Mathematica 11.3 Integration Test Results

Test results for the 51 problems in "4.3.9 trig^m (a+b tan^n+c tan^(2 n))^p.m"

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

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

Optimal (type 3, 975 leaves, 21 steps):

$$\left(\sqrt{a^2+b^2+c\left(c+\sqrt{a^2+b^2-2ac+c^2}\right)-a\left(2c+\sqrt{a^2+b^2-2ac+c^2}\right)}\right.$$
$$\text{ArcTan}\left[\left(b^2+(a-c)\left(a-c-\sqrt{a^2+b^2-2ac+c^2}\right)-b\sqrt{a^2+b^2-2ac+c^2}\,\text{Tan}[d+e x]\right)\Big/\right.$$
$$\left(\sqrt{2}\left(a^2+b^2-2ac+c^2\right)^{1/4}\right.$$
$$\sqrt{a^2+b^2+c\left(c+\sqrt{a^2+b^2-2ac+c^2}\right)-a\left(2c+\sqrt{a^2+b^2-2ac+c^2}\right)}$$
$$\left.\left.\left.\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}\right)\right]\right)\Big/$$
$$\left(\sqrt{2}\left(a^2+b^2-2ac+c^2\right)^{1/4} e\right)+\frac{b\,\text{ArcTanh}\left[\frac{b+2c\,\text{Tan}[d+e x]}{2\sqrt{c}\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}}\right]}{2\sqrt{c}\,e}-$$
$$\frac{b\left(b^2-4ac\right)\text{ArcTanh}\left[\frac{b+2c\,\text{Tan}[d+e x]}{2\sqrt{c}\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}}\right]}{16\,c^{5/2}\,e}+$$
$$\frac{b\left(7b^2-12ac\right)\left(b^2-4ac\right)\text{ArcTanh}\left[\frac{b+2c\,\text{Tan}[d+e x]}{2\sqrt{c}\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}}\right]}{256\,c^{9/2}\,e}-$$
$$\left(\sqrt{a^2+b^2+c\left(c-\sqrt{a^2+b^2-2ac+c^2}\right)-a\left(2c-\sqrt{a^2+b^2-2ac+c^2}\right)}\right.$$

$$\text{ArcTanh}\Big[\Big(b^2+(a-c)\left(a-c+\sqrt{a^2+b^2-2ac+c^2}\right)+b\sqrt{a^2+b^2-2ac+c^2}\,\text{Tan}[d+e x]\Big)\Big/\Big(\sqrt{2}\,(a^2+b^2-2ac+c^2)^{1/4}\sqrt{a^2+b^2+c\left(c-\sqrt{a^2+b^2-2ac+c^2}\right)-a\left(2c-\sqrt{a^2+b^2-2ac+c^2}\right)}\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}\Big)\Big]\Big/\left(\sqrt{2}\,(a^2+b^2-2ac+c^2)^{1/4}\,e\right)+\frac{\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}}{e}+$$
$$\frac{b\,(b+2c\,\text{Tan}[d+e x])\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}}{8c^2 e}-$$
$$\frac{b\,(7b^2-12ac)\,(b+2c\,\text{Tan}[d+e x])\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}}{128c^4 e}-$$
$$\frac{(a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2)^{3/2}}{3ce}+\frac{\text{Tan}[d+e x]^2\,(a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2)^{3/2}}{5ce}+$$
$$\frac{(35b^2-32ac-42bc\,\text{Tan}[d+e x])\,(a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2)^{3/2}}{240c^3 e}$$

Result (type 3, 2599 leaves) :

$$\frac{1}{e}\sqrt{\frac{a+c+a\,\text{Cos}[2(d+e x)]-c\,\text{Cos}[2(d+e x)]+b\,\text{Sin}[2(d+e x)]}{1+\text{Cos}[2(d+e x)]}}$$
$$\Big(\frac{-105b^4+460ab^2c-256a^2c^2+296b^2c^2-768ac^3+2944c^4}{1920c^4}+\frac{(-7b^2+16ac-176c^2)\,\text{Sec}[d+e x]^2}{240c^2}+\frac{1}{5}\text{Sec}[d+e x]^4+\frac{1}{960c^3}\text{Sec}[d+e x]\,(35b^3\,\text{Sin}[d+e x]-116abc\,\text{Sin}[d+e x]-104bc^2\,\text{Sin}[d+e x])+\frac{b\,\text{Sec}[d+e x]^2\,\text{Tan}[d+e x]}{40c}\Big)+$$
$$\Big(\Big(-\frac{1}{2}\sqrt{a-\mathrm{i}b-c}\,\text{Log}\Big[\Big(2a-2\mathrm{i}c\,\text{Tan}[d+e x]+b(-\mathrm{i}+\text{Tan}[d+e x])+2\sqrt{a-\mathrm{i}b-c}\sqrt{a+\text{Tan}[d+e x]\,(b+c\,\text{Tan}[d+e x])}\Big)\Big/\left(128(a-\mathrm{i}b-c)^{3/2}c^4(\mathrm{i}+\text{Tan}[d+e x])\right)\Big]-$$
$$\frac{1}{2}\sqrt{a+\mathrm{i}b-c}\,\text{Log}\Big[\Big(2a+2\mathrm{i}c\,\text{Tan}[d+e x]+b(\mathrm{i}+\text{Tan}[d+e x])+$$

$$2\sqrt{a+i b-c}\sqrt{a+\text{Tan}[d+e x](b+c\,\text{Tan}[d+e x])}\Big)\Big/\Big(128(a+i b-c)^{3/2}c^4$$
$$(-i+\text{Tan}[d+e x])\Big)\Big)\Big]+\frac{1}{256c^{9/2}}b\left(7b^4-8b^2c(5a+2c)+16c^2(3a^2+4ac+8c^2)\right)$$
$$\text{Log}\left[b+2c\,\text{Tan}[d+e x]+2\sqrt{c}\sqrt{a+\text{Tan}[d+e x](b+c\,\text{Tan}[d+e x])}\right]\Big)$$

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

$$\left(5ab^3\sqrt{\left(\frac{a}{1+\text{Cos}[2(d+e x)]}+\frac{c}{1+\text{Cos}[2(d+e x)]}+\frac{a\,\text{Cos}[2(d+e x)]}{1+\text{Cos}[2(d+e x)]}-\frac{c\,\text{Cos}[2(d+e x)]}{1+\text{Cos}[2(d+e x)]}+\frac{b\,\text{Sin}[2(d+e x)]}{1+\text{Cos}[2(d+e x)]}\right)}\right)\Bigg/$$
$$\left(16c^3(-a-c-a\,\text{Cos}[2(d+e x)]+c\,\text{Cos}[2(d+e x)]-b\,\text{Sin}[2(d+e x)])\right)-$$

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

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

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

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

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

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

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

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

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

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

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

$$\left(256 c^{9/2}\,\left(b+2 c \operatorname{Tan}[d+e\,x]+2 \sqrt{c}\,\sqrt{a+\operatorname{Tan}[d+e\,x]\,(b+c \operatorname{Tan}[d+e\,x])}\right)\right)-$$

$$\Big(64\,(a-\mathbb{i}\,b-c)^2 c^4\,(\mathbb{i}+\operatorname{Tan}[d+e\,x])\,\Big(\Big(b \operatorname{Sec}[d+e\,x]^2-2\,\mathbb{i}\,c \operatorname{Sec}[d+e\,x]^2+$$

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

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

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

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

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

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

$$\Big(64\,(a+\mathbb{i}\,b-c)^2 c^4\,(-\mathbb{i}+\operatorname{Tan}[d+e\,x])\,\Big(\Big(b \operatorname{Sec}[d+e\,x]^2+2\,\mathbb{i}\,c \operatorname{Sec}[d+e\,x]^2+$$

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

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

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

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

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

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

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

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

Optimal (type 3, 889 leaves, 19 steps) :

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

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

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

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

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

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

$$\frac{\left(b^2-4ac\right)\left(5b^2-4ac\right)\text{ArcTanh}\left[\frac{b+2c\,\text{Tan}[d+ex]}{2\sqrt{c}\sqrt{a+b\,\text{Tan}[d+ex]+c\,\text{Tan}[d+ex]^2}}\right]}{128c^{7/2}e}-$$

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

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

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

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

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

$$\frac{1}{64c^3e}\left(5b^2-4ac\right)\left(b+2c\,\text{Tan}[d+ex]\right)\sqrt{a+b\,\text{Tan}[d+ex]+c\,\text{Tan}[d+ex]^2}-$$

$$\frac{5b\left(a+b\,\text{Tan}[d+ex]+c\,\text{Tan}[d+ex]^2\right)^{3/2}}{24c^2e}+$$

$$\frac{\text{Tan}[d+ex]\left(a+b\,\text{Tan}[d+ex]+c\,\text{Tan}[d+ex]^2\right)^{3/2}}{4ce}$$

Result (type 3, 2537 leaves) :

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

$$\left(\frac{b\left(15b^2-52ac-56c^2\right)}{192c^3}+\frac{b\,\text{Sec}[d+ex]^2}{24c}+\frac{1}{96c^2}\text{Sec}[d+ex]\right.$$

$$\left(-5 b^2 \mathrm{Sin}[d+e x]+12 a c \mathrm{Sin}[d+e x]-72 c^2 \mathrm{Sin}[d+e x]\right)+\frac{1}{4} \mathrm{Sec}[d+e x]^2 \mathrm{Tan}[d+e x]\Bigg)+$$

$$\Bigg(\Bigg(-64 i \sqrt{a-i b-c}\ \mathrm{Log}\Big[-\Big(\Big(i\ \big(2 a-2 i c \mathrm{Tan}[d+e x]+b\ (-i+\mathrm{Tan}[d+e x])+2 \sqrt{a-i b-c}\ \sqrt{a+\mathrm{Tan}[d+e x]\ (b+c \mathrm{Tan}[d+e x])}\big)\Big)\Big/\left(64\ (a-i b-c)^{3/2} c^3\ (i+\mathrm{Tan}[d+e x])\right)\Big)\Big]+64 i \sqrt{a+i b-c}$$

$$\mathrm{Log}\Big[\Big(i\ \big(2 a+2 i c \mathrm{Tan}[d+e x]+b\ (i+\mathrm{Tan}[d+e x])+2 \sqrt{a+i b-c}\ \sqrt{a+\mathrm{Tan}[d+e x]\ (b+c \mathrm{Tan}[d+e x])}\big)\Big)\Big/\left(64\ (a+i b-c)^{3/2} c^3\ (-i+\mathrm{Tan}[d+e x])\right)\Big]+\frac{1}{c^{7/2}}\left(-5 b^4+8 b^2 c\ (3 a+2 c)-16 c^2\ (a^2+4 a c-8 c^2)\right)$$

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

$$\Bigg(\Bigg(5 b^4 \sqrt{\left(\frac{a}{1+\mathrm{Cos}[2 (d+e x)]}+\frac{c}{1+\mathrm{Cos}[2 (d+e x)]}+\frac{a \mathrm{Cos}[2 (d+e x)]}{1+\mathrm{Cos}[2 (d+e x)]}-\frac{c \mathrm{Cos}[2 (d+e x)]}{1+\mathrm{Cos}[2 (d+e x)]}+\frac{b \mathrm{Sin}[2 (d+e x)]}{1+\mathrm{Cos}[2 (d+e x)]}\right)}\Bigg)\Bigg/$$

$$\left(64 c^3\ (-a-c-a \mathrm{Cos}[2 (d+e x)]+c \mathrm{Cos}[2 (d+e x)]-b \mathrm{Sin}[2 (d+e x)])\right)-$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\Big(e\,\Big(\Big(\Big((-5\,b^4+8\,b^2\,c\,(3\,a+2\,c)-16\,c^2\,(a^2+4\,a\,c-8\,c^2))\,\Big(2\,c\,\mathrm{Sec}[d+e\,x]^2+$$

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

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

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

$$\Big(4096\,(a-\mathrm{i}\,b-c)^2\,c^3\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])\,\Big(-\Big(\Big(\mathrm{i}\,\Big(b\,\mathrm{Sec}[d+e\,x]^2-2\,\mathrm{i}\,c\,\mathrm{Sec}[d+e\,x]^2+$$

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

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

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

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

$$\Big(64\,(a-\mathrm{i}\,b-c)^{3/2}\,c^3\,(\mathrm{i}+\mathrm{Tan}[d+e\,x])^2\Big)\Big)\Big)\Big/\Big(2\,a-2\,\mathrm{i}\,c\,\mathrm{Tan}[d+e\,x]+$$

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

$$\Big(4096\,(a+\mathrm{i}\,b-c)^2\,c^3\,(-\mathrm{i}+\mathrm{Tan}[d+e\,x])\,\Big(\Big(\mathrm{i}\,\Big(b\,\mathrm{Sec}[d+e\,x]^2+2\,\mathrm{i}\,c\,\mathrm{Sec}[d+e\,x]^2+$$

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

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

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

$$b\left(i+\text{Tan}[d+e\,x]\right)+2\sqrt{a+i\,b-c}\,\sqrt{a+\text{Tan}[d+e\,x]\,\left(b+c\,\text{Tan}[d+e\,x]\right)}\Bigg)\Bigg)\Bigg/$$
$$\left(64\,\left(a+i\,b-c\right)^{3/2}c^3\,\left(-i+\text{Tan}[d+e\,x]\right)^2\right)\Bigg)\Bigg)\Bigg/\Bigg(2\,a+2\,i\,c\,\text{Tan}[d+e\,x]+$$
$$b\left(i+\text{Tan}[d+e\,x]\right)+2\sqrt{a+i\,b-c}\,\sqrt{a+\text{Tan}[d+e\,x]\,\left(b+c\,\text{Tan}[d+e\,x]\right)}\Bigg)\Bigg)\Bigg)$$

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

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

Optimal (type 3, 748 leaves, 16 steps):

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

Result (type 3, 1960 leaves):

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

$$\left(-\frac{3\,b^2-8\,a\,c+32\,c^2}{24\,c^2}+\frac{1}{3}\,\text{Sec}[d+e\,x]^2+\frac{b\,\text{Tan}[d+e\,x]}{12\,c}\right)+$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\Bigg(64\,(a+\mathrm{i}\,b-c)^2\,c^2\,(-\mathrm{i}+\text{Tan}[d+e\,x])$$

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

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

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

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

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

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

$$\Bigg(64\,(a-\mathrm{i}\,b-c)^2\,c^2\,(\mathrm{i}+\text{Tan}[d+e\,x])\,\Bigg(\Bigg(-b\,\text{Sec}[d+e\,x]^2+2\,\mathrm{i}\,c\,\text{Sec}[d+e\,x]^2-$$

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

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

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

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

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

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

Problem 4: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 676 leaves, 10 steps):

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

Result (type 3, 1958 leaves) :

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Problem 5: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 601 leaves, 10 steps):

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

Result (type 3, 333 leaves):

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

Problem 6: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 574 leaves, 9 steps):

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

Result (type 3, 282 leaves):

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

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

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

Optimal (type 3, 571 leaves, 18 steps):

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

Result (type 3, 1193 leaves):

$$\left(\text{Cot}[d+ex]\left(2\sqrt{a}\,\text{Log}[\text{Tan}[d+ex]]-\right.\right.$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Problem 8: Humongous result has more than 200000 leaves.

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

Optimal (type 3, 612 leaves, 17 steps):

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

Result (type ?, 325 908 leaves): Display of huge result suppressed!

Problem 9: Humongous result has more than 200000 leaves.

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

Optimal (type 3, 690 leaves, 21 steps):

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

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

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

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

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

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

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

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

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

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

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

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

Result (type ?, 439 306 leaves) : Display of huge result suppressed!

Problem 10: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 548 leaves, 15 steps) :

$$\left(\sqrt{a-c-\sqrt{a^2+b^2-2ac+c^2}}\ \text{ArcTanh}\left[\left(a-c-\sqrt{a^2+b^2-2ac+c^2}+b\,\text{Tan}[d+e x]\right)\Big/\left(\sqrt{2}\sqrt{a-c-\sqrt{a^2+b^2-2ac+c^2}}\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}\right)\right]\right)\Big/\left(\sqrt{2}\sqrt{a^2+b^2-2ac+c^2}\ e\right)-\left(\sqrt{a-c+\sqrt{a^2+b^2-2ac+c^2}}\ \text{ArcTanh}\left[\left(a-c+\sqrt{a^2+b^2-2ac+c^2}+b\,\text{Tan}[d+e x]\right)\Big/\left(\sqrt{2}\sqrt{a-c+\sqrt{a^2+b^2-2ac+c^2}}\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}\right)\right]\right)\Big/\left(\sqrt{2}\sqrt{a^2+b^2-2ac+c^2}\ e\right)+\frac{b\,\text{ArcTanh}\left[\frac{b+2c\,\text{Tan}[d+e x]}{2\sqrt{c}\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}}\right]}{2c^{3/2}e}-\frac{b\left(5b^2-12ac\right)\text{ArcTanh}\left[\frac{b+2c\,\text{Tan}[d+e x]}{2\sqrt{c}\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}}\right]}{16c^{7/2}e}-\frac{\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}}{c\,e}+\frac{\text{Tan}[d+e x]^2\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}}{3c\,e}+\frac{1}{24c^3e}\left(15b^2-16ac-10bc\,\text{Tan}[d+e x]\right)\sqrt{a+b\,\text{Tan}[d+e x]+c\,\text{Tan}[d+e x]^2}$$

Result (type 3, 389 leaves):

$$\frac{1}{16\,e}\left(-\frac{8\,\text{Log}\left[\frac{2\,a-i\,b+(b-2\,i\,c)\,\text{Tan}[d+e\,x]+2\,\sqrt{a-i\,b-c}\,\sqrt{a+b\,\text{Tan}[d+e\,x]+c\,\text{Tan}[d+e\,x]^2}}{8\,\sqrt{a-i\,b-c}\,c^3\,(i+\text{Tan}[d+e\,x])}\right]}{\sqrt{a-i\,b-c}}-\frac{8\,\text{Log}\left[\frac{2\,a+i\,b+(b+2\,i\,c)\,\text{Tan}[d+e\,x]+2\,\sqrt{a+i\,b-c}\,\sqrt{a+b\,\text{Tan}[d+e\,x]+c\,\text{Tan}[d+e\,x]^2}}{8\,\sqrt{a+i\,b-c}\,c^3\,(-i+\text{Tan}[d+e\,x])}\right]}{\sqrt{a+i\,b-c}}+\frac{1}{c^{7/2}}\,b\,\left(-5\,b^2+4\,c\,(3\,a+2\,c)\right)\,\text{Log}\left[b+2\,c\,\text{Tan}[d+e\,x]+2\,\sqrt{c}\,\sqrt{a+\text{Tan}[d+e\,x]\,(b+c\,\text{Tan}[d+e\,x])}\right]+\frac{1}{3\,c^3}\sqrt{2}\,\sqrt{\left(\text{Sec}[d+e\,x]^2\,\left(a+c+(a-c)\,\text{Cos}[2\,(d+e\,x)]+b\,\text{Sin}[2\,(d+e\,x)]\right)\right)}\,\left(15\,b^2-16\,a\,c-32\,c^2+8\,c^2\,\text{Sec}[d+e\,x]^2-10\,b\,c\,\text{Tan}[d+e\,x]\right)\right)$$

Problem 11: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 495 leaves, 14 steps):

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

Result (type 3, 388 leaves):

$$\frac{1}{8e}\left(-\frac{1}{\sqrt{a-i b-c}}4\,i\,\text{Log}\left[-\left(\left(i\left(2a-2ic\,\text{Tan}[d+ex]+b\left(-i+\text{Tan}[d+ex]\right)+2\sqrt{a-ib-c}\sqrt{a+\text{Tan}[d+ex]\left(b+c\,\text{Tan}[d+ex]\right)}\right)\right)\Big/\left(4\sqrt{a-ib-c}\ c^2\left(i+\text{Tan}[d+ex]\right)\right)\right)\right]+\frac{1}{\sqrt{a+ib-c}}4\,i\,\text{Log}\left[\left(i\left(2a+2ic\,\text{Tan}[d+ex]+b\left(i+\text{Tan}[d+ex]\right)+2\sqrt{a+ib-c}\sqrt{a+\text{Tan}[d+ex]\left(b+c\,\text{Tan}[d+ex]\right)}\right)\right)\Big/\left(4\sqrt{a+ib-c}\ c^2\left(-i+\text{Tan}[d+ex]\right)\right)\right]+\frac{1}{c^{5/2}}\left(3b^2-4c\left(a+2c\right)\right)\text{Log}\left[b+2c\,\text{Tan}[d+ex]+2\sqrt{c}\sqrt{a+\text{Tan}[d+ex]\left(b+c\,\text{Tan}[d+ex]\right)}\right]\right)+\frac{\sqrt{\frac{a+c+a\,\text{Cos}[2(d+ex)]-c\,\text{Cos}[2(d+ex)]+b\,\text{Sin}[2(d+ex)]}{1+\text{Cos}[2(d+ex)]}}\left(-\frac{3b}{4c^2}+\frac{\text{Tan}[d+ex]}{2c}\right)}{e}$$

Problem 12: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 383 leaves, 11 steps):

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

Result (type 3, 325 leaves):

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

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

Problem 13: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 352 leaves, 9 steps):

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

Result (type 3, 255 leaves):

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

Problem 14: Result unnecessarily involves imaginary or complex numbers.

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

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

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

Result (type 3, 196 leaves):

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

Problem 15: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 298 leaves, 6 steps):

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

Result (type 3, 229 leaves):

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

Problem 16: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 350 leaves, 10 steps):

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

Result (type 4, 154 575 leaves): Display of huge result suppressed!

Problem 17: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 395 leaves, 11 steps):

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

Result (type 4, 167 080 leaves) : Display of huge result suppressed!

Problem 18: Humongous result has more than 200000 leaves.

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

Optimal (type 3, 500 leaves, 14 steps) :

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

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

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

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

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

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

Result (type ?, 281 691 leaves) : Display of huge result suppressed!

Problem 19: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 1190 leaves, 20 steps) :

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

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

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

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

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

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

$$\left(\sqrt{2\,a-2\,c+\sqrt{a^2+b^2-2\,a\,c+c^2}}\,\sqrt{a^2-b^2-2\,a\,c+c^2-(a-c)\,\sqrt{a^2+b^2-2\,a\,c+c^2}}\,\text{ArcTanh}\Big[\right.$$

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

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

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

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

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

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

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

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

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

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

$$\left(\left(105\,b^4-460\,a\,b^2\,c+256\,a^2\,c^2-2\,b\,c\,\left(35\,b^2-116\,a\,c\right)\,\text{Tan}[d+e\,x]\right)\right.$$

$$\left.\sqrt{a+b\,\text{Tan}[d+e\,x]+c\,\text{Tan}[d+e\,x]^2}\right)\Big/\left(24\,c^4\,\left(b^2-4\,a\,c\right)\,e\right)$$

Result (type 3, 884 leaves) :

$$\frac{1}{16\,e}\left(\frac{8\,\text{Log}\left[\frac{-2\,a-i\,b-(b+2\,i\,c)\,\text{Tan}[d+e\,x]-2\,\sqrt{a+i\,b-c}\,\sqrt{a+b\,\text{Tan}[d+e\,x]+c\,\text{Tan}[d+e\,x]^2}}{8\,(a-i\,b-c)\,\sqrt{a+i\,b-c}\,c^4\,(-i+\text{Tan}[d+e\,x])}\right]}{(a+i\,b-c)^{3/2}}+\frac{1}{(a-i\,b-c)^{3/2}}8\,\text{Log}\Big[\Big(-2\,a+i\,b-b\,\text{Tan}[d+e\,x]+2\,i\,c\,\text{Tan}[d+e\,x]-2\,\sqrt{a-i\,b-c}\,\sqrt{a+\text{Tan}[d+e\,x]\,(b+c\,\text{Tan}[d+e\,x])}\Big)\Big/\Big(8\,\sqrt{a-i\,b-c}\,(a+i\,b-c)\,c^4\,(i+\text{Tan}[d+e\,x])\Big)\Big]+\frac{1}{c^{9/2}}b\,(-35\,b^2+60\,a\,c+24\,c^2)\,\text{Log}\left[b+2\,c\,\text{Tan}[d+e\,x]+2\,\sqrt{c}\,\sqrt{a+\text{Tan}[d+e\,x]\,(b+c\,\text{Tan}[d+e\,x])}\right]\right)+$$

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

Problem 20: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 864 leaves, 14 steps):

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

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

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

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

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

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

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

Result (type 3, 697 leaves) :

$$\frac{1}{2e}\left(-\frac{1}{(a-ib-c)^{3/2}}\text{Log}\Big[\Big(2a-2ic\,\text{Tan}[d+ex]+b\,(-i+\text{Tan}[d+ex])+2\sqrt{a-ib-c}\sqrt{a+\text{Tan}[d+ex]\,(b+c\,\text{Tan}[d+ex])}\Big)\Big/\Big(\sqrt{a-ib-c}\,(a+ib-c)\,c^2\,(i+\text{Tan}[d+ex])\Big)\Big]-\frac{\text{Log}\Big[\frac{2a+2ic\,\text{Tan}[d+ex]+b\,(i+\text{Tan}[d+ex])+2\sqrt{a+ib-c}\sqrt{a+\text{Tan}[d+ex]\,(b+c\,\text{Tan}[d+ex])}}{(a-ib-c)\sqrt{a+ib-c}\,c^2\,(-i+\text{Tan}[d+ex])}\Big]}{(a+ib-c)^{3/2}}-\frac{1}{c^{5/2}}3b\,\text{Log}\Big[b+2c\,\text{Tan}[d+ex]+2\sqrt{c}\sqrt{a+\text{Tan}[d+ex]\,(b+c\,\text{Tan}[d+ex])}\Big]\right)+$$

$$\frac{1}{e}\sqrt{\frac{a+c+a\,\text{Cos}[2(d+ex)]-c\,\text{Cos}[2(d+ex)]+b\,\text{Sin}[2(d+ex)]}{1+\text{Cos}[2(d+ex)]}}\Big(\big(-3a^3b^2-3ab^4+8a^4c+15a^2b^2c+b^4c-16a^3c^2-7ab^2c^2+12a^2c^3+b^2c^3-4ac^4\big)\Big/\big((a-c)\,(a-ib-c)\,(a+ib-c)\,c^2\,(-b^2+4ac)\big)-\big(2\,(-2a^3b^2-2ab^4+4a^4c+8a^2b^2c-4a^3c^2-a^4b\,\text{Sin}[2(d+ex)]-2a^2b^3\,\text{Sin}[2(d+ex)]-b^5\,\text{Sin}[2(d+ex)]+6a^3bc\,\text{Sin}[2(d+ex)]+5ab^3c\,\text{Sin}[2(d+ex)]-5a^2bc^2\,\text{Sin}[2(d+ex)])\big)\Big/\big((a-c)\,(a-ib-c)\,(a+ib-c)\,c\,(-b^2+4ac)\,(a+c+a\,\text{Cos}[2(d+ex)]-c\,\text{Cos}[2(d+ex)]+b\,\text{Sin}[2(d+ex)])\big)\Big)$$

Problem 21: Result unnecessarily involves imaginary or complex numbers.

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

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

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

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

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

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

Result (type 3, 738 leaves) :

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

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

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

Problem 22: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 638 leaves, 7 steps):

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

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

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

Result (type 3, 538 leaves) :

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

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

Problem 23: Result unnecessarily involves imaginary or complex numbers.

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

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

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

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

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

Result (type 3, 535 leaves):

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

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

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

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

Problem 24: Humongous result has more than 200000 leaves.

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

Optimal (type 3, 750 leaves, 13 steps):

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

Result (type ?, 512 551 leaves): Display of huge result suppressed!

Problem 25: Humongous result has more than 200000 leaves.

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

Optimal (type 3, 829 leaves, 13 steps):

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

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

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

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

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

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

Result (type ?, 536 928 leaves): Display of huge result suppressed!

Problem 26: Humongous result has more than 200000 leaves.

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

Optimal (type 3, 1007 leaves, 18 steps) :

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

$$\left(\sqrt{2a-2c-\sqrt{a^2+b^2-2a\,c+c^2}}\sqrt{a^2-b^2-2a\,c+c^2+(a-c)\sqrt{a^2+b^2-2a\,c+c^2}}\,\text{ArcTanh}\Big[\right.$$

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

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

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

$$\left(\sqrt{2a-2c+\sqrt{a^2+b^2-2a\,c+c^2}}\sqrt{a^2-b^2-2a\,c+c^2-(a-c)\sqrt{a^2+b^2-2a\,c+c^2}}\,\text{ArcTanh}\Big[\right.$$

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

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

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

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

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

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

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

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

Result (type ?, 788 811 leaves) : Display of huge result suppressed!

Problem 27: Humongous result has more than 200000 leaves.

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

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

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

Result (type ?, 421 511 leaves): Display of huge result suppressed!

Problem 28: Humongous result has more than 200000 leaves.

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

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

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

Result (type ?, 307 606 leaves): Display of huge result suppressed!

Problem 29: Humongous result has more than 200000 leaves.

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

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

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

Result (type ?, 216 968 leaves) : Display of huge result suppressed!

Problem 32: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 1254 leaves, 14 steps) :

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Result (type 4, 639 leaves) :

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

$$\left(\frac{(b-3 c) \operatorname{Sin}[2 (d+e x)]}{6 c}+\frac{1}{3} \operatorname{Tan}[d+e x]\right)+\frac{1}{12 c e \sqrt{a+b \operatorname{Tan}[d+e x]^2+c \operatorname{Tan}[d+e x]^4}}$$

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

$$i \sqrt{2}\left((b-3 c)\left(-b+\sqrt{b^2-4 a c}\right) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{2} \sqrt{\frac{c}{b+\sqrt{b^2-4 a c}}} \operatorname{Tan}[d+e x]\right], \frac{b+\sqrt{b^2-4 a c}}{b-\sqrt{b^2-4 a c}}\right]+\left(b^2-b\left(-3 c+\sqrt{b^2-4 a c}\right)+c\left(-4 a-6 c+3 \sqrt{b^2-4 a c}\right)\right)\right.$$

$$\operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{2} \sqrt{\frac{c}{b+\sqrt{b^2-4 a c}}} \operatorname{Tan}[d+e x]\right], \frac{b+\sqrt{b^2-4 a c}}{b-\sqrt{b^2-4 a c}}\right]+$$

$$6 c (a-b+c) \operatorname{EllipticPi}\left[\frac{b+\sqrt{b^2-4 a c}}{2 c}, i \operatorname{ArcSinh}\left[\sqrt{2} \sqrt{\frac{c}{b+\sqrt{b^2-4 a c}}} \operatorname{Tan}[d+e x]\right],\right.$$

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

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

Problem 33: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 829 leaves, 8 steps):

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

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

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

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

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

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

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

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

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

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

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

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

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

Result (type 4, 428 leaves) :

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

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

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

$$\left.\frac{b+\sqrt{b^2-4ac}}{b-\sqrt{b^2-4ac}}\right]-2\left(a-b+c\right)\text{EllipticPi}\left[\frac{b+\sqrt{b^2-4ac}}{2c},\right.$$

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

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

Problem 34: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 861 leaves, 9 steps):

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

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

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

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

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

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

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

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

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

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

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

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

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

Result (type 4, 1258 leaves):

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Problem 35: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 943 leaves, 10 steps):

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

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

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

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

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

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

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

Result (type 4, 1590 leaves):

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

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

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

$$\left.\frac{(3a-b)\,\text{Sin}[2(d+e x)]}{6a}\right)+\left(3\,i\sqrt{2}\,a\left(b-\sqrt{b^2-4ac}\right)\right.$$

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{2}\sqrt{\frac{c}{b+\sqrt{b^2-4ac}}}\,\text{Tan}[d+e x]\right],\frac{b+\sqrt{b^2-4ac}}{b-\sqrt{b^2-4ac}}\right]-\text{EllipticF}\left[\right.\right.$$

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

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

$$\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{2}\sqrt{\frac{c}{b+\sqrt{b^2-4ac}}}\,\text{Tan}[d+e x]\right],\frac{b+\sqrt{b^2-4ac}}{b-\sqrt{b^2-4ac}}\right]-\right.$$

$$\left.\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{2}\sqrt{\frac{c}{b+\sqrt{b^2-4ac}}}\,\text{Tan}[d+e x]\right],\frac{b+\sqrt{b^2-4ac}}{b-\sqrt{b^2-4ac}}\right]\right)$$

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

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

$$\left(1+\text{Tan}[d+e x]^2\right)\sqrt{\frac{b+\sqrt{b^2-4ac}+2c\,\text{Tan}[d+e x]^2}{b+\sqrt{b^2-4ac}}}\sqrt{1+\frac{2c\,\text{Tan}[d+e x]^2}{b-\sqrt{b^2-4ac}}}-6\,i\sqrt{2}\,a^2$$

$$\text{EllipticPi}\left[\frac{b+\sqrt{b^2-4ac}}{2c}, i\,\text{ArcSinh}\left[\sqrt{2}\sqrt{\frac{c}{b+\sqrt{b^2-4ac}}}\,\text{Tan}[d+ex]\right], \frac{b+\sqrt{b^2-4ac}}{b-\sqrt{b^2-4ac}}\right]$$

$$\left(1+\text{Tan}[d+ex]^2\right)\sqrt{\frac{b+\sqrt{b^2-4ac}+2c\,\text{Tan}[d+ex]^2}{b+\sqrt{b^2-4ac}}}\sqrt{1+\frac{2c\,\text{Tan}[d+ex]^2}{b-\sqrt{b^2-4ac}}}+6i\sqrt{2}\,ab$$

$$\text{EllipticPi}\left[\frac{b+\sqrt{b^2-4ac}}{2c}, i\,\text{ArcSinh}\left[\sqrt{2}\sqrt{\frac{c}{b+\sqrt{b^2-4ac}}}\,\text{Tan}[d+ex]\right], \frac{b+\sqrt{b^2-4ac}}{b-\sqrt{b^2-4ac}}\right]$$

$$\left(1+\text{Tan}[d+ex]^2\right)\sqrt{\frac{b+\sqrt{b^2-4ac}+2c\,\text{Tan}[d+ex]^2}{b+\sqrt{b^2-4ac}}}\sqrt{1+\frac{2c\,\text{Tan}[d+ex]^2}{b-\sqrt{b^2-4ac}}}-6i\sqrt{2}\,ac$$

$$\text{EllipticPi}\left[\frac{b+\sqrt{b^2-4ac}}{2c}, i\,\text{ArcSinh}\left[\sqrt{2}\sqrt{\frac{c}{b+\sqrt{b^2-4ac}}}\,\text{Tan}[d+ex]\right], \frac{b+\sqrt{b^2-4ac}}{b-\sqrt{b^2-4ac}}\right]$$

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

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

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

Problem 36: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

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

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

Result (type 4, 125 619 leaves): Display of huge result suppressed!

Problem 37: Result unnecessarily involves higher level functions and more than

twice size of optimal antiderivative.

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

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

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

Result (type 4, 80 416 leaves): Display of huge result suppressed!

Problem 38: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

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

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

Result (type 4, 57 267 leaves): Display of huge result suppressed!

Problem 41: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 662 leaves, 5 steps):

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

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

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

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

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

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

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

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

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

Result (type 4, 579 leaves):

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

$$\operatorname{Sin}[2 (d+e x)]+\left(\frac{1}{\sqrt{\frac{c}{b+\sqrt{b^2-4 a c}}}}\, i \sqrt{2}\left(\left(-b+\sqrt{b^2-4 a c}\right) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{2} \sqrt{\frac{c}{b+\sqrt{b^2-4 a c}}} \operatorname{Tan}[d+e x]\right], \frac{b+\sqrt{b^2-4 a c}}{b-\sqrt{b^2-4 a c}}\right]+\left(b+2 c-\sqrt{b^2-4 a c}\right)\right.\right.$$

$$\operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{2} \sqrt{\frac{c}{b+\sqrt{b^2-4 a c}}} \operatorname{Tan}[d+e x]\right], \frac{b+\sqrt{b^2-4 a c}}{b-\sqrt{b^2-4 a c}}\right]-$$

$$2 c \operatorname{EllipticPi}\left[\frac{b+\sqrt{b^2-4 a c}}{2 c}, i \operatorname{ArcSinh}\left[\sqrt{2} \sqrt{\frac{c}{b+\sqrt{b^2-4 a c}}} \operatorname{Tan}[d+e x]\right],\right.$$

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

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

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

Problem 42: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 436 leaves, 4 steps):

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

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

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

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

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

Result (type 4, 311 leaves) :

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

Problem 43: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 436 leaves, 4 steps) :

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

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

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

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

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

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

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

Result (type 4, 235 leaves):

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

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

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

Problem 44: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 707 leaves, 7 steps):

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

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

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

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

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

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

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

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

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

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

Result (type 4, 735 leaves) :

$$\frac{1}{e}\sqrt{\left(\left(3 a+b+3 c+4 a \operatorname{Cos}[2 (d+e x)]-4 c \operatorname{Cos}[2 (d+e x)]+a \operatorname{Cos}[4 (d+e x)]-b \operatorname{Cos}[4 (d+e x)]+c \operatorname{Cos}[4 (d+e x)]\right) / \left(3+4 \operatorname{Cos}[2 (d+e x)]+\operatorname{Cos}[4 (d+e x)]\right)\right)}\left(-\frac{\operatorname{Cot}[d+e x]}{a}+\frac{\operatorname{Sin}[2 (d+e x)]}{2 a}\right)+$$

$$\frac{1}{a e}\left(\left(\left(\mathrm{i}\left(-b+\sqrt{b^2-4 a c}\right)\left(\operatorname{EllipticE}\left[\mathrm{i} \operatorname{ArcSinh}\left[\sqrt{2} \sqrt{-\frac{c}{-b-\sqrt{b^2-4 a c}}} \operatorname{Tan}[d+e x]\right], \frac{-b-\sqrt{b^2-4 a c}}{-b+\sqrt{b^2-4 a c}}\right]-\operatorname{EllipticF}\left[\mathrm{i} \operatorname{ArcSinh}\left[\sqrt{2} \sqrt{-\frac{c}{-b-\sqrt{b^2-4 a c}}} \operatorname{Tan}[d+e x]\right], \frac{-b-\sqrt{b^2-4 a c}}{-b+\sqrt{b^2-4 a c}}\right]\right) \sqrt{1-\frac{2 c \operatorname{Tan}[d+e x]^2}{-b-\sqrt{b^2-4 a c}}} \sqrt{1-\frac{2 c \operatorname{Tan}[d+e x]^2}{-b+\sqrt{b^2-4 a c}}}\right) / \left(2 \sqrt{2} \sqrt{-\frac{c}{-b-\sqrt{b^2-4 a c}}} \sqrt{a+b \operatorname{Tan}[d+e x]^2+c \operatorname{Tan}[d+e x]^4}\right)+\left(\mathrm{i}\, a \operatorname{EllipticPi}\left[-\frac{-b-\sqrt{b^2-4 a c}}{2 c}, \mathrm{i} \operatorname{ArcSinh}\left[\sqrt{2} \sqrt{-\frac{c}{-b-\sqrt{b^2-4 a c}}} \operatorname{Tan}[d+e x]\right], \frac{-b-\sqrt{b^2-4 a c}}{-b+\sqrt{b^2-4 a c}}\right] \sqrt{1-\frac{2 c \operatorname{Tan}[d+e x]^2}{-b-\sqrt{b^2-4 a c}}} \sqrt{1-\frac{2 c \operatorname{Tan}[d+e x]^2}{-b+\sqrt{b^2-4 a c}}}\right) / \left(\sqrt{2} \sqrt{-\frac{c}{-b-\sqrt{b^2-4 a c}}} \sqrt{a+b \operatorname{Tan}[d+e x]^2+c \operatorname{Tan}[d+e x]^4}\right)-\frac{\operatorname{Tan}[d+e x] \sqrt{a+b \operatorname{Tan}[d+e x]^2+c \operatorname{Tan}[d+e x]^4}}{1+\operatorname{Tan}[d+e x]^2}\right)$$

Problem 45: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Tan}[d+e x]^7}{\left(a+b \operatorname{Tan}[d+e x]^2+c \operatorname{Tan}[d+e x]^4\right)^{3/2}}\, dx$$

Optimal (type 3, 235 leaves, 8 steps):

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

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

Result (type 4, 182 725 leaves): Display of huge result suppressed!

Problem 46: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[d+e x]^5}{\left(a+b\,\text{Tan}[d+e x]^2+c\,\text{Tan}[d+e x]^4\right)^{3/2}}\,dx$$

Optimal (type 3, 159 leaves, 6 steps):

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

Result (type 4, 57 597 leaves): Display of huge result suppressed!

Problem 47: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

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

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

Result (type 4, 57 592 leaves): Display of huge result suppressed!

Problem 48: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 155 leaves, 6 steps):

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

Result (type 4, 57 615 leaves) : Display of huge result suppressed!

Problem 49: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 280 leaves, 12 steps) :

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

Result (type 3, 694 leaves) :

$$\frac{1}{e}\sqrt{\left(\left(3a+b+3c+4a\,\mathrm{Cos}[2(d+ex)]-4c\,\mathrm{Cos}[2(d+ex)]+a\,\mathrm{Cos}[4(d+ex)]-b\,\mathrm{Cos}[4(d+ex)]+c\,\mathrm{Cos}[4(d+ex)]\right)\Big/\left(3+4\,\mathrm{Cos}[2(d+ex)]+\mathrm{Cos}[4(d+ex)]\right)\right)}\left(-\frac{-b^3+3abc+2b^2c-4ac^2-bc^2}{a(a-b+c)^2(-b^2+4ac)}-\left(4\left(b^4-4ab^2c-b^3c+2a^2c^2+3abc^2-b^2c^2+2ac^3+bc^3+b^4\,\mathrm{Cos}[2(d+ex)]-4ab^2c\,\mathrm{Cos}[2(d+ex)]-3b^3c\,\mathrm{Cos}[2(d+ex)]+2a^2c^2\,\mathrm{Cos}[2(d+ex)]+9abc^2\,\mathrm{Cos}[2(d+ex)]+3b^2c^2\,\mathrm{Cos}[2(d+ex)]-6ac^3\,\mathrm{Cos}[2(d+ex)]-bc^3\,\mathrm{Cos}[2(d+ex)]\right)\right)\Big/\left(a(a-b+c)^2(-b^2+4ac)\left(3a+b+3c+4a\,\mathrm{Cos}[2(d+ex)]-4c\,\mathrm{Cos}[2(d+ex)]+a\,\mathrm{Cos}[4(d+ex)]-b\,\mathrm{Cos}[4(d+ex)]+c\,\mathrm{Cos}[4(d+ex)]\right)\right)\right)+$$

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

Problem 51: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{\mathrm{Tan}[d+ex]^2}{\left(a+b\,\mathrm{Tan}[d+ex]^2+c\,\mathrm{Tan}[d+ex]^4\right)^{3/2}}\,dx$$

Optimal (type 4, 981 leaves, 9 steps):

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Result (type 4, 831 leaves) :

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

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

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

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

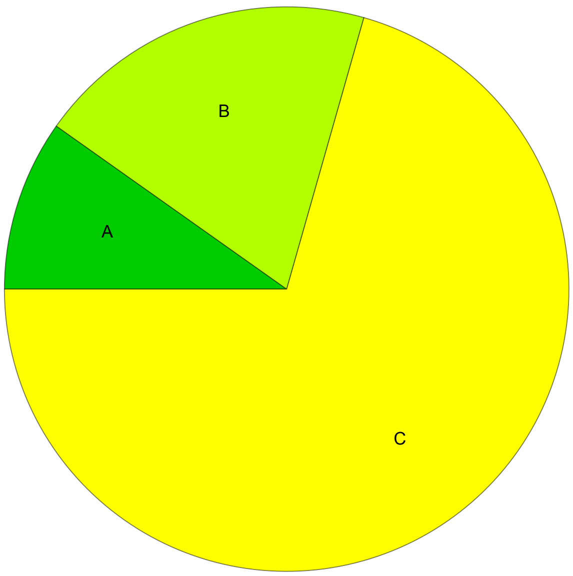
$$\text{EllipticF}\left[\mathbb{i}\,\text{ArcSinh}\left[\sqrt{2}\,\sqrt{\frac{c}{b+\sqrt{b^2-4\,a\,c}}}\,\text{Tan}[d+e\,x]\right],\frac{b+\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}}\right]-$$

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

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

Summary of Integration Test Results

51 integration problems



A - 5 optimal antiderivatives

B - 10 more than twice size of optimal antiderivatives

C - 36 unnecessarily complex antiderivatives

D - 0 unable to integrate problems

E - 0 integration timeouts