\,\mathrm{Log}\Big[\Big(2\,c+b\,\left(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)-$$

$$2\,\mathrm{i}\,\left(a\,\mathrm{Tan}[d+e\,x]+\sqrt{a+\mathrm{i}\,b-c}\;\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\right)\Big)\Big/$$

$$\left(\sqrt{a+\mathrm{i}\,b-c}\;c\,\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\right)\Big]\Big)\Big)\;\mathrm{Tan}[d+e\,x]$$

$$\left(b\,\mathrm{Csc}[d+e\,x]^2-2\,\mathrm{Cot}[d+e\,x]\,\mathrm{Csc}[d+e\,x]^2\,\left(c+b\,\mathrm{Tan}[d+e\,x]\right)\right)\Big)\Big/$$

$$\Big(4\,\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{a+\mathrm{i}\,b-c}\;c^{3/2}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}$$

$$\sqrt{a+\mathrm{Cot}[d+e\,x]^2\,\left(c+b\,\mathrm{Tan}[d+e\,x]\right)}\;\Big)-$$

$$\Big(\mathrm{Tan}[d+e\,x]\,\sqrt{a+\mathrm{Cot}[d+e\,x]^2\,\left(c+b\,\mathrm{Tan}[d+e\,x]\right)}$$

$$\Big(b\,\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{a+\mathrm{i}\,b-c}\;\mathrm{Csc}[d+e\,x]\,\mathrm{Sec}[d+e\,x]-\Big(\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{a+\mathrm{i}\,b-c}\;c^{5/2}$$

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

$$\left(a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\mathrm{Sec}[d+e\,x]^2\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)\right)\Big)\Big/$$

$$\left(\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\;\right)\Big)\Big/\Big(\sqrt{a-\mathrm{i}\,b-c}\;c\,\Big(-\mathrm{i}+\mathrm{Tan}[$$

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

$$2\,\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\;\Big)\Big)\Big/$$

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

$$b\,\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)+2\,\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\;\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\;\Big)+$$

$$\sqrt{a-\mathrm{i}\,b-c}\;\Big(-\Big(\Big(b\,\sqrt{a+\mathrm{i}\,b-c}\;\Big(b\,\mathrm{Sec}[d+e\,x]^2+\Big(\sqrt{c}\;\Big(a\,\mathrm{Sec}[d+e\,x]^2$$

$$\mathrm{Tan}[d+e\,x]+\mathrm{Sec}[d+e\,x]^2\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)\Big)\Big)\Big)\Big/$$

$$\left(\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\;\right)\Big)\Big)\Big/\Big(2\,c+b\,\mathrm{Tan}[d+e\,x]+$$

$$2\,\sqrt{c}\;\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\;\Big)\Big)+\Big(\sqrt{a+\mathrm{i}\,b-c}\;c^{5/2}\,\Big(\mathrm{i}+$$

$$\mathrm{Tan}[d+e x]\Bigg)\Bigg(\Bigg(b\,\mathrm{Sec}[d+e x]^2-2\,i\,\Big(a\,\mathrm{Sec}[d+e x]^2+\Big(\sqrt{a+i b-c}\,\big(a\,\mathrm{Sec}[d+e x]^2\,\mathrm{Tan}[d+e x]+\mathrm{Sec}[d+e x]^2\,(b+a\,\mathrm{Tan}[d+e x])\big)\Big)\Big/\Big(2\sqrt{c+\mathrm{Tan}[d+e x]}\,(b+a\,\mathrm{Tan}[d+e x])\Big)\Big)\Bigg)\Bigg/\Big(\sqrt{a+i b-c}\,c\,(i+\mathrm{Tan}[d+e x])\Big)-\Bigg(\mathrm{Sec}[d+e x]^2\,\Big(2c+b\,(-i+\mathrm{Tan}[d+e x])-2\,i\,\Big(a\,\mathrm{Tan}[d+e x]+\sqrt{a+i b-c}\,\sqrt{c+\mathrm{Tan}[d+e x]}\,(b+a\,\mathrm{Tan}[d+e x])\Big)\Big)\Bigg)\Bigg/\Big(\sqrt{a+i b-c}\,c\,(i+\mathrm{Tan}[d+e x])^2\Big)\Bigg)\Bigg/\Bigg(2c+b\,(-i+\mathrm{Tan}[d+e x])-2\,i\,\Big(a\,\mathrm{Tan}[d+e x]+\sqrt{a+i b-c}\,\sqrt{c+\mathrm{Tan}[d+e x]}\,(b+a\,\mathrm{Tan}[d+e x])\Big)\Bigg)\Bigg)\Bigg/\Big(2\sqrt{a-i b-c}\,\sqrt{a+i b-c}\,c^{3/2}\sqrt{c+\mathrm{Tan}[d+e x]}\,(b+a\,\mathrm{Tan}[d+e x])\Big)\Big)\Big)$$

Problem 3: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 294 leaves, 6 steps):

$$-\left(\left(\sqrt{a-c-\sqrt{a^2+b^2-2ac+c^2}}\ \mathrm{ArcTanh}\Big[\Big(a-c-\sqrt{a^2+b^2-2ac+c^2}+b\,\mathrm{Cot}[d+e x]\Big)\Big/\Big(\sqrt{2}\sqrt{a-c-\sqrt{a^2+b^2-2ac+c^2}}\sqrt{a+b\,\mathrm{Cot}[d+e x]+c\,\mathrm{Cot}[d+e x]^2}\Big)\Big]\right)\Big/\Big(\sqrt{2}\sqrt{a^2+b^2-2ac+c^2}\ e\Big)\right)+\left(\sqrt{a-c+\sqrt{a^2+b^2-2ac+c^2}}\ \mathrm{ArcTanh}\Big[\Big(a-c+\sqrt{a^2+b^2-2ac+c^2}+b\,\mathrm{Cot}[d+e x]\Big)\Big/\Big(\sqrt{2}\sqrt{a-c+\sqrt{a^2+b^2-2ac+c^2}}\sqrt{a+b\,\mathrm{Cot}[d+e x]+c\,\mathrm{Cot}[d+e x]^2}\Big)\Big]\right)\Big/\Big(\sqrt{2}\sqrt{a^2+b^2-2ac+c^2}\ e\Big)$$

Result (type 3, 2104 leaves):

$$-\Bigg(\Bigg(\Bigg(\sqrt{a-i b-c}\ \mathrm{Log}\Big[\Big(2\Big(\frac{b\,(-i+\mathrm{Tan}[d+e x])+2\,(c-i\,a\,\mathrm{Tan}[d+e x])}{\sqrt{a+i b-c}}-2\,i\sqrt{c+\mathrm{Tan}[d+e x]}\,(b+a\,\mathrm{Tan}[d+e x])\Big)\Big)\Big/(i+\mathrm{Tan}[d+e x])\Big]-$$

$$\sqrt{a+\mathrm{i}\,b-c}\;\mathrm{Log}\Big[\Big(2\,\Big(-\frac{b\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])+2\,(c+\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x])}{\sqrt{a-\mathrm{i}\,b-c}}+$$

$$2\,\mathrm{i}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big]\Big)$$

$$\mathrm{Sin}[2\,(d+e\,x)]\,\sqrt{\Big(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+}$$

$$\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{b\,\mathrm{Sin}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}\Big)$$

$$\mathrm{Tan}[d+e\,x]\,\sqrt{a+\mathrm{Cot}[d+e\,x]^2\,(c+b\,\mathrm{Tan}[d+e\,x])}\,\Big)\Big/$$

$$\Big(2\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{a+\mathrm{i}\,b-c}\;e\,(-a-c+(a-c)\,\mathrm{Cos}[2\,(d+e\,x)]-b\,\mathrm{Sin}[2\,(d+e\,x)])$$

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

$$\Big(-\Big(1\Big/\Big(4\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{a+\mathrm{i}\,b-c}\,(c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x]))^{3/2}\Big)\Big)$$

$$\Big(\sqrt{a-\mathrm{i}\,b-c}\;\mathrm{Log}\Big[\Big(2\,\Big(\frac{b\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])+2\,(c-\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x])}{\sqrt{a+\mathrm{i}\,b-c}}-$$

$$2\,\mathrm{i}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big]-$$

$$\sqrt{a+\mathrm{i}\,b-c}\;\mathrm{Log}\Big[\Big(2\,\Big(-\frac{b\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])+2\,(c+\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x])}{\sqrt{a-\mathrm{i}\,b-c}}+$$

$$2\,\mathrm{i}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big]\Big)$$

$$\mathrm{Tan}[d+e\,x]\,\big(a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\mathrm{Sec}[d+e\,x]^2\,(b+a\,\mathrm{Tan}[d+e\,x])\big)$$

$$\sqrt{a+\mathrm{Cot}[d+e\,x]^2\,(c+b\,\mathrm{Tan}[d+e\,x])}\,+$$

$$\Big(\Big(\sqrt{a-\mathrm{i}\,b-c}\;\mathrm{Log}\Big[\Big(2\,\Big(\frac{b\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])+2\,(c-\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x])}{\sqrt{a+\mathrm{i}\,b-c}}-$$

$$2\,\mathrm{i}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big]-$$

$$\sqrt{a+\mathrm{i}\,b-c}\;\mathrm{Log}\Big[\Big(2\,\Big(-\frac{b\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])+2\,(c+\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x])}{\sqrt{a-\mathrm{i}\,b-c}}+$$

$$2\,\mathrm{i}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big]\Big)$$

$$\mathrm{Sec}[d+e\,x]^2\,\sqrt{a+\mathrm{Cot}[d+e\,x]^2\,(c+b\,\mathrm{Tan}[d+e\,x])}\,\Big)\Big/$$

$$\Big(2\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)+$$

$$\Big(\Big(\sqrt{a-\mathrm{i}\,b-c}\;\mathrm{Log}\Big[\Big(2\,\Big(\frac{b\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])+2\,(c-\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x])}{\sqrt{a+\mathrm{i}\,b-c}}-$$

$$2\,i\,\sqrt{c+\operatorname{Tan}[d+e\,x]\,(b+a\operatorname{Tan}[d+e\,x])}\Bigg)\Bigg)\Big/\,(i+\operatorname{Tan}[d+e\,x])\Bigg]-$$

$$\sqrt{a+i\,b-c}\,\operatorname{Log}\Bigg[\Bigg(2\,\Bigg(-\frac{b\,(i+\operatorname{Tan}[d+e\,x])+2\,(c+i\,a\operatorname{Tan}[d+e\,x])}{\sqrt{a-i\,b-c}}+$$

$$2\,i\,\sqrt{c+\operatorname{Tan}[d+e\,x]\,(b+a\operatorname{Tan}[d+e\,x])}\Bigg)\Bigg)\Big/\,(-i+\operatorname{Tan}[d+e\,x])\Bigg]\Bigg)$$

$$\operatorname{Tan}[d+e\,x]\,\left(b\operatorname{Csc}[d+e\,x]^2-2\operatorname{Cot}[d+e\,x]\operatorname{Csc}[d+e\,x]^2\,(c+b\operatorname{Tan}[d+e\,x])\right)\Bigg)\Big/$$

$$\Bigg(4\,\sqrt{a-i\,b-c}\,\sqrt{a+i\,b-c}\,\sqrt{c+\operatorname{Tan}[d+e\,x]\,(b+a\operatorname{Tan}[d+e\,x])}$$

$$\sqrt{a+\operatorname{Cot}[d+e\,x]^2\,(c+b\operatorname{Tan}[d+e\,x])}\Bigg)+$$

$$\Bigg(1\Big/\Bigg(2\,\sqrt{a-i\,b-c}\,\sqrt{a+i\,b-c}\,\sqrt{c+\operatorname{Tan}[d+e\,x]\,(b+a\operatorname{Tan}[d+e\,x])}\Bigg)\Bigg)$$

$$\operatorname{Tan}[d+e\,x]\,\sqrt{a+\operatorname{Cot}[d+e\,x]^2\,(c+b\operatorname{Tan}[d+e\,x])}$$

$$\Bigg(\Bigg(\sqrt{a-i\,b-c}\,(i+\operatorname{Tan}[d+e\,x])\Bigg)\Bigg(\Bigg(2\,\Bigg(\frac{-2\,i\,a\operatorname{Sec}[d+e\,x]^2+b\operatorname{Sec}[d+e\,x]^2}{\sqrt{a+i\,b-c}}-$$

$$\left(i\,\left(a\operatorname{Sec}[d+e\,x]^2\operatorname{Tan}[d+e\,x]+\operatorname{Sec}[d+e\,x]^2\,(b+a\operatorname{Tan}[d+e\,x])\right)\right)\Big/$$

$$\Bigg(\sqrt{c+\operatorname{Tan}[d+e\,x]\,(b+a\operatorname{Tan}[d+e\,x])}\Bigg)\Bigg)\Bigg)\Big/\,(i+\operatorname{Tan}[d+e\,x])-$$

$$\Bigg(2\operatorname{Sec}[d+e\,x]^2\,\Bigg(\frac{b\,(-i+\operatorname{Tan}[d+e\,x])+2\,(c-i\,a\operatorname{Tan}[d+e\,x])}{\sqrt{a+i\,b-c}}-$$

$$2\,i\,\sqrt{c+\operatorname{Tan}[d+e\,x]\,(b+a\operatorname{Tan}[d+e\,x])}\Bigg)\Bigg)\Big/\,(i+\operatorname{Tan}[d+e\,x])^2\Bigg)\Bigg)\Big/$$

$$\Bigg(2\,\Bigg(\frac{b\,(-i+\operatorname{Tan}[d+e\,x])+2\,(c-i\,a\operatorname{Tan}[d+e\,x])}{\sqrt{a+i\,b-c}}-2\,i$$

$$\sqrt{c+\operatorname{Tan}[d+e\,x]\,(b+a\operatorname{Tan}[d+e\,x])}\Bigg)\Bigg)-$$

$$\Bigg(\sqrt{a+i\,b-c}\,(-i+\operatorname{Tan}[d+e\,x])\Bigg)\Bigg(\Bigg(2\,\Bigg(-\frac{2\,i\,a\operatorname{Sec}[d+e\,x]^2+b\operatorname{Sec}[d+e\,x]^2}{\sqrt{a-i\,b-c}}+$$

$$\left(i\,\left(a\operatorname{Sec}[d+e\,x]^2\operatorname{Tan}[d+e\,x]+\operatorname{Sec}[d+e\,x]^2\,(b+a\operatorname{Tan}[d+e\,x])\right)\right)\Big/$$

$$\Bigg(\sqrt{c+\operatorname{Tan}[d+e\,x]\,(b+a\operatorname{Tan}[d+e\,x])}\Bigg)\Bigg)\Bigg)\Big/\,(-i+\operatorname{Tan}[d+e\,x])-$$

$$\Bigg(2\operatorname{Sec}[d+e\,x]^2\,\Bigg(-\Bigg(\Big(b\,(i+\operatorname{Tan}[d+e\,x])+2\,(c+i\,a\operatorname{Tan}[d+e\,x])\Big)\Big/$$

$$\Bigg(\sqrt{a-i\,b-c}\Bigg)\Bigg)+2\,i\,\sqrt{c+\operatorname{Tan}[d+e\,x]\,(b+a\operatorname{Tan}[d+e\,x])}\Bigg)\Bigg)\Big/$$

$$(-i+\operatorname{Tan}[d+e\,x])^2\Bigg)\Bigg)\Big/\Bigg(2\,\Bigg(-\frac{b\,(i+\operatorname{Tan}[d+e\,x])+2\,(c+i\,a\operatorname{Tan}[d+e\,x])}{\sqrt{a-i\,b-c}}+$$

$$2\,i\,\sqrt{c+\operatorname{Tan}[d+e\,x]\,(b+a\operatorname{Tan}[d+e\,x])}\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 4: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Tan}[d+e\,x]}{\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}}\,dx$$

Optimal (type 3, 349 leaves, 10 steps):

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

Result (type 4, 64 621 leaves): Display of huge result suppressed!

Problem 5: Humongous result has more than 200000 leaves.

$$\int \frac{\mathrm{Tan}[d+e\,x]^3}{\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}}\,dx$$

Optimal (type 3, 501 leaves, 14 steps):

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

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

$$\frac{\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}\;\text{Tan}[d+e x]^2}{2ae}$$

Result (type ?, 325 525 leaves): Display of huge result suppressed!

Problem 6: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cot}[d+e x]^5\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}\,dx$$

Optimal (type 3, 976 leaves, 21 steps):

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

$$\frac{b\left(b^2-4ac\right)\text{ArcTanh}\left[\frac{b+2c\,\text{Cot}[d+ex]}{2\sqrt{c}\,\sqrt{a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2}}\right]}{16\,c^{5/2}\,e}-\frac{b\left(7b^2-12ac\right)\left(b^2-4ac\right)\text{ArcTanh}\left[\frac{b+2c\,\text{Cot}[d+ex]}{2\sqrt{c}\,\sqrt{a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2}}\right]}{256\,c^{9/2}\,e}+$$

$$\left(\sqrt{\left(a^2+b^2+c\left(c-\sqrt{a^2+b^2-2ac+c^2}\right)-a\left(2c-\sqrt{a^2+b^2-2ac+c^2}\right)\right)}\right.$$

$$\text{ArcTanh}\left[\left(b^2+(a-c)\left(a-c+\sqrt{a^2+b^2-2ac+c^2}\right)+b\sqrt{a^2+b^2-2ac+c^2}\,\text{Cot}[d+ex]\right)\Big/\right.$$

$$\left(\sqrt{2}\left(a^2+b^2-2ac+c^2\right)^{1/4}\sqrt{\left(a^2+b^2+c\left(c-\sqrt{a^2+b^2-2ac+c^2}\right)-\right.}\right.$$

$$\left.\left.\left.\left.a\left(2c-\sqrt{a^2+b^2-2ac+c^2}\right)\right)\sqrt{a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2}\right)\right]\right)\Big/$$

$$\left(\sqrt{2}\left(a^2+b^2-2ac+c^2\right)^{1/4}e\right)-\frac{\sqrt{a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2}}{e}-$$

$$\frac{b\left(b+2c\,\text{Cot}[d+ex]\right)\sqrt{a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2}}{8c^2e}+$$

$$\frac{1}{128\,c^4\,e}\,b\left(7b^2-12ac\right)\left(b+2c\,\text{Cot}[d+ex]\right)\sqrt{a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2}+$$

$$\frac{\left(a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2\right)^{3/2}}{3ce}-\frac{\text{Cot}[d+ex]^2\left(a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2\right)^{3/2}}{5ce}-$$

$$\frac{1}{240\,c^3\,e}\left(35b^2-32ac-42bc\,\text{Cot}[d+ex]\right)\left(a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2\right)^{3/2}$$

Result (type 3, 4237 leaves):

$$\frac{1}{e}\left(-\frac{-105b^4+460ab^2c-256a^2c^2+296b^2c^2-768ac^3+2944c^4}{1920\,c^4}+\frac{1}{960\,c^3}\right.$$

$$\left(-35b^3\,\text{Cos}[d+ex]+116abc\,\text{Cos}[d+ex]+104bc^2\,\text{Cos}[d+ex]\right)\text{Csc}[d+ex]+$$

$$\left.\frac{\left(7b^2-16ac+176c^2\right)\text{Csc}[d+ex]^2}{240\,c^2}-\frac{b\,\text{Cot}[d+ex]\,\text{Csc}[d+ex]^2}{40\,c}-\frac{1}{5}\,\text{Csc}[d+ex]^4\right)$$

$$\sqrt{\left(\frac{-a-c+a\,\text{Cos}[2(d+ex)]-c\,\text{Cos}[2(d+ex)]-b\,\text{Sin}[2(d+ex)]}{-1+\text{Cos}[2(d+ex)]}\right)}+$$

$$\Big(\Big(b\left(7 b^4-8 b^2 c\left(5 a+2 c\right)+16 c^2\left(3 a^2+4 a c+8 c^2\right)\right)\text{Log}[\text{Tan}[d+e x]]-$$
$$128\sqrt{a-\mathbb{i} b-c}\; c^{9/2}\,\text{Log}\Big[\Big(-2 c-2\mathbb{i} a\,\text{Tan}[d+e x]-b\left(\mathbb{i}+\text{Tan}[d+e x]\right)+$$
$$2\mathbb{i}\sqrt{a-\mathbb{i} b-c}\sqrt{c+\text{Tan}[d+e x]\left(b+a\,\text{Tan}[d+e x]\right)}\Big)\Big/\Big(128\left(a-\mathbb{i} b-c\right)^{3/2}$$
$$c^4\left(-\mathbb{i}+\text{Tan}[d+e x]\right)\Big)\Big]-b\left(7 b^4-8 b^2 c\left(5 a+2 c\right)+16 c^2\left(3 a^2+4 a c+8 c^2\right)\right)$$
$$\text{Log}\Big[2 c+b\,\text{Tan}[d+e x]+2\sqrt{c}\sqrt{c+\text{Tan}[d+e x]\left(b+a\,\text{Tan}[d+e x]\right)}\Big]+$$
$$128\sqrt{a+\mathbb{i} b-c}\; c^{9/2}\,\text{Log}\Big[\Big(2 c+b\left(-\mathbb{i}+\text{Tan}[d+e x]\right)-$$
$$2\mathbb{i}\Big(a\,\text{Tan}[d+e x]+\sqrt{a+\mathbb{i} b-c}\sqrt{c+\text{Tan}[d+e x]\left(b+a\,\text{Tan}[d+e x]\right)}\Big)\Big)\Big/$$
$$\Big(128\left(a+\mathbb{i} b-c\right)^{3/2} c^4\left(\mathbb{i}+\text{Tan}[d+e x]\right)\Big)\Big]\Big)$$

$$\Big(\Big(7 b^5\sqrt{\Big(-\frac{a}{-1+\text{Cos}[2(d+e x)]}-\frac{c}{-1+\text{Cos}[2(d+e x)]}+\frac{a\,\text{Cos}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}-}$$
$$\overline{\frac{c\,\text{Cos}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}-\frac{b\,\text{Sin}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}\Big)}\Big)\Big/$$
$$\Big(128 c^4\left(a+c-a\,\text{Cos}[2(d+e x)]+c\,\text{Cos}[2(d+e x)]+b\,\text{Sin}[2(d+e x)]\right)\Big)-$$
$$\Big(5 a b^3\sqrt{\Big(-\frac{a}{-1+\text{Cos}[2(d+e x)]}-\frac{c}{-1+\text{Cos}[2(d+e x)]}+\frac{a\,\text{Cos}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}-}$$
$$\overline{\frac{c\,\text{Cos}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}-\frac{b\,\text{Sin}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}\Big)}\Big)\Big/$$
$$\Big(16 c^3\left(a+c-a\,\text{Cos}[2(d+e x)]+c\,\text{Cos}[2(d+e x)]+b\,\text{Sin}[2(d+e x)]\right)\Big)+$$
$$\Big(3 a^2 b\sqrt{\Big(-\frac{a}{-1+\text{Cos}[2(d+e x)]}-\frac{c}{-1+\text{Cos}[2(d+e x)]}+\frac{a\,\text{Cos}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}-}$$
$$\overline{\frac{c\,\text{Cos}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}-\frac{b\,\text{Sin}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}\Big)}\Big)\Big/$$
$$\Big(8 c^2\left(a+c-a\,\text{Cos}[2(d+e x)]+c\,\text{Cos}[2(d+e x)]+b\,\text{Sin}[2(d+e x)]\right)\Big)-$$
$$\Big(b^3\sqrt{\Big(-\frac{a}{-1+\text{Cos}[2(d+e x)]}-\frac{c}{-1+\text{Cos}[2(d+e x)]}+\frac{a\,\text{Cos}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}-}$$
$$\overline{\frac{c\,\text{Cos}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}-\frac{b\,\text{Sin}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}\Big)}\Big)\Big/$$
$$\Big(8 c^2\left(a+c-a\,\text{Cos}[2(d+e x)]+c\,\text{Cos}[2(d+e x)]+b\,\text{Sin}[2(d+e x)]\right)\Big)+$$
$$\Big(a b\sqrt{\Big(-\frac{a}{-1+\text{Cos}[2(d+e x)]}-\frac{c}{-1+\text{Cos}[2(d+e x)]}+\frac{a\,\text{Cos}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}-}$$
$$\overline{\frac{c\,\text{Cos}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}-\frac{b\,\text{Sin}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}\Big)}\Big)\Big/$$
$$\Big(2 c\left(a+c-a\,\text{Cos}[2(d+e x)]+c\,\text{Cos}[2(d+e x)]+b\,\text{Sin}[2(d+e x)]\right)\Big)+$$

$$\left(b \operatorname{Cos}[2 (d+e x)] \sqrt{\left(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{c}{-1+\operatorname{Cos}[2 (d+e x)]}+\frac{a \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}\right)}\right) \Big/ \left(a+c-a \operatorname{Cos}[2 (d+e x)]+c \operatorname{Cos}[2 (d+e x)]+b \operatorname{Sin}[2 (d+e x)]\right)+$$

$$\left(a \operatorname{Sin}[2 (d+e x)] \sqrt{\left(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{c}{-1+\operatorname{Cos}[2 (d+e x)]}+\frac{a \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}\right)}\right) \Big/ \left(a+c-a \operatorname{Cos}[2 (d+e x)]+c \operatorname{Cos}[2 (d+e x)]+b \operatorname{Sin}[2 (d+e x)]\right)-$$

$$\left(c \operatorname{Sin}[2 (d+e x)] \sqrt{\left(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{c}{-1+\operatorname{Cos}[2 (d+e x)]}+\frac{a \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}\right)}\right) \Big/ \left(a+c-a \operatorname{Cos}[2 (d+e x)]+c \operatorname{Cos}[2 (d+e x)]+b \operatorname{Sin}[2 (d+e x)]\right)\Bigg)$$

$$\operatorname{Tan}[d+e x] \sqrt{a+\operatorname{Cot}[d+e x]^2 (c+b \operatorname{Tan}[d+e x])}\Bigg) \Big/ \Bigg(256$$

$$c^{9/2}$$

$$e$$

$$\sqrt{c+\operatorname{Tan}[d+e x] (b+a \operatorname{Tan}[d+e x])}$$

$$\Bigg(-\frac{1}{512 c^{9/2} (c+\operatorname{Tan}[d+e x] (b+a \operatorname{Tan}[d+e x]))^{3/2}}$$

$$\Big(b \left(7 b^4-8 b^2 c (5 a+2 c)+16 c^2 \left(3 a^2+4 a c+8 c^2\right)\right) \operatorname{Log}[\operatorname{Tan}[d+e x]]-$$

$$128 \sqrt{a-\mathrm{i} b-c}\; c^{9/2} \operatorname{Log}\Big[\Big(-2 c-2 \mathrm{i} a \operatorname{Tan}[d+e x]-b (\mathrm{i}+\operatorname{Tan}[d+e x])+$$

$$2 \mathrm{i} \sqrt{a-\mathrm{i} b-c} \sqrt{c+\operatorname{Tan}[d+e x] (b+a \operatorname{Tan}[d+e x])}\Big) \Big/ \Big(128 (a-\mathrm{i} b-c)^{3/2}$$

$$c^4 (-\mathrm{i}+\operatorname{Tan}[d+e x])\Big)\Big]-b \left(7 b^4-8 b^2 c (5 a+2 c)+16 c^2 \left(3 a^2+4 a c+8 c^2\right)\right)$$

$$\operatorname{Log}\left[2 c+b \operatorname{Tan}[d+e x]+2 \sqrt{c} \sqrt{c+\operatorname{Tan}[d+e x] (b+a \operatorname{Tan}[d+e x])}\right]+$$

$$128 \sqrt{a+\mathrm{i} b-c}\; c^{9/2} \operatorname{Log}\Big[\Big(2 c+b (-\mathrm{i}+\operatorname{Tan}[d+e x])-$$

$$2 \mathrm{i} \left(a \operatorname{Tan}[d+e x]+\sqrt{a+\mathrm{i} b-c} \sqrt{c+\operatorname{Tan}[d+e x] (b+a \operatorname{Tan}[d+e x])}\right)\Big) \Big/$$

$$\Big(128 (a+\mathrm{i} b-c)^{3/2} c^4 (\mathrm{i}+\operatorname{Tan}[d+e x])\Big)\Big]\Big) \operatorname{Tan}[d+e x]$$

$$\left(a \operatorname{Sec}[d+e x]^2 \operatorname{Tan}[d+e x]+\operatorname{Sec}[d+e x]^2 (b+a \operatorname{Tan}[d+e x])\right)$$

$$\sqrt{a+\operatorname{Cot}[d+e x]^2 (c+b \operatorname{Tan}[d+e x])}+\frac{1}{256 c^{9/2} \sqrt{c+\operatorname{Tan}[d+e x] (b+a \operatorname{Tan}[d+e x])}}$$

$$\Big(b\left(7 b^4-8 b^2 c\left(5 a+2 c\right)+16 c^2\left(3 a^2+4 a c+8 c^2\right)\right) \mathrm{Log}[\mathrm{Tan}[d+e x]]-$$
$$128 \sqrt{a-\mathrm{i}\, b-c}\; c^{9/2} \mathrm{Log}\Big[\Big(-2 c-2 \mathrm{i}\, a \mathrm{Tan}[d+e x]-b\left(\mathrm{i}+\mathrm{Tan}[d+e x]\right)+2 \mathrm{i}$$
$$\sqrt{a-\mathrm{i}\, b-c}\;\sqrt{c+\mathrm{Tan}[d+e x]\left(b+a \mathrm{Tan}[d+e x]\right)}\Big)\Big/\Big(128\left(a-\mathrm{i}\, b-c\right)^{3/2} c^4$$
$$\left(-\mathrm{i}+\mathrm{Tan}[d+e x]\right)\Big)\Big]-b\left(7 b^4-8 b^2 c\left(5 a+2 c\right)+16 c^2\left(3 a^2+4 a c+8 c^2\right)\right)$$
$$\mathrm{Log}\Big[2 c+b \mathrm{Tan}[d+e x]+2 \sqrt{c}\;\sqrt{c+\mathrm{Tan}[d+e x]\left(b+a \mathrm{Tan}[d+e x]\right)}\Big]+$$
$$128 \sqrt{a+\mathrm{i}\, b-c}\; c^{9/2} \mathrm{Log}\Big[\Big(2 c+b\left(-\mathrm{i}+\mathrm{Tan}[d+e x]\right)-2 \mathrm{i}\Big(a \mathrm{Tan}[d+e x]+$$
$$\sqrt{a+\mathrm{i}\, b-c}\;\sqrt{c+\mathrm{Tan}[d+e x]\left(b+a \mathrm{Tan}[d+e x]\right)}\Big)\Big)\Big/\Big(128\left(a+\mathrm{i}\, b-c\right)^{3/2} c^4$$
$$\left(\mathrm{i}+\mathrm{Tan}[d+e x]\right)\Big)\Big]\Big) \mathrm{Sec}[d+e x]^2 \sqrt{a+\mathrm{Cot}[d+e x]^2\left(c+b \mathrm{Tan}[d+e x]\right)}\;+$$
$$\Big(\Big(b\left(7 b^4-8 b^2 c\left(5 a+2 c\right)+16 c^2\left(3 a^2+4 a c+8 c^2\right)\right) \mathrm{Log}[\mathrm{Tan}[d+e x]]-$$
$$128 \sqrt{a-\mathrm{i}\, b-c}\; c^{9/2} \mathrm{Log}\Big[\Big(-2 c-2 \mathrm{i}\, a \mathrm{Tan}[d+e x]-b\left(\mathrm{i}+\mathrm{Tan}[d+e x]\right)+$$
$$2 \mathrm{i} \sqrt{a-\mathrm{i}\, b-c}\;\sqrt{c+\mathrm{Tan}[d+e x]\left(b+a \mathrm{Tan}[d+e x]\right)}\Big)\Big/\Big(128\left(a-\mathrm{i}\, b-c\right)^{3/2}$$
$$c^4\left(-\mathrm{i}+\mathrm{Tan}[d+e x]\right)\Big)\Big]-b\left(7 b^4-8 b^2 c\left(5 a+2 c\right)+16 c^2\left(3 a^2+4 a c+8 c^2\right)\right)$$
$$\mathrm{Log}\Big[2 c+b \mathrm{Tan}[d+e x]+2 \sqrt{c}\;\sqrt{c+\mathrm{Tan}[d+e x]\left(b+a \mathrm{Tan}[d+e x]\right)}\Big]+$$
$$128 \sqrt{a+\mathrm{i}\, b-c}\; c^{9/2} \mathrm{Log}\Big[\Big(2 c+b\left(-\mathrm{i}+\mathrm{Tan}[d+e x]\right)-$$
$$2 \mathrm{i}\Big(a \mathrm{Tan}[d+e x]+\sqrt{a+\mathrm{i}\, b-c}\;\sqrt{c+\mathrm{Tan}[d+e x]\left(b+a \mathrm{Tan}[d+e x]\right)}\Big)\Big)\Big/$$
$$\Big(128\left(a+\mathrm{i}\, b-c\right)^{3/2} c^4\left(\mathrm{i}+\mathrm{Tan}[d+e x]\right)\Big)\Big]\Big) \mathrm{Tan}[d+e x]$$
$$\left(b \mathrm{Csc}[d+e x]^2-2 \mathrm{Cot}[d+e x] \mathrm{Csc}[d+e x]^2\left(c+b \mathrm{Tan}[d+e x]\right)\right)\Big)\Big/$$
$$\Big(512 c^{9/2} \sqrt{c+\mathrm{Tan}[d+e x]\left(b+a \mathrm{Tan}[d+e x]\right)}\;\sqrt{a+\mathrm{Cot}[d+e x]^2\left(c+b \mathrm{Tan}[d+e x]\right)}\Big)+$$
$$\frac{1}{256 c^{9/2} \sqrt{c+\mathrm{Tan}[d+e x]\left(b+a \mathrm{Tan}[d+e x]\right)}}$$
$$\mathrm{Tan}[d+e x] \sqrt{a+\mathrm{Cot}[d+e x]^2\left(c+b \mathrm{Tan}[d+e x]\right)}$$
$$\Big(b\left(7 b^4-8 b^2 c\left(5 a+2 c\right)+16 c^2\left(3 a^2+4 a c+8 c^2\right)\right) \mathrm{Csc}[d+e x] \mathrm{Sec}[d+e x]-$$
$$\Big(b\left(7 b^4-8 b^2 c\left(5 a+2 c\right)+16 c^2\left(3 a^2+4 a c+8 c^2\right)\right)\Big(b \mathrm{Sec}[d+e x]^2+$$
$$\left(\sqrt{c}\;\left(a \mathrm{Sec}[d+e x]^2 \mathrm{Tan}[d+e x]+\mathrm{Sec}[d+e x]^2\left(b+a \mathrm{Tan}[d+e x]\right)\right)\right)\Big/$$
$$\left(\sqrt{c+\mathrm{Tan}[d+e x]\left(b+a \mathrm{Tan}[d+e x]\right)}\right)\Big)\Big)\Big/$$
$$\Big(2 c+b \mathrm{Tan}[d+e x]+2 \sqrt{c}\;\sqrt{c+\mathrm{Tan}[d+e x]\left(b+a \mathrm{Tan}[d+e x]\right)}\Big)-$$
$$\Big(16384\left(a-\mathrm{i}\, b-c\right)^2 c^{17/2}\left(-\mathrm{i}+\mathrm{Tan}[d+e x]\right)\Big(\Big(-2 \mathrm{i}\, a \mathrm{Sec}[d+e x]^2-$$
$$b \mathrm{Sec}[d+e x]^2+\Big(\mathrm{i} \sqrt{a-\mathrm{i}\, b-c}\;\Big(a \mathrm{Sec}[d+e x]^2 \mathrm{Tan}[d+e x]+\mathrm{Sec}[d+e x]^2$$

$$\left(b+a\,\text{Tan}[d+e\,x]\right)\Big)\Big)\Big/\left(\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}\right)\Big)\Big/$$

$$\left(128\,\left(a-\mathrm{i}\,b-c\right)^{3/2}c^4\,\left(-\mathrm{i}+\text{Tan}[d+e\,x]\right)\right)-\Big(\text{Sec}[d+e\,x]^2$$

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

$$\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}\Big)\Big)\Big/\Big(128\,\left(a-\mathrm{i}\,b-c\right)^{3/2}c^4$$

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

$$2\,\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}\Big)+\Big(16384\,\left(a+\mathrm{i}\,b-c\right)^2$$

$$c^{17/2}\,\left(\mathrm{i}+\text{Tan}[d+e\,x]\right)\,\Big(\Big(b\,\text{Sec}[d+e\,x]^2-2\,\mathrm{i}\,\Big(a\,\text{Sec}[d+e\,x]^2+\Big(\sqrt{a+\mathrm{i}\,b-c}$$

$$\left(a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\text{Sec}[d+e\,x]^2\,\left(b+a\,\text{Tan}[d+e\,x]\right)\right)\Big)\Big/$$

$$\Big(2\,\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}\Big)\Big)\Big)\Big/\Big(128\,\left(a+\mathrm{i}\,b-c\right)^{3/2}$$

$$c^4\,\left(\mathrm{i}+\text{Tan}[d+e\,x]\right)\Big)-\Big(\text{Sec}[d+e\,x]^2\,\Big(2\,c+b\,\left(-\mathrm{i}+\text{Tan}[d+e\,x]\right)-$$

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

$$\Big(128\,\left(a+\mathrm{i}\,b-c\right)^{3/2}c^4\,\left(\mathrm{i}+\text{Tan}[d+e\,x]\right)^2\Big)\Big)\Big/\Big(2\,c+b\,\left(-\mathrm{i}+\text{Tan}[d+e\,x]\right)-$$

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

Problem 7: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 747 leaves, 16 steps):

$$\left(\sqrt{\left(a^2+b^2+c\left(c+\sqrt{a^2+b^2-2ac+c^2}\right)-a\left(2c+\sqrt{a^2+b^2-2ac+c^2}\right)\right)}\right.$$
$$\text{ArcTan}\left[\left(b^2+(a-c)\left(a-c-\sqrt{a^2+b^2-2ac+c^2}\right)-b\sqrt{a^2+b^2-2ac+c^2}\,\text{Cot}[d+ex]\right)\Big/\right.$$
$$\left(\sqrt{2}\left(a^2+b^2-2ac+c^2\right)^{1/4}\sqrt{\left(a^2+b^2+c\left(c+\sqrt{a^2+b^2-2ac+c^2}\right)-\right.}\right.$$
$$\left.\left.\left.\left.a\left(2c+\sqrt{a^2+b^2-2ac+c^2}\right)\right)\sqrt{a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2}\right)\right]\right)\Big/$$
$$\left(\sqrt{2}\left(a^2+b^2-2ac+c^2\right)^{1/4}e\right)+\frac{b\,\text{ArcTanh}\left[\frac{b+2c\,\text{Cot}[d+ex]}{2\sqrt{c}\sqrt{a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2}}\right]}{2\sqrt{c}\,e}-$$
$$\frac{b\left(b^2-4ac\right)\text{ArcTanh}\left[\frac{b+2c\,\text{Cot}[d+ex]}{2\sqrt{c}\sqrt{a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2}}\right]}{16c^{5/2}e}-$$
$$\left(\sqrt{\left(a^2+b^2+c\left(c-\sqrt{a^2+b^2-2ac+c^2}\right)-a\left(2c-\sqrt{a^2+b^2-2ac+c^2}\right)\right)}\right.$$
$$\text{ArcTanh}\left[\left(b^2+(a-c)\left(a-c+\sqrt{a^2+b^2-2ac+c^2}\right)+b\sqrt{a^2+b^2-2ac+c^2}\,\text{Cot}[d+ex]\right)\Big/\right.$$
$$\left(\sqrt{2}\left(a^2+b^2-2ac+c^2\right)^{1/4}\sqrt{\left(a^2+b^2+c\left(c-\sqrt{a^2+b^2-2ac+c^2}\right)-\right.}\right.$$
$$\left.\left.\left.\left.a\left(2c-\sqrt{a^2+b^2-2ac+c^2}\right)\right)\sqrt{a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2}\right)\right]\right)\Big/$$
$$\left(\sqrt{2}\left(a^2+b^2-2ac+c^2\right)^{1/4}e\right)+\frac{\sqrt{a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2}}{e}+$$
$$\frac{b\left(b+2c\,\text{Cot}[d+ex]\right)\sqrt{a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2}}{8c^2e}-$$
$$\frac{\left(a+b\,\text{Cot}[d+ex]+c\,\text{Cot}[d+ex]^2\right)^{3/2}}{3ce}$$

Result (type 3, 3416 leaves):

$$\frac{1}{e}\left(\frac{3b^2-8ac+32c^2}{24c^2}-\frac{b\,\text{Cot}[d+ex]}{12c}-\frac{1}{3}\text{Csc}[d+ex]^2\right)$$
$$\sqrt{\left(\frac{-a-c+a\,\text{Cos}[2(d+ex)]-c\,\text{Cos}[2(d+ex)]-b\,\text{Sin}[2(d+ex)]}{-1+\text{Cos}[2(d+ex)]}\right)}+$$
$$\left(\left(b\left(b^2-4c(a+2c)\right)\text{Log}[\text{Tan}[d+ex]]-8\sqrt{a+\mathrm{i}b-c}\;c^{5/2}\,\text{Log}\left[\left(\mathrm{i}\left(b+2\mathrm{i}c+2a\,\text{Tan}[d+ex]+\right.\right.\right.\right.\right.$$
$$\left.\left.\mathrm{i}b\,\text{Tan}[d+ex]+2\sqrt{a+\mathrm{i}b-c}\sqrt{c+\text{Tan}[d+ex]\,(b+a\,\text{Tan}[d+ex])}\right)\right)\Big/$$
$$\left.\left(8(a+\mathrm{i}b-c)^{3/2}c^2\left(\mathrm{i}+\text{Tan}[d+ex]\right)\right)\right]-b\left(b^2-4c(a+2c)\right)$$
$$\text{Log}\left[2c+b\,\text{Tan}[d+ex]+2\sqrt{c}\sqrt{c+\text{Tan}[d+ex]\,(b+a\,\text{Tan}[d+ex])}\right]+$$
$$8\sqrt{a-\mathrm{i}b-c}\;c^{5/2}\,\text{Log}\left[\left(b\left(\mathrm{i}+\text{Tan}[d+ex]\right)+\right.\right.$$

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

$$\left(8\,(a-i\,b-c)^{3/2}\,c^2\,(-i+\mathrm{Tan}[d+e\,x])\right)\Big]\Big)$$

$$\Bigg(\Bigg(b^3\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{b\,\mathrm{Sin}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}\right)}\Bigg)\Big/$$

$$\left(8\,c^2\,(a+c-a\,\mathrm{Cos}[2\,(d+e\,x)]+c\,\mathrm{Cos}[2\,(d+e\,x)]+b\,\mathrm{Sin}[2\,(d+e\,x)])\right)-$$

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

$$\left(2\,c\,(a+c-a\,\mathrm{Cos}[2\,(d+e\,x)]+c\,\mathrm{Cos}[2\,(d+e\,x)]+b\,\mathrm{Sin}[2\,(d+e\,x)])\right)-$$

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

$$(a+c-a\,\mathrm{Cos}[2\,(d+e\,x)]+c\,\mathrm{Cos}[2\,(d+e\,x)]+b\,\mathrm{Sin}[2\,(d+e\,x)])-$$

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

$$(a+c-a\,\mathrm{Cos}[2\,(d+e\,x)]+c\,\mathrm{Cos}[2\,(d+e\,x)]+b\,\mathrm{Sin}[2\,(d+e\,x)])+$$

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

$$(a+c-a\,\mathrm{Cos}[2\,(d+e\,x)]+c\,\mathrm{Cos}[2\,(d+e\,x)]+b\,\mathrm{Sin}[2\,(d+e\,x)])\Bigg)$$

$$\mathrm{Tan}[d+e\,x]\sqrt{a+\mathrm{Cot}[d+e\,x]^2\,(c+b\,\mathrm{Tan}[d+e\,x])}\Bigg)\Big/\Bigg(16$$

$$c^{5/2}$$

$$e$$

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

$$\left(-\frac{1}{32\,c^{5/2}\,(c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x]))^{3/2}}\left(b\,(b^2-4\,c\,(a+2\,c))\,\mathrm{Log}[\mathrm{Tan}[d+e\,x]]-\right.\right.$$

$$8 \sqrt{a + i b - c}\; c^{5/2} \operatorname{Log}\Big[\Big(i \Big(b + 2 i c + 2 a \operatorname{Tan}[d + e x] + i b \operatorname{Tan}[d + e x] + 2 \sqrt{a + i b - c} \sqrt{c + \operatorname{Tan}[d + e x] (b + a \operatorname{Tan}[d + e x])}\Big)\Big) \Big/ \Big(8 (a + i b - c)^{3/2} c^2 (i + \operatorname{Tan}[d + e x])\Big)\Big] - b (b^2 - 4 c (a + 2 c)) \operatorname{Log}\Big[2 c + b \operatorname{Tan}[d + e x] + 2 \sqrt{c} \sqrt{c + \operatorname{Tan}[d + e x] (b + a \operatorname{Tan}[d + e x])}\Big] + 8 \sqrt{a - i b - c}\; c^{5/2} \operatorname{Log}\Big[\Big(b (i + \operatorname{Tan}[d + e x]) + 2 \Big(c + i a \operatorname{Tan}[d + e x] - i \sqrt{a - i b - c} \sqrt{c + \operatorname{Tan}[d + e x] (b + a \operatorname{Tan}[d + e x])}\Big)\Big) \Big/ \Big(8 (a - i b - c)^{3/2} c^2 (-i + \operatorname{Tan}[d + e x])\Big)\Big]\Big) \operatorname{Tan}[d + e x] \left(a \operatorname{Sec}[d + e x]^2 \operatorname{Tan}[d + e x] + \operatorname{Sec}[d + e x]^2 (b + a \operatorname{Tan}[d + e x])\right) \sqrt{a + \operatorname{Cot}[d + e x]^2 (c + b \operatorname{Tan}[d + e x])} +$$

$$\frac{1}{16 c^{5/2} \sqrt{c + \operatorname{Tan}[d + e x] (b + a \operatorname{Tan}[d + e x])}} \Big(b (b^2 - 4 c (a + 2 c)) \operatorname{Log}[\operatorname{Tan}[d + e x]] - 8 \sqrt{a + i b - c}\; c^{5/2} \operatorname{Log}\Big[\Big(i \Big(b + 2 i c + 2 a \operatorname{Tan}[d + e x] + i b \operatorname{Tan}[d + e x] + 2 \sqrt{a + i b - c} \sqrt{c + \operatorname{Tan}[d + e x] (b + a \operatorname{Tan}[d + e x])}\Big)\Big) \Big/ \Big(8 (a + i b - c)^{3/2} c^2 (i + \operatorname{Tan}[d + e x])\Big)\Big] - b (b^2 - 4 c (a + 2 c)) \operatorname{Log}\Big[2 c + b \operatorname{Tan}[d + e x] + 2 \sqrt{c} \sqrt{c + \operatorname{Tan}[d + e x] (b + a \operatorname{Tan}[d + e x])}\Big] + 8 \sqrt{a - i b - c}\; c^{5/2} \operatorname{Log}\Big[\Big(b (i + \operatorname{Tan}[d + e x]) + 2 \Big(c + i a \operatorname{Tan}[d + e x] - i \sqrt{a - i b - c} \sqrt{c + \operatorname{Tan}[d + e x] (b + a \operatorname{Tan}[d + e x])}\Big)\Big) \Big/ \Big(8 (a - i b - c)^{3/2} c^2 (-i + \operatorname{Tan}[d + e x])\Big)\Big]\Big) \operatorname{Sec}[d + e x]^2$$

$$\sqrt{a + \operatorname{Cot}[d + e x]^2 (c + b \operatorname{Tan}[d + e x])} + \Big(\Big(b (b^2 - 4 c (a + 2 c)) \operatorname{Log}[\operatorname{Tan}[d + e x]] - 8 \sqrt{a + i b - c}\; c^{5/2} \operatorname{Log}\Big[\Big(i \Big(b + 2 i c + 2 a \operatorname{Tan}[d + e x] + i b \operatorname{Tan}[d + e x] + 2 \sqrt{a + i b - c} \sqrt{c + \operatorname{Tan}[d + e x] (b + a \operatorname{Tan}[d + e x])}\Big)\Big) \Big/ \Big(8 (a + i b - c)^{3/2} c^2 (i + \operatorname{Tan}[d + e x])\Big)\Big] - b (b^2 - 4 c (a + 2 c)) \operatorname{Log}\Big[2 c + b \operatorname{Tan}[d + e x] + 2 \sqrt{c} \sqrt{c + \operatorname{Tan}[d + e x] (b + a \operatorname{Tan}[d + e x])}\Big] + 8 \sqrt{a - i b - c}\; c^{5/2} \operatorname{Log}\Big[\Big(b (i + \operatorname{Tan}[d + e x]) + 2 \Big(c + i a \operatorname{Tan}[d + e x] - i \sqrt{a - i b - c} \sqrt{c + \operatorname{Tan}[d + e x] (b + a \operatorname{Tan}[d + e x])}\Big)\Big) \Big/ \Big(8 (a - i b - c)^{3/2} c^2 (-i + \operatorname{Tan}[d + e x])\Big)\Big]\Big) \operatorname{Tan}[d + e x] \left(b \operatorname{Csc}[d + e x]^2 - 2 \operatorname{Cot}[d + e x] \operatorname{Csc}[d + e x]^2 (c + b \operatorname{Tan}[d + e x])\right)\Big) \Big/ \Big(32 c^{5/2} \sqrt{c + \operatorname{Tan}[d + e x] (b + a \operatorname{Tan}[d + e x])} \sqrt{a + \operatorname{Cot}[d + e x]^2 (c + b \operatorname{Tan}[d + e x])}\Big) +$$

$$\frac{1}{16 c^{5/2} \sqrt{c + \operatorname{Tan}[d + e x] (b + a \operatorname{Tan}[d + e x])}}$$

$$\begin{aligned}
&\text{Tan}[d+e\,x]\,\sqrt{a+\text{Cot}[d+e\,x]^2\,(c+b\,\text{Tan}[d+e\,x])}\\
&\Big(b\,(b^2-4\,c\,(a+2\,c))\,\text{Csc}[d+e\,x]\,\text{Sec}[d+e\,x]-\\
&\quad\Big(b\,(b^2-4\,c\,(a+2\,c))\,\Big(b\,\text{Sec}[d+e\,x]^2+\Big(\sqrt{c}\,\big(a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\text{Sec}[d+e\,x]^2\\
&\qquad\qquad(b+a\,\text{Tan}[d+e\,x])\big)\Big)\Big/\Big(\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big)\Big)\Big)\Big/\\
&\quad\Big(2\,c+b\,\text{Tan}[d+e\,x]+2\,\sqrt{c}\,\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big)+\Big(64\,i\,(a+i\,b-c)^2\\
&\qquad c^{9/2}\,(i+\text{Tan}[d+e\,x])\,\Big(\Big(i\,\Big(2\,a\,\text{Sec}[d+e\,x]^2+i\,b\,\text{Sec}[d+e\,x]^2+\Big(\sqrt{a+i\,b-c}\\
&\qquad\qquad\big(a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\text{Sec}[d+e\,x]^2\,(b+a\,\text{Tan}[d+e\,x])\big)\Big)\Big/\\
&\qquad\qquad\Big(\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big)\Big)\Big)\Big/\Big(8\,(a+i\,b-c)^{3/2}\\
&\qquad\quad c^2\,(i+\text{Tan}[d+e\,x])\Big)-\Big(i\,\text{Sec}[d+e\,x]^2\,\Big(b+2\,i\,c+2\,a\,\text{Tan}[d+e\,x]+\\
&\qquad\qquad i\,b\,\text{Tan}[d+e\,x]+2\,\sqrt{a+i\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big)\Big)\Big/\\
&\qquad\quad\Big(8\,(a+i\,b-c)^{3/2}\,c^2\,(i+\text{Tan}[d+e\,x])^2\Big)\Big)\Big)\Big/\Big(b+2\,i\,c+2\,a\,\text{Tan}[d+e\,x]+i\,b\,\text{Tan}[\\
&\qquad d+e\,x]+2\,\sqrt{a+i\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big)+\Big(64\,(a-i\,b-c)^2\\
&\qquad c^{9/2}\,(-i+\text{Tan}[d+e\,x])\,\Big(\Big(b\,\text{Sec}[d+e\,x]^2+2\,\Big(i\,a\,\text{Sec}[d+e\,x]^2-\Big(i\,\sqrt{a-i\,b-c}\\
&\qquad\qquad\big(a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\text{Sec}[d+e\,x]^2\,(b+a\,\text{Tan}[d+e\,x])\big)\Big)\Big/\\
&\qquad\qquad\Big(2\,\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big)\Big)\Big)\Big/\Big(8\,(a-i\,b-c)^{3/2}\,c^2\\
&\qquad\quad(-i+\text{Tan}[d+e\,x])\Big)-\Big(\text{Sec}[d+e\,x]^2\,\Big(b\,(i+\text{Tan}[d+e\,x])+2\,\Big(c+i\,a\\
&\qquad\qquad\text{Tan}[d+e\,x]-i\,\sqrt{a-i\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big)\Big)\Big)\Big/\\
&\qquad\quad\Big(8\,(a-i\,b-c)^{3/2}\,c^2\,(-i+\text{Tan}[d+e\,x])^2\Big)\Big)\Big)\Big/\Big(b\,(i+\text{Tan}[d+e\,x])+\\
&\qquad 2\,\Big(c+i\,a\,\text{Tan}[d+e\,x]-i\,\sqrt{a-i\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\Big)\Big)\Big)\Big)
\end{aligned}$$

Problem 8: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 602 leaves, 10 steps):

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

Result (type 3, 2871 leaves):

$$-\frac{\sqrt{\frac{-a-c+a\,\text{Cos}[2(d+ex)]-c\,\text{Cos}[2(d+ex)]-b\,\text{Sin}[2(d+ex)]}{-1+\text{Cos}[2(d+ex)]}}}{e}-\left(\left(\left(-\frac{b\,\text{Log}[\text{Tan}[d+ex]]}{\sqrt{c}}-\right.\right.\right.$$
$$\sqrt{a+\mathbb{i}b-c}\,\text{Log}\Big[\left(\mathbb{i}\left(b+2\mathbb{i}c+2a\,\text{Tan}[d+ex]+\mathbb{i}b\,\text{Tan}[d+ex]+2\sqrt{a+\mathbb{i}b-c}\right.\right.$$
$$\left.\left.\sqrt{c+\text{Tan}[d+ex]}\left(b+a\,\text{Tan}[d+ex]\right)\right)\right)\Big/\left(\left(a+\mathbb{i}b-c\right)^{3/2}\left(\mathbb{i}+\text{Tan}[d+ex]\right)\right)\Big]+$$
$$\frac{1}{\sqrt{c}}b\,\text{Log}\left[2c+b\,\text{Tan}[d+ex]+2\sqrt{c}\sqrt{c+\text{Tan}[d+ex]}\left(b+a\,\text{Tan}[d+ex]\right)\right]+$$
$$\sqrt{a-\mathbb{i}b-c}\,\text{Log}\Big[\left(b\left(\mathbb{i}+\text{Tan}[d+ex]\right)+2\left(c+\mathbb{i}a\,\text{Tan}[d+ex]-\mathbb{i}\sqrt{a-\mathbb{i}b-c}\right.\right.$$
$$\left.\left.\left.\sqrt{c+\text{Tan}[d+ex]}\left(b+a\,\text{Tan}[d+ex]\right)\right)\right)\Big/\left(\left(a-\mathbb{i}b-c\right)^{3/2}\left(-\mathbb{i}+\text{Tan}[d+ex]\right)\right)\Big]\right)$$
$$\left(-\left(\left(b\,\text{Cos}[2(d+ex)]\sqrt{\left(-\frac{a}{-1+\text{Cos}[2(d+ex)]}-\frac{c}{-1+\text{Cos}[2(d+ex)]}+\right.}\right.\right.\right.$$
$$\left.\left.\frac{a\,\text{Cos}[2(d+ex)]}{-1+\text{Cos}[2(d+ex)]}-\frac{c\,\text{Cos}[2(d+ex)]}{-1+\text{Cos}[2(d+ex)]}-\frac{b\,\text{Sin}[2(d+ex)]}{-1+\text{Cos}[2(d+ex)]}\right)\right)\Big/$$
$$\left.\left(-a-c+a\,\text{Cos}[2(d+ex)]-c\,\text{Cos}[2(d+ex)]-b\,\text{Sin}[2(d+ex)]\right)\right)-$$

$$\left(a\,\mathrm{Sin}[2\,(d+e\,x)]\,\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{b\,\mathrm{Sin}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}\right)}\right)\Big/$$
$$\left(-a-c+a\,\mathrm{Cos}[2\,(d+e\,x)]-c\,\mathrm{Cos}[2\,(d+e\,x)]-b\,\mathrm{Sin}[2\,(d+e\,x)]\right)+$$
$$\left(c\,\mathrm{Sin}[2\,(d+e\,x)]\,\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{b\,\mathrm{Sin}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}\right)}\right)\Big/$$
$$\left(-a-c+a\,\mathrm{Cos}[2\,(d+e\,x)]-c\,\mathrm{Cos}[2\,(d+e\,x)]-b\,\mathrm{Sin}[2\,(d+e\,x)]\right)\Bigg)$$

$$\mathrm{Tan}[d+e\,x]\,\sqrt{a+\mathrm{Cot}[d+e\,x]^2\,(c+b\,\mathrm{Tan}[d+e\,x])}\Bigg)\Big/\Bigg(2$$

$$e$$
$$\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}$$
$$\Bigg(\frac{1}{4\,(c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x]))^{3/2}}$$
$$\Bigg(-\frac{b\,\mathrm{Log}[\mathrm{Tan}[d+e\,x]]}{\sqrt{c}}-\sqrt{a+i\,b-c}\,\mathrm{Log}\Big[\Big(i\,\Big(b+2\,i\,c+2\,a\,\mathrm{Tan}[d+e\,x]+$$
$$i\,b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{a+i\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/$$
$$\Big((a+i\,b-c)^{3/2}\,(i+\mathrm{Tan}[d+e\,x])\Big)\Big]+\frac{1}{\sqrt{c}}b\,\mathrm{Log}\Big[2\,c+b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{c}$$
$$\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big]+\sqrt{a-i\,b-c}\,\mathrm{Log}\Big[\Big(b\,(i+\mathrm{Tan}[d+e\,x])+2$$
$$\Big(c+i\,a\,\mathrm{Tan}[d+e\,x]-i\,\sqrt{a-i\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/$$
$$\Big((a-i\,b-c)^{3/2}\,(-i+\mathrm{Tan}[d+e\,x])\Big)\Big]\Bigg)\,\mathrm{Tan}[d+e\,x]$$
$$\left(a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\mathrm{Sec}[d+e\,x]^2\,(b+a\,\mathrm{Tan}[d+e\,x])\right)$$
$$\sqrt{a+\mathrm{Cot}[d+e\,x]^2\,(c+b\,\mathrm{Tan}[d+e\,x])}-\frac{1}{2\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}}$$
$$\Bigg(-\frac{b\,\mathrm{Log}[\mathrm{Tan}[d+e\,x]]}{\sqrt{c}}-\sqrt{a+i\,b-c}\,\mathrm{Log}\Big[\Big(i\,\Big(b+2\,i\,c+2\,a\,\mathrm{Tan}[d+e\,x]+$$
$$i\,b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{a+i\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/$$
$$\Big((a+i\,b-c)^{3/2}\,(i+\mathrm{Tan}[d+e\,x])\Big)\Big]+\frac{1}{\sqrt{c}}$$
$$b\,\mathrm{Log}\Big[2\,c+b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big]+$$

$$\sqrt{a-\mathrm{i}\,b-c}\;\mathrm{Log}\Big[\Big(b\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])+2\,\Big(c+\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x]-$$

$$\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/\Big((a-\mathrm{i}\,b-c)^{3/2}$$

$$(-\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big)\Big]\Big)\,\mathrm{Sec}[d+e\,x]^2\,\sqrt{a+\mathrm{Cot}[d+e\,x]^2\,(c+b\,\mathrm{Tan}[d+e\,x])}\;-$$

$$\Big(\Big(-\frac{b\,\mathrm{Log}[\mathrm{Tan}[d+e\,x]]}{\sqrt{c}}-\sqrt{a+\mathrm{i}\,b-c}\;\mathrm{Log}\Big[\Big(\mathrm{i}\,\Big(b+2\,\mathrm{i}\,c+2\,a\,\mathrm{Tan}[d+e\,x]+$$

$$\mathrm{i}\,b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/$$

$$\Big((a+\mathrm{i}\,b-c)^{3/2}\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big)\Big]+\frac{1}{\sqrt{c}}b\,\mathrm{Log}\Big[2\,c+b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{c}$$

$$\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big]+\sqrt{a-\mathrm{i}\,b-c}\;\mathrm{Log}\Big[\Big(b\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])+$$

$$2\,\Big(c+\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x]-\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/$$

$$\Big((a-\mathrm{i}\,b-c)^{3/2}\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big)\Big]\Big)\,\mathrm{Tan}[d+e\,x]$$

$$\Big(b\,\mathrm{Csc}[d+e\,x]^2-2\,\mathrm{Cot}[d+e\,x]\,\mathrm{Csc}[d+e\,x]^2\,(c+b\,\mathrm{Tan}[d+e\,x])\Big)\Big)\Big/$$

$$\Big(4\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\,\sqrt{a+\mathrm{Cot}[d+e\,x]^2\,(c+b\,\mathrm{Tan}[d+e\,x])}\Big)-$$

$$\frac{1}{2\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}}$$

$$\mathrm{Tan}[d+e\,x]\,\sqrt{a+\mathrm{Cot}[d+e\,x]^2\,(c+b\,\mathrm{Tan}[d+e\,x])}\,\Big(-\frac{b\,\mathrm{Csc}[d+e\,x]\,\mathrm{Sec}[d+e\,x]}{\sqrt{c}}+$$

$$\Big(b\,\Big(b\,\mathrm{Sec}[d+e\,x]^2+\Big(\sqrt{c}\,\Big(a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\mathrm{Sec}[d+e\,x]^2$$

$$(b+a\,\mathrm{Tan}[d+e\,x])\Big)\Big)\Big/\Big(\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big)\Big/$$

$$\Big(\sqrt{c}\,\Big(2\,c+b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)+$$

$$\Big(\mathrm{i}\,(a+\mathrm{i}\,b-c)^2\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])\,\Big(\Big(\mathrm{i}\,\Big(2\,a\,\mathrm{Sec}[d+e\,x]^2+\mathrm{i}\,b\,\mathrm{Sec}[d+e\,x]^2+$$

$$\Big(\sqrt{a+\mathrm{i}\,b-c}\,\Big(a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\mathrm{Sec}[d+e\,x]^2$$

$$(b+a\,\mathrm{Tan}[d+e\,x])\Big)\Big)\Big/\Big(\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big)\Big/$$

$$\Big((a+\mathrm{i}\,b-c)^{3/2}\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big)-\Big(\mathrm{i}\,\mathrm{Sec}[d+e\,x]^2\,\Big(b+2\,\mathrm{i}\,c+2\,a\,\mathrm{Tan}[d+e\,x]+$$

$$\mathrm{i}\,b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/$$

$$\Big((a+\mathrm{i}\,b-c)^{3/2}\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])^2\Big)\Big)\Big)\Big/\Big(b+2\,\mathrm{i}\,c+2\,a\,\mathrm{Tan}[d+e\,x]+\mathrm{i}\,b$$

$$\mathrm{Tan}[d+e\,x]+2\,\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)+\Big((a-\mathrm{i}\,b-c)^2$$

$$(-\mathrm{i}+\mathrm{Tan}[d+e\,x])\,\Big(\Big(b\,\mathrm{Sec}[d+e\,x]^2+2\,\Big(\mathrm{i}\,a\,\mathrm{Sec}[d+e\,x]^2-\Big(\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}$$

$$\left(a \operatorname{Sec}[d+e x]^2 \operatorname{Tan}[d+e x]+\operatorname{Sec}[d+e x]^2 \left(b+a \operatorname{Tan}[d+e x]\right)\right)\big)\Big) \Big/$$

$$\Big(2 \sqrt{c+\operatorname{Tan}[d+e x]}\; \left(b+a \operatorname{Tan}[d+e x]\right)\Big)\Big)\Big) \Big/ \Big(\left(a-i b-c\right)^{3/2}$$

$$\left(-i+\operatorname{Tan}[d+e x]\right)\Big)-\Big(\operatorname{Sec}[d+e x]^2 \Big(b \left(i+\operatorname{Tan}[d+e x]\right)+2 \Big(c+i a$$

$$\operatorname{Tan}[d+e x]-i \sqrt{a-i b-c}\; \sqrt{c+\operatorname{Tan}[d+e x]}\; \left(b+a \operatorname{Tan}[d+e x]\right)\Big)\Big)\Big) \Big/$$

$$\Big(\left(a-i b-c\right)^{3/2} \left(-i+\operatorname{Tan}[d+e x]\right)^2\Big)\Big) \Big/ \Big(b \left(i+\operatorname{Tan}[d+e x]\right)+$$

$$2 \Big(c+i a \operatorname{Tan}[d+e x]-i \sqrt{a-i b-c}\; \sqrt{c+\operatorname{Tan}[d+e x]}\; \left(b+a \operatorname{Tan}[d+e x]\right)\Big)\Big)\Big)\Big)$$

Problem 9: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \sqrt{a+b \operatorname{Cot}[d+e x]+c \operatorname{Cot}[d+e x]^2}\; \operatorname{Tan}[d+e x]\, dx$$

Optimal (type 3, 570 leaves, 18 steps):

$$\Bigg(\sqrt{a^2+b^2+c \left(c+\sqrt{a^2+b^2-2 a c+c^2}\right)-a \left(2 c+\sqrt{a^2+b^2-2 a c+c^2}\right)}\;
\operatorname{ArcTan}\Big[\Big(b^2+(a-c) \left(a-c-\sqrt{a^2+b^2-2 a c+c^2}\right)-b \sqrt{a^2+b^2-2 a c+c^2}\; \operatorname{Cot}[d+e x]\Big) \Big/
\Big(\sqrt{2}\; \left(a^2+b^2-2 a c+c^2\right)^{1/4} \sqrt{a^2+b^2+c \left(c+\sqrt{a^2+b^2-2 a c+c^2}\right)-a \left(2 c+\sqrt{a^2+b^2-2 a c+c^2}\right)}\; \sqrt{a+b \operatorname{Cot}[d+e x]+c \operatorname{Cot}[d+e x]^2}\Big)\Big]\Bigg) \Big/
\left(\sqrt{2}\; \left(a^2+b^2-2 a c+c^2\right)^{1/4} e\right)+\frac{\sqrt{a}\; \operatorname{ArcTanh}\left[\frac{2 a+b \operatorname{Cot}[d+e x]}{2 \sqrt{a}\; \sqrt{a+b \operatorname{Cot}[d+e x]+c \operatorname{Cot}[d+e x]^2}}\right]}{e}-$$

$$\Bigg(\sqrt{a^2+b^2+c \left(c-\sqrt{a^2+b^2-2 a c+c^2}\right)-a \left(2 c-\sqrt{a^2+b^2-2 a c+c^2}\right)}\;
\operatorname{ArcTanh}\Big[\Big(b^2+(a-c) \left(a-c+\sqrt{a^2+b^2-2 a c+c^2}\right)+b \sqrt{a^2+b^2-2 a c+c^2}\; \operatorname{Cot}[d+e x]\Big) \Big/
\Big(\sqrt{2}\; \left(a^2+b^2-2 a c+c^2\right)^{1/4} \sqrt{a^2+b^2+c \left(c-\sqrt{a^2+b^2-2 a c+c^2}\right)-a \left(2 c-\sqrt{a^2+b^2-2 a c+c^2}\right)}\; \sqrt{a+b \operatorname{Cot}[d+e x]+c \operatorname{Cot}[d+e x]^2}\Big)\Big]\Bigg) \Big/ \left(\sqrt{2}\; \left(a^2+b^2-2 a c+c^2\right)^{1/4} e\right)$$

Result (type 3, 2361 leaves):

$$\Bigg(\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}$$

$$\Big(2\sqrt{a}\,\mathrm{Log}\Big[b+2\,a\,\mathrm{Tan}[d+e\,x]+2\sqrt{a}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\,\Big]-$$

$$\sqrt{a+\mathrm{i}\,b-c}\,\mathrm{Log}\Big[\Big(2\,\mathrm{i}\,\Big(b+2\,\mathrm{i}\,c+2\,a\,\mathrm{Tan}[d+e\,x]+\mathrm{i}\,b\,\mathrm{Tan}[d+e\,x]+2\sqrt{a+\mathrm{i}\,b-c}$$

$$\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/\Big(\big(a+\mathrm{i}\,b-c\big)^{3/2}\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big)\Big]+$$

$$\sqrt{a-\mathrm{i}\,b-c}\,\mathrm{Log}\Big[\Big(2\,b\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])+4\,\Big(c+\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x]-\mathrm{i}\sqrt{a-\mathrm{i}\,b-c}$$

$$\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/\Big(\big(a-\mathrm{i}\,b-c\big)^{3/2}\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big)\Big]\Big)$$

$$\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\right.}$$

$$\left.\frac{c\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{b\,\mathrm{Sin}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}\right)$$

$$\mathrm{Tan}[d+e\,x]^2\Bigg)\Bigg/\Bigg(2\,e\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}$$

$$\Bigg(-\frac{1}{4\,\big(c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])\big)^{3/2}}\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}$$

$$\Big(2\sqrt{a}\,\mathrm{Log}\Big[b+2\,a\,\mathrm{Tan}[d+e\,x]+2\sqrt{a}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\,\Big]-$$

$$\sqrt{a+\mathrm{i}\,b-c}\,\mathrm{Log}\Big[\Big(2\,\mathrm{i}\,\Big(b+2\,\mathrm{i}\,c+2\,a\,\mathrm{Tan}[d+e\,x]+\mathrm{i}\,b\,\mathrm{Tan}[d+e\,x]+$$

$$2\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/$$

$$\Big(\big(a+\mathrm{i}\,b-c\big)^{3/2}\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big)\Big]+\sqrt{a-\mathrm{i}\,b-c}\,\mathrm{Log}\Big[\Big(2\,b\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])+$$

$$4\,\Big(c+\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x]-\mathrm{i}\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/$$

$$\Big(\big(a-\mathrm{i}\,b-c\big)^{3/2}\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big)\Big]\Big)\,\mathrm{Tan}[d+e\,x]$$

$$\big(a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\mathrm{Sec}[d+e\,x]^2\,(b+a\,\mathrm{Tan}[d+e\,x])\big)+$$

$$\frac{1}{2\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}}\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}$$

$$\Big(2\sqrt{a}\,\mathrm{Log}\Big[b+2\,a\,\mathrm{Tan}[d+e\,x]+2\sqrt{a}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\,\Big]-$$

$$\sqrt{a+\mathrm{i}\,b-c}\,\mathrm{Log}\Big[\Big(2\,\mathrm{i}\,\Big(b+2\,\mathrm{i}\,c+2\,a\,\mathrm{Tan}[d+e\,x]+\mathrm{i}\,b\,\mathrm{Tan}[d+e\,x]+$$

$$2\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/$$

$$\Big(\big(a+\mathrm{i}\,b-c\big)^{3/2}\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big)\Big]+\sqrt{a-\mathrm{i}\,b-c}\,\mathrm{Log}\Big[\Big(2\,b\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])+$$

$$4\,\Big(c+\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x]-\mathrm{i}\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/$$

$$\Big(\big(a-\mathrm{i}\,b-c\big)^{3/2}\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big)\Big]\Big)\,\mathrm{Sec}[d+e\,x]^2+$$

$$\Big(\Big(-b\,\text{Csc}[d+e\,x]^2-2\,c\,\text{Cot}[d+e\,x]\,\text{Csc}[d+e\,x]^2\Big)$$

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

$$\sqrt{a+\mathrm{i}\,b-c}\,\text{Log}\Big[\Big(2\,\mathrm{i}\,\Big(b+2\,\mathrm{i}\,c+2\,a\,\text{Tan}[d+e\,x]+\mathrm{i}\,b\,\text{Tan}[d+e\,x]+$$

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

$$\Big(\left(a+\mathrm{i}\,b-c\right)^{3/2}\,\left(\mathrm{i}+\text{Tan}[d+e\,x]\right)\Big)\Big]+\sqrt{a-\mathrm{i}\,b-c}\,\text{Log}\Big[\Big(2\,b\,\left(\mathrm{i}+\text{Tan}[d+e\,x]\right)+$$

$$4\,\Big(c+\mathrm{i}\,a\,\text{Tan}[d+e\,x]-\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}\,\Big)\Big)\Big/$$

$$\Big(\left(a-\mathrm{i}\,b-c\right)^{3/2}\,\left(-\mathrm{i}+\text{Tan}[d+e\,x]\right)\Big)\Big]\Big)\,\text{Tan}[d+e\,x]\Big)\Big/$$

$$\Big(4\,\sqrt{a+b\,\text{Cot}[d+e\,x]+c\,\text{Cot}[d+e\,x]^2}\,\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}\,\Big)+$$

$$\frac{1}{2\,\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}}$$

$$\sqrt{a+b\,\text{Cot}[d+e\,x]+c\,\text{Cot}[d+e\,x]^2}\,\text{Tan}[d+e\,x]$$

$$\Big(\Big(2\,\sqrt{a}\,\Big(2\,a\,\text{Sec}[d+e\,x]^2+\Big(\sqrt{a}\,\Big(a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\text{Sec}[d+e\,x]^2$$

$$\left(b+a\,\text{Tan}[d+e\,x]\right)\Big)\Big)\Big)\Big/\Big(\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}\,\Big)\Big)\Big)\Big/$$

$$\Big(b+2\,a\,\text{Tan}[d+e\,x]+2\,\sqrt{a}\,\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}\,\Big)+$$

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

$$\Big(\sqrt{a+\mathrm{i}\,b-c}\,\Big(a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\text{Sec}[d+e\,x]^2$$

$$\left(b+a\,\text{Tan}[d+e\,x]\right)\Big)\Big)\Big/\Big(\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}\,\Big)\Big)\Big)\Big/$$

$$\Big(\left(a+\mathrm{i}\,b-c\right)^{3/2}\,\left(\mathrm{i}+\text{Tan}[d+e\,x]\right)\Big)-\Big(2\,\mathrm{i}\,\text{Sec}[d+e\,x]^2\,\Big(b+2\,\mathrm{i}\,c+2\,a\,\text{Tan}[d+e\,x]+$$

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

$$\Big(\left(a+\mathrm{i}\,b-c\right)^{3/2}\,\left(\mathrm{i}+\text{Tan}[d+e\,x]\right)^2\Big)\Big)\Big)\Big/\Big(2\,\Big(b+2\,\mathrm{i}\,c+2\,a\,\text{Tan}[d+e\,x]+\mathrm{i}\,b\,\text{Tan}[$$

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

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

$$\Big(a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\text{Sec}[d+e\,x]^2\,\left(b+a\,\text{Tan}[d+e\,x]\right)\Big)\Big)\Big/$$

$$\Big(2\,\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}\,\Big)\Big)\Big)\Big/\Big(\left(a-\mathrm{i}\,b-c\right)^{3/2}$$

$$\left(-\mathrm{i}+\text{Tan}[d+e\,x]\right)\Big)-\Big(\text{Sec}[d+e\,x]^2\,\Big(2\,b\,\left(\mathrm{i}+\text{Tan}[d+e\,x]\right)+4\,\Big(c+\mathrm{i}\,a$$

$$\text{Tan}[d+e\,x]-\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}\,\Big)\Big)\Big)\Big/$$

$$\Big(\left(a-\mathrm{i}\,b-c\right)^{3/2}\,\left(-\mathrm{i}+\text{Tan}[d+e\,x]\right)^2\Big)\Big)\Big)\Big/\Big(2\,b\,\left(\mathrm{i}+\text{Tan}[d+e\,x]\right)+$$

$$4\left(c+\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x]-\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\right)\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 10: Humongous result has more than 200000 leaves.

$$\int\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}\;\mathrm{Tan}[d+e\,x]^3\,dx$$

Optimal (type 3, 691 leaves, 21 steps):

$$-\left(\left(\sqrt{a^2+b^2+c\left(c+\sqrt{a^2+b^2-2\,a\,c+c^2}\right)-a\left(2\,c+\sqrt{a^2+b^2-2\,a\,c+c^2}\right)}\;\mathrm{ArcTan}\Big[\left(b^2+(a-c)\left(a-c-\sqrt{a^2+b^2-2\,a\,c+c^2}\right)-b\,\sqrt{a^2+b^2-2\,a\,c+c^2}\;\mathrm{Cot}[d+e\,x]\right)\Big/\left(\sqrt{2}\,\left(a^2+b^2-2\,a\,c+c^2\right)^{1/4}\sqrt{a^2+b^2+c\left(c+\sqrt{a^2+b^2-2\,a\,c+c^2}\right)-a\left(2\,c+\sqrt{a^2+b^2-2\,a\,c+c^2}\right)}\;\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}\right)\Big]\right)\Big/\left(\sqrt{2}\,\left(a^2+b^2-2\,a\,c+c^2\right)^{1/4}e\right)\right)-\frac{\sqrt{a}\;\mathrm{ArcTanh}\Big[\frac{2\,a+b\,\mathrm{Cot}[d+e\,x]}{2\,\sqrt{a}\,\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}}\Big]}{e}-\frac{\left(b^2-4\,a\,c\right)\mathrm{ArcTanh}\Big[\frac{2\,a+b\,\mathrm{Cot}[d+e\,x]}{2\,\sqrt{a}\,\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}}\Big]}{8\,a^{3/2}\,e}+\left(\sqrt{a^2+b^2+c\left(c-\sqrt{a^2+b^2-2\,a\,c+c^2}\right)-a\left(2\,c-\sqrt{a^2+b^2-2\,a\,c+c^2}\right)}\;\mathrm{ArcTanh}\Big[\left(b^2+(a-c)\left(a-c+\sqrt{a^2+b^2-2\,a\,c+c^2}\right)+b\,\sqrt{a^2+b^2-2\,a\,c+c^2}\;\mathrm{Cot}[d+e\,x]\right)\Big/\left(\sqrt{2}\,\left(a^2+b^2-2\,a\,c+c^2\right)^{1/4}\sqrt{a^2+b^2+c\left(c-\sqrt{a^2+b^2-2\,a\,c+c^2}\right)-a\left(2\,c-\sqrt{a^2+b^2-2\,a\,c+c^2}\right)}\;\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}\right)\Big]\right)\Big/\left(\sqrt{2}\,\left(a^2+b^2-2\,a\,c+c^2\right)^{1/4}e\right)+\frac{1}{4\,a\,e}\left(2\,a+b\,\mathrm{Cot}[d+e\,x]\right)\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}\;\mathrm{Tan}[d+e\,x]^2$$

Result (type ?, 465721 leaves): Display of huge result suppressed!

Problem 11: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Cot}[d+e\,x]^7}{\left(a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2\right)^{3/2}}\,dx$$

Optimal (type 3, 1189 leaves, 20 steps):

$$-\frac{3\,b\,\text{ArcTanh}\left[\frac{b+2\,c\,\text{Cot}[d+e\,x]}{2\,\sqrt{c}\,\sqrt{a+b\,\text{Cot}[d+e\,x]+c\,\text{Cot}[d+e\,x]^2}}\right]}{2\,c^{5/2}\,e}+\frac{5\,b\,\left(7\,b^2-12\,a\,c\right)\,\text{ArcTanh}\left[\frac{b+2\,c\,\text{Cot}[d+e\,x]}{2\,\sqrt{c}\,\sqrt{a+b\,\text{Cot}[d+e\,x]+c\,\text{Cot}[d+e\,x]^2}}\right]}{16\,c^{9/2}\,e}+$$

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

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

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

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

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

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

$$\frac{\left(7\,b^2-16\,a\,c\right)\,\text{Cot}[d+e\,x]^2\,\sqrt{a+b\,\text{Cot}[d+e\,x]+c\,\text{Cot}[d+e\,x]^2}}{3\,c^2\,\left(b^2-4\,a\,c\right)\,e}+$$

$$\frac{2\,b\,\mathrm{Cot}[d+e\,x]^3\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}}{c\,\left(b^2-4\,a\,c\right)\,e}+$$
$$\frac{\left(3\,b^2-8\,a\,c-2\,b\,c\,\mathrm{Cot}[d+e\,x]\right)\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}}{c^2\,\left(b^2-4\,a\,c\right)\,e}-$$
$$\left(\left(105\,b^4-460\,a\,b^2\,c+256\,a^2\,c^2-2\,b\,c\,\left(35\,b^2-116\,a\,c\right)\,\mathrm{Cot}[d+e\,x]\right)\right.$$
$$\left.\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}\right)\Big/\left(24\,c^4\,\left(b^2-4\,a\,c\right)\,e\right)$$

Result (type 3, 5618 leaves):

$$\frac{1}{e}\sqrt{\left(\left(-a-c+a\,\mathrm{Cos}[2\,(d+e\,x)]-c\,\mathrm{Cos}[2\,(d+e\,x)]-b\,\mathrm{Sin}[2\,(d+e\,x)]\right)\Big/\left(-1+\mathrm{Cos}[2\,(d+e\,x)]\right)\right)}$$
$$\left(\left(105\,a^3\,b^4+105\,a\,b^6-460\,a^4\,b^2\,c-727\,a^2\,b^4\,c-57\,b^6\,c+256\,a^5\,c^2+1364\,a^3\,b^2\,c^2+407\,a\,b^4\,c^2-\right.\right.$$
$$\left.448\,a^4\,c^3-740\,a^2\,b^2\,c^3-25\,b^4\,c^3+96\,a^3\,c^4+44\,a\,b^2\,c^4+224\,a^2\,c^5+32\,b^2\,c^5-128\,a\,c^6\right)\Big/$$
$$\left(24\,(a-c)\,\left(a-i\,b-c\right)\,\left(a+i\,b-c\right)\,c^4\,\left(-b^2+4\,a\,c\right)\right)+\frac{11\,b\,\mathrm{Cot}[d+e\,x]}{12\,c^3}-$$
$$\frac{\mathrm{Csc}[d+e\,x]^2}{3\,c^2}+\left(2\,\left(2\,a^3\,b^4+2\,a\,b^6-8\,a^4\,b^2\,c-12\,a^2\,b^4\,c+4\,a^5\,c^2+18\,a^3\,b^2\,c^2-\right.\right.$$
$$4\,a^4\,c^3+a^4\,b^3\,\mathrm{Sin}[2\,(d+e\,x)]+2\,a^2\,b^5\,\mathrm{Sin}[2\,(d+e\,x)]+b^7\,\mathrm{Sin}[2\,(d+e\,x)]-$$
$$3\,a^5\,b\,c\,\mathrm{Sin}[2\,(d+e\,x)]-10\,a^3\,b^3\,c\,\mathrm{Sin}[2\,(d+e\,x)]-7\,a\,b^5\,c\,\mathrm{Sin}[2\,(d+e\,x)]+$$
$$\left.\left.10\,a^4\,b\,c^2\,\mathrm{Sin}[2\,(d+e\,x)]+14\,a^2\,b^3\,c^2\,\mathrm{Sin}[2\,(d+e\,x)]-7\,a^3\,b\,c^3\,\mathrm{Sin}[2\,(d+e\,x)]\right)\right)\Big/$$
$$\left((a-c)\,\left(a-i\,b-c\right)\,\left(a+i\,b-c\right)\,c^3\,\left(-b^2+4\,a\,c\right)\right.$$
$$\left.\left.\left(-a-c+a\,\mathrm{Cos}[2\,(d+e\,x)]-c\,\mathrm{Cos}[2\,(d+e\,x)]-b\,\mathrm{Sin}[2\,(d+e\,x)]\right)\right)\right)+$$
$$\left(\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}\,\left(-b\,\left(i\,a+b-i\,c\right)\,\left(-i\,a+b+i\,c\right)\right.\right.$$
$$\left(35\,b^2-12\,c\,\left(5\,a+2\,c\right)\right)\,\mathrm{Log}[\mathrm{Tan}[d+e\,x]]+\frac{1}{\sqrt{a-i\,b-c}}8\,\left(a+i\,b-c\right)\,c^{9/2}\,\mathrm{Log}\Big[$$
$$\left(i\,b+2\,c+\left(2\,i\,a+b\right)\,\mathrm{Tan}[d+e\,x]-2\,i\,\sqrt{a-i\,b-c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]+a\,\mathrm{Tan}[d+e\,x]^2}\right)\Big/$$
$$\left(8\,\sqrt{a-i\,b-c}\,\left(a+i\,b-c\right)\,c^4\,\left(-i+\mathrm{Tan}[d+e\,x]\right)\right)\Big]+\frac{1}{\sqrt{a+i\,b-c}}$$
$$8\,c^{9/2}\,\left(-a+i\,b+c\right)\,\mathrm{Log}\Big[\left(i\,\left(b+2\,i\,c+2\,a\,\mathrm{Tan}[d+e\,x]+i\,b\,\mathrm{Tan}[d+e\,x]+\right.\right.$$
$$\left.\left.2\,\sqrt{a+i\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\right)\right)\Big/$$
$$\left(8\,\left(a-i\,b-c\right)\,\sqrt{a+i\,b-c}\,c^4\,\left(i+\mathrm{Tan}[d+e\,x]\right)\right)\Big]+$$
$$b\,\left(i\,a+b-i\,c\right)\,\left(-i\,a+b+i\,c\right)\,\left(35\,b^2-12\,c\,\left(5\,a+2\,c\right)\right)$$
$$\left.\mathrm{Log}\left[2\,c+b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\right]\right)$$
$$\left(-\left(\left(2\,b\,\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\right.}\right.\right.\right.$$

$$\left.\left.\frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}\right)\right) \Big/ \left((a-\mathrm{i} b-c)(a+\mathrm{i} b-c)\right.$$

$$\left.\left.(-a-c+a \operatorname{Cos}[2 (d+e x)]-c \operatorname{Cos}[2 (d+e x)]-b \operatorname{Sin}[2 (d+e x)])\right)\right)+$$

$$\left(35 a^2 b^3 \sqrt{\left(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{c}{-1+\operatorname{Cos}[2 (d+e x)]}+\frac{a \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\right.}\right.$$

$$\left.\left.\frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}\right)\right) \Big/ \left(8 (a-\mathrm{i} b-c)(a+\mathrm{i} b-c)\right.$$

$$\left.c^4 (-a-c+a \operatorname{Cos}[2 (d+e x)]-c \operatorname{Cos}[2 (d+e x)]-b \operatorname{Sin}[2 (d+e x)])\right)+$$

$$\left(35 b^5 \sqrt{\left(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{c}{-1+\operatorname{Cos}[2 (d+e x)]}+\frac{a \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\right.}\right.$$

$$\left.\left.\frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}\right)\right) \Big/ \left(8 (a-\mathrm{i} b-c)(a+\mathrm{i} b-c)\right.$$

$$\left.c^4 (-a-c+a \operatorname{Cos}[2 (d+e x)]-c \operatorname{Cos}[2 (d+e x)]-b \operatorname{Sin}[2 (d+e x)])\right)-$$

$$\left(15 a^3 b \sqrt{\left(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{c}{-1+\operatorname{Cos}[2 (d+e x)]}+\frac{a \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\right.}\right.$$

$$\left.\left.\frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}\right)\right) \Big/ \left(2 (a-\mathrm{i} b-c)(a+\mathrm{i} b-c)\right.$$

$$\left.c^3 (-a-c+a \operatorname{Cos}[2 (d+e x)]-c \operatorname{Cos}[2 (d+e x)]-b \operatorname{Sin}[2 (d+e x)])\right)-$$

$$\left(65 a b^3 \sqrt{\left(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{c}{-1+\operatorname{Cos}[2 (d+e x)]}+\frac{a \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\right.}\right.$$

$$\left.\left.\frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}\right)\right) \Big/ \left(4 (a-\mathrm{i} b-c)(a+\mathrm{i} b-c)\right.$$

$$\left.c^3 (-a-c+a \operatorname{Cos}[2 (d+e x)]-c \operatorname{Cos}[2 (d+e x)]-b \operatorname{Sin}[2 (d+e x)])\right)+$$

$$\left(12 a^2 b \sqrt{\left(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{c}{-1+\operatorname{Cos}[2 (d+e x)]}+\frac{a \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\right.}\right.$$

$$\left.\left.\frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}\right)\right) \Big/ \left((a-\mathrm{i} b-c)(a+\mathrm{i} b-c)\right.$$

$$\left.c^2 (-a-c+a \operatorname{Cos}[2 (d+e x)]-c \operatorname{Cos}[2 (d+e x)]-b \operatorname{Sin}[2 (d+e x)])\right)+$$

$$\left(11 b^3 \sqrt{\left(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{c}{-1+\operatorname{Cos}[2 (d+e x)]}+\frac{a \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\right.}\right.$$

$$\left.\left.\frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}-\frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]}\right)\right) \Big/ \left(8 (a-\mathrm{i} b-c)(a+\mathrm{i} b-c)\right.$$

$$\left.c^2 (-a-c+a \operatorname{Cos}[2 (d+e x)]-c \operatorname{Cos}[2 (d+e x)]-b \operatorname{Sin}[2 (d+e x)])\right)-$$

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

$$\left.\left.\left.\frac{c\,\text{Cos}[2\,(d+e\,x)]}{-1+\text{Cos}[2\,(d+e\,x)]}-\frac{b\,\text{Sin}[2\,(d+e\,x)]}{-1+\text{Cos}[2\,(d+e\,x)]}\right)\right)\right/\left(2\,(a-\mathrm{i}\,b-c)\,(a+\mathrm{i}\,b-c)\right.$$

$$\left.c\,\left(-a-c+a\,\text{Cos}[2\,(d+e\,x)]-c\,\text{Cos}[2\,(d+e\,x)]-b\,\text{Sin}[2\,(d+e\,x)]\right)\right)-$$

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

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

$$\left.c)\,(a+\mathrm{i}\,b-c)\,\left(-a-c+a\,\text{Cos}[2\,(d+e\,x)]-c\,\text{Cos}[2\,(d+e\,x)]-b\,\text{Sin}[2\,(d+e\,x)]\right)\right)+$$

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

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

$$\left.c)\,(a+\mathrm{i}\,b-c)\,\left(-a-c+a\,\text{Cos}[2\,(d+e\,x)]-c\,\text{Cos}[2\,(d+e\,x)]-b\,\text{Sin}[2\,(d+e\,x)]\right)\right)-$$

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

$$\left.\left.\frac{a\,\text{Cos}[2\,(d+e\,x)]}{-1+\text{Cos}[2\,(d+e\,x)]}-\frac{c\,\text{Cos}[2\,(d+e\,x)]}{-1+\text{Cos}[2\,(d+e\,x)]}-\frac{b\,\text{Sin}[2\,(d+e\,x)]}{-1+\text{Cos}[2\,(d+e\,x)]}\right)\right)\Big/$$

$$\left((a-\mathrm{i}\,b-c)\,(a+\mathrm{i}\,b-c)\,\left(-a-c+a\,\text{Cos}[2\,(d+e\,x)]-c\,\text{Cos}[2\,(d+e\,x)]-\right.\right.$$

$$\left.\left.\left.\left.b\,\text{Sin}[2\,(d+e\,x)]\right)\right)\right)\,\text{Tan}[d+e\,x]\right)\Big/$$

$$\left(16\,c^{9/2}\,(a^2+b^2-2\,a\,c+c^2)\,e\,\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\right)$$

$$\left(-\left(1\Big/\left(32\,c^{9/2}\,(a^2+b^2-2\,a\,c+c^2)\,(c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x]))^{3/2}\right)\right)\right)$$

$$\sqrt{a+b\,\text{Cot}[d+e\,x]+c\,\text{Cot}[d+e\,x]^2}$$

$$\left(-b\,(\mathrm{i}\,a+b-\mathrm{i}\,c)\,(-\mathrm{i}\,a+b+\mathrm{i}\,c)\,(35\,b^2-12\,c\,(5\,a+2\,c))\,\text{Log}[\text{Tan}[d+e\,x]]+\right.$$

$$\frac{1}{\sqrt{a-\mathrm{i}\,b-c}}8\,(a+\mathrm{i}\,b-c)\,c^{9/2}\,\text{Log}\Big[\Big(\mathrm{i}\,b+2\,c+(2\,\mathrm{i}\,a+b)\,\text{Tan}[d+e\,x]-$$

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

$$\left(8\,\sqrt{a-\mathrm{i}\,b-c}\,(a+\mathrm{i}\,b-c)\,c^4\,(-\mathrm{i}+\text{Tan}[d+e\,x])\right)\Big]+\frac{1}{\sqrt{a+\mathrm{i}\,b-c}}$$

$$8\,c^{9/2}\,(-a+\mathrm{i}\,b+c)\,\text{Log}\Big[\Big(\mathrm{i}\,\Big(b+2\,\mathrm{i}\,c+2\,a\,\text{Tan}[d+e\,x]+\mathrm{i}\,b\,\text{Tan}[d+e\,x]+2\,\sqrt{a+\mathrm{i}\,b-c}$$

$$\left.\left.\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\right)\right)\Big/\left(8\,(a-\mathrm{i}\,b-c)\,\sqrt{a+\mathrm{i}\,b-c}\,c^4\right.$$

$$\left.(\mathrm{i}+\text{Tan}[d+e\,x])\right)\Big]+b\,(\mathrm{i}\,a+b-\mathrm{i}\,c)\,(-\mathrm{i}\,a+b+\mathrm{i}\,c)\,(35\,b^2-12\,c\,(5\,a+2\,c))$$

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

$$\text{Tan}[d+e x]\ \left(a\,\text{Sec}[d+e x]^2\,\text{Tan}[d+e x]+\text{Sec}[d+e x]^2\,\left(b+a\,\text{Tan}[d+e x]\right)\right)+$$

$$\left(1\Big/\left(16\,c^{9/2}\,\left(a^2+b^2-2\,a\,c+c^2\right)\,\sqrt{c+\text{Tan}[d+e x]\,\left(b+a\,\text{Tan}[d+e x]\right)}\right)\right)$$

$$\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}$$

$$\left(-b\,\left(\mathbb{i}\,a+b-\mathbb{i}\,c\right)\,\left(-\mathbb{i}\,a+b+\mathbb{i}\,c\right)\,\left(35\,b^2-12\,c\,\left(5\,a+2\,c\right)\right)\,\text{Log}[\text{Tan}[d+e x]]+\right.$$

$$\frac{1}{\sqrt{a-\mathbb{i}\,b-c}}8\,\left(a+\mathbb{i}\,b-c\right)\,c^{9/2}\,\text{Log}\Big[\Big(\mathbb{i}\,b+2\,c+\left(2\,\mathbb{i}\,a+b\right)\,\text{Tan}[d+e x]-2$$

$$\mathbb{i}\,\sqrt{a-\mathbb{i}\,b-c}\,\sqrt{c+b\,\text{Tan}[d+e x]+a\,\text{Tan}[d+e x]^2}\Big)\Big/$$

$$\left(8\,\sqrt{a-\mathbb{i}\,b-c}\,\left(a+\mathbb{i}\,b-c\right)\,c^4\,\left(-\mathbb{i}+\text{Tan}[d+e x]\right)\right)\Big]+\frac{1}{\sqrt{a+\mathbb{i}\,b-c}}$$

$$8\,c^{9/2}\,\left(-a+\mathbb{i}\,b+c\right)\,\text{Log}\Big[\Big(\mathbb{i}\,\Big(b+2\,\mathbb{i}\,c+2\,a\,\text{Tan}[d+e x]+\mathbb{i}\,b\,\text{Tan}[d+e x]+2\,\sqrt{a+\mathbb{i}\,b-c}$$

$$\sqrt{c+\text{Tan}[d+e x]\,\left(b+a\,\text{Tan}[d+e x]\right)}\Big)\Big)\Big/\Big(8\,\left(a-\mathbb{i}\,b-c\right)\,\sqrt{a+\mathbb{i}\,b-c}\,c^4$$

$$\left(\mathbb{i}+\text{Tan}[d+e x]\right)\Big)\Big]+b\,\left(\mathbb{i}\,a+b-\mathbb{i}\,c\right)\,\left(-\mathbb{i}\,a+b+\mathbb{i}\,c\right)\,\left(35\,b^2-12\,c\,\left(5\,a+2\,c\right)\right)$$

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

$$\text{Sec}[d+e x]^2+\Big(\left(-b\,\text{Csc}[d+e x]^2-2\,c\,\text{Cot}[d+e x]\,\text{Csc}[d+e x]^2\right)$$

$$\left(-b\,\left(\mathbb{i}\,a+b-\mathbb{i}\,c\right)\,\left(-\mathbb{i}\,a+b+\mathbb{i}\,c\right)\,\left(35\,b^2-12\,c\,\left(5\,a+2\,c\right)\right)\,\text{Log}[\text{Tan}[d+e x]]+\right.$$

$$\frac{1}{\sqrt{a-\mathbb{i}\,b-c}}8\,\left(a+\mathbb{i}\,b-c\right)\,c^{9/2}\,\text{Log}\Big[\Big(\mathbb{i}\,b+2\,c+\left(2\,\mathbb{i}\,a+b\right)\,\text{Tan}[d+e x]-$$

$$2\,\mathbb{i}\,\sqrt{a-\mathbb{i}\,b-c}\,\sqrt{c+b\,\text{Tan}[d+e x]+a\,\text{Tan}[d+e x]^2}\Big)\Big/$$

$$\left(8\,\sqrt{a-\mathbb{i}\,b-c}\,\left(a+\mathbb{i}\,b-c\right)\,c^4\,\left(-\mathbb{i}+\text{Tan}[d+e x]\right)\right)\Big]+\frac{1}{\sqrt{a+\mathbb{i}\,b-c}}$$

$$8\,c^{9/2}\,\left(-a+\mathbb{i}\,b+c\right)\,\text{Log}\Big[\Big(\mathbb{i}\,\Big(b+2\,\mathbb{i}\,c+2\,a\,\text{Tan}[d+e x]+\mathbb{i}\,b\,\text{Tan}[d+e x]+2\,\sqrt{a+\mathbb{i}\,b-c}$$

$$\sqrt{c+\text{Tan}[d+e x]\,\left(b+a\,\text{Tan}[d+e x]\right)}\Big)\Big)\Big/\Big(8\,\left(a-\mathbb{i}\,b-c\right)\,\sqrt{a+\mathbb{i}\,b-c}\,c^4$$

$$\left(\mathbb{i}+\text{Tan}[d+e x]\right)\Big)\Big]+b\,\left(\mathbb{i}\,a+b-\mathbb{i}\,c\right)\,\left(-\mathbb{i}\,a+b+\mathbb{i}\,c\right)\,\left(35\,b^2-12\,c\,\left(5\,a+2\,c\right)\right)$$

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

$$\text{Tan}[d+e x]\Big)\Big/\Big(32\,c^{9/2}\,\left(a^2+b^2-2\,a\,c+c^2\right)\,\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}$$

$$\sqrt{c+\text{Tan}[d+e x]\,\left(b+a\,\text{Tan}[d+e x]\right)}\Big)+$$

$$\left(1\Big/\left(16\,c^{9/2}\,\left(a^2+b^2-2\,a\,c+c^2\right)\,\sqrt{c+\text{Tan}[d+e x]\,\left(b+a\,\text{Tan}[d+e x]\right)}\right)\right)$$

$$\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}\,\text{Tan}[d+e x]$$

$$\left(-b\,\left(\mathbb{i}\,a+b-\mathbb{i}\,c\right)\,\left(-\mathbb{i}\,a+b+\mathbb{i}\,c\right)\,\left(35\,b^2-12\,c\,\left(5\,a+2\,c\right)\right)\,\text{Csc}[d+e x]\,\text{Sec}[d+e x]+\right.$$

$$
\begin{aligned}
&\Big(b\,(\mathrm{i}\,a+b-\mathrm{i}\,c)\,(-\mathrm{i}\,a+b+\mathrm{i}\,c)\,\big(35\,b^2-12\,c\,(5\,a+2\,c)\big)\,\Big(b\,\mathrm{Sec}[d+e\,x]^2+\\
&\quad\Big(\sqrt{c}\,\big(a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\mathrm{Sec}[d+e\,x]^2\,(b+a\,\mathrm{Tan}[d+e\,x])\big)\Big)\Big/\\
&\quad\Big(\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big)\Big/\\
&\Big(2\,c+b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)+\\
&\Big(64\,(a+\mathrm{i}\,b-c)^2\,c^{17/2}\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])\,\Big(\Big(\Big((2\,\mathrm{i}\,a+b)\,\mathrm{Sec}[d+e\,x]^2-\\
&\quad\Big(\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\big(b\,\mathrm{Sec}[d+e\,x]^2+2\,a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]\big)\Big)\Big/\\
&\quad\Big(\sqrt{c+b\,\mathrm{Tan}[d+e\,x]+a\,\mathrm{Tan}[d+e\,x]^2}\Big)\Big)\Big/\Big(8\,\sqrt{a-\mathrm{i}\,b-c}\,(a+\mathrm{i}\,b-c)\,c^4\\
&\quad(-\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big)-\Big(\mathrm{Sec}[d+e\,x]^2\,\Big(\mathrm{i}\,b+2\,c+(2\,\mathrm{i}\,a+b)\,\mathrm{Tan}[d+e\,x]-\\
&\quad 2\,\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]+a\,\mathrm{Tan}[d+e\,x]^2}\Big)\Big)\Big/\\
&\quad\Big(8\,\sqrt{a-\mathrm{i}\,b-c}\,(a+\mathrm{i}\,b-c)\,c^4\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])^2\Big)\Big)\Big)\Big/\Big(\mathrm{i}\,b+2\,c+\\
&\quad(2\,\mathrm{i}\,a+b)\,\mathrm{Tan}[d+e\,x]-2\,\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]+a\,\mathrm{Tan}[d+e\,x]^2}\Big)-\\
&\Big(64\,\mathrm{i}\,(a-\mathrm{i}\,b-c)\,c^{17/2}\,(-a+\mathrm{i}\,b+c)\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])\,\Big(\Big(\mathrm{i}\,\Big(2\,a\,\mathrm{Sec}[d+e\,x]^2+\\
&\quad\mathrm{i}\,b\,\mathrm{Sec}[d+e\,x]^2+\Big(\sqrt{a+\mathrm{i}\,b-c}\,\big(a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\mathrm{Sec}[d+e\,x]^2\\
&\quad(b+a\,\mathrm{Tan}[d+e\,x])\big)\Big)\Big/\Big(\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big)\Big/\\
&\quad\Big(8\,(a-\mathrm{i}\,b-c)\,\sqrt{a+\mathrm{i}\,b-c}\,c^4\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])\Big)-\Big(\mathrm{i}\,\mathrm{Sec}[d+e\,x]^2\\
&\quad\Big(b+2\,\mathrm{i}\,c+2\,a\,\mathrm{Tan}[d+e\,x]+\mathrm{i}\,b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{a+\mathrm{i}\,b-c}\\
&\quad\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/\Big(8\,(a-\mathrm{i}\,b-c)\\
&\quad\sqrt{a+\mathrm{i}\,b-c}\,c^4\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])^2\Big)\Big)\Big)\Big/\Big(b+2\,\mathrm{i}\,c+2\,a\,\mathrm{Tan}[d+e\,x]+\\
&\quad\mathrm{i}\,b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big)\Big)
\end{aligned}
$$

Problem 12: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 865 leaves, 14 steps):

$$\frac{3\,b\,\text{ArcTanh}\left[\frac{b+2\,c\,\text{Cot}[d+e\,x]}{2\,\sqrt{c}\,\sqrt{a+b\,\text{Cot}[d+e\,x]+c\,\text{Cot}[d+e\,x]^2}}\right]}{2\,c^{5/2}\,e}-$$

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

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

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

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

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

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

Result (type 3, 4537 leaves) :

$$\frac{1}{e}\sqrt{\frac{-a-c+a\,\text{Cos}[2\,(d+e\,x)]-c\,\text{Cos}[2\,(d+e\,x)]-b\,\text{Sin}[2\,(d+e\,x)]}{-1+\text{Cos}[2\,(d+e\,x)]}}$$

$$\Big(-\Big(\left(-3\,a^3\,b^2-3\,a\,b^4+8\,a^4\,c+15\,a^2\,b^2\,c+b^4\,c-16\,a^3\,c^2-7\,a\,b^2\,c^2+12\,a^2\,c^3+b^2\,c^3-4\,a\,c^4\right)\Big/$$
$$\left((a-c)\,(a-\mathbb{i}\,b-c)\,(a+\mathbb{i}\,b-c)\,c^2\,\left(-b^2+4\,a\,c\right)\right)\Big)-$$
$$\Big(2\,\Big(-2\,a^3\,b^2-2\,a\,b^4+4\,a^4\,c+8\,a^2\,b^2\,c-4\,a^3\,c^2-a^4\,b\,\text{Sin}[2\,(d+e\,x)]-2\,a^2\,b^3\,\text{Sin}[2\,(d+e\,x)]-$$
$$b^5\,\text{Sin}[2\,(d+e\,x)]+6\,a^3\,b\,c\,\text{Sin}[2\,(d+e\,x)]+5\,a\,b^3\,c\,\text{Sin}[2\,(d+e\,x)]-$$

$$5 a^2 b c^2 \operatorname{Sin}[2 (d+e x)]))) \Big/ \Big((a-c) (a-\mathrm{i} b-c) (a+\mathrm{i} b-c) c (-b^2+4 a c) (-a-c+a \operatorname{Cos}[2 (d+e x)]-c \operatorname{Cos}[2 (d+e x)]-b \operatorname{Sin}[2 (d+e x)]) \Big) \Big) -$$

$$\Bigg(\sqrt{a+b \operatorname{Cot}[d+e x]+c \operatorname{Cot}[d+e x]^2} \Bigg(3 b (\mathrm{i} a+b-\mathrm{i} c) (-\mathrm{i} a+b+\mathrm{i} c) \operatorname{Log}[\operatorname{Tan}[d+e x]] +$$

$$\frac{1}{\sqrt{a-\mathrm{i} b-c}} (a+\mathrm{i} b-c) c^{5/2} \operatorname{Log}\Big[\Big(\mathrm{i} b+2 c+(2 \mathrm{i} a+b) \operatorname{Tan}[d+e x]-2 \mathrm{i} \sqrt{a-\mathrm{i} b-c} \sqrt{c+b \operatorname{Tan}[d+e x]+a \operatorname{Tan}[d+e x]^2} \Big) \Big/$$

$$\Big(\sqrt{a-\mathrm{i} b-c} (a+\mathrm{i} b-c) c^2 (-\mathrm{i}+\operatorname{Tan}[d+e x]) \Big) \Big] + \frac{1}{\sqrt{a+\mathrm{i} b-c}}$$

$$c^{5/2} (-a+\mathrm{i} b+c) \operatorname{Log}\Big[\Big(\mathrm{i} \Big(b+2 \mathrm{i} c+2 a \operatorname{Tan}[d+e x]+\mathrm{i} b \operatorname{Tan}[d+e x] + 2 \sqrt{a+\mathrm{i} b-c} \sqrt{c+\operatorname{Tan}[d+e x] (b+a \operatorname{Tan}[d+e x])} \Big) \Big) \Big/$$

$$\Big((a-\mathrm{i} b-c) \sqrt{a+\mathrm{i} b-c} c^2 (\mathrm{i}+\operatorname{Tan}[d+e x]) \Big) \Big] - 3 b (\mathrm{i} a+b-\mathrm{i} c) (-\mathrm{i} a+b+\mathrm{i} c)$$

$$\operatorname{Log}\Big[2 c+b \operatorname{Tan}[d+e x]+2 \sqrt{c} \sqrt{c+\operatorname{Tan}[d+e x] (b+a \operatorname{Tan}[d+e x])}\Big] \Bigg) \Bigg)$$

$$\Bigg(\Bigg(2 b \sqrt{\left(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]} - \frac{c}{-1+\operatorname{Cos}[2 (d+e x)]} + \frac{a \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]} - \frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]} - \frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]} \right)} \Bigg) \Big/ \Big((a-\mathrm{i} b-c) (a+\mathrm{i} b-c) (-a-c+a \operatorname{Cos}[2 (d+e x)]-c \operatorname{Cos}[2 (d+e x)]-b \operatorname{Sin}[2 (d+e x)]) \Big) +$$

$$\Bigg(3 a^2 b \sqrt{\left(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]} - \frac{c}{-1+\operatorname{Cos}[2 (d+e x)]} + \frac{a \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]} - \frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]} - \frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]} \right)} \Bigg) \Big/ \Big((a-\mathrm{i} b-c) (a+\mathrm{i} b-c) c^2 (-a-c+a \operatorname{Cos}[2 (d+e x)]-c \operatorname{Cos}[2 (d+e x)]-b \operatorname{Sin}[2 (d+e x)]) \Big) +$$

$$\Bigg(3 b^3 \sqrt{\left(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]} - \frac{c}{-1+\operatorname{Cos}[2 (d+e x)]} + \frac{a \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]} - \frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]} - \frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]} \right)} \Bigg) \Big/ \Big((a-\mathrm{i} b-c) (a+\mathrm{i} b-c) c^2 (-a-c+a \operatorname{Cos}[2 (d+e x)]-c \operatorname{Cos}[2 (d+e x)]-b \operatorname{Sin}[2 (d+e x)]) \Big) -$$

$$\Bigg(6 a b \sqrt{\left(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]} - \frac{c}{-1+\operatorname{Cos}[2 (d+e x)]} + \frac{a \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]} - \frac{c \operatorname{Cos}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]} - \frac{b \operatorname{Sin}[2 (d+e x)]}{-1+\operatorname{Cos}[2 (d+e x)]} \right)} \Bigg) \Big/ \Big((a-\mathrm{i} b-c) (a+\mathrm{i} b-c) c (-a-c+a \operatorname{Cos}[2 (d+e x)]-c \operatorname{Cos}[2 (d+e x)]-b \operatorname{Sin}[2 (d+e x)]) \Big) +$$

$$\Bigg(b \operatorname{Cos}[2 (d+e x)] \sqrt{\Bigg(-\frac{a}{-1+\operatorname{Cos}[2 (d+e x)]} - \frac{c}{-1+\operatorname{Cos}[2 (d+e x)]} +}$$

$$\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{b\,\mathrm{Sin}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}\Bigg)\Bigg)\Big/\Big(\big(a-\mathrm{i}\,b-c\big)\,\big(a+\mathrm{i}\,b-c\big)\,\big(-a-c+a\,\mathrm{Cos}[2\,(d+e\,x)]-c\,\mathrm{Cos}[2\,(d+e\,x)]-b\,\mathrm{Sin}[2\,(d+e\,x)]\big)\Big)-$$

$$\left(a\,\mathrm{Sin}[2\,(d+e\,x)]\Bigg/\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{b\,\mathrm{Sin}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}\right)}\Big/\Big(\big(a-\mathrm{i}\,b-c\big)\,\big(a+\mathrm{i}\,b-c\big)\,\big(-a-c+a\,\mathrm{Cos}[2\,(d+e\,x)]-c\,\mathrm{Cos}[2\,(d+e\,x)]-b\,\mathrm{Sin}[2\,(d+e\,x)]\big)\Big)+$$

$$\left(c\,\mathrm{Sin}[2\,(d+e\,x)]\Bigg/\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{b\,\mathrm{Sin}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}\right)}\Big/\right.$$

$$\Big(\big(a-\mathrm{i}\,b-c\big)\,\big(a+\mathrm{i}\,b-c\big)\,\big(-a-c+a\,\mathrm{Cos}[2\,(d+e\,x)]-c\,\mathrm{Cos}[2\,(d+e\,x)]-b\,\mathrm{Sin}[2\,(d+e\,x)]\big)\Big)\Bigg)\,\mathrm{Tan}[d+e\,x]\Bigg)\Big/$$

$$\left(2\,c^{5/2}\,\left(a^2+b^2-2\,a\,c+c^2\right)\,e\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\right.$$

$$\left(\left(1\Big/\left(4\,c^{5/2}\,\left(a^2+b^2-2\,a\,c+c^2\right)\,\left(c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)\right)^{3/2}\right)\right)\right.$$

$$\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}\,\Bigg(3\,b\,\left(\mathrm{i}\,a+b-\mathrm{i}\,c\right)\,\left(-\mathrm{i}\,a+b+\mathrm{i}\,c\right)\,\mathrm{Log}[\mathrm{Tan}[d+e\,x]]+$$

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

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

$$c^{5/2}\,\left(-a+\mathrm{i}\,b+c\right)\,\mathrm{Log}\Big[\Big(\mathrm{i}\,\Big(b+2\,\mathrm{i}\,c+2\,a\,\mathrm{Tan}[d+e\,x]+\mathrm{i}\,b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\Big)\Big)\Big/$$

$$\left(\left(a-\mathrm{i}\,b-c\right)\,\sqrt{a+\mathrm{i}\,b-c}\,c^2\,\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\right)\Big]-3\,b\,\left(\mathrm{i}\,a+b-\mathrm{i}\,c\right)$$

$$\left(-\mathrm{i}\,a+b+\mathrm{i}\,c\right)\,\mathrm{Log}\Big[2\,c+b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\Big]\Bigg)$$

$$\mathrm{Tan}[d+e\,x]\,\left(a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\mathrm{Sec}[d+e\,x]^2\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)\right)-$$

$$\left(1\Big/\left(2\,c^{5/2}\,\left(a^2+b^2-2\,a\,c+c^2\right)\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\right)\right)$$

$$\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}\,\Bigg(3\,b\,\left(\mathrm{i}\,a+b-\mathrm{i}\,c\right)\,\left(-\mathrm{i}\,a+b+\mathrm{i}\,c\right)\,\mathrm{Log}[\mathrm{Tan}[d+e\,x]]+$$

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

$$
\begin{aligned}
&\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]+a\,\mathrm{Tan}[d+e\,x]^2}\Big)\Big/\\
&\left(\sqrt{a-\mathrm{i}\,b-c}\,\left(a+\mathrm{i}\,b-c\right)c^2\left(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\right)\Big]+\frac{1}{\sqrt{a+\mathrm{i}\,b-c}}\\
&c^{5/2}\left(-a+\mathrm{i}\,b+c\right)\mathrm{Log}\Big[\Big(\mathrm{i}\,\Big(b+2\,\mathrm{i}\,c+2\,a\,\mathrm{Tan}[d+e\,x]+\mathrm{i}\,b\,\mathrm{Tan}[d+e\,x]+\\
&2\,\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\Big)\Big)\Big/\\
&\left(\left(a-\mathrm{i}\,b-c\right)\sqrt{a+\mathrm{i}\,b-c}\,c^2\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\right)\Big]-3\,b\left(\mathrm{i}\,a+b-\mathrm{i}\,c\right)\left(-\mathrm{i}\,a+b+\mathrm{i}\,c\right)\\
&\mathrm{Log}\Big[2\,c+b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\Big]\Big)\,\mathrm{Sec}[d+e\,x]^2-\\
&\Big(\left(-b\,\mathrm{Csc}[d+e\,x]^2-2\,c\,\mathrm{Cot}[d+e\,x]\,\mathrm{Csc}[d+e\,x]^2\right)\Big(3\,b\left(\mathrm{i}\,a+b-\mathrm{i}\,c\right)\left(-\mathrm{i}\,a+b+\mathrm{i}\,c\right)\\
&\mathrm{Log}[\mathrm{Tan}[d+e\,x]]+\frac{1}{\sqrt{a-\mathrm{i}\,b-c}}\left(a+\mathrm{i}\,b-c\right)c^{5/2}\,\mathrm{Log}\Big[\Big(\mathrm{i}\,b+2\,c+\\
&\left(2\,\mathrm{i}\,a+b\right)\mathrm{Tan}[d+e\,x]-2\,\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]+a\,\mathrm{Tan}[d+e\,x]^2}\Big)\Big/\\
&\left(\sqrt{a-\mathrm{i}\,b-c}\,\left(a+\mathrm{i}\,b-c\right)c^2\left(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\right)\Big]+\frac{1}{\sqrt{a+\mathrm{i}\,b-c}}\\
&c^{5/2}\left(-a+\mathrm{i}\,b+c\right)\mathrm{Log}\Big[\Big(\mathrm{i}\,\Big(b+2\,\mathrm{i}\,c+2\,a\,\mathrm{Tan}[d+e\,x]+\mathrm{i}\,b\,\mathrm{Tan}[d+e\,x]+\\
&2\,\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\Big)\Big)\Big/\Big(\left(a-\mathrm{i}\,b-c\right)\\
&\sqrt{a+\mathrm{i}\,b-c}\,c^2\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\Big)\Big]-3\,b\left(\mathrm{i}\,a+b-\mathrm{i}\,c\right)\left(-\mathrm{i}\,a+b+\mathrm{i}\,c\right)\mathrm{Log}\Big[\\
&2\,c+b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\Big]\Big)\,\mathrm{Tan}[d+e\,x]\Big)\Big/\\
&\Big(4\,c^{5/2}\left(a^2+b^2-2\,a\,c+c^2\right)\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}\\
&\sqrt{c+\mathrm{Tan}[d+e\,x]\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\Big)-\\
&\Big(1\Big/\Big(2\,c^{5/2}\left(a^2+b^2-2\,a\,c+c^2\right)\sqrt{c+\mathrm{Tan}[d+e\,x]\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\Big)\Big)\\
&\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}\,\mathrm{Tan}[d+e\,x]\\
&\Big(3\,b\left(\mathrm{i}\,a+b-\mathrm{i}\,c\right)\left(-\mathrm{i}\,a+b+\mathrm{i}\,c\right)\mathrm{Csc}[d+e\,x]\,\mathrm{Sec}[d+e\,x]-\Big(3\,b\left(\mathrm{i}\,a+b-\mathrm{i}\,c\right)\\
&\left(-\mathrm{i}\,a+b+\mathrm{i}\,c\right)\Big(b\,\mathrm{Sec}[d+e\,x]^2+\Big(\sqrt{c}\,\Big(a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\mathrm{Sec}[d+e\,x]^2\\
&\left(b+a\,\mathrm{Tan}[d+e\,x]\right)\Big)\Big)\Big/\Big(\sqrt{c+\mathrm{Tan}[d+e\,x]\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\Big)\Big)\Big)\Big/\\
&\Big(2\,c+b\,\mathrm{Tan}[d+e\,x]+2\,\sqrt{c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\Big)+\\
&\Big(\left(a+\mathrm{i}\,b-c\right)^2c^{9/2}\left(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\Big(\Big(\left(2\,\mathrm{i}\,a+b\right)\mathrm{Sec}[d+e\,x]^2-\\
&\left(\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\left(b\,\mathrm{Sec}[d+e\,x]^2+2\,a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]\right)\right)\Big/\\
&\left(\sqrt{c+b\,\mathrm{Tan}[d+e\,x]+a\,\mathrm{Tan}[d+e\,x]^2}\right)\Big)\Big/\Big(\sqrt{a-\mathrm{i}\,b-c}\,\left(a+\mathrm{i}\,b-c\right)c^2
\end{aligned}
$$

$$\left(-i+\text{Tan}[d+e x]\right)\Big)-\Bigg(\text{Sec}[d+e x]^2\left(i b+2 c+(2 i a+b)\,\text{Tan}[d+e x]-2 i\sqrt{a-i b-c}\,\sqrt{c+b\,\text{Tan}[d+e x]+a\,\text{Tan}[d+e x]^2}\right)\Bigg)\Bigg/\left(\sqrt{a-i b-c}\,(a+i b-c)\,c^2\left(-i+\text{Tan}[d+e x]\right)^2\right)\Bigg)\Bigg)\Bigg/\Bigg(i b+2 c+(2 i a+b)\,\text{Tan}[d+e x]-2 i\sqrt{a-i b-c}\,\sqrt{c+b\,\text{Tan}[d+e x]+a\,\text{Tan}[d+e x]^2}\Bigg)-$$

$$\Bigg(i\,(a-i b-c)\,c^{9/2}\,(-a+i b+c)\,\left(i+\text{Tan}[d+e x]\right)\Bigg(\Bigg(\Bigg(i\Bigg(2 a\,\text{Sec}[d+e x]^2+i b\,\text{Sec}[d+e x]^2+\Bigg(\sqrt{a+i b-c}\,\left(a\,\text{Sec}[d+e x]^2\,\text{Tan}[d+e x]+\text{Sec}[d+e x]^2\left(b+a\,\text{Tan}[d+e x]\right)\right)\Bigg)\Bigg/\left(\sqrt{c+\text{Tan}[d+e x]\left(b+a\,\text{Tan}[d+e x]\right)}\right)\Bigg)\Bigg)\Bigg/\left((a-i b-c)\,\sqrt{a+i b-c}\,c^2\left(i+\text{Tan}[d+e x]\right)\right)-\Bigg(i\,\text{Sec}[d+e x]^2\Bigg(b+2 i c+2 a\,\text{Tan}[d+e x]+i b\,\text{Tan}[d+e x]+2\sqrt{a+i b-c}\,\sqrt{c+\text{Tan}[d+e x]\left(b+a\,\text{Tan}[d+e x]\right)}\Bigg)\Bigg)\Bigg/\left((a-i b-c)\,\sqrt{a+i b-c}\,c^2\left(i+\text{Tan}[d+e x]\right)^2\right)\Bigg)\Bigg/\Bigg(b+2 i c+2 a\,\text{Tan}[d+e x]+i b\,\text{Tan}[d+e x]+2\sqrt{a+i b-c}\,\sqrt{c+\text{Tan}[d+e x]\left(b+a\,\text{Tan}[d+e x]\right)}\Bigg)\Bigg)\Bigg)$$

Problem 13: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 686 leaves, 10 steps):

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

Result (type 3, 3282 leaves):

$$\frac{1}{e}\sqrt{\Big(\big(-a-c+a\,\text{Cos}[2(d+e x)]-c\,\text{Cos}[2(d+e x)]-b\,\text{Sin}[2(d+e x)]\big)\Big/\big(-1+\text{Cos}[2(d+e x)]\big)\Big)}$$
$$\Bigg(\frac{2a\left(2a^2+b^2-2ac\right)}{(a-c)(a+i b-c)\left(-a b^2+i b^3+4a^2c-4i a b c+b^2c-4ac^2\right)}+$$
$$\Big(\big(\text{Cos}[2(d+e x)]-i\,\text{Sin}[2(d+e x)]\big)$$
$$\big(i a^3 b+2i a^2 b c+i b^3 c-3i a b c^2+8a^3 c\,\text{Cos}[2(d+e x)]+4a b^2 c\,\text{Cos}[2(d+e x)]-$$
$$8a^2c^2\,\text{Cos}[2(d+e x)]-i a^3 b\,\text{Cos}[4(d+e x)]-2i a^2 b c\,\text{Cos}[4(d+e x)]-$$
$$i b^3 c\,\text{Cos}[4(d+e x)]+3i a b c^2\,\text{Cos}[4(d+e x)]+8i a^3 c\,\text{Sin}[2(d+e x)]+$$
$$4i a b^2 c\,\text{Sin}[2(d+e x)]-8i a^2 c^2\,\text{Sin}[2(d+e x)]+a^3 b\,\text{Sin}[4(d+e x)]+$$
$$2a^2 b c\,\text{Sin}[4(d+e x)]+b^3 c\,\text{Sin}[4(d+e x)]-3a b c^2\,\text{Sin}[4(d+e x)]\big)\Big)\Big/$$
$$\Big((a-c)(a-i b-c)(a+i b-c)\left(-b^2+4ac\right)\big(-a-c+a\,\text{Cos}[2(d+e x)]-$$
$$c\,\text{Cos}[2(d+e x)]-b\,\text{Sin}[2(d+e x)]\big)\Big)\Bigg)+$$
$$\Bigg(\sqrt{a+b\,\text{Cot}[d+e x]+c\,\text{Cot}[d+e x]^2}\ \Bigg(\frac{1}{(a-i b-c)^{3/2}}\text{Log}\Big[\Big(-4c-4i a\,\text{Tan}[d+e x]-$$

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

$$\Bigg(\Bigg(b \sqrt{\left(-\frac{a}{-1+\text{Cos}[2 (d+e x)]}-\frac{c}{-1+\text{Cos}[2 (d+e x)]}+\frac{a \text{Cos}[2 (d+e x)]}{-1+\text{Cos}[2 (d+e x)]}-\right.}$$
$$\left.\frac{c \text{Cos}[2 (d+e x)]}{-1+\text{Cos}[2 (d+e x)]}-\frac{b \text{Sin}[2 (d+e x)]}{-1+\text{Cos}[2 (d+e x)]}\right)\Bigg)\Big/\Big(\left(a-\mathbb{i} b-c\right) \left(a+\mathbb{i} b-c\right)$$
$$\left(-a-c+a \text{Cos}[2 (d+e x)]-c \text{Cos}[2 (d+e x)]-b \text{Sin}[2 (d+e x)]\right)\Big)-$$
$$\Bigg(b \text{Cos}[2 (d+e x)] \sqrt{\left(-\frac{a}{-1+\text{Cos}[2 (d+e x)]}-\frac{c}{-1+\text{Cos}[2 (d+e x)]}+\right.}$$
$$\left.\frac{a \text{Cos}[2 (d+e x)]}{-1+\text{Cos}[2 (d+e x)]}-\frac{c \text{Cos}[2 (d+e x)]}{-1+\text{Cos}[2 (d+e x)]}-\frac{b \text{Sin}[2 (d+e x)]}{-1+\text{Cos}[2 (d+e x)]}\right)\Bigg)\Big/\Big(\Big(a-\mathbb{i} b-$$
$$c\Big) \left(a+\mathbb{i} b-c\right) \left(-a-c+a \text{Cos}[2 (d+e x)]-c \text{Cos}[2 (d+e x)]-b \text{Sin}[2 (d+e x)]\right)\Big)+$$
$$\Bigg(a \text{Sin}[2 (d+e x)] \sqrt{\left(-\frac{a}{-1+\text{Cos}[2 (d+e x)]}-\frac{c}{-1+\text{Cos}[2 (d+e x)]}+\right.}$$
$$\left.\frac{a \text{Cos}[2 (d+e x)]}{-1+\text{Cos}[2 (d+e x)]}-\frac{c \text{Cos}[2 (d+e x)]}{-1+\text{Cos}[2 (d+e x)]}-\frac{b \text{Sin}[2 (d+e x)]}{-1+\text{Cos}[2 (d+e x)]}\right)\Bigg)\Big/\Big(\Big(a-\mathbb{i} b-$$
$$c\Big) \left(a+\mathbb{i} b-c\right) \left(-a-c+a \text{Cos}[2 (d+e x)]-c \text{Cos}[2 (d+e x)]-b \text{Sin}[2 (d+e x)]\right)\Big)-$$
$$\Bigg(c \text{Sin}[2 (d+e x)] \sqrt{\left(-\frac{a}{-1+\text{Cos}[2 (d+e x)]}-\frac{c}{-1+\text{Cos}[2 (d+e x)]}+\right.}$$
$$\left.\frac{a \text{Cos}[2 (d+e x)]}{-1+\text{Cos}[2 (d+e x)]}-\frac{c \text{Cos}[2 (d+e x)]}{-1+\text{Cos}[2 (d+e x)]}-\frac{b \text{Sin}[2 (d+e x)]}{-1+\text{Cos}[2 (d+e x)]}\right)\Bigg)\Big/$$
$$\Big(\left(a-\mathbb{i} b-c\right) \left(a+\mathbb{i} b-c\right) \Big(-a-c+a \text{Cos}[2 (d+e x)]-c \text{Cos}[2 (d+e x)]-$$
$$b \text{Sin}[2 (d+e x)]\Big)\Big)\Bigg) \text{Tan}[d+e x]\Bigg)\Big/$$

$$\Bigg(2 e \sqrt{c+b \text{Tan}[d+e x]+a \text{Tan}[d+e x]^2} \Bigg(-\Bigg(\Bigg(\sqrt{a+b \text{Cot}[d+e x]+c \text{Cot}[d+e x]^2}$$
$$\Bigg(\text{Log}\Big[\Big(-4 c-4 \mathbb{i} a \text{Tan}[d+e x]-2 b \left(\mathbb{i}+\text{Tan}[d+e x]\right)+4 \mathbb{i} \sqrt{a-\mathbb{i} b-c}$$
$$\sqrt{c+\text{Tan}[d+e x] \left(b+a \text{Tan}[d+e x]\right)}\Big)\Big/\Big(\sqrt{a-\mathbb{i} b-c} \left(a+\mathbb{i} b-c\right)$$
$$\left(-\mathbb{i}+\text{Tan}[d+e x]\right)\Big)\Big]\Big/\left(a-\mathbb{i} b-c\right)^{3/2}-\text{Log}\Big[\Big(4 c+2 b \left(-\mathbb{i}+\text{Tan}[d+e x]\right)-$$

$$4\,\mathrm{i}\left(a\,\mathrm{Tan}[d+e\,x]+\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\right)\Big)\Big/$$

$$\left(\left(a-\mathrm{i}\,b-c\right)\sqrt{a+\mathrm{i}\,b-c}\,\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\right)\Big]\Big/\left(a+\mathrm{i}\,b-c\right)^{3/2}\Big)$$

$$\mathrm{Tan}[d+e\,x]\,\left(b\,\mathrm{Sec}[d+e\,x]^2+2\,a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]\right)\Big)\Big/$$

$$\left(4\,\left(c+b\,\mathrm{Tan}[d+e\,x]+a\,\mathrm{Tan}[d+e\,x]^2\right)^{3/2}\right)\Big)+$$

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

$$4\,\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big/\Big(\sqrt{a-\mathrm{i}\,b-c}\,\left(a+\mathrm{i}\,b-\right.$$

$$\left.c\right)\,\left(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\Big)\Big]\Big/\left(a-\mathrm{i}\,b-c\right)^{3/2}-\mathrm{Log}\Big[\Big(4\,c+2\,b\,\left(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)-$$

$$4\,\mathrm{i}\left(a\,\mathrm{Tan}[d+e\,x]+\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\right)\Big)\Big/$$

$$\left(\left(a-\mathrm{i}\,b-c\right)\sqrt{a+\mathrm{i}\,b-c}\,\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\right)\Big]\Big/\left(a+\mathrm{i}\,b-c\right)^{3/2}\Big)\,\mathrm{Sec}[d+e\,x]^2\Big)\Big/$$

$$\left(2\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]+a\,\mathrm{Tan}[d+e\,x]^2}\right)+\Big(\left(-b\,\mathrm{Csc}[d+e\,x]^2-2\,c\,\mathrm{Cot}[d+e\,x]\,\mathrm{Csc}[d+e\,x]^2\right)$$

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

$$\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big/\Big(\sqrt{a-\mathrm{i}\,b-c}\,\left(a+\mathrm{i}\,b-c\right)$$

$$\left(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\Big)\Big]\Big/\left(a-\mathrm{i}\,b-c\right)^{3/2}-\mathrm{Log}\Big[\Big(4\,c+2\,b\,\left(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)-$$

$$4\,\mathrm{i}\left(a\,\mathrm{Tan}[d+e\,x]+\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\right)\Big)\Big/$$

$$\left(\left(a-\mathrm{i}\,b-c\right)\sqrt{a+\mathrm{i}\,b-c}\,\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\right)\Big]\Big/\left(a+\mathrm{i}\,b-c\right)^{3/2}\Big)\,\mathrm{Tan}[d+e\,x]\Big)\Big/$$

$$\left(4\,\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]+a\,\mathrm{Tan}[d+e\,x]^2}\right)+$$

$$\frac{1}{2\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]+a\,\mathrm{Tan}[d+e\,x]^2}}$$

$$\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}\,\mathrm{Tan}[d+e\,x]$$

$$\Big(\Big(\Big(\left(a+\mathrm{i}\,b-c\right)\,\left(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\Big)\,\Big(\Big(-4\,\mathrm{i}\,a\,\mathrm{Sec}[d+e\,x]^2-2\,b\,\mathrm{Sec}[d+e\,x]^2+$$

$$\Big(2\,\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\Big(a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\mathrm{Sec}[d+e\,x]^2$$

$$\left(b+a\,\mathrm{Tan}[d+e\,x]\right)\Big)\Big)\Big)\Big/\left(\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\right)\Big)\Big/$$

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

$$\Big(-4\,c-4\,\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x]-2\,b\,\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)+4\,\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}$$

$$\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)\Big/\Big(\sqrt{a-\mathrm{i}\,b-c}\,\left(a+\mathrm{i}\,b-c\right)$$

$$\left(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)^2\Big)\Big)\Big)\Big/\Big(\left(a-\mathrm{i}\,b-c\right)\,\Big(-4\,c-4\,\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x]-2\,b$$

$$\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)+4\,\mathrm{i}\,\sqrt{a-\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,(b+a\,\mathrm{Tan}[d+e\,x])}\Big)\Big)-$$

$$\left(\left(a-\mathbb{i}\,b-c\right)\left(\mathbb{i}+\text{Tan}[d+e\,x]\right)\left(\left(2\,b\,\text{Sec}[d+e\,x]^2-4\,\mathbb{i}\left(a\,\text{Sec}[d+e\,x]^2+\left(\sqrt{a+\mathbb{i}\,b-c}\left(a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\text{Sec}[d+e\,x]^2\left(b+a\,\text{Tan}[d+e\,x]\right)\right)\right)\Big/\left(2\,\sqrt{c+\text{Tan}[d+e\,x]\left(b+a\,\text{Tan}[d+e\,x]\right)}\right)\right)\right)\Big/\left(\left(a-\mathbb{i}\,b-c\right)\sqrt{a+\mathbb{i}\,b-c}\left(\mathbb{i}+\text{Tan}[d+e\,x]\right)\right)-\left(\text{Sec}[d+e\,x]^2\left(4\,c+2\,b\left(-\mathbb{i}+\text{Tan}[d+e\,x]\right)-4\,\mathbb{i}\left(a\,\text{Tan}[d+e\,x]+\sqrt{a+\mathbb{i}\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\left(b+a\,\text{Tan}[d+e\,x]\right)}\right)\right)\right)\Big/\left(\left(a-\mathbb{i}\,b-c\right)\sqrt{a+\mathbb{i}\,b-c}\left(\mathbb{i}+\text{Tan}[d+e\,x]\right)^2\right)\right)\Big/\left(\left(a+\mathbb{i}\,b-c\right)\left(4\,c+2\,b\left(-\mathbb{i}+\text{Tan}[d+e\,x]\right)-4\,\mathbb{i}\left(a\,\text{Tan}[d+e\,x]+\sqrt{a+\mathbb{i}\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\left(b+a\,\text{Tan}[d+e\,x]\right)}\right)\right)\right)\right)$$

Problem 14: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 635 leaves, 7 steps):

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

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

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

Result (type 3, 3075 leaves):

$$\frac{1}{e}\sqrt{\frac{-a-c+a\,\text{Cos}[2(d+e x)]-c\,\text{Cos}[2(d+e x)]-b\,\text{Sin}[2(d+e x)]}{-1+\text{Cos}[2(d+e x)]}}$$

$$\Bigg(-\frac{2a\left(-b^2+2ac-2c^2\right)}{(a-c)(a-\text{i} b-c)(a+\text{i} b-c)\left(-b^2+4ac\right)}-\Big(2\left(-2ab^2c+4a^2c^2-4ac^3-ab^3\,\text{Sin}[2(d+e x)]+3a^2bc\,\text{Sin}[2(d+e x)]-2abc^2\,\text{Sin}[2(d+e x)]-bc^3\,\text{Sin}[2(d+e x)]\right)\Big)\Big/\Big((a-c)(a-\text{i} b-c)(a+\text{i} b-c)\left(-b^2+4ac\right)\left(-a-c+a\,\text{Cos}[2(d+e x)]-c\,\text{Cos}[2(d+e x)]-b\,\text{Sin}[2(d+e x)]\right)\Big)\Bigg)+$$

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

$$\frac{1}{(a+\text{i} b-c)^{3/2}}\text{Log}\Big[\Big(4c+2b(-\text{i}+\text{Tan}[d+e x])-$$

$$4\,\mathrm{i}\left(a\,\mathrm{Tan}[d+e\,x]+\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\right)\Big)\Big/$$

$$\left(\left(a-\mathrm{i}\,b-c\right)\sqrt{a+\mathrm{i}\,b-c}\,\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\right)\Big]\Bigg)$$

$$\Bigg(-\Bigg(\Bigg(b\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{b\,\mathrm{Sin}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}\right)}\Bigg)\Bigg/\left(\left(a-\mathrm{i}\,b-c\right)\left(a+\mathrm{i}\,b-c\right)\right.$$

$$\left.\left(-a-c+a\,\mathrm{Cos}[2\,(d+e\,x)]-c\,\mathrm{Cos}[2\,(d+e\,x)]-b\,\mathrm{Sin}[2\,(d+e\,x)]\right)\right)\Bigg)+$$

$$\Bigg(b\,\mathrm{Cos}[2\,(d+e\,x)]\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{b\,\mathrm{Sin}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}\right)}\Bigg/\left(\left(a-\mathrm{i}\,b-c\right)\left(a+\mathrm{i}\,b-c\right)\left(-a-c+a\,\mathrm{Cos}[2\,(d+e\,x)]-c\,\mathrm{Cos}[2\,(d+e\,x)]-b\,\mathrm{Sin}[2\,(d+e\,x)]\right)\right)-$$

$$\Bigg(a\,\mathrm{Sin}[2\,(d+e\,x)]\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{b\,\mathrm{Sin}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}\right)}\Bigg/\left(\left(a-\mathrm{i}\,b-c\right)\left(a+\mathrm{i}\,b-c\right)\left(-a-c+a\,\mathrm{Cos}[2\,(d+e\,x)]-c\,\mathrm{Cos}[2\,(d+e\,x)]-b\,\mathrm{Sin}[2\,(d+e\,x)]\right)\right)+$$

$$\Bigg(c\,\mathrm{Sin}[2\,(d+e\,x)]\sqrt{\left(-\frac{a}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c}{-1+\mathrm{Cos}[2\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{c\,\mathrm{Cos}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}-\frac{b\,\mathrm{Sin}[2\,(d+e\,x)]}{-1+\mathrm{Cos}[2\,(d+e\,x)]}\right)}\Bigg/$$

$$\left(\left(a-\mathrm{i}\,b-c\right)\left(a+\mathrm{i}\,b-c\right)\left(-a-c+a\,\mathrm{Cos}[2\,(d+e\,x)]-c\,\mathrm{Cos}[2\,(d+e\,x)]-b\,\mathrm{Sin}[2\,(d+e\,x)]\right)\right)\Bigg)\,\mathrm{Tan}[d+e\,x]\Bigg)\Bigg/$$

$$\Bigg(2\,e\sqrt{c+b\,\mathrm{Tan}[d+e\,x]+a\,\mathrm{Tan}[d+e\,x]^2}\,\Bigg(-\Bigg(\Bigg(\sqrt{a+b\,\mathrm{Cot}[d+e\,x]+c\,\mathrm{Cot}[d+e\,x]^2}$$

$$\Bigg(-\Bigg(\mathrm{Log}\Big[\Big(-4\,c-4\,\mathrm{i}\,a\,\mathrm{Tan}[d+e\,x]-2\,b\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)+4\,\mathrm{i}\sqrt{a-\mathrm{i}\,b-c}$$

$$\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\Big)\Big/\Big(\sqrt{a-\mathrm{i}\,b-c}\,\left(a+\mathrm{i}\,b-c\right)$$

$$\left(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\Big)\Big]\Big/\left(a-\mathrm{i}\,b-c\right)^{3/2}\Bigg)+\mathrm{Log}\Big[\Big(4\,c+2\,b\left(-\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)-$$

$$4\,\mathrm{i}\left(a\,\mathrm{Tan}[d+e\,x]+\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\mathrm{Tan}[d+e\,x]\,\left(b+a\,\mathrm{Tan}[d+e\,x]\right)}\right)\Big)\Big/$$

$$\left(\left(a-\mathrm{i}\,b-c\right)\sqrt{a+\mathrm{i}\,b-c}\,\left(\mathrm{i}+\mathrm{Tan}[d+e\,x]\right)\right)\Big]\Big/\left(a+\mathrm{i}\,b-c\right)^{3/2}\Bigg)$$

$$\mathrm{Tan}[d+e\,x]\,\left(b\,\mathrm{Sec}[d+e\,x]^2+2\,a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]\right)\Bigg)\Bigg/$$

$$\left(4\left(c+b\,\text{Tan}[d+e\,x]+a\,\text{Tan}[d+e\,x]^2\right)^{3/2}\right)\right)+\left(\sqrt{a+b\,\text{Cot}[d+e\,x]+c\,\text{Cot}[d+e\,x]^2}\right.$$

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

$$\left.\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\right)\Big/\left(\sqrt{a-i\,b-c}\,(a+i\,b-c)\right.$$

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

$$4\,i\left(a\,\text{Tan}[d+e\,x]+\sqrt{a+i\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\right)\Big)\Big/$$

$$\left.\left.\left((a-i\,b-c)\,\sqrt{a+i\,b-c}\,(i+\text{Tan}[d+e\,x])\right)\right]\Big/(a+i\,b-c)^{3/2}\right)\text{Sec}[d+e\,x]^2\Big)\Big/$$

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

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

$$\left.\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\right)\Big/\left(\sqrt{a-i\,b-c}\,(a+i\,b-c)\right.$$

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

$$4\,i\left(a\,\text{Tan}[d+e\,x]+\sqrt{a+i\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\right)\Big)\Big/$$

$$\left.\left.\left((a-i\,b-c)\,\sqrt{a+i\,b-c}\,(i+\text{Tan}[d+e\,x])\right)\right]\Big/(a+i\,b-c)^{3/2}\right)\text{Tan}[d+e\,x]\Big)\Big/$$

$$\left(4\sqrt{a+b\,\text{Cot}[d+e\,x]+c\,\text{Cot}[d+e\,x]^2}\,\sqrt{c+b\,\text{Tan}[d+e\,x]+a\,\text{Tan}[d+e\,x]^2}\right)+$$

$$\frac{1}{2\sqrt{c+b\,\text{Tan}[d+e\,x]+a\,\text{Tan}[d+e\,x]^2}}$$

$$\sqrt{a+b\,\text{Cot}[d+e\,x]+c\,\text{Cot}[d+e\,x]^2}\,\text{Tan}[d+e\,x]$$

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

$$\left(2\,i\,\sqrt{a-i\,b-c}\,\left(a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\text{Sec}[d+e\,x]^2\right.\right.$$

$$\left.\left.\left.(b+a\,\text{Tan}[d+e\,x])\right)\right)\Big/\left(\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\right)\Big)\Big/$$

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

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

$$\left.\left.\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\right)\right)\Big/\left(\sqrt{a-i\,b-c}\,(a+i\,b-c)\right.$$

$$\left.\left.(-i+\text{Tan}[d+e\,x])^2\right)\right)\Big/\left((a-i\,b-c)\left(-4\,c-4\,i\,a\,\text{Tan}[d+e\,x]-2\,b\right.\right.$$

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

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

$$\left.\left.\left(a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\text{Sec}[d+e\,x]^2\,(b+a\,\text{Tan}[d+e\,x])\right)\right)\right)\Big/$$

$$\left(2\sqrt{c+\text{Tan}[d+e\,x]\,(b+a\,\text{Tan}[d+e\,x])}\right)\Big)\Big)\Big/\left((a-i\,b-c)\,\sqrt{a+i\,b-c}\right.$$

$$\left(\mathrm{i}+\text{Tan}[d+e\,x]\right)\Big)\Big)-\Bigg(\text{Sec}[d+e\,x]^2\,\Big(4\,c+2\,b\,\left(-\mathrm{i}+\text{Tan}[d+e\,x]\right)-$$

$$4\,\mathrm{i}\,\left(a\,\text{Tan}[d+e\,x]+\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}\right)\Big)\Bigg)\Bigg/$$

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

$$\Bigg(\left(a+\mathrm{i}\,b-c\right)\,\Big(4\,c+2\,b\,\left(-\mathrm{i}+\text{Tan}[d+e\,x]\right)-4\,\mathrm{i}\,\Big(a\,\text{Tan}[d+e\,x]+$$

$$\sqrt{a+\mathrm{i}\,b-c}\,\sqrt{c+\text{Tan}[d+e\,x]\,\left(b+a\,\text{Tan}[d+e\,x]\right)}\Big)\Big)\Bigg)\Bigg)$$

Problem 15: Humongous result has more than 200000 leaves.

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

Optimal (type 3, 749 leaves, 13 steps) :

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

$$\left(\sqrt{2a-2c-\sqrt{a^2+b^2-2ac+c^2}}\,\sqrt{a^2-b^2-2ac+c^2+(a-c)\sqrt{a^2+b^2-2ac+c^2}}\,\text{ArcTanh}\Big[\right.$$
$$\left(b^2-(a-c)\left(a-c+\sqrt{a^2+b^2-2ac+c^2}\right)-b\left(2a-2c-\sqrt{a^2+b^2-2ac+c^2}\right)\text{Cot}[d+e\,x]\right)\Big/$$
$$\left(\sqrt{2}\,\sqrt{2a-2c-\sqrt{a^2+b^2-2ac+c^2}}\,\sqrt{a^2-b^2-2ac+c^2+(a-c)\sqrt{a^2+b^2-2ac+c^2}}\right.$$
$$\left.\left.\sqrt{a+b\,\text{Cot}[d+e\,x]+c\,\text{Cot}[d+e\,x]^2}\right)\Big]\right)\Big/\left(\sqrt{2}\,\left(a^2+b^2-2ac+c^2\right)^{3/2}e\right)-$$

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

Result (type ?, 558 961 leaves) : Display of huge result suppressed!

Problem 16: Humongous result has more than 200000 leaves.

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

Optimal (type 3, 1008 leaves, 18 steps) :

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

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

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

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

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

$$\frac{b\,\left(15\,b^2-52\,a\,c\right)\,\sqrt{a+b\,\text{Cot}[d+e\,x]+c\,\text{Cot}[d+e\,x]^2}\,\text{Tan}[d+e\,x]}{4\,a^3\,\left(b^2-4\,a\,c\right)\,e}-$$

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

$$\frac{\left(5\,b^2-12\,a\,c\right)\,\sqrt{a+b\,\text{Cot}[d+e\,x]+c\,\text{Cot}[d+e\,x]^2}\,\text{Tan}[d+e\,x]^2}{2\,a^2\,\left(b^2-4\,a\,c\right)\,e}$$

Result (type ?, 930 953 leaves) : Display of huge result suppressed!

Problem 17: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[d+e x]^5}{\sqrt{a+b\,\text{Cot}[d+e x]^2+c\,\text{Cot}[d+e x]^4}}\,dx$$

Optimal (type 3, 182 leaves, 8 steps):

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

Result (type 3, 2952 leaves):

$$-\frac{1}{2 c e}\Big(\sqrt{\big((3 a+b+3 c-4 a\,\text{Cos}[2 (d+e x)]+4 c\,\text{Cos}[2 (d+e x)]+a\,\text{Cos}[4 (d+e x)]-b\,\text{Cos}[4 (d+e x)]+c\,\text{Cos}[4 (d+e x)])\,/\,(3-4\,\text{Cos}[2 (d+e x)]+\text{Cos}[4 (d+e x)])\big)}\Big)-$$

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

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

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

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

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

$$\Bigg(-\Bigg(\Bigg(2\sqrt{\Bigg(\frac{3 a}{3-4\,\text{Cos}[2 (d+e x)]+\text{Cos}[4 (d+e x)]}+\frac{b}{3-4\,\text{Cos}[2 (d+e x)]+\text{Cos}[4 (d+e x)]}+}$$

$$\frac{3 c}{3-4\,\text{Cos}[2 (d+e x)]+\text{Cos}[4 (d+e x)]}-\frac{4 a\,\text{Cos}[2 (d+e x)]}{3-4\,\text{Cos}[2 (d+e x)]+\text{Cos}[4 (d+e x)]}+$$

$$\frac{4 c\,\text{Cos}[2 (d+e x)]}{3-4\,\text{Cos}[2 (d+e x)]+\text{Cos}[4 (d+e x)]}+\frac{a\,\text{Cos}[4 (d+e x)]}{3-4\,\text{Cos}[2 (d+e x)]+\text{Cos}[4 (d+e x)]}-$$

$$\frac{b\,\text{Cos}[4 (d+e x)]}{3-4\,\text{Cos}[2 (d+e x)]+\text{Cos}[4 (d+e x)]}+\frac{c\,\text{Cos}[4 (d+e x)]}{3-4\,\text{Cos}[2 (d+e x)]+\text{Cos}[4 (d+e x)]}\Bigg)$$

$$\text{Sin}[2 (d+e x)]\Bigg)\Bigg/\left(3 a+b+3 c-4 a\,\text{Cos}[2 (d+e x)]+4 c\,\text{Cos}[2 (d+e x)]+\right.$$

$$\left.a\,\text{Cos}[4 (d+e x)]-b\,\text{Cos}[4 (d+e x)]+c\,\text{Cos}[4 (d+e x)]\right)\Bigg)-$$

$$\Bigg(2 b\sqrt{\Bigg(\frac{3 a}{3-4\,\text{Cos}[2 (d+e x)]+\text{Cos}[4 (d+e x)]}+\frac{b}{3-4\,\text{Cos}[2 (d+e x)]+\text{Cos}[4 (d+e x)]}+}$$

$$\frac{3\,c}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+$$
$$\frac{4\,c\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-$$
$$\left.\frac{b\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{c\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}\right)$$
$$\left.\mathrm{Sin}[2\,(d+e\,x)]\right)\Big/\left(c\,\left(3\,a+b+3\,c-4\,a\,\mathrm{Cos}[2\,(d+e\,x)]+4\,c\,\mathrm{Cos}[2\,(d+e\,x)]+\right.\right.$$
$$\left.\left.a\,\mathrm{Cos}[4\,(d+e\,x)]-b\,\mathrm{Cos}[4\,(d+e\,x)]+c\,\mathrm{Cos}[4\,(d+e\,x)]\right)\right)-$$
$$\left(\sqrt{\left(\frac{3\,a}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\right.}\right.$$
$$\frac{3\,c}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+$$
$$\frac{4\,c\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-$$
$$\left.\frac{b\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{c\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}\right)$$
$$\left.\mathrm{Sin}[4\,(d+e\,x)]\right)\Big/\left(3\,a+b+3\,c-4\,a\,\mathrm{Cos}[2\,(d+e\,x)]+4\,c\,\mathrm{Cos}[2\,(d+e\,x)]+\right.$$
$$\left.\left.a\,\mathrm{Cos}[4\,(d+e\,x)]-b\,\mathrm{Cos}[4\,(d+e\,x)]+c\,\mathrm{Cos}[4\,(d+e\,x)]\right)\right)$$
$$\left.\mathrm{Tan}[d+e\,x]^2\,\sqrt{a+\mathrm{Cot}[d+e\,x]^4\,\left(c+b\,\mathrm{Tan}[d+e\,x]^2\right)}\right)\Big/\left(4\right.$$
$$c^{3/2}$$
$$e$$
$$\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}$$
$$\left(\frac{1}{8\,c^{3/2}\,\left(c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4\right)^{3/2}}\right.$$
$$\left((b+2\,c)\,\mathrm{Log}\left[\mathrm{Tan}[d+e\,x]^2\right]-\frac{2\,c^{3/2}\,\mathrm{Log}\left[1+\mathrm{Tan}[d+e\,x]^2\right]}{\sqrt{a-b+c}}-\right.$$
$$b\,\mathrm{Log}\left[2\,c+b\,\mathrm{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right]-$$
$$2\,c\,\mathrm{Log}\left[2\,c+b\,\mathrm{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right]+$$
$$\frac{1}{\sqrt{a-b+c}}2\,c^{3/2}\,\mathrm{Log}\left[b\,\left(-1+\mathrm{Tan}[d+e\,x]^2\right)+\right.$$
$$\left.\left.\left.2\,\left(c-a\,\mathrm{Tan}[d+e\,x]^2+\sqrt{a-b+c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right)\right]\right)\right)$$

$$\mathrm{Tan}[d+e\,x]^2\,\left(2\,b\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+4\,a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]^3\right)$$

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

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

$$b\,\mathrm{Log}\left[2\,c+b\,\mathrm{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right]-$$

$$2\,c\,\mathrm{Log}\left[2\,c+b\,\mathrm{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right]+$$

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

$$2\,\left(c-a\,\mathrm{Tan}[d+e\,x]^2+\sqrt{a-b+c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right)\Big]\Bigg)$$

$$\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]\,\sqrt{a+\mathrm{Cot}[d+e\,x]^4\,\left(c+b\,\mathrm{Tan}[d+e\,x]^2\right)}-$$

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

$$b\,\mathrm{Log}\left[2\,c+b\,\mathrm{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right]-$$

$$2\,c\,\mathrm{Log}\left[2\,c+b\,\mathrm{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right]+$$

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

$$\sqrt{a-b+c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\Big)\Big]\Bigg)\,\mathrm{Tan}[d+e\,x]^2$$

$$\left(2\,b\,\mathrm{Cot}[d+e\,x]\,\mathrm{Csc}[d+e\,x]^2-4\,\mathrm{Cot}[d+e\,x]^3\,\mathrm{Csc}[d+e\,x]^2\,\left(c+b\,\mathrm{Tan}[d+e\,x]^2\right)\right)\Bigg)\Big/$$

$$\left(8\,c^{3/2}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\,\sqrt{a+\mathrm{Cot}[d+e\,x]^4\,\left(c+b\,\mathrm{Tan}[d+e\,x]^2\right)}\right)-$$

$$\frac{1}{4\,c^{3/2}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}}$$

$$\mathrm{Tan}[d+e\,x]^2\,\sqrt{a+\mathrm{Cot}[d+e\,x]^4\,\left(c+b\,\mathrm{Tan}[d+e\,x]^2\right)}$$

$$\Bigg(2\,\left(b+2\,c\right)\,\mathrm{Csc}[d+e\,x]\,\mathrm{Sec}[d+e\,x]-\frac{4\,c^{3/2}\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]}{\sqrt{a-b+c}\,\left(1+\mathrm{Tan}[d+e\,x]^2\right)}-$$

$$\Bigg(b\,\Bigg(2\,b\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\Big(\sqrt{c}\,\Big(2\,b\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+4\,a\,\mathrm{Sec}[d+e\,x]^2$$

$$\mathrm{Tan}[d+e\,x]^3\Big)\Big)\Big/\left(\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right)\Bigg)\Bigg)\Big/$$

$$\left(2\,c+b\,\mathrm{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right)-$$

$$\Bigg(2\,c\,\Bigg(2\,b\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\Big(\sqrt{c}\,\Big(2\,b\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+4\,a$$

$$\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]^3\Big)\Big)\Big/\left(\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right)\Bigg)\Bigg)\Big/$$

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

Problem 18: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cot}[d+e\,x]^3}{\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}}\,dx$$

Optimal (type 3, 141 leaves, 7 steps):

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

Result (type 3, 2161 leaves):

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

$$a\,\text{Cos}[4\,(d+e\,x)] - b\,\text{Cos}[4\,(d+e\,x)] + c\,\text{Cos}[4\,(d+e\,x)]\Big) + \Bigg(\sqrt{\Bigg(\frac{3\,a}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]} + \frac{b}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]} + \frac{3\,c}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]} - \frac{4\,a\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]} + \frac{4\,c\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]} + \frac{a\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]} - \frac{b\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]} + \frac{c\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}\Bigg)}$$

$$\text{Sin}[4\,(d+e\,x)]\Bigg)\Big/\Big(3\,a+b+3\,c-4\,a\,\text{Cos}[2\,(d+e\,x)]+4\,c\,\text{Cos}[2\,(d+e\,x)] + a\,\text{Cos}[4\,(d+e\,x)] - b\,\text{Cos}[4\,(d+e\,x)] + c\,\text{Cos}[4\,(d+e\,x)]\Big)\Bigg)$$

$$\text{Tan}[d+e\,x]^2\,\sqrt{a+\text{Cot}[d+e\,x]^4\,\left(c+b\,\text{Tan}[d+e\,x]^2\right)}\Bigg)\Big/\Bigg(2\,e\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\Bigg)$$

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

$$\text{Tan}[d+e\,x]^2\,\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+4\,a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]^3\right)\sqrt{a+\text{Cot}[d+e\,x]^4\,\left(c+b\,\text{Tan}[d+e\,x]^2\right)}\Bigg)\Big/\left(4\,\left(c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4\right)^{3/2}\right)\Bigg) +$$

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

$$\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]\,\sqrt{a+\text{Cot}[d+e\,x]^4\,\left(c+b\,\text{Tan}[d+e\,x]^2\right)}\Bigg)\Big/$$

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

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

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

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

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

$$\left.\left(2\,b\,\text{Cot}[d+e\,x]\,\text{Csc}[d+e\,x]^2-4\,\text{Cot}[d+e\,x]^3\,\text{Csc}[d+e\,x]^2\left(c+b\,\text{Tan}[d+e\,x]^2\right)\right)\right)\Big/$$

$$\left(4\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\,\sqrt{a+\text{Cot}[d+e\,x]^4\left(c+b\,\text{Tan}[d+e\,x]^2\right)}\right)+$$

$$\frac{1}{2\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}}$$

$$\text{Tan}[d+e\,x]^2\,\sqrt{a+\text{Cot}[d+e\,x]^4\left(c+b\,\text{Tan}[d+e\,x]^2\right)}$$

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

$$\text{Tan}[d+e\,x]+\left(\sqrt{c}\,\left(2\,a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]^3+2\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]\right.\right.$$

$$\left.\left.\left.\left(b+a\,\text{Tan}[d+e\,x]^2\right)\right)\right)\Big/\left(\sqrt{c+\text{Tan}[d+e\,x]^2\left(b+a\,\text{Tan}[d+e\,x]^2\right)}\right)\right)\Big/$$

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

$$\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+2\left(-2\,a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\right.\right.$$

$$\left(\sqrt{a-b+c}\,\left(2\,a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]^3+2\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]\right.\right.$$

$$\left.\left.\left.\left.\left(b+a\,\text{Tan}[d+e\,x]^2\right)\right)\right)\Big/\left(2\,\sqrt{c+\text{Tan}[d+e\,x]^2\left(b+a\,\text{Tan}[d+e\,x]^2\right)}\right)\right)\right)\Big/$$

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

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

Problem 19: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Cot}[d+e\,x]}{\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}}\,dx$$

Optimal (type 3, 79 leaves, 4 steps):

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

Result (type 4, 84 039 leaves) : Display of huge result suppressed!

Problem 20: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[d+e\,x]}{\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}}\,dx$$

Optimal (type 3, 142 leaves, 8 steps) :

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

Result (type 4, 44 361 leaves) : Display of huge result suppressed!

Problem 21: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[d+e\,x]^3}{\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}}\,dx$$

Optimal (type 3, 249 leaves, 11 steps) :

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

Result (type 4, 124 484 leaves) : Display of huge result suppressed!

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

$$\int \text{Cot}[d+e\,x]^5\,\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}\,\,dx$$

Optimal (type 3, 270 leaves, 9 steps) :

$$\frac{\sqrt{a-b+c}\ \text{ArcTanh}\left[\frac{2a-b+(b-2c)\,\text{Cot}[d+e x]^2}{2\sqrt{a-b+c}\ \sqrt{a+b\,\text{Cot}[d+e x]^2+c\,\text{Cot}[d+e x]^4}}\right]}{2e}-\frac{1}{32\,c^{5/2}\,e}$$
$$\left(b^3+2b^2c-4b\,(a-2c)\,c-8c^2\,(a+2c)\right)\text{ArcTanh}\left[\frac{b+2c\,\text{Cot}[d+e x]^2}{2\sqrt{c}\ \sqrt{a+b\,\text{Cot}[d+e x]^2+c\,\text{Cot}[d+e x]^4}}\right]+$$
$$\frac{1}{16\,c^2\,e}\left(\left(b-2c\right)\left(b+4c\right)+2c\,(b+2c)\,\text{Cot}[d+e x]^2\right)\sqrt{a+b\,\text{Cot}[d+e x]^2+c\,\text{Cot}[d+e x]^4}-$$
$$\frac{\left(a+b\,\text{Cot}[d+e x]^2+c\,\text{Cot}[d+e x]^4\right)^{3/2}}{6\,c\,e}$$

Result (type 3, 4238 leaves):

$$\frac{1}{e}\sqrt{\left(\left(3a+b+3c-4a\,\text{Cos}[2\,(d+e x)]+4c\,\text{Cos}[2\,(d+e x)]+a\,\text{Cos}[4\,(d+e x)]-\right.\right.}$$
$$\left.\left.b\,\text{Cos}[4\,(d+e x)]+c\,\text{Cos}[4\,(d+e x)]\right)\Big/\left(3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]\right)\right)$$
$$\left(-\frac{-3b^2+8ac-8bc+44c^2}{48\,c^2}+\frac{(-b+14c)\,\text{Csc}[d+e x]^2}{24\,c}-\frac{1}{6}\text{Csc}[d+e x]^4\right)+$$
$$\left(\left(\left(b^3+2b^2c-4b\,(a-2c)\,c-8c^2\,(a+2c)\right)\text{Log}\left[\text{Tan}[d+e x]^2\right]+\right.\right.$$
$$16\,c^{5/2}\sqrt{a-b+c}\ \text{Log}\left[1+\text{Tan}[d+e x]^2\right]-\left(b^3+2b^2c-4b\,(a-2c)\,c-8c^2\,(a+2c)\right)$$
$$\text{Log}\left[2c+b\,\text{Tan}[d+e x]^2+2\sqrt{c}\ \sqrt{c+\text{Tan}[d+e x]^2\,\left(b+a\,\text{Tan}[d+e x]^2\right)}\right]-$$
$$16\,c^{5/2}\sqrt{a-b+c}\ \text{Log}\left[b\,\left(-1+\text{Tan}[d+e x]^2\right)+\right.$$
$$\left.\left.2\left(c-a\,\text{Tan}[d+e x]^2+\sqrt{a-b+c}\ \sqrt{c+\text{Tan}[d+e x]^2\,\left(b+a\,\text{Tan}[d+e x]^2\right)}\right)\right]\right)$$
$$\left(\left(b^3\sqrt{\left(\frac{3a}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}+\frac{b}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}+\right.}\right.\right.$$
$$\frac{3c}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}-\frac{4a\,\text{Cos}[2\,(d+e x)]}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}+$$
$$\frac{4c\,\text{Cos}[2\,(d+e x)]}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}+\frac{a\,\text{Cos}[4\,(d+e x)]}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}-$$
$$\left.\frac{b\,\text{Cos}[4\,(d+e x)]}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}+\frac{c\,\text{Cos}[4\,(d+e x)]}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}\right)$$
$$\left.\text{Sin}[2\,(d+e x)]\right)\Big/\left(4c^2\,\left(3a+b+3c-4a\,\text{Cos}[2\,(d+e x)]+4c\,\text{Cos}[2\,(d+e x)]+\right.\right.$$
$$\left.\left.a\,\text{Cos}[4\,(d+e x)]-b\,\text{Cos}[4\,(d+e x)]+c\,\text{Cos}[4\,(d+e x)]\right)\right)-$$
$$\left(a\,b\sqrt{\left(\frac{3a}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}+\frac{b}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}+\right.}\right.$$
$$\frac{3c}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}-\frac{4a\,\text{Cos}[2\,(d+e x)]}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}+$$
$$\frac{4c\,\text{Cos}[2\,(d+e x)]}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}+\frac{a\,\text{Cos}[4\,(d+e x)]}{3-4\,\text{Cos}[2\,(d+e x)]+\text{Cos}[4\,(d+e x)]}-$$

$$\frac{b\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{c\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}\Bigg)$$

$$\mathrm{Sin}[2\,(d+e\,x)]\Bigg)\Big/\Big(c\,\big(3\,a+b+3\,c-4\,a\,\mathrm{Cos}[2\,(d+e\,x)]+4\,c\,\mathrm{Cos}[2\,(d+e\,x)]+$$

$$a\,\mathrm{Cos}[4\,(d+e\,x)]-b\,\mathrm{Cos}[4\,(d+e\,x)]+c\,\mathrm{Cos}[4\,(d+e\,x)]\big)\Big)+$$

$$\Bigg(b^2\sqrt{\Bigg(\frac{3\,a}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+}$$

$$\frac{3\,c}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+$$

$$\frac{4\,c\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-$$

$$\frac{b\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{c\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}\Bigg)$$

$$\mathrm{Sin}[2\,(d+e\,x)]\Bigg)\Big/\Big(2\,c\,\big(3\,a+b+3\,c-4\,a\,\mathrm{Cos}[2\,(d+e\,x)]+4\,c\,\mathrm{Cos}[2\,(d+e\,x)]+$$

$$a\,\mathrm{Cos}[4\,(d+e\,x)]-b\,\mathrm{Cos}[4\,(d+e\,x)]+c\,\mathrm{Cos}[4\,(d+e\,x)]\big)\Big)-$$

$$\Bigg(2\,c\sqrt{\Bigg(\frac{3\,a}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+}$$

$$\frac{3\,c}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+$$

$$\frac{4\,c\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-$$

$$\frac{b\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{c\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}\Bigg)$$

$$\mathrm{Sin}[2\,(d+e\,x)]\Bigg)\Big/\Big(3\,a+b+3\,c-4\,a\,\mathrm{Cos}[2\,(d+e\,x)]+4\,c\,\mathrm{Cos}[2\,(d+e\,x)]+$$

$$a\,\mathrm{Cos}[4\,(d+e\,x)]-b\,\mathrm{Cos}[4\,(d+e\,x)]+c\,\mathrm{Cos}[4\,(d+e\,x)]\Big)-$$

$$\Bigg(a\sqrt{\Bigg(\frac{3\,a}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+}$$

$$\frac{3\,c}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+$$

$$\frac{4\,c\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-$$

$$\frac{b\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{c\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}\Bigg)$$

$$\mathrm{Sin}[4\,(d+e\,x)]\Bigg)\Big/\Big(3\,a+b+3\,c-4\,a\,\mathrm{Cos}[2\,(d+e\,x)]+4\,c\,\mathrm{Cos}[2\,(d+e\,x)]+$$

$$a \operatorname{Cos}[4 (d+e x)] - b \operatorname{Cos}[4 (d+e x)] + c \operatorname{Cos}[4 (d+e x)]) +$$

$$\left(b \sqrt{\left(\frac{3 a}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}+\frac{b}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}+\frac{3 c}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}-\frac{4 a \operatorname{Cos}[2 (d+e x)]}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}+\frac{4 c \operatorname{Cos}[2 (d+e x)]}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}+\frac{a \operatorname{Cos}[4 (d+e x)]}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}-\frac{b \operatorname{Cos}[4 (d+e x)]}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}+\frac{c \operatorname{Cos}[4 (d+e x)]}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}\right)}\right.$$

$$\left.\operatorname{Sin}[4 (d+e x)]\right) \Big/ (3 a + b + 3 c - 4 a \operatorname{Cos}[2 (d+e x)] + 4 c \operatorname{Cos}[2 (d+e x)] +$$

$$a \operatorname{Cos}[4 (d+e x)] - b \operatorname{Cos}[4 (d+e x)] + c \operatorname{Cos}[4 (d+e x)]) -$$

$$\left(c \sqrt{\left(\frac{3 a}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}+\frac{b}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}+\frac{3 c}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}-\frac{4 a \operatorname{Cos}[2 (d+e x)]}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}+\frac{4 c \operatorname{Cos}[2 (d+e x)]}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}+\frac{a \operatorname{Cos}[4 (d+e x)]}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}-\frac{b \operatorname{Cos}[4 (d+e x)]}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}+\frac{c \operatorname{Cos}[4 (d+e x)]}{3-4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]}\right)}\right.$$

$$\left.\operatorname{Sin}[4 (d+e x)]\right) \Big/ (3 a + b + 3 c - 4 a \operatorname{Cos}[2 (d+e x)] + 4 c \operatorname{Cos}[2 (d+e x)] +$$

$$a \operatorname{Cos}[4 (d+e x)] - b \operatorname{Cos}[4 (d+e x)] + c \operatorname{Cos}[4 (d+e x)])\Big)$$

$$\left.\operatorname{Tan}[d+e x]^2 \sqrt{a+\operatorname{Cot}[d+e x]^4 \left(c+b \operatorname{Tan}[d+e x]^2\right)}\right) \Big/ \Bigg(32$$

$$c^{5/2}$$

$$e$$

$$\sqrt{c+b \operatorname{Tan}[d+e x]^2+a \operatorname{Tan}[d+e x]^4}$$

$$\left(-\frac{1}{64 c^{5/2} \left(c+b \operatorname{Tan}[d+e x]^2+a \operatorname{Tan}[d+e x]^4\right)^{3/2}}\right.$$

$$\Big(\left(b^3+2 b^2 c-4 b (a-2 c) c-8 c^2 (a+2 c)\right) \operatorname{Log}\left[\operatorname{Tan}[d+e x]^2\right] +$$

$$16 c^{5/2} \sqrt{a-b+c} \operatorname{Log}\left[1+\operatorname{Tan}[d+e x]^2\right] - \left(b^3+2 b^2 c-4 b (a-2 c) c-8 c^2 (a+2 c)\right)$$

$$\operatorname{Log}\left[2 c+b \operatorname{Tan}[d+e x]^2+2 \sqrt{c} \sqrt{c+\operatorname{Tan}[d+e x]^2 \left(b+a \operatorname{Tan}[d+e x]^2\right)}\right] -$$

$$16 c^{5/2} \sqrt{a-b+c} \operatorname{Log}\Big[b \left(-1+\operatorname{Tan}[d+e x]^2\right) +$$

$$2 \left(c-a \operatorname{Tan}[d+e x]^2+\sqrt{a-b+c} \sqrt{c+\operatorname{Tan}[d+e x]^2 \left(b+a \operatorname{Tan}[d+e x]^2\right)}\right)\Big]\Big)$$

$$\text{Tan}[d+e x]^2 \left(2 b \text{Sec}[d+e x]^2 \text{Tan}[d+e x]+4 a \text{Sec}[d+e x]^2 \text{Tan}[d+e x]^3\right)$$

$$\sqrt{a+\text{Cot}[d+e x]^4 \left(c+b \text{Tan}[d+e x]^2\right)}+\frac{1}{16 c^{5/2} \sqrt{c+b \text{Tan}[d+e x]^2+a \text{Tan}[d+e x]^4}}$$

$$\Big(\left(b^3+2 b^2 c-4 b (a-2 c) c-8 c^2 (a+2 c)\right) \text{Log}\left[\text{Tan}[d+e x]^2\right]+$$
$$16 c^{5/2} \sqrt{a-b+c} \text{Log}\left[1+\text{Tan}[d+e x]^2\right]-\left(b^3+2 b^2 c-4 b (a-2 c) c-8 c^2 (a+2 c)\right)$$
$$\text{Log}\left[2 c+b \text{Tan}[d+e x]^2+2 \sqrt{c} \sqrt{c+\text{Tan}[d+e x]^2 \left(b+a \text{Tan}[d+e x]^2\right)}\right]-$$
$$16 c^{5/2} \sqrt{a-b+c} \text{Log}\Big[b \left(-1+\text{Tan}[d+e x]^2\right)+$$
$$2 \left(c-a \text{Tan}[d+e x]^2+\sqrt{a-b+c} \sqrt{c+\text{Tan}[d+e x]^2 \left(b+a \text{Tan}[d+e x]^2\right)}\right)\Big]\Big)$$

$$\text{Sec}[d+e x]^2 \text{Tan}[d+e x] \sqrt{a+\text{Cot}[d+e x]^4 \left(c+b \text{Tan}[d+e x]^2\right)}+$$

$$\Big(\Big(\left(b^3+2 b^2 c-4 b (a-2 c) c-8 c^2 (a+2 c)\right) \text{Log}\left[\text{Tan}[d+e x]^2\right]+$$
$$16 c^{5/2} \sqrt{a-b+c} \text{Log}\left[1+\text{Tan}[d+e x]^2\right]-\left(b^3+2 b^2 c-4 b (a-2 c) c-8 c^2 (a+2 c)\right)$$
$$\text{Log}\left[2 c+b \text{Tan}[d+e x]^2+2 \sqrt{c} \sqrt{c+\text{Tan}[d+e x]^2 \left(b+a \text{Tan}[d+e x]^2\right)}\right]-$$
$$16 c^{5/2} \sqrt{a-b+c} \text{Log}\Big[b \left(-1+\text{Tan}[d+e x]^2\right)+2 \Big(c-a \text{Tan}[d+e x]^2+$$
$$\sqrt{a-b+c} \sqrt{c+\text{Tan}[d+e x]^2 \left(b+a \text{Tan}[d+e x]^2\right)}\Big)\Big]\Big) \text{Tan}[d+e x]^2$$
$$\left(2 b \text{Cot}[d+e x] \text{Csc}[d+e x]^2-4 \text{Cot}[d+e x]^3 \text{Csc}[d+e x]^2 \left(c+b \text{Tan}[d+e x]^2\right)\right)\Big) \Big/$$
$$\left(64 c^{5/2} \sqrt{c+b \text{Tan}[d+e x]^2+a \text{Tan}[d+e x]^4} \sqrt{a+\text{Cot}[d+e x]^4 \left(c+b \text{Tan}[d+e x]^2\right)}\right)+$$

$$\frac{1}{32 c^{5/2} \sqrt{c+b \text{Tan}[d+e x]^2+a \text{Tan}[d+e x]^4}}$$

$$\text{Tan}[d+e x]^2 \sqrt{a+\text{Cot}[d+e x]^4 \left(c+b \text{Tan}[d+e x]^2\right)}$$

$$\Big(2 \left(b^3+2 b^2 c-4 b (a-2 c) c-8 c^2 (a+2 c)\right) \text{Csc}[d+e x] \text{Sec}[d+e x]+$$

$$\frac{32 c^{5/2} \sqrt{a-b+c} \text{Sec}[d+e x]^2 \text{Tan}[d+e x]}{1+\text{Tan}[d+e x]^2}-$$

$$\Big(\left(b^3+2 b^2 c-4 b (a-2 c) c-8 c^2 (a+2 c)\right) \Big(2 b \text{Sec}[d+e x]^2 \text{Tan}[d+e x]+$$
$$\Big(\sqrt{c} \Big(2 a \text{Sec}[d+e x]^2 \text{Tan}[d+e x]^3+2 \text{Sec}[d+e x]^2 \text{Tan}[d+e x]$$
$$\left(b+a \text{Tan}[d+e x]^2\right)\Big)\Big) \Big/ \left(\sqrt{c+\text{Tan}[d+e x]^2 \left(b+a \text{Tan}[d+e x]^2\right)}\right)\Big)\Big) \Big/$$
$$\left(2 c+b \text{Tan}[d+e x]^2+2 \sqrt{c} \sqrt{c+\text{Tan}[d+e x]^2 \left(b+a \text{Tan}[d+e x]^2\right)}\right)-$$

$$\Big(16 c^{5/2} \sqrt{a-b+c} \Big(2 b \text{Sec}[d+e x]^2 \text{Tan}[d+e x]+2$$
$$\Big(-2 a \text{Sec}[d+e x]^2 \text{Tan}[d+e x]+\Big(\sqrt{a-b+c} \Big(2 a \text{Sec}[d+e x]^2 \text{Tan}[d+e x]^3+$$
$$2 \text{Sec}[d+e x]^2 \text{Tan}[d+e x] \left(b+a \text{Tan}[d+e x]^2\right)\Big)\Big) \Big/$$
$$\left(2 \sqrt{c+\text{Tan}[d+e x]^2 \left(b+a \text{Tan}[d+e x]^2\right)}\right)\Big)\Big)\Big) \Big/ \Big(b \left(-1+\text{Tan}[d+e x]^2\right)+$$

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

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

$$\int \text{Cot}[d+e\,x]^3\,\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}\,dx$$

Optimal (type 3, 209 leaves, 8 steps):

$$-\frac{\sqrt{a-b+c}\,\text{ArcTanh}\left[\frac{2\,a-b+(b-2\,c)\,\text{Cot}[d+e\,x]^2}{2\,\sqrt{a-b+c}\,\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}}\right]}{2\,e}+\frac{\left(b^2+4\,b\,c-4\,c\,(a+2\,c)\right)\,\text{ArcTanh}\left[\frac{b+2\,c\,\text{Cot}[d+e\,x]^2}{2\,\sqrt{c}\,\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}}\right]}{16\,c^{3/2}\,e}-\frac{\left(b-4\,c+2\,c\,\text{Cot}[d+e\,x]^2\right)\,\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}}{8\,c\,e}$$

Result (type 3, 4379 leaves):

$$\frac{1}{e}\sqrt{\Big(\Big(3\,a+b+3\,c-4\,a\,\text{Cos}[2\,(d+e\,x)]+4\,c\,\text{Cos}[2\,(d+e\,x)]+a\,\text{Cos}[4\,(d+e\,x)]-b\,\text{Cos}[4\,(d+e\,x)]+c\,\text{Cos}[4\,(d+e\,x)]\Big)\Big/\Big(3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]\Big)\Big)}\,\left(\frac{-b+6\,c}{8\,c}-\frac{1}{4}\,\text{Csc}[d+e\,x]^2\right)+$$

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

$$\Bigg(-\Bigg(\Bigg(b^2\sqrt{\Bigg(\frac{3\,a}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+}$$
$$\frac{3\,c}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+$$
$$\frac{4\,c\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{a\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}-$$
$$\frac{b\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{c\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}\Bigg)$$

$$\operatorname{Sin}[2\,(d+e\,x)]\Big)\Big/\Big(2\,c\,\big(3\,a+b+3\,c-4\,a\operatorname{Cos}[2\,(d+e\,x)]+4\,c\operatorname{Cos}[2\,(d+e\,x)]+$$

$$a\operatorname{Cos}[4\,(d+e\,x)]-b\operatorname{Cos}[4\,(d+e\,x)]+c\operatorname{Cos}[4\,(d+e\,x)]\big)\Big)\Big)+$$

$$\Bigg(2\,c\,\sqrt{\left(\frac{3\,a}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{3\,c}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}-\frac{4\,a\operatorname{Cos}[2\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{4\,c\operatorname{Cos}[2\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{a\operatorname{Cos}[4\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}-\frac{b\operatorname{Cos}[4\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{c\operatorname{Cos}[4\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}\right)}$$

$$\operatorname{Sin}[2\,(d+e\,x)]\Bigg)\Big/\big(3\,a+b+3\,c-4\,a\operatorname{Cos}[2\,(d+e\,x)]+4\,c\operatorname{Cos}[2\,(d+e\,x)]+$$

$$a\operatorname{Cos}[4\,(d+e\,x)]-b\operatorname{Cos}[4\,(d+e\,x)]+c\operatorname{Cos}[4\,(d+e\,x)]\big)+$$

$$\Bigg(a\,\sqrt{\left(\frac{3\,a}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{3\,c}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}-\frac{4\,a\operatorname{Cos}[2\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{4\,c\operatorname{Cos}[2\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{a\operatorname{Cos}[4\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}-\frac{b\operatorname{Cos}[4\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{c\operatorname{Cos}[4\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}\right)}$$

$$\operatorname{Sin}[4\,(d+e\,x)]\Bigg)\Big/\big(3\,a+b+3\,c-4\,a\operatorname{Cos}[2\,(d+e\,x)]+4\,c\operatorname{Cos}[2\,(d+e\,x)]+$$

$$a\operatorname{Cos}[4\,(d+e\,x)]-b\operatorname{Cos}[4\,(d+e\,x)]+c\operatorname{Cos}[4\,(d+e\,x)]\big)-$$

$$\Bigg(b\,\sqrt{\left(\frac{3\,a}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{3\,c}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}-\frac{4\,a\operatorname{Cos}[2\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{4\,c\operatorname{Cos}[2\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{a\operatorname{Cos}[4\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}-\frac{b\operatorname{Cos}[4\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}+\frac{c\operatorname{Cos}[4\,(d+e\,x)]}{3-4\operatorname{Cos}[2\,(d+e\,x)]+\operatorname{Cos}[4\,(d+e\,x)]}\right)}$$

$$\operatorname{Sin}[4\,(d+e\,x)]\Bigg)\Big/\big(3\,a+b+3\,c-4\,a\operatorname{Cos}[2\,(d+e\,x)]+4\,c\operatorname{Cos}[2\,(d+e\,x)]+$$

$$a\operatorname{Cos}[4\,(d+e\,x)]-b\operatorname{Cos}[4\,(d+e\,x)]+c\operatorname{Cos}[4\,(d+e\,x)]\big)+$$

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

$$\left.\text{Sin}[4\,(d+e\,x)]\right)\Big/\Big(3a+b+3c-4\,a\,\text{Cos}[2\,(d+e\,x)]+4\,c\,\text{Cos}[2\,(d+e\,x)]+a\,\text{Cos}[4\,(d+e\,x)]-b\,\text{Cos}[4\,(d+e\,x)]+c\,\text{Cos}[4\,(d+e\,x)]\Big)\Big)$$

$$\text{Tan}[d+e\,x]^2\sqrt{a+\text{Cot}[d+e\,x]^4\,(c+b\,\text{Tan}[d+e\,x]^2)}\Bigg)\Bigg/\Bigg(16$$

$$c^{3/2}$$

$$e$$

$$\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}$$

$$\left(-\frac{1}{32\,c^{3/2}\,(c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4)^{3/2}}\right.$$

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

$$\text{Tan}[d+e\,x]^2\,\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+4\,a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]^3\right)$$

$$\sqrt{a+\text{Cot}[d+e\,x]^4\,(c+b\,\text{Tan}[d+e\,x]^2)}+\frac{1}{8\,c^{3/2}\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}}$$

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

$$8\,c^{3/2}\sqrt{a-b+c}\;\text{Log}\Big[b\,\left(-1+\text{Tan}[d+e\,x]^2\right)+$$
$$2\,\left(c-a\,\text{Tan}[d+e\,x]^2+\sqrt{a-b+c}\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right)\Big]\Big)$$
$$\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]\,\sqrt{a+\text{Cot}[d+e\,x]^4\,\left(c+b\,\text{Tan}[d+e\,x]^2\right)}\;+$$
$$\Big(\Big(-\left(b^2+4\,b\,c-4\,c\,\left(a+2\,c\right)\right)\,\text{Log}\left[\text{Tan}[d+e\,x]^2\right]-8\,c^{3/2}\sqrt{a-b+c}\;\text{Log}\left[1+\text{Tan}[d+e\,x]^2\right]+$$
$$b^2\,\text{Log}\left[2\,c+b\,\text{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right]-$$
$$4\,a\,c\,\text{Log}\left[2\,c+b\,\text{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right]+$$
$$4\,b\,c\,\text{Log}\left[2\,c+b\,\text{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right]-$$
$$8\,c^2\,\text{Log}\left[2\,c+b\,\text{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right]+$$
$$8\,c^{3/2}\sqrt{a-b+c}\;\text{Log}\Big[b\,\left(-1+\text{Tan}[d+e\,x]^2\right)+2\,\Big(c-a\,\text{Tan}[d+e\,x]^2+$$
$$\sqrt{a-b+c}\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\Big)\Big]\Big)\,\text{Tan}[d+e\,x]^2$$
$$\left(2\,b\,\text{Cot}[d+e\,x]\,\text{Csc}[d+e\,x]^2-4\,\text{Cot}[d+e\,x]^3\,\text{Csc}[d+e\,x]^2\,\left(c+b\,\text{Tan}[d+e\,x]^2\right)\right)\Big)\Big/$$
$$\left(32\,c^{3/2}\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\,\sqrt{a+\text{Cot}[d+e\,x]^4\,\left(c+b\,\text{Tan}[d+e\,x]^2\right)}\right)+$$
$$\frac{1}{16\,c^{3/2}\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}}$$
$$\text{Tan}[d+e\,x]^2\,\sqrt{a+\text{Cot}[d+e\,x]^4\,\left(c+b\,\text{Tan}[d+e\,x]^2\right)}$$
$$\Big(-2\,\left(b^2+4\,b\,c-4\,c\,\left(a+2\,c\right)\right)\,\text{Csc}[d+e\,x]\,\text{Sec}[d+e\,x]-$$
$$\frac{16\,c^{3/2}\sqrt{a-b+c}\;\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]}{1+\text{Tan}[d+e\,x]^2}+$$
$$\Big(b^2\,\Big(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\Big(\sqrt{c}\,\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+4\,a\,\text{Sec}[d+e\,x]^2\right.$$
$$\left.\text{Tan}[d+e\,x]^3\right)\Big)\Big/\left(\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right)\Big)\Big)\Big/$$
$$\left(2\,c+b\,\text{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right)-$$
$$\Big(4\,a\,c\,\Big(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\Big(\sqrt{c}\,\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+4\,a\right.$$
$$\left.\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]^3\right)\Big)\Big/\left(\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right)\Big)\Big)\Big/$$
$$\left(2\,c+b\,\text{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right)+$$
$$\Big(4\,b\,c\,\Big(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\Big(\sqrt{c}\,\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+4\,a\right.$$
$$\left.\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]^3\right)\Big)\Big/\left(\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right)\Big)\Big)\Big/$$
$$\left(2\,c+b\,\text{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right)-$$

$$\left(8\,c^2\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\left(\sqrt{c}\,\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+4\,a\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]^3\right)\right)\Big/\left(\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right)\right)\right)\Big/$$

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

$$\left(8\,c^{3/2}\,\sqrt{a-b+c}\,\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+2\,\left(-2\,a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\right.\right.\right.$$

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

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

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

Problem 24: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 179 leaves, 8 steps):

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

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

Result (type 3, 3486 leaves):

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

$$\left.\left.\left.b\,\text{Cos}[4\,(d+e\,x)]+c\,\text{Cos}[4\,(d+e\,x)]\right)\Big/\left(3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]\right)\right)\right)+$$

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

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

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

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

$$\left(\left(2\,a\Big/\sqrt{\left(\frac{3\,a}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\right.}\right.\right.$$

$$\frac{3\,c}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+$$

$$\frac{4\,c\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{a\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}-$$

$$\frac{b\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{c\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}\Bigg)$$

$$\mathrm{Sin}[2\,(d+e\,x)]\Bigg)\Big/\,(3\,a+b+3\,c-4\,a\,\mathrm{Cos}[2\,(d+e\,x)]+4\,c\,\mathrm{Cos}[2\,(d+e\,x)]+$$

$$a\,\mathrm{Cos}[4\,(d+e\,x)]-b\,\mathrm{Cos}[4\,(d+e\,x)]+c\,\mathrm{Cos}[4\,(d+e\,x)])-$$

$$\Bigg(2\,c\,\sqrt{\Bigg(\frac{3\,a}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+}$$

$$\frac{3\,c}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+$$

$$\frac{4\,c\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-$$

$$\frac{b\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{c\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}\Bigg)$$

$$\mathrm{Sin}[2\,(d+e\,x)]\Bigg)\Big/\,(3\,a+b+3\,c-4\,a\,\mathrm{Cos}[2\,(d+e\,x)]+4\,c\,\mathrm{Cos}[2\,(d+e\,x)]+$$

$$a\,\mathrm{Cos}[4\,(d+e\,x)]-b\,\mathrm{Cos}[4\,(d+e\,x)]+c\,\mathrm{Cos}[4\,(d+e\,x)])-$$

$$\Bigg(a\,\sqrt{\Bigg(\frac{3\,a}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+}$$

$$\frac{3\,c}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+$$

$$\frac{4\,c\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-$$

$$\frac{b\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{c\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}\Bigg)$$

$$\mathrm{Sin}[4\,(d+e\,x)]\Bigg)\Big/\,(3\,a+b+3\,c-4\,a\,\mathrm{Cos}[2\,(d+e\,x)]+4\,c\,\mathrm{Cos}[2\,(d+e\,x)]+$$

$$a\,\mathrm{Cos}[4\,(d+e\,x)]-b\,\mathrm{Cos}[4\,(d+e\,x)]+c\,\mathrm{Cos}[4\,(d+e\,x)])+$$

$$\Bigg(b\,\sqrt{\Bigg(\frac{3\,a}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+}$$

$$\frac{3\,c}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+$$

$$\frac{4\,c\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-$$

$$\frac{b\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{c\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}\Bigg)$$

$$\mathrm{Sin}[4\,(d+e\,x)]\Bigg)\Big/\,(3\,a+b+3\,c-4\,a\,\mathrm{Cos}[2\,(d+e\,x)]+4\,c\,\mathrm{Cos}[2\,(d+e\,x)]+$$

$$a\,\text{Cos}[4\,(d+e\,x)]-b\,\text{Cos}[4\,(d+e\,x)]+c\,\text{Cos}[4\,(d+e\,x)])-$$

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

$$\frac{3\,c}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+$$

$$\frac{4\,c\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{a\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}-$$

$$\left.\frac{b\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{c\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}\right)$$

$$\left.\text{Sin}[4\,(d+e\,x)]\right)\Big/\ (3\,a+b+3\,c-4\,a\,\text{Cos}[2\,(d+e\,x)]+4\,c\,\text{Cos}[2\,(d+e\,x)]+$$

$$\left.a\,\text{Cos}[4\,(d+e\,x)]-b\,\text{Cos}[4\,(d+e\,x)]+c\,\text{Cos}[4\,(d+e\,x)])\right)$$

$$\left.\text{Tan}[d+e\,x]^2\right)\Big/\left(4\sqrt{c}\ e\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right.$$

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

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

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

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

$$2\sqrt{c}\ \sqrt{a-b+c}\ \text{Log}\Big[-b+(-2\,a+b)\ \text{Tan}[d+e\,x]^2+$$

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

$$\text{Tan}[d+e\,x]^2\ \left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+4\,a\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]^3\right)+$$

$$\frac{1}{2\sqrt{c}\ \sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}}\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}$$

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

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

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

$$2\sqrt{c}\ \sqrt{a-b+c}\ \text{Log}\Big[-b+(-2\,a+b)\ \text{Tan}[d+e\,x]^2+$$

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

$$\left(\left(-2\,b\,\text{Cot}[d+e\,x]\ \text{Csc}[d+e\,x]^2-4\,c\,\text{Cot}[d+e\,x]^3\,\text{Csc}[d+e\,x]^2\right)\right.$$

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

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

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

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

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

$$\left(8\,\sqrt{c}\,\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right)+$$

$$\frac{1}{4\,\sqrt{c}\,\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}}$$

$$\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}\,\,\text{Tan}[d+e\,x]^2$$

$$\Big(2\,\left(b-2\,c\right)\,\text{Csc}[d+e\,x]\,\,\text{Sec}[d+e\,x]+4\,\sqrt{c}\,\sqrt{a-b+c}\,\,\text{Tan}[d+e\,x]-$$

$$\Big(b\,\Big(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\Big(\sqrt{c}\,\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+4\,a\,\text{Sec}[d+e\,x]^2\right.$$

$$\left.\text{Tan}[d+e\,x]^3\right)\Big)\Big/\left(\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right)\Big)\Big)\Big/$$

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

$$\Big(2\,c\,\Big(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\Big(\sqrt{c}\,\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+4\,a\right.$$

$$\left.\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]^3\right)\Big)\Big/\left(\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right)\Big)\Big)\Big/$$

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

$$\Big(2\,\sqrt{c}\,\sqrt{a-b+c}\,\,\Big(2\,\left(-2\,a+b\right)\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+$$

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

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

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

Problem 25: Result more than twice size of optimal antiderivative.

$$\int\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}\,\,\text{Tan}[d+e\,x]\,dx$$

Optimal (type 3, 203 leaves, 10 steps):

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

Result (type 3, 1999 leaves):

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

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

Problem 26: Humongous result has more than 200000 leaves.

$$\int\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}\,\text{Tan}[d+e\,x]^3\,dx$$

Optimal (type 3, 435 leaves, 22 steps):

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

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

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

$$\frac{\sqrt{c}\,\text{ArcTanh}\left[\frac{b+2\,c\,\text{Cot}[d+e\,x]^2}{2\,\sqrt{c}\,\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}}\right]}{2\,e}+\frac{\sqrt{a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4}\,\text{Tan}[d+e\,x]^2}{2\,e}$$

Result (type ?, 215 131 leaves): Display of huge result suppressed!

Problem 27: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cot}[d+e\,x]^7}{\left(a+b\,\text{Cot}[d+e\,x]^2+c\,\text{Cot}[d+e\,x]^4\right)^{3/2}}\,dx$$

Optimal (type 3, 236 leaves, 8 steps):

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

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

Result (type 3, 3921 leaves):

$$\frac{1}{e}\sqrt{\Big(\big(3\,a+b+3\,c-4\,a\,\text{Cos}[2\,(d+e\,x)]+4\,c\,\text{Cos}[2\,(d+e\,x)]+a\,\text{Cos}[4\,(d+e\,x)]-b\,\text{Cos}[4\,(d+e\,x)]+c\,\text{Cos}[4\,(d+e\,x)]\big)\Big/}$$

$$\big(3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]\big)\Big)\,\left(-\frac{a^2\,b-2\,a\,b^2+b^3+4\,a^2\,c-3\,a\,b\,c}{c\,(a-b+c)^2\,\left(-b^2+4\,a\,c\right)}-\right.$$

$$\big(4\,\big(-2\,a^3+a^2\,b+a\,b^2-b^3-2\,a^2\,c+3\,a\,b\,c+2\,a^3\,\text{Cos}[2\,(d+e\,x)]-3\,a^2\,b\,\text{Cos}[2\,(d+e\,x)]+3\,a\,b^2\,\text{Cos}[2\,(d+e\,x)]-b^3\,\text{Cos}[2\,(d+e\,x)]-6\,a^2\,c\,\text{Cos}[2\,(d+e\,x)]+3\,a\,b\,c\,\text{Cos}[2\,(d+e\,x)]\big)\big)\Big/$$

$$\left.\Big((a-b+c)^2\,\left(-b^2+4\,a\,c\right)\,\big(3\,a+b+3\,c-4\,a\,\text{Cos}[2\,(d+e\,x)]+4\,c\,\text{Cos}[2\,(d+e\,x)]+a\,\text{Cos}[4\,(d+e\,x)]-b\,\text{Cos}[4\,(d+e\,x)]+c\,\text{Cos}[4\,(d+e\,x)]\big)\Big)\right)+$$

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

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

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

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

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

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

$$\left(\left(2\,\sqrt{\left(\frac{3\,a}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\right.}\right.\right.$$

$$\frac{3\,c}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+$$

$$\frac{4\,c\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{a\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}-$$

$$\left.\frac{b\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{c\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}\right)$$

$$\left.\text{Sin}[2\,(d+e\,x)]\right)\Big/\left(\left(a-b+c\right)\,\left(3\,a+b+3\,c-4\,a\,\text{Cos}[2\,(d+e\,x)]+\right.\right.$$

$$\left.\left.\left.4\,c\,\text{Cos}[2\,(d+e\,x)]+a\,\text{Cos}[4\,(d+e\,x)]-b\,\text{Cos}[4\,(d+e\,x)]+c\,\text{Cos}[4\,(d+e\,x)]\right)\right)\right)+$$

$$\left(4\,a\,\sqrt{\left(\frac{3\,a}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\right.}\right.$$

$$\frac{3\,c}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+$$

$$\frac{4\,c\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{a\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}-$$

$$\left.\frac{b\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{c\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}\right)$$

$$\left.\text{Sin}[2\,(d+e\,x)]\right)\Big/\left(c\,\left(a-b+c\right)\,\left(3\,a+b+3\,c-4\,a\,\text{Cos}[2\,(d+e\,x)]+\right.\right.$$

$$\left.\left.4\,c\,\text{Cos}[2\,(d+e\,x)]+a\,\text{Cos}[4\,(d+e\,x)]-b\,\text{Cos}[4\,(d+e\,x)]+c\,\text{Cos}[4\,(d+e\,x)]\right)\right)-$$

$$\left(4\,b\,\sqrt{\left(\frac{3\,a}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\right.}\right.$$

$$\frac{3\,c}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+$$

$$\frac{4\,c\,\text{Cos}[2\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{a\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}-$$

$$\left.\frac{b\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}+\frac{c\,\text{Cos}[4\,(d+e\,x)]}{3-4\,\text{Cos}[2\,(d+e\,x)]+\text{Cos}[4\,(d+e\,x)]}\right)$$

$$\mathrm{Sin}\left[2\,(d+e\,x)\right]\Big)\Big/\Big(c\,(a-b+c)\,\big(3\,a+b+3\,c-4\,a\,\mathrm{Cos}[2\,(d+e\,x)]+4\,c\,\mathrm{Cos}[2\,(d+e\,x)]+a\,\mathrm{Cos}[4\,(d+e\,x)]-b\,\mathrm{Cos}[4\,(d+e\,x)]+c\,\mathrm{Cos}[4\,(d+e\,x)]\big)\Big)+$$

$$\Bigg(\sqrt{\left(\frac{3\,a}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{b}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{3\,c}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-\frac{4\,a\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{4\,c\,\mathrm{Cos}[2\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{a\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}-\frac{b\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}+\frac{c\,\mathrm{Cos}[4\,(d+e\,x)]}{3-4\,\mathrm{Cos}[2\,(d+e\,x)]+\mathrm{Cos}[4\,(d+e\,x)]}\right)}$$

$$\mathrm{Sin}[4\,(d+e\,x)]\Bigg)\Big/\Big(\big(a-b+c\big)\,\big(3\,a+b+3\,c-4\,a\,\mathrm{Cos}[2\,(d+e\,x)]+4\,c\,\mathrm{Cos}[2\,(d+e\,x)]+a\,\mathrm{Cos}[4\,(d+e\,x)]-b\,\mathrm{Cos}[4\,(d+e\,x)]+c\,\mathrm{Cos}[4\,(d+e\,x)]\big)\Big)\Bigg)$$

$$\mathrm{Tan}[d+e\,x]^2\,\sqrt{a+\mathrm{Cot}[d+e\,x]^4\,\left(c+b\,\mathrm{Tan}[d+e\,x]^2\right)}\Bigg)\Bigg/\Bigg(2$$

$$c^{3/2}$$
$$(a-b+c)$$
$$e$$
$$\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}$$

$$\Bigg(-\frac{1}{4\,c^{3/2}\,(a-b+c)\,\left(c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4\right)^{3/2}}$$

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

$$\mathrm{Tan}[d+e\,x]^2\,\left(2\,b\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+4\,a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]^3\right)$$
$$\sqrt{a+\mathrm{Cot}[d+e\,x]^4\,\left(c+b\,\mathrm{Tan}[d+e\,x]^2\right)}+$$

$$\frac{1}{c^{3/2}\,(a-b+c)\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}}$$

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

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

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

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

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

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

$$\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]\,\sqrt{a+\text{Cot}[d+e\,x]^4\,\left(c+b\,\text{Tan}[d+e\,x]^2\right)}\,+$$

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

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

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

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

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

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

$$\left.\left(2\,b\,\text{Cot}[d+e\,x]\,\text{Csc}[d+e\,x]^2-4\,\text{Cot}[d+e\,x]^3\,\text{Csc}[d+e\,x]^2\,\left(c+b\,\text{Tan}[d+e\,x]^2\right)\right)\right)\Big/$$

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

$$\left.\sqrt{a+\text{Cot}[d+e\,x]^4\,\left(c+b\,\text{Tan}[d+e\,x]^2\right)}\,\right)+$$

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

$$\text{Tan}[d+e\,x]^2\,\sqrt{a+\text{Cot}[d+e\,x]^4\,\left(c+b\,\text{Tan}[d+e\,x]^2\right)}$$

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

$$\left(a\,\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\left(\sqrt{c}\,\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+4\,a\,\text{Sec}[d+e\,x]^2\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\text{Tan}[d+e\,x]^3\right)\right)\Big/\left(\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right)\right)\right)\Big/$$

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

$$\left(b\,\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+\left(\sqrt{c}\,\left(2\,b\,\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]+4\,a\right.\right.\right.\right.$$

$$\left.\left.\left.\left.\text{Sec}[d+e\,x]^2\,\text{Tan}[d+e\,x]^3\right)\right)\Big/\left(\sqrt{c+b\,\text{Tan}[d+e\,x]^2+a\,\text{Tan}[d+e\,x]^4}\right)\right)\right)\Big/$$

$$\left(2\,c+b\,\mathrm{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right)-$$
$$\left(c\,\left(2\,b\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\left(\sqrt{c}\,\left(2\,b\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+4\,a\right.\right.\right.\right.$$
$$\left.\left.\left.\left.\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]^3\right)\right)\Big/\left(\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right)\right)\right)\Big/$$
$$\left(2\,c+b\,\mathrm{Tan}[d+e\,x]^2+2\,\sqrt{c}\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right)+$$
$$\left(c^{3/2}\,\left(2\,b\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+2\,\left(-2\,a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+\right.\right.\right.$$
$$\left(\sqrt{a-b+c}\,\left(2\,b\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]+4\,a\,\mathrm{Sec}[d+e\,x]^2\,\mathrm{Tan}[d+e\,x]^3\right)\right)\Big/$$
$$\left.\left.\left.\left(2\,\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right)\right)\right)\right)\Big/$$
$$\left(\sqrt{a-b+c}\,\left(b\,\left(-1+\mathrm{Tan}[d+e\,x]^2\right)+2\,\left(c-a\,\mathrm{Tan}[d+e\,x]^2+\sqrt{a-b+c}\right.\right.\right.$$
$$\left.\left.\left.\left.\left.\sqrt{c+b\,\mathrm{Tan}[d+e\,x]^2+a\,\mathrm{Tan}[d+e\,x]^4}\right)\right)\right)\right)\right)$$

Problem 28: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Cot}[d+e\,x]^5}{\left(a+b\,\mathrm{Cot}[d+e\,x]^2+c\,\mathrm{Cot}[d+e\,x]^4\right)^{3/2}}\,dx$$

Optimal (type 3, 160 leaves, 6 steps):

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

Result (type 4, 78 272 leaves): Display of huge result suppressed!

Problem 29: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 153 leaves, 6 steps):

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

Result (type 4, 78 265 leaves) : Display of huge result suppressed!

Problem 30: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 156 leaves, 6 steps) :

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

Result (type 4, 78 291 leaves) : Display of huge result suppressed!

Problem 31: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 280 leaves, 12 steps) :

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

Result (type 4, 181 078 leaves) : Display of huge result suppressed!

Problem 32: Humongous result has more than 200000 leaves.

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

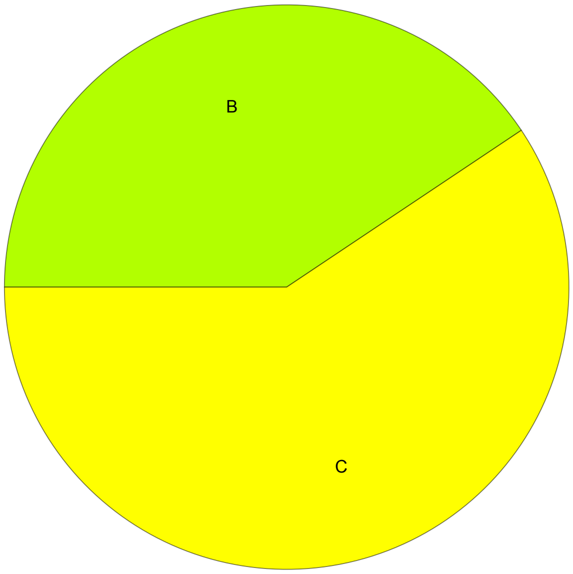
Optimal (type 3, 478 leaves, 16 steps):

$$-\frac{\text{ArcTanh}\left[\frac{2 a+b\,\text{Cot}[d+e x]^2}{2\sqrt{a}\,\sqrt{a+b\,\text{Cot}[d+e x]^2+c\,\text{Cot}[d+e x]^4}}\right]}{2 a^{3/2} e}-\frac{3 b\,\text{ArcTanh}\left[\frac{2 a+b\,\text{Cot}[d+e x]^2}{2\sqrt{a}\,\sqrt{a+b\,\text{Cot}[d+e x]^2+c\,\text{Cot}[d+e x]^4}}\right]}{4 a^{5/2} e}+$$
$$\frac{\text{ArcTanh}\left[\frac{2 a-b+(b-2 c)\,\text{Cot}[d+e x]^2}{2\sqrt{a-b+c}\,\sqrt{a+b\,\text{Cot}[d+e x]^2+c\,\text{Cot}[d+e x]^4}}\right]}{2\left(a-b+c\right)^{3/2} e}+\frac{b^2-2 a c+b c\,\text{Cot}[d+e x]^2}{a\left(b^2-4 a c\right) e\sqrt{a+b\,\text{Cot}[d+e x]^2+c\,\text{Cot}[d+e x]^4}}-$$
$$\frac{b^2-2 a c-b c+\left(b-2 c\right) c\,\text{Cot}[d+e x]^2}{\left(a-b+c\right)\left(b^2-4 a c\right) e\sqrt{a+b\,\text{Cot}[d+e x]^2+c\,\text{Cot}[d+e x]^4}}-$$
$$\frac{\left(b^2-2 a c+b c\,\text{Cot}[d+e x]^2\right)\text{Tan}[d+e x]^2}{a\left(b^2-4 a c\right) e\sqrt{a+b\,\text{Cot}[d+e x]^2+c\,\text{Cot}[d+e x]^4}}+$$
$$\frac{\left(3 b^2-8 a c\right)\sqrt{a+b\,\text{Cot}[d+e x]^2+c\,\text{Cot}[d+e x]^4}\;\text{Tan}[d+e x]^2}{2 a^2\left(b^2-4 a c\right) e}$$

Result (type ?, 293 889 leaves): Display of huge result suppressed!

Summary of Integration Test Results

32 integration problems



A - 0 optimal antiderivatives

B - 13 more than twice size of optimal antiderivatives

C - 19 unnecessarily complex antiderivatives

D - 0 unable to integrate problems

E - 0 integration timeouts