Mathematica 11.3 Integration Test Results

Test results for the 365 problems in "4.5.1.4 (d tan)^n (a+b sec)^m.m"

Problem 12: Result more than twice size of optimal antiderivative.

$$\int (a + a\,\mathrm{Sec}[c + d\,x])\,\mathrm{Tan}[c + d\,x]^4\,dx$$

Optimal (type 3, 73 leaves, 4 steps):

$$a\,x + \frac{3\,a\,\mathrm{ArcTanh}[\mathrm{Sin}[c + d\,x]]}{8\,d} - \frac{(8\,a + 3\,a\,\mathrm{Sec}[c + d\,x])\,\mathrm{Tan}[c + d\,x]}{8\,d} + \frac{(4\,a + 3\,a\,\mathrm{Sec}[c + d\,x])\,\mathrm{Tan}[c + d\,x]^3}{12\,d}$$

Result (type 3, 230 leaves):

$$a\,x - \frac{3\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c + d\,x)\right] - \mathrm{Sin}\left[\frac{1}{2}(c + d\,x)\right]\right]}{8\,d} + \frac{3\,a\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(c + d\,x)\right] + \mathrm{Sin}\left[\frac{1}{2}(c + d\,x)\right]\right]}{8\,d} + \frac{a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c + d\,x)\right] - \mathrm{Sin}\left[\frac{1}{2}(c + d\,x)\right]\right)^4} - \frac{5\,a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c + d\,x)\right] - \mathrm{Sin}\left[\frac{1}{2}(c + d\,x)\right]\right)^2} - \frac{a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c + d\,x)\right] + \mathrm{Sin}\left[\frac{1}{2}(c + d\,x)\right]\right)^4} + \frac{5\,a}{16\,d\left(\mathrm{Cos}\left[\frac{1}{2}(c + d\,x)\right] + \mathrm{Sin}\left[\frac{1}{2}(c + d\,x)\right]\right)^2} - \frac{4\,a\,\mathrm{Tan}[c + d\,x]}{3\,d} + \frac{a\,\mathrm{Sec}[c + d\,x]^2\,\mathrm{Tan}[c + d\,x]}{3\,d}$$

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

$$\int (a + a\,\mathrm{Sec}[c + d\,x])\,\mathrm{Tan}[c + d\,x]^2\,dx$$

Optimal (type 3, 45 leaves, 3 steps):

$$-a\,x - \frac{a\,\mathrm{ArcTanh}[\mathrm{Sin}[c + d\,x]]}{2\,d} + \frac{(2\,a + a\,\mathrm{Sec}[c + d\,x])\,\mathrm{Tan}[c + d\,x]}{2\,d}$$

Result (type 3, 142 leaves):

$$-a x+\frac{a \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{2 d}-\frac{a \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{2 d}+\frac{a}{4 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{a}{4 d\left(\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}+\frac{a \operatorname{Tan}[c+d x]}{d}$$

Problem 15: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cot}[c+d x]^4 (a+a \operatorname{Sec}[c+d x])\, dx$$

Optimal (type 3, 55 leaves, 3 steps):

$$a x-\frac{\operatorname{Cot}[c+d x]^3 (a+a \operatorname{Sec}[c+d x])}{3 d}+\frac{\operatorname{Cot}[c+d x] (3 a+2 a \operatorname{Sec}[c+d x])}{3 d}$$

Result (type 3, 136 leaves):

$$a x+\frac{5 a \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]}{12 d}+\frac{4 a \operatorname{Cot}[c+d x]}{3 d}-\frac{a \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{24 d}-\frac{a \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^2}{3 d}+\frac{5 a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{12 d}-\frac{a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 d}$$

Problem 16: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cot}[c+d x]^6 (a+a \operatorname{Sec}[c+d x])\, dx$$

Optimal (type 3, 84 leaves, 4 steps):

$$-a x-\frac{\operatorname{Cot}[c+d x]^5 (a+a \operatorname{Sec}[c+d x])}{5 d}+\frac{\operatorname{Cot}[c+d x]^3 (5 a+4 a \operatorname{Sec}[c+d x])}{15 d}-\frac{\operatorname{Cot}[c+d x] (15 a+8 a \operatorname{Sec}[c+d x])}{15 d}$$

Result (type 3, 219 leaves):

$$-a x-\frac{89 a \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]}{240 d}-\frac{23 a \operatorname{Cot}[c+d x]}{15 d}+\frac{31 a \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{480 d}-\frac{a \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{160 d}+\frac{11 a \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^2}{15 d}-\frac{a \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^4}{5 d}-\frac{89 a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{240 d}+\frac{31 a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{480 d}-\frac{a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{160 d}$$

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

$$\int \operatorname{Cot}[c+d x]^8 (a+a \operatorname{Sec}[c+d x]) \, dx$$

Optimal (type 3, 111 leaves, 5 steps):

$$a x-\frac{\operatorname{Cot}[c+d x]^7 (a+a \operatorname{Sec}[c+d x])}{7 d}+\frac{\operatorname{Cot}[c+d x]^5 (7 a+6 a \operatorname{Sec}[c+d x])}{35 d}+\frac{\operatorname{Cot}[c+d x] (35 a+16 a \operatorname{Sec}[c+d x])}{35 d}-\frac{\operatorname{Cot}[c+d x]^3 (35 a+24 a \operatorname{Sec}[c+d x])}{105 d}$$

Result (type 3, 300 leaves):

$$a x+\frac{381 a \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]}{1120 d}+\frac{176 a \operatorname{Cot}[c+d x]}{105 d}-\frac{179 a \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{2240 d}+\frac{a \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{70 d}-\frac{a \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^6}{896 d}-\frac{122 a \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^2}{105 d}+\frac{22 a \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^4}{35 d}-\frac{a \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^6}{7 d}+\frac{381 a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{1120 d}-\frac{179 a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{2240 d}+\frac{a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^4 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{70 d}-\frac{a \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^6 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{896 d}$$

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

$$\int \operatorname{Cot}[c+d x]^{10} (a+a \operatorname{Sec}[c+d x]) \, dx$$

Optimal (type 3, 140 leaves, 6 steps):

$$-a x-\frac{\text{Cot}[c+d x]^9 (a+a \text{Sec}[c+d x])}{9 d}+\frac{\text{Cot}[c+d x]^7 (9 a+8 a \text{Sec}[c+d x])}{63 d}-\frac{\text{Cot}[c+d x]^5 (21 a+16 a \text{Sec}[c+d x])}{105 d}+\frac{\text{Cot}[c+d x]^3 (105 a+64 a \text{Sec}[c+d x])}{315 d}-\frac{\text{Cot}[c+d x] (315 a+128 a \text{Sec}[c+d x])}{315 d}$$

Result (type 3, 383 leaves):

$$-a x-\frac{25609 a \text{Cot}\left[\frac{1}{2} (c+d x)\right]}{80640 d}-\frac{563 a \text{Cot}[c+d x]}{315 d}+\frac{14711 a \text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2}{161280 d}-\frac{1231 a \text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]^4}{53760 d}+\frac{109 a \text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]^6}{32256 d}-\frac{a \text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]^8}{4608 d}+\frac{506 a \text{Cot}[c+d x] \text{Csc}[c+d x]^2}{315 d}-\frac{136 a \text{Cot}[c+d x] \text{Csc}[c+d x]^4}{105 d}+\frac{37 a \text{Cot}[c+d x] \text{Csc}[c+d x]^6}{63 d}-\frac{a \text{Cot}[c+d x] \text{Csc}[c+d x]^8}{9 d}-\frac{25609 a \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{80640 d}+\frac{14711 a \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{161280 d}-\frac{1231 a \text{Sec}\left[\frac{1}{2} (c+d x)\right]^4 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{53760 d}+\frac{109 a \text{Sec}\left[\frac{1}{2} (c+d x)\right]^6 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{32256 d}-\frac{a \text{Sec}\left[\frac{1}{2} (c+d x)\right]^8 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{4608 d}$$

Problem 29: Result more than twice size of optimal antiderivative.

$$\int (a+a \text{Sec}[c+d x])^2 \text{Tan}[c+d x]^6 \, dx$$

Optimal (type 3, 161 leaves, 12 steps):

$$-a^2 x-\frac{5 a^2 \text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{a^2 \text{Tan}[c+d x]}{d}+\frac{5 a^2 \text{Sec}[c+d x] \text{Tan}[c+d x]}{8 d}-\frac{a^2 \text{Tan}[c+d x]^3}{3 d}-\frac{5 a^2 \text{Sec}[c+d x] \text{Tan}[c+d x]^3}{12 d}+\frac{a^2 \text{Tan}[c+d x]^5}{5 d}+\frac{a^2 \text{Sec}[c+d x] \text{Tan}[c+d x]^5}{3 d}+\frac{a^2 \text{Tan}[c+d x]^7}{7 d}$$

Result (type 3, 337 leaves):

$$\frac{1}{215040\,d}\,a^2\,(1+\text{Cos}[c+d\,x])^2\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,\text{Sec}[c+d\,x]^7\,\Bigg(33600\,\text{Cos}[c+d\,x]^7\,\Bigg(\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]\right]\Bigg)+\text{Sec}[c]\,(-14700\,d\,x\,\text{Cos}[d\,x]-14700\,d\,x\,\text{Cos}[2\,c+d\,x]-8820\,d\,x\,\text{Cos}[2\,c+3\,d\,x]-8820\,d\,x\,\text{Cos}[4\,c+3\,d\,x]-2940\,d\,x\,\text{Cos}[4\,c+5\,d\,x]-2940\,d\,x\,\text{Cos}[6\,c+5\,d\,x]-420\,d\,x\,\text{Cos}[6\,c+7\,d\,x]-420\,d\,x\,\text{Cos}[8\,c+7\,d\,x]+24640\,\text{Sin}[d\,x]-16240\,\text{Sin}[2\,c+d\,x]+2975\,\text{Sin}[c+2\,d\,x]+2975\,\text{Sin}[3\,c+2\,d\,x]+14448\,\text{Sin}[2\,c+3\,d\,x]-10080\,\text{Sin}[4\,c+3\,d\,x]+980\,\text{Sin}[3\,c+4\,d\,x]+980\,\text{Sin}[5\,c+4\,d\,x]+6496\,\text{Sin}[4\,c+5\,d\,x]-1680\,\text{Sin}[6\,c+5\,d\,x]+1155\,\text{Sin}[5\,c+6\,d\,x]+1155\,\text{Sin}[7\,c+6\,d\,x]+1168\,\text{Sin}[6\,c+7\,d\,x])\Bigg)$$

Problem 30: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sec}[c+d\,x])^2\,\text{Tan}[c+d\,x]^4\,dx$$

Optimal (type 3, 119 leaves, 10 steps):

$$a^2\,x+\frac{3\,a^2\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{4\,d}-\frac{a^2\,\text{Tan}[c+d\,x]}{d}-\frac{3\,a^2\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{4\,d}+\frac{a^2\,\text{Tan}[c+d\,x]^3}{3\,d}+\frac{a^2\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]^3}{2\,d}+\frac{a^2\,\text{Tan}[c+d\,x]^5}{5\,d}$$

Result (type 3, 1173 leaves):

$$\frac{1}{4} x \text{Cos}[c+d x]^2 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2-\frac{1}{16 d}$$
$$3 \text{Cos}[c+d x]^2 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2+$$
$$\frac{1}{16 d} 3 \text{Cos}[c+d x]^2 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2+$$
$$\frac{\text{Cos}[c+d x]^2 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \text{Sin}\left[\frac{d x}{2}\right]}{80 d \left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^5}+$$
$$\left(\text{Cos}[c+d x]^2 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \left(3 \text{Cos}\left[\frac{c}{2}\right]-2 \text{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/$$
$$\left(80 d \left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^4\right)-$$
$$\frac{\text{Cos}[c+d x]^2 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \text{Sin}\left[\frac{d x}{2}\right]}{480 d \left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3}+$$
$$\left(\text{Cos}[c+d x]^2 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \left(-151 \text{Cos}\left[\frac{c}{2}\right]+149 \text{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/$$
$$\left(960 d \left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)-$$
$$\frac{17 \text{Cos}[c+d x]^2 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \text{Sin}\left[\frac{d x}{2}\right]}{60 d \left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}+$$
$$\frac{\text{Cos}[c+d x]^2 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \text{Sin}\left[\frac{d x}{2}\right]}{80 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^5}+$$
$$\left(\text{Cos}[c+d x]^2 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \left(-3 \text{Cos}\left[\frac{c}{2}\right]-2 \text{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/$$
$$\left(80 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^4\right)-$$
$$\frac{\text{Cos}[c+d x]^2 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \text{Sin}\left[\frac{d x}{2}\right]}{480 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3}+$$
$$\left(\text{Cos}[c+d x]^2 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \left(151 \text{Cos}\left[\frac{c}{2}\right]+149 \text{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/$$
$$\left(960 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)-$$
$$\frac{17 \text{Cos}[c+d x]^2 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \text{Sin}\left[\frac{d x}{2}\right]}{60 d \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)}$$

Problem 31: Result more than twice size of optimal antiderivative.

$$\int (a + a \operatorname{Sec}[c + d x])^2 \operatorname{Tan}[c + d x]^2 \, dx$$

Optimal (type 3, 72 leaves, 8 steps):

$$-a^2 x - \frac{a^2 \operatorname{ArcTanh}[\operatorname{Sin}[c + d x]]}{d} + \frac{a^2 \operatorname{Tan}[c + d x]}{d} + \frac{a^2 \operatorname{Sec}[c + d x] \operatorname{Tan}[c + d x]}{d} + \frac{a^2 \operatorname{Tan}[c + d x]^3}{3 d}$$

Result (type 3, 773 leaves):

$$-\frac{1}{4} x \operatorname{Cos}[c + d x]^2 \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^4 (a + a \operatorname{Sec}[c + d x])^2 + \frac{1}{4 d} \operatorname{Cos}[c + d x]^2 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^4 (a + a \operatorname{Sec}[c + d x])^2 -$$

$$\frac{1}{4 d} \operatorname{Cos}[c + d x]^2 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right] \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^4 (a + a \operatorname{Sec}[c + d x])^2 +$$

$$\frac{\operatorname{Cos}[c + d x]^2 \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^4 (a + a \operatorname{Sec}[c + d x])^2 \operatorname{Sin}\left[\frac{d x}{2}\right]}{24 d \left(\operatorname{Cos}\left[\frac{c}{2}\right] - \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right)^3} +$$

$$\left(\operatorname{Cos}[c + d x]^2 \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^4 (a + a \operatorname{Sec}[c + d x])^2 \left(7 \operatorname{Cos}\left[\frac{c}{2}\right] - 5 \operatorname{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/ \left(48 d \left(\operatorname{Cos}\left[\frac{c}{2}\right] - \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right)^2\right) +$$

$$\frac{\operatorname{Cos}[c + d x]^2 \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^4 (a + a \operatorname{Sec}[c + d x])^2 \operatorname{Sin}\left[\frac{d x}{2}\right]}{6 d \left(\operatorname{Cos}\left[\frac{c}{2}\right] - \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] - \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right)} +$$

$$\frac{\operatorname{Cos}[c + d x]^2 \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^4 (a + a \operatorname{Sec}[c + d x])^2 \operatorname{Sin}\left[\frac{d x}{2}\right]}{24 d \left(\operatorname{Cos}\left[\frac{c}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right)^3} +$$

$$\left(\operatorname{Cos}[c + d x]^2 \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^4 (a + a \operatorname{Sec}[c + d x])^2 \left(-7 \operatorname{Cos}\left[\frac{c}{2}\right] - 5 \operatorname{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/ \left(48 d \left(\operatorname{Cos}\left[\frac{c}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right)^2\right) +$$

$$\frac{\operatorname{Cos}[c + d x]^2 \operatorname{Sec}\left[\frac{c}{2} + \frac{d x}{2}\right]^4 (a + a \operatorname{Sec}[c + d x])^2 \operatorname{Sin}\left[\frac{d x}{2}\right]}{6 d \left(\operatorname{Cos}\left[\frac{c}{2}\right] + \operatorname{Sin}\left[\frac{c}{2}\right]\right) \left(\operatorname{Cos}\left[\frac{c}{2} + \frac{d x}{2}\right] + \operatorname{Sin}\left[\frac{c}{2} + \frac{d x}{2}\right]\right)}$$

Problem 35: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cot}[c + d x]^8 (a + a \operatorname{Sec}[c + d x])^2 \, dx$$

Optimal (type 3, 139 leaves, 12 steps):

$$a^2 x+\frac{a^2 \text{Cot}[c+d x]}{d}-\frac{a^2 \text{Cot}[c+d x]^3}{3 d}+\frac{a^2 \text{Cot}[c+d x]^5}{5 d}-\frac{2 a^2 \text{Cot}[c+d x]^7}{7 d}+\frac{2 a^2 \text{Csc}[c+d x]}{d}-\frac{2 a^2 \text{Csc}[c+d x]^3}{d}+\frac{6 a^2 \text{Csc}[c+d x]^5}{5 d}-\frac{2 a^2 \text{Csc}[c+d x]^7}{7 d}$$

Result (type 3, 312 leaves):

$$\frac{1}{860160 d} a^2 \text{Csc}\left[\frac{c}{2}\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^7 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^3 \left(5880 d x \text{Cos}[d x]-5880 d x \text{Cos}[2 c+d x]-3360 d x \text{Cos}[c+2 d x]+3360 d x \text{Cos}[3 c+2 d x]-1260 d x \text{Cos}[2 c+3 d x]+1260 d x \text{Cos}[4 c+3 d x]+1680 d x \text{Cos}[3 c+4 d x]-1680 d x \text{Cos}[5 c+4 d x]-420 d x \text{Cos}[4 c+5 d x]+420 d x \text{Cos}[6 c+5 d x]+4032 \text{Sin}[c]-9632 \text{Sin}[d x]-16002 \text{Sin}[c+d x]+9144 \text{Sin}[2 (c+d x)]+3429 \text{Sin}[3 (c+d x)]-4572 \text{Sin}[4 (c+d x)]+1143 \text{Sin}[5 (c+d x)]-11760 \text{Sin}[2 c+d x]+8864 \text{Sin}[c+2 d x]+3360 \text{Sin}[3 c+2 d x]+2064 \text{Sin}[2 c+3 d x]+2520 \text{Sin}[4 c+3 d x]-4432 \text{Sin}[3 c+4 d x]-1680 \text{Sin}[5 c+4 d x]+1528 \text{Sin}[4 c+5 d x]\right)$$

Problem 36: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x]^{10} (a+a \text{Sec}[c+d x])^2 \, dx$$

Optimal (type 3, 179 leaves, 13 steps):

$$-a^2 x-\frac{a^2 \text{Cot}[c+d x]}{d}+\frac{a^2 \text{Cot}[c+d x]^3}{3 d}-\frac{a^2 \text{Cot}[c+d x]^5}{5 d}+\frac{a^2 \text{Cot}[c+d x]^7}{7 d}-\frac{2 a^2 \text{Cot}[c+d x]^9}{9 d}-\frac{2 a^2 \text{Csc}[c+d x]}{d}+\frac{8 a^2 \text{Csc}[c+d x]^3}{3 d}-\frac{12 a^2 \text{Csc}[c+d x]^5}{5 d}+\frac{8 a^2 \text{Csc}[c+d x]^7}{7 d}-\frac{2 a^2 \text{Csc}[c+d x]^9}{9 d}$$

Result (type 3, 428 leaves):

$$-\frac{1}{330301440 d} a^2 \text{Csc}\left[\frac{c}{2}\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^9 \text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 \left(453600 d x \text{Cos}[d x]-453600 d x \text{Cos}[2 c+d x]-201600 d x \text{Cos}[c+2 d x]+201600 d x \text{Cos}[3 c+2 d x]-191520 d x \text{Cos}[2 c+3 d x]+191520 d x \text{Cos}[4 c+3 d x]+161280 d x \text{Cos}[3 c+4 d x]-161280 d x \text{Cos}[5 c+4 d x]+10080 d x \text{Cos}[4 c+5 d x]-10080 d x \text{Cos}[6 c+5 d x]-40320 d x \text{Cos}[5 c+6 d x]+40320 d x \text{Cos}[7 c+6 d x]+10080 d x \text{Cos}[6 c+7 d x]-10080 d x \text{Cos}[8 c+7 d x]+259584 \text{Sin}[c]-897024 \text{Sin}[d x]-1152405 \text{Sin}[c+d x]+512180 \text{Sin}[2 (c+d x)]+486571 \text{Sin}[3 (c+d x)]-409744 \text{Sin}[4 (c+d x)]-25609 \text{Sin}[5 (c+d x)]+102436 \text{Sin}[6 (c+d x)]-25609 \text{Sin}[7 (c+d x)]-825216 \text{Sin}[2 c+d x]+622976 \text{Sin}[c+2 d x]+142464 \text{Sin}[3 c+2 d x]+297088 \text{Sin}[2 c+3 d x]+430080 \text{Sin}[4 c+3 d x]-424192 \text{Sin}[3 c+4 d x]-188160 \text{Sin}[5 c+4 d x]+2048 \text{Sin}[4 c+5 d x]-40320 \text{Sin}[6 c+5 d x]+112768 \text{Sin}[5 c+6 d x]+40320 \text{Sin}[7 c+6 d x]-38272 \text{Sin}[6 c+7 d x]\right)$$

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

$$\int (a+a \text{Sec}[c+d x])^3 \text{Tan}[c+d x]^2 \, dx$$

Optimal (type 3, 98 leaves, 11 steps):

$$-a^3 x-\frac{13 a^3 \text{ArcTanh}[\text{Sin}[c+d x]]}{8 d}+\frac{a^3 \text{Tan}[c+d x]}{d}+\frac{11 a^3 \text{Sec}[c+d x] \text{Tan}[c+d x]}{8 d}+\frac{a^3 \text{Sec}[c+d x]^3 \text{Tan}[c+d x]}{4 d}+\frac{a^3 \text{Tan}[c+d x]^3}{d}$$

Result (type 3, 230 leaves):

$$-\frac{1}{64 d} a^3 \text{Sec}[c+d x]^4 \left(24 d x-39 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+39 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+4 \text{Cos}[2(c+d x)]\left(8 d x-13 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+13 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)+\text{Cos}[4(c+d x)]\left(8 d x-13 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+13 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)-38 \text{Sin}[c+d x]-32 \text{Sin}[2(c+d x)]-22 \text{Sin}[3(c+d x)]\right)$$

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

$$\int \text{Cot}[c+d x]^2 (a+a \text{Sec}[c+d x])^3 \, dx$$

Optimal (type 3, 49 leaves, 11 steps):

$$-a^3 x+\frac{a^3 \text{ArcTanh}[\text{Sin}[c+d x]]}{d}-\frac{4 a^3 \text{Cot}[c+d x]}{d}-\frac{4 a^3 \text{Csc}[c+d x]}{d}$$

Result (type 3, 109 leaves):

$$-\frac{1}{8 d} a^3 (1+\text{Cos}[c+d x])^3 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^6 \left(d x+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]-4 \text{Csc}\left[\frac{c}{2}\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right] \text{Sin}\left[\frac{d x}{2}\right]\right)$$

Problem 54: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x]^{10} (a+a \text{Sec}[c+d x])^3 \, dx$$

Optimal (type 3, 179 leaves, 16 steps):

$$-a^3 x-\frac{a^3 \text{Cot}[c+d x]}{d}+\frac{a^3 \text{Cot}[c+d x]^3}{3 d}-\frac{a^3 \text{Cot}[c+d x]^5}{5 d}+\frac{a^3 \text{Cot}[c+d x]^7}{7 d}-\frac{4 a^3 \text{Cot}[c+d x]^9}{9 d}-\frac{3 a^3 \text{Csc}[c+d x]}{d}+\frac{13 a^3 \text{Csc}[c+d x]^3}{3 d}-\frac{21 a^3 \text{Csc}[c+d x]^5}{5 d}+\frac{15 a^3 \text{Csc}[c+d x]^7}{7 d}-\frac{4 a^3 \text{Csc}[c+d x]^9}{9 d}$$

Result (type 3, 370 leaves):

$$\frac{1}{41287680\,d} a^3 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^9 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^3 \left(-181440\,d\,x \operatorname{Cos}[d x]+181440\,d\,x \operatorname{Cos}[2 c+d x]+136080\,d\,x \operatorname{Cos}[c+2 d x]-136080\,d\,x \operatorname{Cos}[3 c+2 d x]+10080\,d\,x \operatorname{Cos}[2 c+3 d x]-10080\,d\,x \operatorname{Cos}[4 c+3 d x]-60480\,d\,x \operatorname{Cos}[3 c+4 d x]+60480\,d\,x \operatorname{Cos}[5 c+4 d x]+30240\,d\,x \operatorname{Cos}[4 c+5 d x]-30240\,d\,x \operatorname{Cos}[6 c+5 d x]-5040\,d\,x \operatorname{Cos}[5 c+6 d x]+5040\,d\,x \operatorname{Cos}[7 c+6 d x]-169344 \operatorname{Sin}[c]+338112 \operatorname{Sin}[d x]+675036 \operatorname{Sin}[c+d x]-506277 \operatorname{Sin}[2(c+d x)]-37502 \operatorname{Sin}[3(c+d x)]+225012 \operatorname{Sin}[4(c+d x)]-112506 \operatorname{Sin}[5(c+d x)]+18751 \operatorname{Sin}[6(c+d x)]+431424 \operatorname{Sin}[2 c+d x]-375552 \operatorname{Sin}[c+2 d x]-201600 \operatorname{Sin}[3 c+2 d x]+41248 \operatorname{Sin}[2 c+3 d x]-84000 \operatorname{Sin}[4 c+3 d x]+155712 \operatorname{Sin}[3 c+4 d x]+100800 \operatorname{Sin}[5 c+4 d x]-98016 \operatorname{Sin}[4 c+5 d x]-30240 \operatorname{Sin}[6 c+5 d x]+21376 \operatorname{Sin}[5 c+6 d x]\right)$$

Problem 55: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cot}[c+d x]^{12} (a+a \operatorname{Sec}[c+d x])^3 \, dx$$

Optimal (type 3, 213 leaves, 17 steps):

$$a^3 x+\frac{a^3 \operatorname{Cot}[c+d x]}{d}-\frac{a^3 \operatorname{Cot}[c+d x]^3}{3 d}+\frac{a^3 \operatorname{Cot}[c+d x]^5}{5 d}-\frac{a^3 \operatorname{Cot}[c+d x]^7}{7 d}+\frac{a^3 \operatorname{Cot}[c+d x]^9}{9 d}-\frac{4 a^3 \operatorname{Cot}[c+d x]^{11}}{11 d}+\frac{3 a^3 \operatorname{Csc}[c+d x]}{d}-\frac{16 a^3 \operatorname{Csc}[c+d x]^3}{3 d}+\frac{34 a^3 \operatorname{Csc}[c+d x]^5}{5 d}-\frac{36 a^3 \operatorname{Csc}[c+d x]^7}{7 d}+\frac{19 a^3 \operatorname{Csc}[c+d x]^9}{9 d}-\frac{4 a^3 \operatorname{Csc}[c+d x]^{11}}{11 d}$$

Result (type 3, 1035 leaves):

$$\frac{1}{8} x \operatorname{Cos}[c+d x]^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3-\frac{1}{1419264 d}$$
$$112229 \operatorname{Cos}[c+d x]^3 \operatorname{Cot}\left[\frac{c}{2}\right] \operatorname{Csc}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3+$$
$$\frac{1}{236544 d} 6155 \operatorname{Cos}[c+d x]^3 \operatorname{Cot}\left[\frac{c}{2}\right] \operatorname{Csc}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3-$$
$$\frac{1}{177408 d} 1033 \operatorname{Cos}[c+d x]^3 \operatorname{Cot}\left[\frac{c}{2}\right] \operatorname{Csc}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3+$$
$$\frac{1}{202752 d} 155 \operatorname{Cos}[c+d x]^3 \operatorname{Cot}\left[\frac{c}{2}\right] \operatorname{Csc}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3-$$
$$\frac{\operatorname{Cos}[c+d x]^3 \operatorname{Cot}\left[\frac{c}{2}\right] \operatorname{Csc}\left[\frac{c}{2}+\frac{d x}{2}\right]^{10} \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3}{22528 d}-\frac{1}{1419264 d}$$
$$347267 \operatorname{Cos}[c+d x]^3 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Csc}\left[\frac{c}{2}+\frac{d x}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Sin}\left[\frac{d x}{2}\right]+\frac{1}{1419264 d}$$
$$112229 \operatorname{Cos}[c+d x]^3 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Csc}\left[\frac{c}{2}+\frac{d x}{2}\right]^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Sin}\left[\frac{d x}{2}\right]-$$
$$\frac{1}{236544 d} 6155 \operatorname{Cos}[c+d x]^3 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Csc}\left[\frac{c}{2}+\frac{d x}{2}\right]^5 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Sin}\left[\frac{d x}{2}\right]+$$
$$\frac{1}{177408 d} 1033 \operatorname{Cos}[c+d x]^3 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Csc}\left[\frac{c}{2}+\frac{d x}{2}\right]^7 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Sin}\left[\frac{d x}{2}\right]-$$
$$\frac{1}{202752 d} 155 \operatorname{Cos}[c+d x]^3 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Csc}\left[\frac{c}{2}+\frac{d x}{2}\right]^9 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Sin}\left[\frac{d x}{2}\right]+$$
$$\frac{1}{22528 d} \operatorname{Cos}[c+d x]^3 \operatorname{Csc}\left[\frac{c}{2}\right] \operatorname{Csc}\left[\frac{c}{2}+\frac{d x}{2}\right]^{11} \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^6 (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Sin}\left[\frac{d x}{2}\right]-$$
$$\frac{743 \operatorname{Cos}[c+d x]^3 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^7 (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Sin}\left[\frac{d x}{2}\right]}{30720 d}+$$
$$\frac{7 \operatorname{Cos}[c+d x]^3 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^9 (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Sin}\left[\frac{d x}{2}\right]}{3840 d}-$$
$$\frac{\operatorname{Cos}[c+d x]^3 \operatorname{Sec}\left[\frac{c}{2}\right] \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^{11} (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Sin}\left[\frac{d x}{2}\right]}{10240 d}+$$
$$\frac{7 \operatorname{Cos}[c+d x]^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^8 (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Tan}\left[\frac{c}{2}\right]}{3840 d}-$$
$$\frac{\operatorname{Cos}[c+d x]^3 \operatorname{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^{10} (a+a \operatorname{Sec}[c+d x])^3 \operatorname{Tan}\left[\frac{c}{2}\right]}{10240 d}$$

Problem 64: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Tan}[c+d x]^8}{a+a \operatorname{Sec}[c+d x]} \, dx$$

Optimal (type 3, 105 leaves, 6 steps) :

$$\frac{x}{a}-\frac{5\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{16\,a\,d}-\frac{(16-5\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]}{16\,a\,d}+\frac{(8-5\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]^3}{24\,a\,d}-\frac{(6-5\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]^5}{30\,a\,d}$$

Result (type 3, 301 leaves):

$$\frac{1}{3840\,a\,d\,(1+\text{Sec}[c+d\,x])}\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]\left(2400\left(\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right]\right)+\text{Sec}[c]\,\text{Sec}[c+d\,x]^6\,(2400\,d\,x\,\text{Cos}[c]+1800\,d\,x\,\text{Cos}[c+2\,d\,x]+1800\,d\,x\,\text{Cos}[3\,c+2\,d\,x]+720\,d\,x\,\text{Cos}[3\,c+4\,d\,x]+720\,d\,x\,\text{Cos}[5\,c+4\,d\,x]+120\,d\,x\,\text{Cos}[5\,c+6\,d\,x]+120\,d\,x\,\text{Cos}[7\,c+6\,d\,x]+3680\,\text{Sin}[c]+450\,\text{Sin}[d\,x]+450\,\text{Sin}[2\,c+d\,x]-3360\,\text{Sin}[c+2\,d\,x]+2160\,\text{Sin}[3\,c+2\,d\,x]-25\,\text{Sin}[2\,c+3\,d\,x]-25\,\text{Sin}[4\,c+3\,d\,x]-1488\,\text{Sin}[3\,c+4\,d\,x]+720\,\text{Sin}[5\,c+4\,d\,x]+165\,\text{Sin}[4\,c+5\,d\,x]+165\,\text{Sin}[6\,c+5\,d\,x]-368\,\text{Sin}[5\,c+6\,d\,x])\right)$$

Problem 65: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Tan}[c+d\,x]^6}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 78 leaves, 5 steps):

$$-\frac{x}{a}+\frac{3\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,a\,d}+\frac{(8-3\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]}{8\,a\,d}-\frac{(4-3\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]^3}{12\,a\,d}$$

Result (type 3, 893 leaves):

$$-\frac{2\,x\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Sec}[c+d\,x]}{a+a\,\mathrm{Sec}[c+d\,x]}-\frac{3\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}[c+d\,x]}{4\,d\,(a+a\,\mathrm{Sec}[c+d\,x])}+$$

$$\frac{3\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right]\,\mathrm{Sec}[c+d\,x]}{4\,d\,(a+a\,\mathrm{Sec}[c+d\,x])}+$$

$$\frac{\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Sec}[c+d\,x]}{8\,d\,(a+a\,\mathrm{Sec}[c+d\,x])\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^4}-\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Sec}[c+d\,x]\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$

$$\left(3\,d\,(a+a\,\mathrm{Sec}[c+d\,x])\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+$$

$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Sec}[c+d\,x]\,\left(-19\,\mathrm{Cos}\left[\frac{c}{2}\right]+11\,\mathrm{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$

$$\left(24\,d\,(a+a\,\mathrm{Sec}[c+d\,x])\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+$$

$$\left(8\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Sec}[c+d\,x]\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$

$$\left(3\,d\,(a+a\,\mathrm{Sec}[c+d\,x])\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)-$$

$$\frac{\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Sec}[c+d\,x]}{8\,d\,(a+a\,\mathrm{Sec}[c+d\,x])\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^4}-\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Sec}[c+d\,x]\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$

$$\left(3\,d\,(a+a\,\mathrm{Sec}[c+d\,x])\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+$$

$$\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Sec}[c+d\,x]\,\left(19\,\mathrm{Cos}\left[\frac{c}{2}\right]+11\,\mathrm{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$

$$\left(24\,d\,(a+a\,\mathrm{Sec}[c+d\,x])\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)+$$

$$\left(8\,\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\mathrm{Sec}[c+d\,x]\,\mathrm{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$

$$\left(3\,d\,(a+a\,\mathrm{Sec}[c+d\,x])\,\left(\mathrm{Cos}\left[\frac{c}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}\right]\right)\,\left(\mathrm{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\mathrm{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)$$

Problem 66: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Tan}[c+d\,x]^4}{a+a\,\mathrm{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 49 leaves, 4 steps):

$$\frac{x}{a}-\frac{\mathrm{ArcTanh}[\mathrm{Sin}[c+d\,x]]}{2\,a\,d}-\frac{(2-\mathrm{Sec}[c+d\,x])\,\mathrm{Tan}[c+d\,x]}{2\,a\,d}$$

Result (type 3, 241 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sec}[c+d x]\left(4 x+\frac{2 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{d}-\frac{2 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{d}+\frac{1}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-\frac{1}{d\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2}-(4 \text{Sin}[d x])\Big/\left(d\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right)\Big/(2 a(1+\text{Sec}[c+d x]))$$

Problem 67: Result more than twice size of optimal antiderivative.

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

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

$$-\frac{x}{a}+\frac{\text{ArcTanh}[\text{Sin}[c+d x]]}{a d}$$

Result (type 3, 60 leaves):

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

Problem 69: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^4}{a+a \text{Sec}[c+d x]} \, dx$$

Optimal (type 3, 88 leaves, 5 steps):

$$\frac{x}{a}+\frac{\text{Cot}[c+d x](15-8 \text{Sec}[c+d x])}{15 a d}-\frac{\text{Cot}[c+d x]^3(5-4 \text{Sec}[c+d x])}{15 a d}+\frac{\text{Cot}[c+d x]^5(1-\text{Sec}[c+d x])}{5 a d}$$

Result (type 3, 254 leaves):

$$\frac{1}{1920\, a\, d\, (1+\text{Sec}[c+d x])}\text{Csc}\left[\frac{c}{2}\right]\text{Csc}[c+d x]^3\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]$$
$$(360\, d\, x\, \text{Cos}[d x]-360\, d\, x\, \text{Cos}[2 c+d x]+120\, d\, x\, \text{Cos}[c+2 d x]-120\, d\, x\, \text{Cos}[3 c+2 d x]-120\, d\, x\, \text{Cos}[2 c+3 d x]+120\, d\, x\, \text{Cos}[4 c+3 d x]-60\, d\, x\, \text{Cos}[3 c+4 d x]+60\, d\, x\, \text{Cos}[5 c+4 d x]-200\, \text{Sin}[c]-584\, \text{Sin}[d x]+534\, \text{Sin}[c+d x]+178\, \text{Sin}[2 (c+d x)]-178\, \text{Sin}[3 (c+d x)]-89\, \text{Sin}[4 (c+d x)]-520\, \text{Sin}[2 c+d x]-248\, \text{Sin}[c+2 d x]-120\, \text{Sin}[3 c+2 d x]+248\, \text{Sin}[2 c+3 d x]+120\, \text{Sin}[4 c+3 d x]+184\, \text{Sin}[3 c+4 d x])$$

Problem 70: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^6}{a+a\, \text{Sec}[c+d x]}\, dx$$

Optimal (type 3, 117 leaves, 6 steps):

$$-\frac{x}{a}+\frac{\text{Cot}[c+d x]^3\,(35-24\, \text{Sec}[c+d x])}{105\, a\, d}-\frac{\text{Cot}[c+d x]\,(35-16\, \text{Sec}[c+d x])}{35\, a\, d}-\frac{\text{Cot}[c+d x]^5\,(7-6\, \text{Sec}[c+d x])}{35\, a\, d}+\frac{\text{Cot}[c+d x]^7\,(1-\text{Sec}[c+d x])}{7\, a\, d}$$

Result (type 3, 359 leaves):

$$\frac{1}{107520\, a\, d\, (1+\text{Sec}[c+d x])}\text{Csc}\left[\frac{c}{2}\right]\text{Csc}[c+d x]^5\,\text{Sec}\left[\frac{c}{2}\right]\text{Sec}[c+d x]$$
$$(-16800\, d\, x\, \text{Cos}[d x]+16800\, d\, x\, \text{Cos}[2 c+d x]-4200\, d\, x\, \text{Cos}[c+2 d x]+4200\, d\, x\, \text{Cos}[3 c+2 d x]+8400\, d\, x\, \text{Cos}[2 c+3 d x]-8400\, d\, x\, \text{Cos}[4 c+3 d x]+3360\, d\, x\, \text{Cos}[3 c+4 d x]-3360\, d\, x\, \text{Cos}[5 c+4 d x]-1680\, d\, x\, \text{Cos}[4 c+5 d x]+1680\, d\, x\, \text{Cos}[6 c+5 d x]-840\, d\, x\, \text{Cos}[5 c+6 d x]+840\, d\, x\, \text{Cos}[7 c+6 d x]+3136\, \text{Sin}[c]+30112\, \text{Sin}[d x]-22860\, \text{Sin}[c+d x]-5715\, \text{Sin}[2 (c+d x)]+11430\, \text{Sin}[3 (c+d x)]+4572\, \text{Sin}[4 (c+d x)]-2286\, \text{Sin}[5 (c+d x)]-1143\, \text{Sin}[6 (c+d x)]+26208\, \text{Sin}[2 c+d x]+14080\, \text{Sin}[c+2 d x]-16400\, \text{Sin}[2 c+3 d x]-11760\, \text{Sin}[4 c+3 d x]-7904\, \text{Sin}[3 c+4 d x]-3360\, \text{Sin}[5 c+4 d x]+3952\, \text{Sin}[4 c+5 d x]+1680\, \text{Sin}[6 c+5 d x]+2816\, \text{Sin}[5 c+6 d x])$$

Problem 79: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[c+d x]^8}{(a+a\, \text{Sec}[c+d x])^2}\, dx$$

Optimal (type 3, 119 leaves, 11 steps):

$$\frac{x}{a^2}-\frac{3\, \text{ArcTanh}[\text{Sin}[c+d x]]}{4\, a^2\, d}-\frac{\text{Tan}[c+d x]}{a^2\, d}+\frac{3\, \text{Sec}[c+d x]\, \text{Tan}[c+d x]}{4\, a^2\, d}+\frac{\text{Tan}[c+d x]^3}{3\, a^2\, d}-\frac{\text{Sec}[c+d x]\, \text{Tan}[c+d x]^3}{2\, a^2\, d}+\frac{\text{Tan}[c+d x]^5}{5\, a^2\, d}$$

Result (type 3, 1167 leaves):

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

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

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(5\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^5\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2\,\left(-2\,\text{Cos}\left[\frac{c}{2}\right]+3\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(5\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^4\right)-$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(30\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2\,\left(149\,\text{Cos}\left[\frac{c}{2}\right]-151\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(60\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)-$$

$$\left(68\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(15\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(5\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^5\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2\,\left(2\,\text{Cos}\left[\frac{c}{2}\right]+3\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(5\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^4\right)-$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(30\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^3\right)+$$

$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2\,\left(-149\,\text{Cos}\left[\frac{c}{2}\right]-151\,\text{Sin}\left[\frac{c}{2}\right]\right)\right)\Big/$$
$$\left(60\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)^2\right)-$$

$$\left(68\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]\right)\Big/$$
$$\left(15\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2\,\left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right)\,\left(\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\right)\right)$$

Problem 80: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[c+d x]^6}{(a+a \text{Sec}[c+d x])^2} \, dx$$

Optimal (type 3, 72 leaves, 9 steps):

$$-\frac{x}{a^2}+\frac{\text{ArcTanh}[\text{Sin}[c+d x]]}{a^2 d}+\frac{\text{Tan}[c+d x]}{a^2 d}-\frac{\text{Sec}[c+d x] \text{Tan}[c+d x]}{a^2 d}+\frac{\text{Tan}[c+d x]^3}{3 a^2 d}$$

Result (type 3, 767 leaves):

$$-\frac{4 x \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Sec}[c+d x]^2}{(a+a \text{Sec}[c+d x])^2}-\frac{4 \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}[c+d x]^2}{d (a+a \text{Sec}[c+d x])^2}+$$
$$\frac{4 \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Log}\left[\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right] \text{Sec}[c+d x]^2}{d (a+a \text{Sec}[c+d x])^2}+$$
$$\left(2 \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Sec}[c+d x]^2 \text{Sin}\left[\frac{d x}{2}\right]\right) \Big/$$
$$\left(3 d (a+a \text{Sec}[c+d x])^2 \left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Sec}[c+d x]^2 \left(-5 \text{Cos}\left[\frac{c}{2}\right]+7 \text{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/$$
$$\left(3 d (a+a \text{Sec}[c+d x])^2 \left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)+$$
$$\left(8 \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Sec}[c+d x]^2 \text{Sin}\left[\frac{d x}{2}\right]\right) \Big/$$
$$\left(3 d (a+a \text{Sec}[c+d x])^2 \left(\text{Cos}\left[\frac{c}{2}\right]-\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]-\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\right)+$$
$$\left(2 \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Sec}[c+d x]^2 \text{Sin}\left[\frac{d x}{2}\right]\right) \Big/$$
$$\left(3 d (a+a \text{Sec}[c+d x])^2 \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^3\right)+$$
$$\left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Sec}[c+d x]^2 \left(5 \text{Cos}\left[\frac{c}{2}\right]+7 \text{Sin}\left[\frac{c}{2}\right]\right)\right) \Big/$$
$$\left(3 d (a+a \text{Sec}[c+d x])^2 \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)^2\right)+$$
$$\left(8 \text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 \text{Sec}[c+d x]^2 \text{Sin}\left[\frac{d x}{2}\right]\right) \Big/$$
$$\left(3 d (a+a \text{Sec}[c+d x])^2 \left(\text{Cos}\left[\frac{c}{2}\right]+\text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]+\text{Sin}\left[\frac{c}{2}+\frac{d x}{2}\right]\right)\right)$$

Problem 81: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[c+d x]^4}{(a+a \text{Sec}[c+d x])^2} \, dx$$

Optimal (type 3, 34 leaves, 5 steps):

$$\frac{x}{a^2}-\frac{2\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{a^2\,d}+\frac{\text{Tan}[c+d\,x]}{a^2\,d}$$

Result (type 3, 177 leaves):

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

Problem 84: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Cot}[c+d\,x]^4}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 3, 139 leaves, 13 steps):

$$\frac{x}{a^2}+\frac{\text{Cot}[c+d\,x]}{a^2\,d}-\frac{\text{Cot}[c+d\,x]^3}{3\,a^2\,d}+\frac{\text{Cot}[c+d\,x]^5}{5\,a^2\,d}-\frac{2\,\text{Cot}[c+d\,x]^7}{7\,a^2\,d}-\frac{2\,\text{Csc}[c+d\,x]}{a^2\,d}+\frac{2\,\text{Csc}[c+d\,x]^3}{a^2\,d}-\frac{6\,\text{Csc}[c+d\,x]^5}{5\,a^2\,d}+\frac{2\,\text{Csc}[c+d\,x]^7}{7\,a^2\,d}$$

Result (type 3, 314 leaves):

$$\frac{1}{26880\,a^2\,d\,(1+\text{Sec}[c+d\,x])^2}\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Csc}[c+d\,x]^3\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,(5880\,d\,x\,\text{Cos}[d\,x]-5880\,d\,x\,\text{Cos}[2\,c+d\,x]+3360\,d\,x\,\text{Cos}[c+2\,d\,x]-3360\,d\,x\,\text{Cos}[3\,c+2\,d\,x]-1260\,d\,x\,\text{Cos}[2\,c+3\,d\,x]+1260\,d\,x\,\text{Cos}[4\,c+3\,d\,x]-1680\,d\,x\,\text{Cos}[3\,c+4\,d\,x]+1680\,d\,x\,\text{Cos}[5\,c+4\,d\,x]-420\,d\,x\,\text{Cos}[4\,c+5\,d\,x]+420\,d\,x\,\text{Cos}[6\,c+5\,d\,x]-4032\,\text{Sin}[c]-9632\,\text{Sin}[d\,x]+16002\,\text{Sin}[c+d\,x]+9144\,\text{Sin}[2\,(c+d\,x)]-3429\,\text{Sin}[3\,(c+d\,x)]-4572\,\text{Sin}[4\,(c+d\,x)]-1143\,\text{Sin}[5\,(c+d\,x)]-11760\,\text{Sin}[2\,c+d\,x]-8864\,\text{Sin}[c+2\,d\,x]-3360\,\text{Sin}[3\,c+2\,d\,x]+2064\,\text{Sin}[2\,c+3\,d\,x]+2520\,\text{Sin}[4\,c+3\,d\,x]+4432\,\text{Sin}[3\,c+4\,d\,x]+1680\,\text{Sin}[5\,c+4\,d\,x]+1528\,\text{Sin}[4\,c+5\,d\,x])$$

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

$$\int\frac{\text{Cot}[c+d\,x]^6}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 3, 179 leaves, 14 steps):

$$-\frac{x}{a^2}-\frac{\text{Cot}[c+d\,x]}{a^2\,d}+\frac{\text{Cot}[c+d\,x]^3}{3\,a^2\,d}-\frac{\text{Cot}[c+d\,x]^5}{5\,a^2\,d}+\frac{\text{Cot}[c+d\,x]^7}{7\,a^2\,d}-\frac{2\,\text{Cot}[c+d\,x]^9}{9\,a^2\,d}+\frac{2\,\text{Csc}[c+d\,x]}{a^2\,d}-\frac{8\,\text{Csc}[c+d\,x]^3}{3\,a^2\,d}+\frac{12\,\text{Csc}[c+d\,x]^5}{5\,a^2\,d}-\frac{8\,\text{Csc}[c+d\,x]^7}{7\,a^2\,d}+\frac{2\,\text{Csc}[c+d\,x]^9}{9\,a^2\,d}$$

Result (type 3, 802 leaves):

$$-\frac{4\,x\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2}{\left(a+a\,\text{Sec}[c+d\,x]\right)^2}+\frac{17\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cot}\left[\frac{c}{2}\right]\,\text{Cot}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[c+d\,x]^2}{160\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}-$$
$$\frac{\text{Cot}\left[\frac{c}{2}\right]\,\text{Cot}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2}{160\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}+\frac{201\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\text{Cot}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]}{160\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}-$$
$$\frac{17\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\text{Cot}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]}{160\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}+$$
$$\frac{\text{Cot}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Csc}\left[\frac{c}{2}\right]\,\text{Csc}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]}{160\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}-$$
$$\frac{7891\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]}{5040\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}+$$
$$\frac{63\,881\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]}{10\,080\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}+$$
$$\frac{313\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]}{840\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}-$$
$$\frac{109\,\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^3\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]}{2016\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}+\frac{\text{Sec}\left[\frac{c}{2}\right]\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^5\,\text{Sec}[c+d\,x]^2\,\text{Sin}\left[\frac{d\,x}{2}\right]}{288\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}+$$
$$\frac{313\,\text{Sec}[c+d\,x]^2\,\text{Tan}\left[\frac{c}{2}\right]}{840\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}-\frac{7891\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}\left[\frac{c}{2}\right]}{5040\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}-$$
$$\frac{109\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}\left[\frac{c}{2}\right]}{2016\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}+\frac{\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2\,\text{Tan}\left[\frac{c}{2}\right]}{288\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}$$

Problem 97: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Tan}[c+d\,x]^8}{\left(a+a\,\text{Sec}[c+d\,x]\right)^3}\,dx$$

Optimal (type 3, 99 leaves, 12 steps):

$$\frac{x}{a^3}-\frac{13\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,a^3\,d}-\frac{\text{Tan}[c+d\,x]}{a^3\,d}+$$
$$\frac{11\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{8\,a^3\,d}+\frac{\text{Sec}[c+d\,x]^3\,\text{Tan}[c+d\,x]}{4\,a^3\,d}-\frac{\text{Tan}[c+d\,x]^3}{a^3\,d}$$

Result (type 3, 230 leaves):

$$\frac{1}{64 a^3 d} \text{Sec}[c+d x]^4 \left(24 d x + 39 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right] - \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] + 4 \text{Cos}[2(c+d x)] \left(8 d x + 13 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right] - \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] - 13 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right] + \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right) + \text{Cos}[4(c+d x)] \left(8 d x + 13 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right] - \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] - 13 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right] + \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right) - 39 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right] + \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right] + 38 \text{Sin}[c+d x] - 32 \text{Sin}[2(c+d x)] + 22 \text{Sin}[3(c+d x)]\right)$$

Problem 98: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[c+d x]^6}{(a+a \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 3, 66 leaves, 6 steps):

$$-\frac{x}{a^3} + \frac{7 \text{ArcTanh}[\text{Sin}[c+d x]]}{2 a^3 d} - \frac{5 \text{Tan}[c+d x]}{2 a^3 d} - \frac{(1-\text{Sec}[c+d x]) \text{Tan}[c+d x]}{2 a^3 d}$$

Result (type 3, 241 leaves):

$$\left(2 \text{Cos}\left[\frac{1}{2}(c+d x)\right]^6 \text{Sec}[c+d x]^3 \left(-4 x - \frac{14 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right] - \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{d} + \frac{14 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right] + \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]}{d} + \frac{1}{d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right] - \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2} - \frac{1}{d \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right] + \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)^2} - (12 \text{Sin}[d x]) \Big/ \left(d \left(\text{Cos}\left[\frac{c}{2}\right] - \text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{c}{2}\right] + \text{Sin}\left[\frac{c}{2}\right]\right) \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right] - \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right) \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right] + \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right)\right)\right) \Big/ \left(a^3 (1+\text{Sec}[c+d x])^3\right)$$

Problem 99: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[c+d x]^4}{(a+a \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 3, 46 leaves, 12 steps):

$$\frac{x}{a^3}+\frac{\text{ArcTanh}[\text{Sin}[c+d x]]}{a^3 d}-\frac{4 \text{Tan}[c+d x]}{a^2 d (a+a \text{Sec}[c+d x])}$$

Result (type 3, 117 leaves):

$$\left(8 \text{Cos}\left[\frac{1}{2}(c+d x)\right]^5 \text{Sec}[c+d x]^3 \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right] \left(d x-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right]\right)-4 \text{Sec}\left[\frac{c}{2}\right] \text{Sin}\left[\frac{d x}{2}\right]\right)\right) \Big/ \left(a^3 d (1+\text{Sec}[c+d x])^3\right)$$

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

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

Optimal (type 3, 60 leaves, 12 steps):

$$-\frac{x}{a^3}+\frac{2 \text{Tan}[c+d x]}{a^2 d (a+a \text{Sec}[c+d x])}-\frac{\text{Tan}[c+d x]^3}{3 d (a+a \text{Sec}[c+d x])^3}$$

Result (type 3, 125 leaves):

$$-\frac{1}{480 a^3 d}\text{Sec}\left[\frac{c}{2}\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^3 \left(180 d x \text{Cos}\left[\frac{d x}{2}\right]+180 d x \text{Cos}\left[c+\frac{d x}{2}\right]+60 d x \text{Cos}\left[c+\frac{3 d x}{2}\right]+60 d x \text{Cos}\left[2 c+\frac{3 d x}{2}\right]-471 \text{Sin}\left[\frac{d x}{2}\right]+351 \text{Sin}\left[c+\frac{d x}{2}\right]-277 \text{Sin}\left[c+\frac{3 d x}{2}\right]-3 \text{Sin}\left[2 c+\frac{3 d x}{2}\right]\right)$$

Problem 102: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^4}{(a+a \text{Sec}[c+d x])^3} \, dx$$

Optimal (type 3, 177 leaves, 17 steps):

$$\frac{x}{a^3}+\frac{\text{Cot}[c+d x]}{a^3 d}-\frac{\text{Cot}[c+d x]^3}{3 a^3 d}+\frac{\text{Cot}[c+d x]^5}{5 a^3 d}-\frac{\text{Cot}[c+d x]^7}{7 a^3 d}+\frac{4 \text{Cot}[c+d x]^9}{9 a^3 d}-\frac{3 \text{Csc}[c+d x]}{a^3 d}+\frac{13 \text{Csc}[c+d x]^3}{3 a^3 d}-\frac{21 \text{Csc}[c+d x]^5}{5 a^3 d}+\frac{15 \text{Csc}[c+d x]^7}{7 a^3 d}-\frac{4 \text{Csc}[c+d x]^9}{9 a^3 d}$$

Result (type 3, 366 leaves):

$$\frac{1}{80640\, a^3\, d\, (1+\text{Sec}[c+d x])^3}\text{Csc}\left[\frac{c}{2}\right]\text{Csc}[2(c+d x)]^3\,\text{Sec}\left[\frac{c}{2}\right]$$
$$(181440\, d x \text{Cos}[d x]-181440\, d x \text{Cos}[2c+d x]+136080\, d x \text{Cos}[c+2 d x]-136080\, d x \text{Cos}[3c+2 d x]-10080\, d x \text{Cos}[2c+3 d x]+10080\, d x \text{Cos}[4c+3 d x]-60480\, d x \text{Cos}[3c+4 d x]+60480\, d x \text{Cos}[5c+4 d x]-30240\, d x \text{Cos}[4c+5 d x]+30240\, d x \text{Cos}[6c+5 d x]-5040\, d x \text{Cos}[5c+6 d x]+5040\, d x \text{Cos}[7c+6 d x]-169344\, \text{Sin}[c]-338112\, \text{Sin}[d x]+675036\, \text{Sin}[c+d x]+506277\, \text{Sin}[2(c+d x)]-37502\, \text{Sin}[3(c+d x)]-225012\, \text{Sin}[4(c+d x)]-112506\, \text{Sin}[5(c+d x)]-18751\, \text{Sin}[6(c+d x)]-431424\, \text{Sin}[2c+d x]-375552\, \text{Sin}[c+2 d x]-201600\, \text{Sin}[3c+2 d x]-41248\, \text{Sin}[2c+3 d x]+84000\, \text{Sin}[4c+3 d x]+155712\, \text{Sin}[3c+4 d x]+100800\, \text{Sin}[5c+4 d x]+98016\, \text{Sin}[4c+5 d x]+30240\, \text{Sin}[6c+5 d x]+21376\, \text{Sin}[5c+6 d x])$$

Problem 104: Result unnecessarily involves imaginary or complex numbers.

$$\int (a+a\,\text{Sec}[c+d x])\,(e\,\text{Tan}[c+d x])^{5/2}\,dx$$

Optimal (type 4, 310 leaves, 17 steps):

$$\frac{a e^{5/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{e\,\text{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d}-\frac{a e^{5/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{e\,\text{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d}-\frac{a e^{5/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d x]-\sqrt{2}\sqrt{e\,\text{Tan}[c+d x]}\right]}{2\sqrt{2}\,d}+\frac{a e^{5/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d x]+\sqrt{2}\sqrt{e\,\text{Tan}[c+d x]}\right]}{2\sqrt{2}\,d}+\frac{6 a e^2\,\text{Cos}[c+d x]\,\text{EllipticE}\left[c-\frac{\pi}{4}+d x,2\right]\sqrt{e\,\text{Tan}[c+d x]}}{5 d\sqrt{\text{Sin}[2c+2 d x]}}-\frac{6 a e\,\text{Cos}[c+d x]\,(e\,\text{Tan}[c+d x])^{3/2}}{5 d}+\frac{2 e\,(5 a+3 a\,\text{Sec}[c+d x])\,(e\,\text{Tan}[c+d x])^{3/2}}{15 d}$$

Result (type 4, 332 leaves):

$$a\left(\frac{1}{d}\text{Cos}[c+d x]\,\text{Cot}[c+d x]^2\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2(1+\text{Sec}[c+d x])\right.$$
$$(e\,\text{Tan}[c+d x])^{5/2}\left(-\frac{3}{5}\text{Sin}[c+d x]+\frac{1}{3}\text{Tan}[c+d x]+\frac{1}{5}\text{Sec}[c+d x]\,\text{Tan}[c+d x]\right)+$$
$$\frac{1}{10\,d\,\text{Tan}[c+d x]^{5/2}}\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2(1+\text{Sec}[c+d x])$$
$$(e\,\text{Tan}[c+d x])^{5/2}\left(-\frac{5}{2}\text{Csc}[c+d x]\left(-\text{ArcSin}[\text{Cos}[c+d x]-\text{Sin}[c+d x]]-\text{Log}\left[\right.\right.\right.$$
$$\left.\left.\text{Cos}[c+d x]+\text{Sin}[c+d x]+\sqrt{\text{Sin}[2(c+d x)]}\right]\right)\sqrt{\text{Sin}[2(c+d x)]}\,\sqrt{\text{Tan}[c+d x]}+$$
$$\left(6\,\text{Sec}[c+d x]\left((-1)^{3/4}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d x]}\right],-1\right]-\right.\right.$$
$$(-1)^{3/4}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d x]}\right],-1\right]+$$
$$\left.\left.\left.\left.\frac{\text{Tan}[c+d x]^{3/2}}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)\right)\Big/\left(\sqrt{1+\text{Tan}[c+d x]^2}\right)\right)\right)$$

Problem 105: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 282 leaves, 16 steps):

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

Result (type 4, 214 leaves):

$$-\frac{1}{12 d\left(-1+\text{Tan}[c+d x]^2\right)} a e \text{Cos}[2(c+d x)] \text{Csc}\left[\frac{1}{2}(c+d x)\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right] \sqrt{\text{Sec}[c+d x]^2} \sqrt{e \text{Tan}[c+d x]} \left(4(-1)^{1/4} \text{EllipticF}\left[i \text{ArcSinh}\left[(-1)^{1/4} \sqrt{\text{Tan}[c+d x]}\right],-1\right] \sqrt{\text{Tan}[c+d x]}+\sqrt{\text{Sec}[c+d x]^2} \left(12 \text{Sin}[c+d x]+3 \text{ArcSin}[\text{Cos}[c+d x]-\text{Sin}[c+d x]] \sqrt{\text{Sin}[2(c+d x)]}-3 \text{Log}\left[\text{Cos}[c+d x]+\text{Sin}[c+d x]+\sqrt{\text{Sin}[2(c+d x)]}\right] \sqrt{\text{Sin}[2(c+d x)]}+4 \text{Tan}[c+d x]\right)\right)$$

Problem 106: Result unnecessarily involves imaginary or complex numbers.

$$\int (a+a \text{Sec}[c+d x]) \sqrt{e \text{Tan}[c+d x]} \, dx$$

Optimal (type 4, 272 leaves, 16 steps):

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

Result (type 4, 207 leaves):

$$-\frac{1}{4 d \sqrt{\text{Sec}[c+d x]^2}} a (1+\text{Cos}[c+d x]) \text{Csc}[c+d x] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \left(\left(\text{ArcSin}[\text{Cos}[c+d x]-\text{Sin}[c+d x]]+\text{Log}\left[\text{Cos}[c+d x]+\text{Sin}[c+d x]+\sqrt{\text{Sin}[2(c+d x)]}\right]\right) \sqrt{\text{Sec}[c+d x]^2} \sqrt{\text{Sin}[2(c+d x)]}+4(-1)^{3/4} \text{EllipticE}\left[i \text{ArcSinh}\left[(-1)^{1/4} \sqrt{\text{Tan}[c+d x]}\right],-1\right] \sqrt{\text{Tan}[c+d x]}-4(-1)^{3/4} \text{EllipticF}\left[i \text{ArcSinh}\left[(-1)^{1/4} \sqrt{\text{Tan}[c+d x]}\right],-1\right] \sqrt{\text{Tan}[c+d x]}\right) \sqrt{e \text{Tan}[c+d x]}$$

Problem 107: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{a+a \text{Sec}[c+d x]}{\sqrt{e \text{Tan}[c+d x]}} \, dx$$

Optimal (type 4, 244 leaves, 15 steps):

$$-\frac{a\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,\sqrt{e}}+\frac{a\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,\sqrt{e}}-\frac{a\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,d\,\sqrt{e}}+\frac{a\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,d\,\sqrt{e}}+\frac{a\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,2\right]\,\text{Sec}[c+d\,x]\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}{d\,\sqrt{e\,\text{Tan}[c+d\,x]}}$$

Result (type 6, 1511 leaves):

$$\left(45\,a\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$
$$\text{Cot}\left[\frac{1}{2}(c+d\,x)\right](1+\text{Sec}[c+d\,x])\,\text{Sin}[c+d\,x]$$
$$\left(5\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.$$
$$4\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+$$
$$\left.\left.2\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\Big/$$
$$\left(d\left(5\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.\right.$$
$$2\left(-2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$
$$\left(225\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]^2\right.$$
$$\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Csc}[c+d\,x]\,\text{Sec}[c+d\,x]-$$
$$450\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]^2\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]$$
$$\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]-180\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Csc}[c+d\,x]\,\text{Sec}[c+d\,x]$$
$$\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]^2+90\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Csc}[c+d\,x]\,\text{Sec}[c+d\,x]$$
$$\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]^2+360\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$

$$\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$
$$180\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$
$$360\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},\right.$$
$$\left.2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$
$$180\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},\right.$$
$$\left.1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$
$$72\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3-$$
$$72\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+$$
$$18\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3-$$
$$400\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},3,\frac{13}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+$$
$$200\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]$$
$$\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},2,\frac{13}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3-$$
$$150\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{AppellF1}\left[\frac{9}{4},\frac{5}{2},\right.$$
$$\left.\left.1,\frac{13}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3\right)\sqrt{e\,\text{Tan}[c+d\,x]}\,\Big)$$

Problem 108: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 305 leaves, 17 steps):

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

Result (type 4, 312 leaves) :

$$a\left(\left(\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2(1+\text{Sec}[c+d\,x])\,\text{Sin}[c+d\,x]\left(-\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]+\text{Sin}[c+d\,x]\right)\text{Tan}[c+d\,x]\right)\Big/\left(d\,(e\,\text{Tan}[c+d\,x])^{3/2}\right)+\frac{1}{2\,d\,(e\,\text{Tan}[c+d\,x])^{3/2}}\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2(1+\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]^{3/2}\left(-\frac{1}{2}\text{Csc}[c+d\,x]\left(-\text{ArcSin}[\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]-\text{Log}\left[\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]+\sqrt{\text{Sin}[2\,(c+d\,x)]}\right]\right)\sqrt{\text{Sin}[2\,(c+d\,x)]}\,\sqrt{\text{Tan}[c+d\,x]}-\left(2\,\text{Sec}[c+d\,x]\left((-1)^{3/4}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]-(-1)^{3/4}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]+\frac{\text{Tan}[c+d\,x]^{3/2}}{\sqrt{1+\text{Tan}[c+d\,x]^2}}\right)\right)\Big/\left(\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\right)\right)$$

Problem 109: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 282 leaves, 16 steps) :

$$\frac{a\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,e^{5/2}}-\frac{a\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,e^{5/2}}+\frac{a\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]-\sqrt{2}\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,d\,e^{5/2}}-\frac{a\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]+\sqrt{2}\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,d\,e^{5/2}}-\frac{2\,(a+a\,\text{Sec}[c+d\,x])}{3\,d\,e\,(e\,\text{Tan}[c+d\,x])^{3/2}}-\frac{a\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,2\right]\text{Sec}[c+d\,x]\sqrt{\text{Sin}[2\,c+2\,d\,x]}}{3\,d\,e^2\sqrt{e\,\text{Tan}[c+d\,x]}}$$

Result (type 4, 200 leaves):

$$-\frac{1}{6\,d\,e^3\sqrt{\text{Sec}[c+d\,x]^2}}\Bigg(a\,\text{Csc}[c+d\,x]\bigg(\sqrt{\text{Sec}[c+d\,x]^2}\left(2\,\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]+2\,\text{Cos}\left[\frac{3}{2}(c+d\,x)\right]\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]-3\,\text{ArcSin}[\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\sqrt{\text{Sin}[2\,(c+d\,x)]}+3\,\text{Log}\left[\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]+\sqrt{\text{Sin}[2\,(c+d\,x)]}\right]\sqrt{\text{Sin}[2\,(c+d\,x)]}\right)-4\,(-1)^{1/4}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]\sqrt{\text{Tan}[c+d\,x]}\bigg)\sqrt{e\,\text{Tan}[c+d\,x]}\Bigg)$$

Problem 110: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 346 leaves, 18 steps):

$$-\frac{a\,\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,e^{7/2}}+\frac{a\,\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,e^{7/2}}+\frac{a\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]-\sqrt{2}\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,d\,e^{7/2}}-\frac{a\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]+\sqrt{2}\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,d\,e^{7/2}}-\frac{2\,(a+a\,\text{Sec}[c+d\,x])}{5\,d\,e\,(e\,\text{Tan}[c+d\,x])^{5/2}}+\frac{2\,(5\,a+3\,a\,\text{Sec}[c+d\,x])}{5\,d\,e^3\sqrt{e\,\text{Tan}[c+d\,x]}}+\frac{6\,a\,\text{Cos}[c+d\,x]\,\text{EllipticE}\left[c-\frac{\pi}{4}+d\,x,2\right]\sqrt{e\,\text{Tan}[c+d\,x]}}{5\,d\,e^4\sqrt{\text{Sin}[2\,c+2\,d\,x]}}-\frac{6\,a\,\text{Cos}[c+d\,x]\,(e\,\text{Tan}[c+d\,x])^{3/2}}{5\,d\,e^5}$$

Result (type 4, 360 leaves):

$$a\left(\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 (1+\text{Sec}[c+d x]) \text{Sin}[c+d x]\left(\frac{19}{20}\text{Cot}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{20}\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2-\frac{3}{5}\text{Sin}[c+d x]-\frac{1}{4}\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\text{Tan}[c+d x]^3\right)\Big/\left(d\,(e\,\text{Tan}[c+d x])^{7/2}\right)+\frac{1}{10 d\,(e\,\text{Tan}[c+d x])^{7/2}}\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2(1+\text{Sec}[c+d x])\,\text{Tan}[c+d x]^{7/2}\left(\frac{5}{2}\text{Csc}[c+d x]\left(-\text{ArcSin}[\text{Cos}[c+d x]-\text{Sin}[c+d x]]-\text{Log}\left[\text{Cos}[c+d x]+\text{Sin}[c+d x]+\sqrt{\text{Sin}[2(c+d x)]}\right]\right)\sqrt{\text{Sin}[2(c+d x)]}\sqrt{\text{Tan}[c+d x]}+\left(6\,\text{Sec}[c+d x]\left((-1)^{3/4}\text{EllipticE}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d x]}\right],-1\right]-(-1)^{3/4}\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d x]}\right],-1\right]+\frac{\text{Tan}[c+d x]^{3/2}}{\sqrt{1+\text{Tan}[c+d x]^2}}\right)\right)\Big/\left(\sqrt{1+\text{Tan}[c+d x]^2}\right)\right)\right)$$

Problem 111: Result unnecessarily involves imaginary or complex numbers.

$$\int (a+a\,\text{Sec}[c+d x])^2\,(e\,\text{Tan}[c+d x])^{5/2}\,dx$$

Optimal (type 4, 366 leaves, 21 steps):

$$\frac{a^2 e^{5/2}\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{e\,\text{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d}-\frac{a^2 e^{5/2}\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{e\,\text{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d}-\frac{a^2 e^{5/2}\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d x]-\sqrt{2}\sqrt{e\,\text{Tan}[c+d x]}\right]}{2\sqrt{2}\,d}+\frac{a^2 e^{5/2}\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d x]+\sqrt{2}\sqrt{e\,\text{Tan}[c+d x]}\right]}{2\sqrt{2}\,d}+\frac{12 a^2 e^2\text{Cos}[c+d x]\,\text{EllipticE}\left[c-\frac{\pi}{4}+d x,2\right]\sqrt{e\,\text{Tan}[c+d x]}}{5 d\sqrt{\text{Sin}[2 c+2 d x]}}+\frac{2 a^2 e\,(e\,\text{Tan}[c+d x])^{3/2}}{3 d}-\frac{12 a^2 e\,\text{Cos}[c+d x]\,(e\,\text{Tan}[c+d x])^{3/2}}{5 d}+\frac{4 a^2 e\,\text{Sec}[c+d x]\,(e\,\text{Tan}[c+d x])^{3/2}}{5 d}+\frac{2 a^2\,(e\,\text{Tan}[c+d x])^{7/2}}{7 d e}$$

Result (type 4, 338 leaves):

$$\left(\left(1+\text{Cos}\left[2\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right]\right)^2 \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4 \text{Sec}[c+d\,x]^2 \left(a+a\,\text{Sec}[c+d\,x]\right)^2\right.$$

$$(e\,\text{Tan}[c+d\,x])^{5/2} \left(\frac{1}{20\,d}\left(48\,(-1)^{3/4}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]-\right.\right.$$

$$48\,(-1)^{3/4}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]+$$

$$5\sqrt{2}\left(2\,\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]-2\,\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]-\text{Log}\left[\right.\right.$$

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

$$\left.\left.\frac{2\,\text{Tan}[c+d\,x]^{3/2}\left(35+15\,\text{Tan}[c+d\,x]^2+42\sqrt{1+\text{Tan}[c+d\,x]^2}\right)}{105\,d}\right)\right)\Big/$$

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

$$\text{Tan}[c+d\,x]^{5/2}$$

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

Problem 112: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 335 leaves, 20 steps):

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

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

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

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

$$\frac{2\,a^2\,e\sqrt{e\,\text{Tan}[c+d\,x]}}{d}+\frac{4\,a^2\,e\,\text{Sec}[c+d\,x]\sqrt{e\,\text{Tan}[c+d\,x]}}{3\,d}+\frac{2\,a^2\,(e\,\text{Tan}[c+d\,x])^{5/2}}{5\,d\,e}$$

Result (type 4, 323 leaves):

$$\left(\left(1+\text{Cos}\left[2\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right]\right)^2 \text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4 \text{Sec}[c+d\,x]^2\,(a+a\,\text{Sec}[c+d\,x])^2\,(e\,\text{Tan}[c+d\,x])^{3/2}\right.$$
$$\left(\frac{1}{d}2\left(\frac{2}{3}(-1)^{1/4}\,\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]+\frac{1}{4\sqrt{2}}\right.\right.$$
$$\left(2\,\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]-2\,\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]+\text{Log}\left[\right.\right.$$
$$\left.\left.\left.1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]-\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\right)\right)+$$
$$\left.\left.\frac{1}{d}2\left(\sqrt{\text{Tan}[c+d\,x]}+\frac{1}{5}\text{Tan}[c+d\,x]^{5/2}+\frac{2}{3}\sqrt{\text{Tan}[c+d\,x]}\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\right)\right)\Big/$$
$$\left(4\left(1+\text{Cos}\left[2\left(\frac{c}{2}+\frac{1}{2}(-c+\text{ArcTan}[\text{Tan}[c+d\,x]])\right)\right]\right)^2\text{Tan}[c+d\,x]^{3/2}\right.$$
$$\left.\left(1+\text{Tan}[c+d\,x]^2\right)^2\right)$$

Problem 113: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 309 leaves, 19 steps):

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

Result (type 4, 249 leaves):

$$\frac{1}{12\,d\sqrt{\text{Tan}[c+d\,x]}}a^2\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Sec}\left[\frac{1}{2}\text{ArcTan}[\text{Tan}[c+d\,x]]\right]^4\sqrt{e\,\text{Tan}[c+d\,x]}$$
$$\left(-6\sqrt{2}\,\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]+6\sqrt{2}\,\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]-\right.$$
$$48\,(-1)^{3/4}\,\text{EllipticE}\left[\text{i}\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]+$$
$$48\,(-1)^{3/4}\,\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]+$$
$$3\sqrt{2}\,\text{Log}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]-$$
$$\left.3\sqrt{2}\,\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]+8\,\text{Tan}[c+d\,x]^{3/2}\right)$$

Problem 114: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 278 leaves, 18 steps):

$$-\frac{a^2\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,\sqrt{e}}+\frac{a^2\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,\sqrt{e}}-\frac{a^2\,\mathrm{Log}\left[\sqrt{e}+\sqrt{e}\,\mathrm{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,d\,\sqrt{e}}+\frac{a^2\,\mathrm{Log}\left[\sqrt{e}+\sqrt{e}\,\mathrm{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,d\,\sqrt{e}}+\frac{2\,a^2\,\mathrm{EllipticF}\left[c-\frac{\pi}{4}+d\,x,\,2\right]\,\mathrm{Sec}[c+d\,x]\,\sqrt{\mathrm{Sin}[2\,c+2\,d\,x]}}{d\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}+\frac{2\,a^2\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}{d\,e}$$

Result (type 4, 218 leaves):

$$\frac{1}{4\,d\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}\,a^2\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,\mathrm{Sec}\left[\frac{1}{2}\,\mathrm{ArcTan}[\mathrm{Tan}[c+d\,x]]\right]^4\left(-2\,\sqrt{2}\,\mathrm{ArcTan}\left[1-\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}\right]+2\,\sqrt{2}\,\mathrm{ArcTan}\left[1+\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}\right]-16\,(-1)^{1/4}\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\mathrm{Tan}[c+d\,x]}\right],\,-1\right]-\sqrt{2}\,\mathrm{Log}\left[1-\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}+\mathrm{Tan}[c+d\,x]\right]+\sqrt{2}\,\mathrm{Log}\left[1+\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}+\mathrm{Tan}[c+d\,x]\right]+8\,\sqrt{\mathrm{Tan}[c+d\,x]}\right)\sqrt{\mathrm{Tan}[c+d\,x]}$$

Problem 115: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 310 leaves, 20 steps):

$$\frac{a^2\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,e^{3/2}}-\frac{a^2\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,e^{3/2}}-\frac{a^2\,\mathrm{Log}\left[\sqrt{e}+\sqrt{e}\,\mathrm{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,d\,e^{3/2}}+\frac{a^2\,\mathrm{Log}\left[\sqrt{e}+\sqrt{e}\,\mathrm{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,d\,e^{3/2}}-\frac{4\,a^2}{d\,e\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}-\frac{4\,a^2\,\mathrm{Cos}[c+d\,x]}{d\,e\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}-\frac{4\,a^2\,\mathrm{Cos}[c+d\,x]\,\mathrm{EllipticE}\left[c-\frac{\pi}{4}+d\,x,\,2\right]\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}{d\,e^2\,\sqrt{\mathrm{Sin}[2\,c+2\,d\,x]}}$$

Result (type 4, 304 leaves):

$$-\frac{1}{4\,d\,e\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}\,a^2\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,\mathrm{Sec}\left[\frac{1}{2}\,\mathrm{ArcTan}[\mathrm{Tan}[c+d\,x]]\right]^4$$
$$\Big(16+16\,\sqrt{\mathrm{Sec}[c+d\,x]^2}-2\,\sqrt{2}\,\mathrm{ArcTan}\left[1-\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}\right]\,\sqrt{\mathrm{Tan}[c+d\,x]}+$$
$$2\,\sqrt{2}\,\mathrm{ArcTan}\left[1+\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}\right]\,\sqrt{\mathrm{Tan}[c+d\,x]}+$$
$$16\,(-1)^{3/4}\,\mathrm{EllipticE}\left[i\,\mathrm{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\mathrm{Tan}[c+d\,x]}\right],-1\right]\,\sqrt{\mathrm{Tan}[c+d\,x]}-$$
$$16\,(-1)^{3/4}\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\mathrm{Tan}[c+d\,x]}\right],-1\right]\,\sqrt{\mathrm{Tan}[c+d\,x]}+$$
$$\sqrt{2}\,\mathrm{Log}\left[1-\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}+\mathrm{Tan}[c+d\,x]\right]\,\sqrt{\mathrm{Tan}[c+d\,x]}-$$
$$\sqrt{2}\,\mathrm{Log}\left[1+\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}+\mathrm{Tan}[c+d\,x]\right]\,\sqrt{\mathrm{Tan}[c+d\,x]}\Big)$$

Problem 116: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(a+a\,\mathrm{Sec}[c+d\,x])^2}{(e\,\mathrm{Tan}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 4, 316 leaves, 20 steps):

$$\frac{a^2\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,e^{5/2}}-\frac{a^2\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,e^{5/2}}+$$
$$\frac{a^2\,\mathrm{Log}\left[\sqrt{e}+\sqrt{e}\,\mathrm{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,d\,e^{5/2}}-$$
$$\frac{a^2\,\mathrm{Log}\left[\sqrt{e}+\sqrt{e}\,\mathrm{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,d\,e^{5/2}}-\frac{4\,a^2}{3\,d\,e\,(e\,\mathrm{Tan}[c+d\,x])^{3/2}}-$$
$$\frac{4\,a^2\,\mathrm{Sec}[c+d\,x]}{3\,d\,e\,(e\,\mathrm{Tan}[c+d\,x])^{3/2}}-\frac{2\,a^2\,\mathrm{EllipticF}\left[c-\frac{\pi}{4}+d\,x,2\right]\,\mathrm{Sec}[c+d\,x]\,\sqrt{\mathrm{Sin}[2\,c+2\,d\,x]}}{3\,d\,e^2\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}$$

Result (type 4, 281 leaves):

$$\frac{1}{24\,d\,e^2\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}$$
$$a^2\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Cos}[c+d\,x]\,\mathrm{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\,\mathrm{Sec}\left[\frac{1}{2}\,\mathrm{ArcTan}[\mathrm{Tan}[c+d\,x]]\right]^4$$
$$\Big(-16-16\,\sqrt{\mathrm{Sec}[c+d\,x]^2}+6\,\sqrt{2}\,\mathrm{ArcTan}\left[1-\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}\right]\,\mathrm{Tan}[c+d\,x]^{3/2}-$$
$$6\,\sqrt{2}\,\mathrm{ArcTan}\left[1+\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}\right]\,\mathrm{Tan}[c+d\,x]^{3/2}+$$
$$16\,(-1)^{1/4}\,\mathrm{EllipticF}\left[i\,\mathrm{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\mathrm{Tan}[c+d\,x]}\right],-1\right]\,\mathrm{Tan}[c+d\,x]^{3/2}+$$
$$3\,\sqrt{2}\,\mathrm{Log}\left[1-\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}+\mathrm{Tan}[c+d\,x]\right]\,\mathrm{Tan}[c+d\,x]^{3/2}-$$
$$3\,\sqrt{2}\,\mathrm{Log}\left[1+\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}+\mathrm{Tan}[c+d\,x]\right]\,\mathrm{Tan}[c+d\,x]^{3/2}\Big)$$

Problem 117: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 370 leaves, 22 steps):

$$-\frac{a^2\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,e^{7/2}}+\frac{a^2\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,d\,e^{7/2}}+\frac{a^2\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,d\,e^{7/2}}-\frac{a^2\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,d\,e^{7/2}}-\frac{4\,a^2}{5\,d\,e\,(e\,\text{Tan}[c+d\,x])^{5/2}}-\frac{4\,a^2\,\text{Sec}[c+d\,x]}{5\,d\,e\,(e\,\text{Tan}[c+d\,x])^{5/2}}+\frac{2\,a^2}{d\,e^3\,\sqrt{e\,\text{Tan}[c+d\,x]}}+\frac{12\,a^2\,\text{Cos}[c+d\,x]}{5\,d\,e^3\,\sqrt{e\,\text{Tan}[c+d\,x]}}+\frac{12\,a^2\,\text{Cos}[c+d\,x]\,\text{EllipticE}\left[c-\frac{\pi}{4}+d\,x,\,2\right]\,\sqrt{e\,\text{Tan}[c+d\,x]}}{5\,d\,e^4\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}$$

Result (type 4, 367 leaves):

$$\left(\left(1+\text{Cos}\left[2\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right]\right)^2\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\,\text{Sec}[c+d\,x]^2\,(a+a\,\text{Sec}[c+d\,x])^2\,\text{Tan}[c+d\,x]^{7/2}\left(\frac{1}{20\,d}\left(48\,(-1)^{3/4}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Tan}[c+d\,x]}\right],\,-1\right]-48\,(-1)^{3/4}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Tan}[c+d\,x]}\right],\,-1\right]+5\,\sqrt{2}\left(-2\,\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]+2\,\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]+\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]-\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\right)\right)+\frac{1}{d}2\left(-\frac{2}{5\,\text{Tan}[c+d\,x]^{5/2}}+\frac{1}{\sqrt{\text{Tan}[c+d\,x]}}+\left(-\frac{2}{5\,\text{Tan}[c+d\,x]^{5/2}}+\frac{6}{5\,\sqrt{\text{Tan}[c+d\,x]}}\right)\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\right)\right)\Bigg/\left(4\left(1+\text{Cos}\left[2\left(\frac{c}{2}+\frac{1}{2}\,(-c+\text{ArcTan}[\text{Tan}[c+d\,x]])\right)\right]\right)^2\,(e\,\text{Tan}[c+d\,x])^{7/2}\,\left(1+\text{Tan}[c+d\,x]^2\right)^2\right)$$

Problem 118: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{(e\,\text{Tan}[c+d\,x])^{11/2}}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 330 leaves, 18 steps):

$$\frac{e^{11/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,d}-\frac{e^{11/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,d}+\frac{e^{11/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,a\,d}-\frac{e^{11/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,a\,d}+\frac{5\,e^6\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,\,2\right]\,\text{Sec}[c+d\,x]\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}{21\,a\,d\,\sqrt{e\,\text{Tan}[c+d\,x]}}+\frac{2\,e^5\,(21-5\,\text{Sec}[c+d\,x])\,\sqrt{e\,\text{Tan}[c+d\,x]}}{21\,a\,d}-\frac{2\,e^3\,(7-5\,\text{Sec}[c+d\,x])\,(e\,\text{Tan}[c+d\,x])^{5/2}}{35\,a\,d}$$

Result (type 4, 316 leaves):

$$\left(2\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[c+d\,x]^2\,(e\,\text{Tan}[c+d\,x])^{11/2}\left(1+\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\left(\frac{1}{d}2\left(-\frac{5}{21}(-1)^{1/4}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]+\frac{1}{4\sqrt{2}}\left(2\,\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]-2\,\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]+\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]-\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\right)\right)+\frac{1}{d}2\left(\sqrt{\text{Tan}[c+d\,x]}-\frac{1}{5}\text{Tan}[c+d\,x]^{5/2}+\sqrt{1+\text{Tan}[c+d\,x]^2}\left(-\frac{5}{21}\sqrt{\text{Tan}[c+d\,x]}+\frac{1}{7}\text{Tan}[c+d\,x]^{5/2}\right)\right)\right)\right)\Big/\left((1+\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]^{11/2}\,\left(1+\text{Tan}[c+d\,x]^2\right)\right)$$

Problem 119: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{(e\,\text{Tan}[c+d\,x])^{9/2}}{a+a\,\text{Sec}[c+d\,x]}\,dx$$

Optimal (type 4, 326 leaves, 18 steps):

$$-\frac{e^{9/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,d}+\frac{e^{9/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,d}+$$
$$\frac{e^{9/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,a\,d}-$$
$$\frac{e^{9/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,a\,d}+$$
$$\frac{6\,e^4\,\text{Cos}[c+d\,x]\,\text{EllipticE}\left[c-\frac{\pi}{4}+d\,x,2\right]\sqrt{e\,\text{Tan}[c+d\,x]}}{5\,a\,d\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}-$$
$$\frac{6\,e^3\,\text{Cos}[c+d\,x]\,(e\,\text{Tan}[c+d\,x])^{3/2}}{5\,a\,d}-\frac{2\,e^3\,(5-3\,\text{Sec}[c+d\,x])\,(e\,\text{Tan}[c+d\,x])^{3/2}}{15\,a\,d}$$

Result (type 4, 305 leaves):

$$\left(2\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Sec}[c+d\,x]^2\,(e\,\text{Tan}[c+d\,x])^{9/2}\left(1+\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\right.$$
$$\left(\frac{1}{20\,d}\left(24\,(-1)^{3/4}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]-\right.\right.$$
$$24\,(-1)^{3/4}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]+$$
$$5\sqrt{2}\left(-2\,\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]+2\,\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]+\text{Log}\left[\right.\right.$$
$$\left.\left.\left.1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]-\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\right)\right)+$$
$$\left.\left.\frac{2\,\text{Tan}[c+d\,x]^{3/2}\left(-5+3\sqrt{1+\text{Tan}[c+d\,x]^2}\right)}{15\,d}\right)\right)\Big/\left((1+\text{Cos}[c+d\,x])\right.$$
$$\left.(a+a\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]^{9/2}\left(1+\text{Tan}[c+d\,x]^2\right)\right)$$

Problem 120: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 295 leaves, 17 steps):

$$-\frac{e^{7/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,d}+\frac{e^{7/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,d}-\frac{e^{7/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,a\,d}+\frac{e^{7/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,a\,d}-\frac{e^4\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,2\right]\,\text{Sec}[c+d\,x]\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}{3\,a\,d\,\sqrt{e\,\text{Tan}[c+d\,x]}}-\frac{2\,e^3\,\left(3-\text{Sec}[c+d\,x]\right)\,\sqrt{e\,\text{Tan}[c+d\,x]}}{3\,a\,d}$$

Result (type 4, 262 leaves):

$$\frac{1}{6\,a\,d\,\left(1+\text{Sec}[c+d\,x]\right)^2\,\sqrt{\text{Tan}[c+d\,x]}}\,e^3\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Sec}[c+d\,x]\,\left(1+\sqrt{\text{Sec}[c+d\,x]^2}\right)\left(-6\sqrt{2}\,\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]+6\sqrt{2}\,\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]+8\,(-1)^{1/4}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]-3\sqrt{2}\,\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]+3\sqrt{2}\,\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]-24\sqrt{\text{Tan}[c+d\,x]}+8\sqrt{\text{Sec}[c+d\,x]^2}\,\sqrt{\text{Tan}[c+d\,x]}\right)\sqrt{e\,\text{Tan}[c+d\,x]}$$

Problem 121: Unable to integrate problem.

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

Optimal (type 4, 285 leaves, 17 steps):

$$\frac{e^{5/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,d}-\frac{e^{5/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,d}-\frac{e^{5/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,a\,d}+\frac{e^{5/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,a\,d}-\frac{2\,e^2\,\text{Cos}[c+d\,x]\,\text{EllipticE}\left[c-\frac{\pi}{4}+d\,x,2\right]\,\sqrt{e\,\text{Tan}[c+d\,x]}}{a\,d\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}+\frac{2\,e\,\text{Cos}[c+d\,x]\,(e\,\text{Tan}[c+d\,x])^{3/2}}{a\,d}$$

Result (type 8, 27 leaves):

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

Problem 122: Unable to integrate problem.

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

Optimal (type 4, 257 leaves, 16 steps):

$$\frac{e^{3/2} \operatorname{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2} a d}-\frac{e^{3/2} \operatorname{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2} a d}+\frac{e^{3/2} \operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]-\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}\right]}{2 \sqrt{2} a d}-\frac{e^{3/2} \operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]+\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}\right]}{2 \sqrt{2} a d}+\frac{e^2 \operatorname{EllipticF}\left[c-\frac{\pi}{4}+d x, 2\right] \operatorname{Sec}[c+d x] \sqrt{\operatorname{Sin}[2 c+2 d x]}}{a d \sqrt{e \operatorname{Tan}[c+d x]}}$$

Result (type 8, 27 leaves):

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

Problem 123: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\sqrt{e \operatorname{Tan}[c+d x]}}{a+a \operatorname{Sec}[c+d x]} \, dx$$

Optimal (type 4, 315 leaves, 18 steps):

$$-\frac{\sqrt{e} \operatorname{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2} a d}+\frac{\sqrt{e} \operatorname{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2} a d}+\frac{\sqrt{e} \operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]-\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}\right]}{2 \sqrt{2} a d}-\frac{\sqrt{e} \operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]+\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}\right]}{2 \sqrt{2} a d}+\frac{2 e (1-\operatorname{Sec}[c+d x])}{a d \sqrt{e \operatorname{Tan}[c+d x]}}-\frac{2 \operatorname{Cos}[c+d x] \operatorname{EllipticE}\left[c-\frac{\pi}{4}+d x, 2\right] \sqrt{e \operatorname{Tan}[c+d x]}}{a d \sqrt{\operatorname{Sin}[2 c+2 d x]}}+\frac{2 \operatorname{Cos}[c+d x] (e \operatorname{Tan}[c+d x])^{3/2}}{a d e}$$

Result (type 4, 261 leaves):

$$\frac{1}{a\,d\,\sqrt{\text{Tan}[c+d\,x]}}\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\left(1+\sqrt{\text{Sec}[c+d\,x]^2}\right)\left(-(-1)^{3/4}\,\text{EllipticE}\left[\text{i}\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]+(-1)^{3/4}\,\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]+\frac{1}{4\sqrt{2}}\left(-2\,\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]+2\,\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]+\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]-\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\right)+\frac{1}{\sqrt{\text{Tan}[c+d\,x]}}-\frac{\sqrt{\text{Sec}[c+d\,x]^2}}{\sqrt{\text{Tan}[c+d\,x]}}\right)\sqrt{e\,\text{Tan}[c+d\,x]}$$

Problem 124: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{(a+a\,\text{Sec}[c+d\,x])\,\sqrt{e\,\text{Tan}[c+d\,x]}}\,dx$$

Optimal (type 4, 290 leaves, 17 steps):

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

Result (type 4, 225 leaves):

$$\frac{1}{24\,a\,d\,\sqrt{e\,\text{Tan}[c+d\,x]}}\,\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\left(1+\sqrt{\text{Sec}[c+d\,x]^2}\right)\left(8\,(-1)^{1/4}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]+3\,\sqrt{2}\,\left(-2\,\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]+2\,\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]-\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]+\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\right)-\frac{8\left(-1+\sqrt{\text{Sec}[c+d\,x]^2}\right)}{\text{Tan}[c+d\,x]^{3/2}}\right)\sqrt{\text{Tan}[c+d\,x]}$$

Problem 125: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{(a+a\,\text{Sec}[c+d\,x])\,(e\,\text{Tan}[c+d\,x])^{3/2}}\,dx$$

Optimal (type 4, 359 leaves, 19 steps):

$$\frac{\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,d\,e^{3/2}}-\frac{\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,d\,e^{3/2}}-\frac{\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,a\,d\,e^{3/2}}+\frac{\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,a\,d\,e^{3/2}}+\frac{2\,e\,(1-\text{Sec}[c+d\,x])}{5\,a\,d\,(e\,\text{Tan}[c+d\,x])^{5/2}}-\frac{2\,(5-3\,\text{Sec}[c+d\,x])}{5\,a\,d\,e\,\sqrt{e\,\text{Tan}[c+d\,x]}}+\frac{6\,\text{Cos}[c+d\,x]\,\text{EllipticE}\left[c-\frac{\pi}{4}+d\,x,2\right]\sqrt{e\,\text{Tan}[c+d\,x]}}{5\,a\,d\,e^2\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}-\frac{6\,\text{Cos}[c+d\,x]\,(e\,\text{Tan}[c+d\,x])^{3/2}}{5\,a\,d\,e^3}$$

Result (type 4, 346 leaves):

$$\left(2\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]^{3/2}\left(1+\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\right.$$
$$\left(\frac{1}{20\,d}\left(24\,(-1)^{3/4}\,\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]-\right.\right.$$
$$24\,(-1)^{3/4}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]+$$
$$5\sqrt{2}\left(2\,\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]-2\,\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]-\text{Log}\left[\right.\right.$$
$$\left.\left.\left.1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]+\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\right)\right)+$$
$$\frac{1}{d}2\left(\frac{1}{5\,\text{Tan}[c+d\,x]^{5/2}}-\frac{1}{\sqrt{\text{Tan}[c+d\,x]}}+\left(-\frac{1}{5\,\text{Tan}[c+d\,x]^{5/2}}+\frac{3}{5\sqrt{\text{Tan}[c+d\,x]}}\right)\right.$$
$$\left.\left.\left.\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\right)\right)\Big/$$
$$\left(\left(1+\text{Cos}[c+d\,x]\right)\left(a+a\,\text{Sec}[c+d\,x]\right)\left(e\,\text{Tan}[c+d\,x]\right)^{3/2}\right.$$
$$\left.\left(1+\text{Tan}[c+d\,x]^2\right)\right)$$

Problem 126: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{\left(a+a\,\text{Sec}[c+d\,x]\right)\left(e\,\text{Tan}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 4, 328 leaves, 18 steps):

$$\frac{\text{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,d\,e^{5/2}}-\frac{\text{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,d\,e^{5/2}}+$$
$$\frac{\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]-\sqrt{2}\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,a\,d\,e^{5/2}}-$$
$$\frac{\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]+\sqrt{2}\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,a\,d\,e^{5/2}}+\frac{2\,e\left(1-\text{Sec}[c+d\,x]\right)}{7\,a\,d\left(e\,\text{Tan}[c+d\,x]\right)^{7/2}}-$$
$$\frac{2\left(7-5\,\text{Sec}[c+d\,x]\right)}{21\,a\,d\,e\left(e\,\text{Tan}[c+d\,x]\right)^{3/2}}+\frac{5\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,2\right]\text{Sec}[c+d\,x]\sqrt{\text{Sin}[2\,c+2\,d\,x]}}{21\,a\,d\,e^2\sqrt{e\,\text{Tan}[c+d\,x]}}$$

Result (type 4, 304 leaves):

$$\left(2\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Sec}[c+d\,x]^2\,\text{Tan}[c+d\,x]^{5/2}\,\left(1+\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\right.$$
$$\left(\frac{1}{d}2\left(-\frac{5}{21}\,(-1)^{1/4}\,\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Tan}[c+d\,x]}\right],-1\right]+\frac{1}{4\,\sqrt{2}}\right.\right.$$
$$\left(2\,\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]-2\,\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]+\text{Log}\left[\right.\right.$$
$$\left.\left.\left.1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]-\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\right)\right)+$$
$$\left(2\left(3-3\sqrt{1+\text{Tan}[c+d\,x]^2}+\text{Tan}[c+d\,x]^2\left(-7+5\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\right)\right)\Big/$$
$$\left.\left.\left(21\,d\,\text{Tan}[c+d\,x]^{7/2}\right)\right)\right)\Big/$$
$$\left((1+\text{Cos}[c+d\,x])\,(a+a\,\text{Sec}[c+d\,x])\,(e\,\text{Tan}[c+d\,x])^{5/2}\right.$$
$$\left.\left(1+\text{Tan}[c+d\,x]^2\right)\right)$$

Problem 127: Unable to integrate problem.

$$\int\frac{(e\,\text{Tan}[c+d\,x])^{13/2}}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 372 leaves, 22 steps):

$$\frac{e^{13/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a^2\,d}-\frac{e^{13/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a^2\,d}-$$
$$\frac{e^{13/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,a^2\,d}+$$
$$\frac{e^{13/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,a^2\,d}-$$
$$\frac{12\,e^6\,\text{Cos}[c+d\,x]\,\text{EllipticE}\left[c-\frac{\pi}{4}+d\,x,2\right]\,\sqrt{e\,\text{Tan}[c+d\,x]}}{5\,a^2\,d\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}+\frac{2\,e^5\,(e\,\text{Tan}[c+d\,x])^{3/2}}{3\,a^2\,d}+$$
$$\frac{12\,e^5\,\text{Cos}[c+d\,x]\,(e\,\text{Tan}[c+d\,x])^{3/2}}{5\,a^2\,d}-\frac{4\,e^5\,\text{Sec}[c+d\,x]\,(e\,\text{Tan}[c+d\,x])^{3/2}}{5\,a^2\,d}+\frac{2\,e^3\,(e\,\text{Tan}[c+d\,x])^{7/2}}{7\,a^2\,d}$$

Result (type 8, 27 leaves):

$$\int\frac{(e\,\text{Tan}[c+d\,x])^{13/2}}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Problem 128: Unable to integrate problem.

$$\int\frac{(e\,\text{Tan}[c+d\,x])^{11/2}}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 339 leaves, 21 steps):

$$\frac{e^{11/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a^2\,d}-\frac{e^{11/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a^2\,d}+\frac{e^{11/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,a^2\,d}-\frac{e^{11/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,a^2\,d}+\frac{2\,e^6\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,2\right]\,\text{Sec}[c+d\,x]\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}{3\,a^2\,d\,\sqrt{e\,\text{Tan}[c+d\,x]}}+\frac{2\,e^5\,\sqrt{e\,\text{Tan}[c+d\,x]}}{a^2\,d}-\frac{4\,e^5\,\text{Sec}[c+d\,x]\,\sqrt{e\,\text{Tan}[c+d\,x]}}{3\,a^2\,d}+\frac{2\,e^3\,(e\,\text{Tan}[c+d\,x])^{5/2}}{5\,a^2\,d}$$

Result (type 8, 27 leaves):

$$\int\frac{(e\,\text{Tan}[c+d\,x])^{11/2}}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Problem 129: Unable to integrate problem.

$$\int\frac{(e\,\text{Tan}[c+d\,x])^{9/2}}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 312 leaves, 20 steps):

$$-\frac{e^{9/2}\,\text{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a^2\,d}+\frac{e^{9/2}\,\text{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a^2\,d}+\frac{e^{9/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,a^2\,d}-\frac{e^{9/2}\,\text{Log}\left[\sqrt{e}+\sqrt{e}\,\text{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\text{Tan}[c+d\,x]}\right]}{2\,\sqrt{2}\,a^2\,d}+\frac{4\,e^4\,\text{Cos}[c+d\,x]\,\text{EllipticE}\left[c-\frac{\pi}{4}+d\,x,2\right]\,\sqrt{e\,\text{Tan}[c+d\,x]}}{a^2\,d\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}+\frac{2\,e^3\,(e\,\text{Tan}[c+d\,x])^{3/2}}{3\,a^2\,d}-\frac{4\,e^3\,\text{Cos}[c+d\,x]\,(e\,\text{Tan}[c+d\,x])^{3/2}}{a^2\,d}$$

Result (type 8, 27 leaves):

$$\int\frac{(e\,\text{Tan}[c+d\,x])^{9/2}}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Problem 130: Unable to integrate problem.

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

Optimal (type 4, 281 leaves, 19 steps):

$$-\frac{e^{7/2} \operatorname{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2} a^2 d}+\frac{e^{7/2} \operatorname{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2} a^2 d}-\frac{e^{7/2} \operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]-\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}\right]}{2 \sqrt{2} a^2 d}+\frac{e^{7/2} \operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]+\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}\right]}{2 \sqrt{2} a^2 d}-\frac{2 e^4 \operatorname{EllipticF}\left[c-\frac{\pi}{4}+d x, 2\right] \operatorname{Sec}[c+d x] \sqrt{\operatorname{Sin}[2 c+2 d x]}}{a^2 d \sqrt{e \operatorname{Tan}[c+d x]}}+\frac{2 e^3 \sqrt{e \operatorname{Tan}[c+d x]}}{a^2 d}$$

Result (type 8, 27 leaves):

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

Problem 131: Unable to integrate problem.

$$\int \frac{(e \operatorname{Tan}[c+d x])^{5/2}}{(a+a \operatorname{Sec}[c+d x])^2} \, dx$$

Optimal (type 4, 310 leaves, 21 steps):

$$\frac{e^{5/2} \operatorname{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2} a^2 d}-\frac{e^{5/2} \operatorname{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2} a^2 d}-\frac{e^{5/2} \operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]-\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}\right]}{2 \sqrt{2} a^2 d}+\frac{e^{5/2} \operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]+\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}\right]}{2 \sqrt{2} a^2 d}-\frac{4 e^3}{a^2 d \sqrt{e \operatorname{Tan}[c+d x]}}+\frac{4 e^3 \operatorname{Cos}[c+d x]}{a^2 d \sqrt{e \operatorname{Tan}[c+d x]}}+\frac{4 e^2 \operatorname{Cos}[c+d x] \operatorname{EllipticE}\left[c-\frac{\pi}{4}+d x, 2\right] \sqrt{e \operatorname{Tan}[c+d x]}}{a^2 d \sqrt{\operatorname{Sin}[2 c+2 d x]}}$$

Result (type 8, 27 leaves):

$$\int \frac{(e \operatorname{Tan}[c+d x])^{5/2}}{(a+a \operatorname{Sec}[c+d x])^2} \, dx$$

Problem 132: Unable to integrate problem.

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

Optimal (type 4, 316 leaves, 21 steps):

$$\frac{e^{3/2} \operatorname{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2} a^2 d}-\frac{e^{3/2} \operatorname{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2} a^2 d}+\frac{e^{3/2} \operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]-\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}\right]}{2 \sqrt{2} a^2 d}-\frac{e^{3/2} \operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]+\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}\right]}{2 \sqrt{2} a^2 d}-\frac{4 e^3}{3 a^2 d (e \operatorname{Tan}[c+d x])^{3/2}}+\frac{4 e^3 \operatorname{Sec}[c+d x]}{3 a^2 d (e \operatorname{Tan}[c+d x])^{3/2}}+\frac{2 e^2 \operatorname{EllipticF}\left[c-\frac{\pi}{4}+d x, 2\right] \operatorname{Sec}[c+d x] \sqrt{\operatorname{Sin}[2 c+2 d x]}}{3 a^2 d \sqrt{e \operatorname{Tan}[c+d x]}}$$

Result (type 8, 27 leaves):

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

Problem 133: Unable to integrate problem.

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

Optimal (type 4, 363 leaves, 23 steps):

$$-\frac{\sqrt{e} \operatorname{ArcTan}\left[1-\frac{\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2} a^2 d}+\frac{\sqrt{e} \operatorname{ArcTan}\left[1+\frac{\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2} a^2 d}+\frac{\sqrt{e} \operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]-\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}\right]}{2 \sqrt{2} a^2 d}-\frac{\sqrt{e} \operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]+\sqrt{2} \sqrt{e \operatorname{Tan}[c+d x]}\right]}{2 \sqrt{2} a^2 d}-\frac{4 e^3}{5 a^2 d (e \operatorname{Tan}[c+d x])^{5/2}}+\frac{4 e^3 \operatorname{Sec}[c+d x]}{5 a^2 d (e \operatorname{Tan}[c+d x])^{5/2}}+\frac{2 e}{a^2 d \sqrt{e \operatorname{Tan}[c+d x]}}-\frac{12 e \operatorname{Cos}[c+d x]}{5 a^2 d \sqrt{e \operatorname{Tan}[c+d x]}}-\frac{12 \operatorname{Cos}[c+d x] \operatorname{EllipticE}\left[c-\frac{\pi}{4}+d x, 2\right] \sqrt{e \operatorname{Tan}[c+d x]}}{5 a^2 d \sqrt{\operatorname{Sin}[2 c+2 d x]}}$$

Result (type 8, 27 leaves):

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

Problem 134: Mathematica result simpler than optimal antiderivative, IF it can be verified!

$$\int \frac{1}{(a+a \operatorname{Sec}[c+d x])^2 \sqrt{e \operatorname{Tan}[c+d x]}} \, dx$$

Optimal (type 4, 365 leaves, 23 steps):

$$-\frac{\operatorname{ArcTan}\left[1-\frac{\sqrt{2}\sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2}\, a^2 d \sqrt{e}}+\frac{\operatorname{ArcTan}\left[1+\frac{\sqrt{2}\sqrt{e \operatorname{Tan}[c+d x]}}{\sqrt{e}}\right]}{\sqrt{2}\, a^2 d \sqrt{e}}-\frac{\operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]-\sqrt{2}\sqrt{e \operatorname{Tan}[c+d x]}\right]}{2\sqrt{2}\, a^2 d \sqrt{e}}+\frac{\operatorname{Log}\left[\sqrt{e}+\sqrt{e} \operatorname{Tan}[c+d x]+\sqrt{2}\sqrt{e \operatorname{Tan}[c+d x]}\right]}{2\sqrt{2}\, a^2 d \sqrt{e}}-\frac{4 e^3}{7 a^2 d (e \operatorname{Tan}[c+d x])^{7/2}}+\frac{4 e^3 \operatorname{Sec}[c+d x]}{7 a^2 d (e \operatorname{Tan}[c+d x])^{7/2}}+\frac{2 e}{3 a^2 d (e \operatorname{Tan}[c+d x])^{3/2}}-\frac{20 e \operatorname{Sec}[c+d x]}{21 a^2 d (e \operatorname{Tan}[c+d x])^{3/2}}-\frac{10 \operatorname{EllipticF}\left[c-\frac{\pi}{4}+d x, 2\right] \operatorname{Sec}[c+d x] \sqrt{\operatorname{Sin}[2 c+2 d x]}}{21 a^2 d \sqrt{e \operatorname{Tan}[c+d x]}}$$

Result (type 3, 247 leaves):

$$-\Big(\Big(\big(60-126 \operatorname{Cos}[c]+40 \operatorname{Cos}[2 c]-84 \operatorname{Cos}[d x]+26 \operatorname{Cos}[c-d x]+80 \operatorname{Cos}[c+d x]+20 \operatorname{Cos}[2 (c+d x)]-84 \operatorname{Cos}[2 c+d x]+26 \operatorname{Cos}[3 c+d x]-21 \operatorname{Cos}[c+2 d x]-21 \operatorname{Cos}[3 c+2 d x]\big) \operatorname{Sec}[2 c] \operatorname{Sin}[c+d x]\Big) \Big/ \Big(42 a^2 d (1+\operatorname{Cos}[c+d x])^2 \sqrt{e \operatorname{Tan}[c+d x]}\Big)\Big)-\Big(\operatorname{Sec}[2 c] \operatorname{Sec}[c+d x] \Big(21 \operatorname{ArcSin}[\operatorname{Cos}[c+d x]-\operatorname{Sin}[c+d x]] \operatorname{Cos}[2 c]-21 \operatorname{Cos}[2 c] \operatorname{Log}\Big[\operatorname{Cos}[c+d x]+\operatorname{Sin}[c+d x]+\sqrt{\operatorname{Sin}[2 (c+d x)]}\Big]+2 (-10+21 \operatorname{Cos}[c]) \sqrt{\operatorname{Sin}[2 (c+d x)]}\Big) \sqrt{\operatorname{Sin}[2 (c+d x)]}\Big) \Big/ \Big(42 a^2 d \sqrt{e \operatorname{Tan}[c+d x]}\Big)$$

Problem 135: Result more than twice size of optimal antiderivative.

$$\int \sqrt{a+a \operatorname{Sec}[c+d x]} \operatorname{Tan}[c+d x]^5 \, dx$$

Optimal (type 3, 147 leaves, 8 steps):

$$-\frac{2\sqrt{a}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sec}[c+d\,x]}}{\sqrt{a}}\right]}{d}+\frac{2\sqrt{a+a\,\text{Sec}[c+d\,x]}}{d}+\frac{2\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}{3\,a\,d}+\frac{2\,(a+a\,\text{Sec}[c+d\,x])^{5/2}}{5\,a^2\,d}-\frac{6\,(a+a\,\text{Sec}[c+d\,x])^{7/2}}{7\,a^3\,d}+\frac{2\,(a+a\,\text{Sec}[c+d\,x])^{9/2}}{9\,a^4\,d}$$

Result (type 3, 533 leaves):

$$\frac{1}{144\,d}5\,(1-2\,\text{Cos}[c+d\,x]+2\,\text{Cos}[2\,(c+d\,x)]-2\,\text{Cos}[3\,(c+d\,x)]+2\,\text{Cos}[4\,(c+d\,x)])\,\text{Sec}[c+d\,x]^4\sqrt{a\,(1+\text{Sec}[c+d\,x])}-\frac{1}{504\,d}5\,(11-22\,\text{Cos}[c+d\,x]+22\,\text{Cos}[2\,(c+d\,x)]-4\,\text{Cos}[3\,(c+d\,x)]+4\,\text{Cos}[4\,(c+d\,x)])\,\text{Sec}[c+d\,x]^4\sqrt{a\,(1+\text{Sec}[c+d\,x])}+\frac{1}{504\,d}(107-88\,\text{Cos}[c+d\,x]+88\,\text{Cos}[2\,(c+d\,x)]-16\,\text{Cos}[3\,(c+d\,x)]+16\,\text{Cos}[4\,(c+d\,x)])\,\text{Sec}[c+d\,x]^4\sqrt{a\,(1+\text{Sec}[c+d\,x])}-\frac{1}{1008\,d}(109+34\,\text{Cos}[c+d\,x]+176\,\text{Cos}[2\,(c+d\,x)]-32\,\text{Cos}[3\,(c+d\,x)]+32\,\text{Cos}[4\,(c+d\,x)])\,\text{Sec}[c+d\,x]^4\sqrt{a\,(1+\text{Sec}[c+d\,x])}+\frac{1}{5040\,d}(557+902\,\text{Cos}[c+d\,x]+778\,\text{Cos}[2\,(c+d\,x)]+374\,\text{Cos}[3\,(c+d\,x)]+256\,\text{Cos}[4\,(c+d\,x)])\,\text{Sec}[c+d\,x]^4\sqrt{a\,(1+\text{Sec}[c+d\,x])}+\frac{1}{5040\,d}\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{a\,(1+\text{Sec}[c+d\,x])}\left(5040\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\text{Log}\left[2+\sqrt{2}\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]\right)\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right](9008-1984\,\text{Sec}[c+d\,x]-1032\,\text{Sec}[c+d\,x]^2+230\,\text{Sec}[c+d\,x]^3+35\,\text{Sec}[c+d\,x]^4)\right)$$

Problem 136: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 99 leaves, 6 steps):

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

Result (type 3, 315 leaves):

$$-\frac{1}{20\,d}3\left(1-2\,\text{Cos}[c+d\,x]+2\,\text{Cos}[2\,(c+d\,x)]\right)\text{Sec}[c+d\,x]^2\sqrt{a\,(1+\text{Sec}[c+d\,x])}+\frac{1}{20\,d}\left(7-4\,\text{Cos}[c+d\,x]+4\,\text{Cos}[2\,(c+d\,x)]\right)\text{Sec}[c+d\,x]^2\sqrt{a\,(1+\text{Sec}[c+d\,x])}-\frac{1}{60\,d}\left(13+14\,\text{Cos}[c+d\,x]+16\,\text{Cos}[2\,(c+d\,x)]\right)\text{Sec}[c+d\,x]^2\sqrt{a\,(1+\text{Sec}[c+d\,x])}+\frac{1}{60\,d}\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]\sqrt{a\,(1+\text{Sec}[c+d\,x])}\left(60\sqrt{2}\,\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\left(-\text{Log}\left[\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right]+\text{Log}\left[2+\sqrt{2}\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]\right)\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\left(-92+16\,\text{Sec}[c+d\,x]+3\,\text{Sec}[c+d\,x]^2\right)\right)$$

Problem 137: Result more than twice size of optimal antiderivative.

$$\int\sqrt{a+a\,\text{Sec}[c+d\,x]}\;\text{Tan}[c+d\,x]\,dx$$

Optimal (type 3, 51 leaves, 4 steps):

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

Result (type 3, 144 leaves):

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

Problem 138: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 73 leaves, 6 steps):

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

Result (type 3, 237 leaves):

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

Problem 139: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 131 leaves, 8 steps):

$$-\frac{2 \sqrt{a}\ \text{ArcTanh}\left[\frac{\sqrt{a+a \text{Sec}[c+d x]}}{\sqrt{a}}\right]}{d}+\frac{7 \sqrt{a}\ \text{ArcTanh}\left[\frac{\sqrt{a+a \text{Sec}[c+d x]}}{\sqrt{2}\ \sqrt{a}}\right]}{4 \sqrt{2}\ d}+$$
$$\frac{a}{4 d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{a}{2 d\ (1-\text{Sec}[c+d x]) \sqrt{a+a \text{Sec}[c+d x]}}$$

Result (type 3, 273 leaves):

$$\frac{1}{16\,d}\left(-2\,\mathrm{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2+\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^2\left(16\,\sqrt{2}\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-7\,\mathrm{Log}\left[\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]+7\,\mathrm{Log}\left[1+\sqrt{\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-3\,\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-16\,\sqrt{2}\,\mathrm{Log}\left[2+\sqrt{2}\,\sqrt{\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-2\,\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-7\,\mathrm{Log}\left[3-\sqrt{\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]\right)\sqrt{\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}\;\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]-4\left(-3+\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\sqrt{a\,(1+\mathrm{Sec}[c+d\,x])}$$

Problem 141: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}\;\mathrm{Tan}[c+d\,x]^6\,dx$$

Optimal (type 3, 222 leaves, 4 steps):

$$-\frac{2\,\sqrt{a}\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{d}+\frac{2\,a\,\mathrm{Tan}[c+d\,x]}{d\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}-\frac{2\,a^2\,\mathrm{Tan}[c+d\,x]^3}{3\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^{3/2}}+\frac{2\,a^3\,\mathrm{Tan}[c+d\,x]^5}{5\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^{5/2}}+\frac{2\,a^4\,\mathrm{Tan}[c+d\,x]^7}{d\,(a+a\,\mathrm{Sec}[c+d\,x])^{7/2}}+\frac{10\,a^5\,\mathrm{Tan}[c+d\,x]^9}{9\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^{9/2}}+\frac{2\,a^6\,\mathrm{Tan}[c+d\,x]^{11}}{11\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^{11/2}}$$

Result (type 4, 959 leaves):

$$\frac{1}{64\,d\,\sqrt{\mathrm{Sec}[c+d\,x]}}\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]\sqrt{a\,(1+\mathrm{Sec}[c+d\,x])}$$

$$\left(\frac{1}{3465}2\left(14153+108232\,\text{Cos}[c+d\,x]+19924\,\text{Cos}\left[2\left(c+d\,x\right)\right]+56884\,\text{Cos}\left[3\left(c+d\,x\right)\right]+6086\,\text{Cos}\left[4\left(c+d\,x\right)\right]+13016\,\text{Cos}\left[5\left(c+d\,x\right)\right]\right)\text{Sec}[c+d\,x]^{11/2}\,\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]+512\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}\left(c+d\,x\right)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}{1+\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)\text{Sec}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2}\,\text{Sec}[c+d\,x]^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}\left(c+d\,x\right)\right]^2}\right)+$$

$$\frac{1}{176\,d}3\left(1+2\,\text{Cos}[c+d\,x]+2\,\text{Cos}\left[2\left(c+d\,x\right)\right]+2\,\text{Cos}\left[3\left(c+d\,x\right)\right]+2\,\text{Cos}\left[4\left(c+d\,x\right)\right]+2\,\text{Cos}\left[5\left(c+d\,x\right)\right]\right)\text{Sec}[c+d\,x]^5\sqrt{a\left(1+\text{Sec}[c+d\,x]\right)}\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\frac{1}{1056\,d}$$

$$5\left(13+26\,\text{Cos}[c+d\,x]+26\,\text{Cos}\left[2\left(c+d\,x\right)\right]+26\,\text{Cos}\left[3\left(c+d\,x\right)\right]+4\,\text{Cos}\left[4\left(c+d\,x\right)\right]+4\,\text{Cos}\left[5\left(c+d\,x\right)\right]\right)\text{Sec}[c+d\,x]^5\sqrt{a\left(1+\text{Sec}[c+d\,x]\right)}\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{5544\,d}$$

$$5\left(151+302\,\text{Cos}[c+d\,x]+104\,\text{Cos}\left[2\left(c+d\,x\right)\right]+104\,\text{Cos}\left[3\left(c+d\,x\right)\right]+16\,\text{Cos}\left[4\left(c+d\,x\right)\right]+16\,\text{Cos}\left[5\left(c+d\,x\right)\right]\right)\text{Sec}[c+d\,x]^5\sqrt{a\left(1+\text{Sec}[c+d\,x]\right)}\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]-\frac{1}{2464\,d}$$

$$\left(71+604\,\text{Cos}[c+d\,x]+208\,\text{Cos}\left[2\left(c+d\,x\right)\right]+208\,\text{Cos}\left[3\left(c+d\,x\right)\right]+32\,\text{Cos}\left[4\left(c+d\,x\right)\right]+32\,\text{Cos}\left[5\left(c+d\,x\right)\right]\right)\text{Sec}[c+d\,x]^5\sqrt{a\left(1+\text{Sec}[c+d\,x]\right)}\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{18480\,d}$$

$$\left(-587+2522\,\text{Cos}[c+d\,x]-646\,\text{Cos}\left[2\left(c+d\,x\right)\right]+1664\,\text{Cos}\left[3\left(c+d\,x\right)\right]+256\,\text{Cos}\left[4\left(c+d\,x\right)\right]+256\,\text{Cos}\left[5\left(c+d\,x\right)\right]\right)$$

$$\text{Sec}[c+d x]^5 \sqrt{a\,(1+\text{Sec}[c+d x])}\ \text{Tan}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{22176\,d}$$
$$(-1867+3658\,\text{Cos}[c+d x]-2678\,\text{Cos}[2\,(c+d x)]+$$
$$1942\,\text{Cos}[3\,(c+d x)]-874\,\text{Cos}[4\,(c+d x)]+512\,\text{Cos}[5\,(c+d x)])$$
$$\text{Sec}[c+d x]^5 \sqrt{a\,(1+\text{Sec}[c+d x])}\ \text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

Problem 142: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 160 leaves, 4 steps):

$$\frac{2\sqrt{a}\ \text{ArcTan}\left[\frac{\sqrt{a}\ \text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{d}-\frac{2\,a\,\text{Tan}[c+d x]}{d\sqrt{a+a\,\text{Sec}[c+d x]}}+$$
$$\frac{2\,a^2\,\text{Tan}[c+d x]^3}{3\,d\,(a+a\,\text{Sec}[c+d x])^{3/2}}+\frac{6\,a^3\,\text{Tan}[c+d x]^5}{5\,d\,(a+a\,\text{Sec}[c+d x])^{5/2}}+\frac{2\,a^4\,\text{Tan}[c+d x]^7}{7\,d\,(a+a\,\text{Sec}[c+d x])^{7/2}}$$

Result (type 4, 681 leaves):

$$\frac{1}{16\,d\sqrt{\text{Sec}[c+d x]}}\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]\sqrt{a\,(1+\text{Sec}[c+d x])}$$
$$\left(-\frac{2}{105}\,(127+954\,\text{Cos}[c+d x]+142\,\text{Cos}[2\,(c+d x)]+352\,\text{Cos}[3\,(c+d x)])\right.$$
$$\text{Sec}[c+d x]^{7/2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]-$$
$$128\,\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\ \left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)$$
$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]+\right.$$
$$\left.\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],\,17-12\sqrt{2}\right]\right)\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$

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

$$\frac{1}{14 d}(1+2\,\text{Cos}[c+d x]+2\,\text{Cos}[2(c+d x)]+2\,\text{Cos}[3(c+d x)])\,\text{Sec}[c+d x]^3\sqrt{a(1+\text{Sec}[c+d x])}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{140 d}$$

$$3(9+18\,\text{Cos}[c+d x]+4\,\text{Cos}[2(c+d x)]+4\,\text{Cos}[3(c+d x)])\,\text{Sec}[c+d x]^3\sqrt{a(1+\text{Sec}[c+d x])}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{210 d}$$

$$(1+72\,\text{Cos}[c+d x]+16\,\text{Cos}[2(c+d x)]+16\,\text{Cos}[3(c+d x)])\,\text{Sec}[c+d x]^3\sqrt{a(1+\text{Sec}[c+d x])}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{280 d}$$

$$(-33+74\,\text{Cos}[c+d x]-38\,\text{Cos}[2(c+d x)]+32\,\text{Cos}[3(c+d x)])\,\text{Sec}[c+d x]^3\sqrt{a(1+\text{Sec}[c+d x])}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

Problem 143: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 96 leaves, 4 steps):

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

Result (type 4, 479 leaves):

$$\frac{1}{4\,d\,\sqrt{\text{Sec}[c+d\,x]}}$$

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

$$32\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

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

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

$$\frac{1}{3\,d}(1+2\,\text{Cos}[c+d\,x])\,\text{Sec}[c+d\,x]\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}$$

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

$$\frac{1}{6\,d}(-1+4\,\text{Cos}[c+d\,x])$$

$$\text{Sec}[c+d\,x]$$

$$\sqrt{a\,(1+\text{Sec}[c+d\,x])}$$

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

Problem 147: Result more than twice size of optimal antiderivative.

$$\int(a+a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]^5\,dx$$

Optimal (type 3, 169 leaves, 9 steps):

$$-\frac{2 a^{3/2} \operatorname{ArcTanh}\left[\frac{\sqrt{a+a \operatorname{Sec}[c+d x]}}{\sqrt{a}}\right]}{d}+\frac{2 a \sqrt{a+a \operatorname{Sec}[c+d x]}}{d}+\frac{2 (a+a \operatorname{Sec}[c+d x])^{3/2}}{3 d}+\frac{2 (a+a \operatorname{Sec}[c+d x])^{5/2}}{5 a d}+\frac{2 (a+a \operatorname{Sec}[c+d x])^{7/2}}{7 a^2 d}-\frac{2 (a+a \operatorname{Sec}[c+d x])^{9/2}}{3 a^3 d}+\frac{2 (a+a \operatorname{Sec}[c+d x])^{11/2}}{11 a^4 d}$$

Result (type 3, 752 leaves):

$$\frac{1}{352 d}(-1+2 \operatorname{Cos}[c+d x]-2 \operatorname{Cos}[2 (c+d x)]+2 \operatorname{Cos}[3 (c+d x)]-2 \operatorname{Cos}[4 (c+d x)]+2 \operatorname{Cos}[5 (c+d x)]) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Sec}[c+d x]^4 (a (1+\operatorname{Sec}[c+d x]))^{3/2}+\frac{1}{6336 d} 5 (-13+26 \operatorname{Cos}[c+d x]-26 \operatorname{Cos}[2 (c+d x)]+26 \operatorname{Cos}[3 (c+d x)]-4 \operatorname{Cos}[4 (c+d x)]+4 \operatorname{Cos}[5 (c+d x)]) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Sec}[c+d x]^4 (a (1+\operatorname{Sec}[c+d x]))^{3/2}-\frac{1}{11088 d} 5 (-151+302 \operatorname{Cos}[c+d x]-104 \operatorname{Cos}[2 (c+d x)]+104 \operatorname{Cos}[3 (c+d x)]-16 \operatorname{Cos}[4 (c+d x)]+16 \operatorname{Cos}[5 (c+d x)]) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Sec}[c+d x]^4 (a (1+\operatorname{Sec}[c+d x]))^{3/2}+\frac{1}{14784 d} 5 (-71+604 \operatorname{Cos}[c+d x]-208 \operatorname{Cos}[2 (c+d x)]+208 \operatorname{Cos}[3 (c+d x)]-32 \operatorname{Cos}[4 (c+d x)]+32 \operatorname{Cos}[5 (c+d x)]) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Sec}[c+d x]^4 (a (1+\operatorname{Sec}[c+d x]))^{3/2}-\frac{1}{15840 d}(587+2522 \operatorname{Cos}[c+d x]+646 \operatorname{Cos}[2 (c+d x)]+1664 \operatorname{Cos}[3 (c+d x)]-256 \operatorname{Cos}[4 (c+d x)]+256 \operatorname{Cos}[5 (c+d x)]) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Sec}[c+d x]^4 (a (1+\operatorname{Sec}[c+d x]))^{3/2}+\frac{1}{14784 d}(1867+3658 \operatorname{Cos}[c+d x]+2678 \operatorname{Cos}[2 (c+d x)]+1942 \operatorname{Cos}[3 (c+d x)]+874 \operatorname{Cos}[4 (c+d x)]+512 \operatorname{Cos}[5 (c+d x)]) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Sec}[c+d x]^4 (a (1+\operatorname{Sec}[c+d x]))^{3/2}-\frac{1}{221760 d} \operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^3 (a (1+\operatorname{Sec}[c+d x]))^{3/2}\left(-110880 \sqrt{2} \operatorname{Cos}\left[\frac{1}{4}(c+d x)\right]^2\left(\operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right]-\operatorname{Log}\left[2+\sqrt{2} \sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-2 \operatorname{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]\right) \sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4}(c+d x)\right]^4}+\operatorname{Cos}\left[\frac{1}{2}(c+d x)\right](-208256+48688 \operatorname{Sec}[c+d x]+32784 \operatorname{Sec}[c+d x]^2-8840 \operatorname{Sec}[c+d x]^3-2660 \operatorname{Sec}[c+d x]^4+315 \operatorname{Sec}[c+d x]^5)\right)$$

Problem 148: Result more than twice size of optimal antiderivative.

$$\int (a + a\,\text{Sec}[c + d\,x])^{3/2}\,\text{Tan}[c + d\,x]^3\,dx$$

Optimal (type 3, 121 leaves, 7 steps):

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

Result (type 3, 399 leaves):

$$-\frac{1}{280\,d}3\,(-9 + 18\,\text{Cos}[c + d\,x] - 4\,\text{Cos}[2\,(c + d\,x)] + 4\,\text{Cos}[3\,(c + d\,x)])\,\text{Sec}\left[\frac{1}{2}\,(c + d\,x)\right]^2\,\text{Sec}[c + d\,x]^2\,(a\,(1 + \text{Sec}[c + d\,x]))^{3/2} + \frac{1}{210\,d}(-1 + 72\,\text{Cos}[c + d\,x] - 16\,\text{Cos}[2\,(c + d\,x)] + 16\,\text{Cos}[3\,(c + d\,x)])\,\text{Sec}\left[\frac{1}{2}\,(c + d\,x)\right]^2\,\text{Sec}[c + d\,x]^2\,(a\,(1 + \text{Sec}[c + d\,x]))^{3/2} - \frac{1}{560\,d}3\,(33 + 74\,\text{Cos}[c + d\,x] + 38\,\text{Cos}[2\,(c + d\,x)] + 32\,\text{Cos}[3\,(c + d\,x)])\,\text{Sec}\left[\frac{1}{2}\,(c + d\,x)\right]^2\,\text{Sec}[c + d\,x]^2\,(a\,(1 + \text{Sec}[c + d\,x]))^{3/2} - \frac{1}{1680\,d}\text{Cos}[c + d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c + d\,x)\right]^3\,(a\,(1 + \text{Sec}[c + d\,x]))^{3/2}\left(840\,\sqrt{2}\,\text{Cos}\left[\frac{1}{4}\,(c + d\,x)\right]^2\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(c + d\,x)\right]^2\right] - \text{Log}\left[2 + \sqrt{2}\,\sqrt{\text{Cos}[c + d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c + d\,x)\right]^4} - 2\,\text{Tan}\left[\frac{1}{4}\,(c + d\,x)\right]^2\right]\right)\sqrt{\text{Cos}[c + d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c + d\,x)\right]^4} + \text{Cos}\left[\frac{1}{2}\,(c + d\,x)\right]\,(1408 - 284\,\text{Sec}[c + d\,x] - 102\,\text{Sec}[c + d\,x]^2 + 15\,\text{Sec}[c + d\,x]^3)\right)$$

Problem 149: Result more than twice size of optimal antiderivative.

$$\int (a + a\,\text{Sec}[c + d\,x])^{3/2}\,\text{Tan}[c + d\,x]\,dx$$

Optimal (type 3, 73 leaves, 5 steps):

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

Result (type 3, 158 leaves):

$$\frac{1}{6 d}\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \left(2+\text{Cos}[c+d x] \left(8+3 \sqrt{2} \text{Cos}\left[\frac{1}{4}(c+d x)\right]^2 \left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right]-\text{Log}\left[2+\sqrt{2} \sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]\right) \sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4} \text{Sec}\left[\frac{1}{2}(c+d x)\right]\right)\right)(a (1+\text{Sec}[c+d x]))^{3/2}$$

Problem 150: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x] (a+a \text{Sec}[c+d x])^{3/2} \, dx$$

Optimal (type 3, 73 leaves, 6 steps):

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

Result (type 3, 238 leaves):

$$\frac{1}{2 d}\text{Cos}\left[\frac{1}{4}(c+d x)\right]^6 \left(-\sqrt{2} \text{Log}\left[\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right]+\text{Log}\left[\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]-\text{Log}\left[1+\sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-3 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]+\sqrt{2} \text{Log}\left[2+\sqrt{2} \sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-2 \text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]+\text{Log}\left[3-\sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]\right) \left(\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4}(c+d x)\right]^4\right)^{3/2} \text{Sec}\left[\frac{1}{2}(c+d x)\right]^3 (a (1+\text{Sec}[c+d x]))^{3/2}$$

Problem 151: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 109 leaves, 7 steps):

$$-\frac{2 a^{3/2} \text{ArcTanh}\left[\frac{\sqrt{a+a \text{Sec}[c+d x]}}{\sqrt{a}}\right]}{d}+\frac{5 a^{3/2} \text{ArcTanh}\left[\frac{\sqrt{a+a \text{Sec}[c+d x]}}{\sqrt{2} \sqrt{a}}\right]}{2 \sqrt{2} d}+\frac{a \sqrt{a+a \text{Sec}[c+d x]}}{2 d \left(1-\text{Sec}[c+d x]\right)}$$

Result (type 3, 325 leaves):

$$\frac{1}{d}\text{Cos}[c+d x] \left(\frac{1}{4} \text{Cos}\left[\frac{1}{2} (c+d x)\right]-\frac{1}{8} \text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]\right) \text{Sec}\left[\frac{1}{2} (c+d x)\right]^3 \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{3/2}+$$

$$\frac{1}{16 d} \text{Cos}\left[\frac{1}{4} (c+d x)\right]^2 \text{Cos}[c+d x] \left(8 \sqrt{2} \text{Log}\left[\text{Sec}\left[\frac{1}{4} (c+d x)\right]^2\right]-5 \text{Log}\left[\text{Tan}\left[\frac{1}{4} (c+d x)\right]^2\right]+\right.$$

$$5 \text{Log}\left[1+\sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4} (c+d x)\right]^4}-3 \text{Tan}\left[\frac{1}{4} (c+d x)\right]^2\right]-$$

$$8 \sqrt{2} \text{Log}\left[2+\sqrt{2} \sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4} (c+d x)\right]^4}-2 \text{Tan}\left[\frac{1}{4} (c+d x)\right]^2\right]-$$

$$\left.5 \text{Log}\left[3-\sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4} (c+d x)\right]^4}-\text{Tan}\left[\frac{1}{4} (c+d x)\right]^2\right]\right)$$

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

Problem 153: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \left(a+a \text{Sec}[c+d x]\right)^{3/2} \text{Tan}[c+d x]^6 dx$$

Optimal (type 3, 258 leaves, 4 steps):

$$-\frac{2 a^{3/2} \text{ArcTan}\left[\frac{\sqrt{a} \text{ Tan}[c+d x]}{\sqrt{a+a \text{ Sec}[c+d x]}}\right]}{d}+\frac{2 a^2 \text{ Tan}[c+d x]}{d \sqrt{a+a \text{ Sec}[c+d x]}}-\frac{2 a^3 \text{ Tan}[c+d x]^3}{3 d (a+a \text{ Sec}[c+d x])^{3/2}}+\frac{2 a^4 \text{ Tan}[c+d x]^5}{5 d (a+a \text{ Sec}[c+d x])^{5/2}}+\frac{30 a^5 \text{ Tan}[c+d x]^7}{7 d (a+a \text{ Sec}[c+d x])^{7/2}}+\frac{34 a^6 \text{ Tan}[c+d x]^9}{9 d (a+a \text{ Sec}[c+d x])^{9/2}}+\frac{14 a^7 \text{ Tan}[c+d x]^{11}}{11 d (a+a \text{ Sec}[c+d x])^{11/2}}+\frac{2 a^8 \text{ Tan}[c+d x]^{13}}{13 d (a+a \text{ Sec}[c+d x])^{13/2}}$$

Result (type 4, 1214 leaves):

$$\frac{1}{256 d \text{ Sec}[c+d x]^{3/2}} \text{Sec}\left[\frac{1}{2}(c+d x)\right]^3 (a (1+\text{Sec}[c+d x]))^{3/2} \left(\frac{1}{45045} 2 (1410481+633920 \text{ Cos}[c+d x]+2153438 \text{ Cos}[2 (c+d x)]+345060 \text{ Cos}[3 (c+d x)]+915630 \text{ Cos}[4 (c+d x)]+86048 \text{ Cos}[5 (c+d x)]+176138 \text{ Cos}[6 (c+d x)]) \text{Sec}[c+d x]^{13/2} \text{Sin}\left[\frac{1}{2}(c+d x)\right]+1024 \left(-3-2\sqrt{2}\right) \text{Cos}\left[\frac{1}{4}(c+d x)\right]^4 \sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}} \sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}} \left(1-\sqrt{2}+\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]+2 \text{ EllipticPi}\left[-3+2\sqrt{2}, -\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]\right) \sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2} \text{ Sec}[c+d x]^{3/2} \sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}\right)+\frac{1}{1664 d}$$

$$3 (1+2 \text{ Cos}[c+d x]+2 \text{ Cos}[2 (c+d x)]+2 \text{ Cos}[3 (c+d x)]+2 \text{ Cos}[4 (c+d x)]+2 \text{ Cos}[5 (c+d x)]+2 \text{ Cos}[6 (c+d x)]) \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sec}[c+d x]^5 (a (1+\text{Sec}[c+d x]))^{3/2} \text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{18304 d}$$

$$3 (15+30 \text{ Cos}[c+d x]+30 \text{ Cos}[2 (c+d x)]+30 \text{ Cos}[3 (c+d x)]+30 \text{ Cos}[4 (c+d x)]+4 \text{ Cos}[5 (c+d x)]+4 \text{ Cos}[6 (c+d x)]) \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sec}[c+d x]^5 (a (1+\text{Sec}[c+d x]))^{3/2}$$

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right] - \frac{1}{164736\,d} 25\,\big(203 + 406\,\text{Cos}[c+d\,x] + 406\,\text{Cos}[2\,(c+d\,x)] + 120\,\text{Cos}[3\,(c+d\,x)] + 120\,\text{Cos}[4\,(c+d\,x)] + 16\,\text{Cos}[5\,(c+d\,x)] + 16\,\text{Cos}[6\,(c+d\,x)]\big)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2 \text{Sec}[c+d\,x]^5\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right] + \frac{1}{128128\,d} 15\,\big(835 + 812\,\text{Cos}[c+d\,x] + 812\,\text{Cos}[2\,(c+d\,x)] + 240\,\text{Cos}[3\,(c+d\,x)] + 240\,\text{Cos}[4\,(c+d\,x)] + 32\,\text{Cos}[5\,(c+d\,x)] + 32\,\text{Cos}[6\,(c+d\,x)]\big)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2 \text{Sec}[c+d\,x]^5\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right] - \frac{1}{49280\,d} \big(3677 + 490\,\text{Cos}[c+d\,x] + 6496\,\text{Cos}[2\,(c+d\,x)] + 1920\,\text{Cos}[3\,(c+d\,x)] + 1920\,\text{Cos}[4\,(c+d\,x)] + 256\,\text{Cos}[5\,(c+d\,x)] + 256\,\text{Cos}[6\,(c+d\,x)]\big)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2 \text{Sec}[c+d\,x]^5\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right] + \frac{1}{1153152\,d} 17\,\big(4351 - 5026\,\text{Cos}[c+d\,x] + 6986\,\text{Cos}[2\,(c+d\,x)] - 2166\,\text{Cos}[3\,(c+d\,x)] + 3840\,\text{Cos}[4\,(c+d\,x)] + 512\,\text{Cos}[5\,(c+d\,x)] + 512\,\text{Cos}[6\,(c+d\,x)]\big)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2 \text{Sec}[c+d\,x]^5\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right] - \frac{1}{128128\,d} \big(14401 - 26110\,\text{Cos}[c+d\,x] + 21938\,\text{Cos}[2\,(c+d\,x)] - 14670\,\text{Cos}[3\,(c+d\,x)] + 9354\,\text{Cos}[4\,(c+d\,x)] - 3958\,\text{Cos}[5\,(c+d\,x)] + 2048\,\text{Cos}[6\,(c+d\,x)]\big)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2 \text{Sec}[c+d\,x]^5\,\big(a\,(1+\text{Sec}[c+d\,x])\big)^{3/2}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]$$

Problem 154: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a + a\,\text{Sec}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]^4\,dx$$

Optimal (type 3, 194 leaves, 4 steps):

$$\frac{2\,a^{3/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d} - \frac{2\,a^2\,\text{Tan}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}} + \frac{2\,a^3\,\text{Tan}[c+d\,x]^3}{3\,d\,(a+a\,\text{Sec}[c+d\,x])^{3/2}} + \frac{14\,a^4\,\text{Tan}[c+d\,x]^5}{5\,d\,(a+a\,\text{Sec}[c+d\,x])^{5/2}} + \frac{10\,a^5\,\text{Tan}[c+d\,x]^7}{7\,d\,(a+a\,\text{Sec}[c+d\,x])^{7/2}} + \frac{2\,a^6\,\text{Tan}[c+d\,x]^9}{9\,d\,(a+a\,\text{Sec}[c+d\,x])^{9/2}}$$

Result (type 4, 872 leaves):

$$\frac{1}{64\,d\,\text{Sec}[c+d\,x]^{3/2}}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\left(-\frac{2}{315}\left(2897+1258\,\text{Cos}[c+d x]+3988\,\text{Cos}\left[2\left(c+d x\right)\right]+\right.\right.$$

$$496\,\text{Cos}\left[3\left(c+d x\right)\right]+1126\,\text{Cos}\left[4\left(c+d x\right)\right]\big)\,\text{Sec}[c+d x]^{9/2}\,\text{Sin}\left[\frac{1}{2}\left(c+d x\right)\right]-$$

$$256\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}\left(c+d x\right)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]}{1+\text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\left(c+d x\right)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\left(c+d x\right)\right]\right)\text{Sec}\left[\frac{1}{4}\left(c+d x\right)\right]^2}$$

$$\left.\text{Sec}[c+d x]^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}\left(c+d x\right)\right]^2}\right)-\frac{1}{288\,d}$$

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

$$\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2$$

$$\text{Sec}[c+d x]^3$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}$$

$$\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]-\frac{1}{336\,d}$$

$$\left(11+22\,\text{Cos}[c+d x]+22\,\text{Cos}\left[2\left(c+d x\right)\right]+4\,\text{Cos}\left[3\left(c+d x\right)\right]+4\,\text{Cos}\left[4\left(c+d x\right)\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d x\right)\right]^2$$

$$\text{Sec}[c+d x]^3$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}$$

$$\text{Tan}\left[\frac{1}{2}\left(c+d x\right)\right]+\frac{1}{720\,d}$$

$$\left(107+88\,\text{Cos}[c+d x]+88\,\text{Cos}\left[2\left(c+d x\right)\right]+16\,\text{Cos}\left[3\left(c+d x\right)\right]+16\,\text{Cos}\left[4\left(c+d x\right)\right]\right)$$

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

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{10080 d}$$
$$11\left(109-34 \text{Cos}[c+d x]+176 \text{Cos}[2(c+d x)]+32 \text{Cos}[3(c+d x)]+32 \text{Cos}[4(c+d x)]\right)$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sec}[c+d x]^3$$
$$(a(1+\text{Sec}[c+d x]))^{3/2} \text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{3360 d}$$
$$\left(557-902 \text{Cos}[c+d x]+778 \text{Cos}[2(c+d x)]-374 \text{Cos}[3(c+d x)]+256 \text{Cos}[4(c+d x)]\right)$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sec}[c+d x]^3$$
$$(a(1+\text{Sec}[c+d x]))^{3/2} \text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

Problem 155: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+a \text{Sec}[c+d x])^{3/2} \text{Tan}[c+d x]^2 \, dx$$

Optimal (type 3, 128 leaves, 4 steps):

$$-\frac{2 a^{3/2} \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{a+a \text{Sec}[c+d x]}}\right]}{d}+\frac{2 a^2 \text{Tan}[c+d x]}{d \sqrt{a+a \text{Sec}[c+d x]}}+\frac{2 a^3 \text{Tan}[c+d x]^3}{d (a+a \text{Sec}[c+d x])^{3/2}}+\frac{2 a^4 \text{Tan}[c+d x]^5}{5 d (a+a \text{Sec}[c+d x])^{5/2}}$$

Result (type 4, 604 leaves):

$$\frac{1}{16\, d\, \text{Sec}[c+d x]^{3/2}} \text{Sec}\left[\frac{1}{2}(c+d x)\right]^3 \left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}$$

$$\left(\frac{2}{15}\left(43+16\,\text{Cos}[c+d x]+46\,\text{Cos}[2(c+d x)]\right)\text{Sec}[c+d x]^{5/2}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]+\right.$$

$$64\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$

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

$$\frac{1}{40 d}\left(1+2\,\text{Cos}[c+d x]+2\,\text{Cos}[2(c+d x)]\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Sec}[c+d x]$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{24 d}$$

$$\left(7+4\,\text{Cos}[c+d x]+4\,\text{Cos}[2(c+d x)]\right)$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Sec}[c+d x]$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{40 d}$$

$$\left(13-14\,\text{Cos}[c+d x]+16\,\text{Cos}[2(c+d x)]\right)$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{3/2}\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

Problem 156: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 64 leaves, 3 steps):

$$-\frac{2 a^{3/2} \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{a+a \text{Sec}[c+d x]}}\right]}{d}-\frac{2 a \text{Cot}[c+d x] \sqrt{a+a \text{Sec}[c+d x]}}{d}$$

Result (type 4, 389 leaves):

$$\frac{1}{d}\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^3 \left(a \left(1+\text{Sec}[c+d x]\right)\right)^{3/2} \left(-\frac{1}{2} \text{Csc}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+$$
$$\frac{1}{d} 4 \left(-3-2 \sqrt{2}\right) \text{Cos}\left[\frac{1}{4}(c+d x)\right]^4 \sqrt{\frac{7-5 \sqrt{2}+\left(10-7 \sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}} \left(1-\sqrt{2}+\left(-2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)$$
$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right]+\right.$$
$$\left.2 \text{EllipticPi}\left[-3+2 \sqrt{2}, -\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2 \sqrt{2}}}\right], 17-12 \sqrt{2}\right]\right)$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2 \text{Sec}\left[\frac{1}{2}(c+d x)\right]^3}$$
$$\left(a \left(1+\text{Sec}[c+d x]\right)\right)^{3/2} \sqrt{3-2 \sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 159: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 193 leaves, 10 steps):

$$-\frac{2\,a^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sec}[c+d\,x]}}{\sqrt{a}}\right]}{d}+\frac{2\,a^2\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}{d}+\frac{2\,a\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}{3\,d}+\frac{2\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}{5\,d}+\frac{2\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{7/2}}{7\,a\,d}+\frac{2\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{9/2}}{9\,a^2\,d}-\frac{6\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{11/2}}{11\,a^3\,d}+\frac{2\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{13/2}}{13\,a^4\,d}$$

Result (type 3, 925 leaves) :

$$-\frac{1}{3328\,d}5\,\left(1-2\,\text{Cos}[c+d\,x]+2\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]-2\,\text{Cos}\left[3\,\left(c+d\,x\right)\right]+2\,\text{Cos}\left[4\,\left(c+d\,x\right)\right]-2\,\text{Cos}\left[5\,\left(c+d\,x\right)\right]+2\,\text{Cos}\left[6\,\left(c+d\,x\right)\right]\right)\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^4\,\text{Sec}[c+d\,x]^4\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}+\frac{1}{36\,608\,d}$$

$$35\,\left(15-30\,\text{Cos}[c+d\,x]+30\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]-30\,\text{Cos}\left[3\,\left(c+d\,x\right)\right]+30\,\text{Cos}\left[4\,\left(c+d\,x\right)\right]-4\,\text{Cos}\left[5\,\left(c+d\,x\right)\right]+4\,\text{Cos}\left[6\,\left(c+d\,x\right)\right]\right)\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^4\,\text{Sec}[c+d\,x]^4\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}-\frac{1}{25\,344\,d}$$

$$5\,\left(203-406\,\text{Cos}[c+d\,x]+406\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]-120\,\text{Cos}\left[3\,\left(c+d\,x\right)\right]+120\,\text{Cos}\left[4\,\left(c+d\,x\right)\right]-16\,\text{Cos}\left[5\,\left(c+d\,x\right)\right]+16\,\text{Cos}\left[6\,\left(c+d\,x\right)\right]\right)\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^4\,\text{Sec}[c+d\,x]^4\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}+\frac{1}{256\,256\,d}$$

$$15\,\left(835-812\,\text{Cos}[c+d\,x]+812\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]-240\,\text{Cos}\left[3\,\left(c+d\,x\right)\right]+240\,\text{Cos}\left[4\,\left(c+d\,x\right)\right]-32\,\text{Cos}\left[5\,\left(c+d\,x\right)\right]+32\,\text{Cos}\left[6\,\left(c+d\,x\right)\right]\right)\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^4\,\text{Sec}[c+d\,x]^4\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}+\frac{1}{3\,843\,840\,d}$$

$$\left(3677-490\,\text{Cos}[c+d\,x]+6496\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]-1920\,\text{Cos}\left[3\,\left(c+d\,x\right)\right]+1920\,\text{Cos}\left[4\,\left(c+d\,x\right)\right]-256\,\text{Cos}\left[5\,\left(c+d\,x\right)\right]+256\,\text{Cos}\left[6\,\left(c+d\,x\right)\right]\right)\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^4\,\text{Sec}[c+d\,x]^4\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}-\frac{1}{768\,768\,d}$$

$$5\,\left(4351+5026\,\text{Cos}[c+d\,x]+6986\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]+2166\,\text{Cos}\left[3\,\left(c+d\,x\right)\right]+3840\,\text{Cos}\left[4\,\left(c+d\,x\right)\right]-512\,\text{Cos}\left[5\,\left(c+d\,x\right)\right]+512\,\text{Cos}\left[6\,\left(c+d\,x\right)\right]\right)\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^4\,\text{Sec}[c+d\,x]^4\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}+\frac{1}{768\,768\,d}$$

$$5\,\left(14\,401+26\,110\,\text{Cos}[c+d\,x]+21\,938\,\text{Cos}\left[2\,\left(c+d\,x\right)\right]+14\,670\,\text{Cos}\left[3\,\left(c+d\,x\right)\right]+9354\,\text{Cos}\left[4\,\left(c+d\,x\right)\right]+3958\,\text{Cos}\left[5\,\left(c+d\,x\right)\right]+2048\,\text{Cos}\left[6\,\left(c+d\,x\right)\right]\right)\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^4\,\text{Sec}[c+d\,x]^4\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}-$$

$$\frac{1}{11\,531\,520\,d}\text{Cos}[c+d\,x]^2\,\text{Sec}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]^5\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\left(-2\,882\,880\,\sqrt{2}\,\text{Cos}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]^2\left(\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]^2\right]-\text{Log}\left[2+\sqrt{2}\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]^2\right]\right)\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,\left(c+d\,x\right)\right]^4}+\text{Cos}\left[\frac{1}{2}\,\left(c+d\,x\right)\right]\left(-5\,636\,416+1\,376\,768\,\text{Sec}[c+d\,x]+1\,129\,584\,\text{Sec}[c+d\,x]^2-340\,720\,\text{Sec}[c+d\,x]^3-152\,320\,\text{Sec}[c+d\,x]^4+28\,980\,\text{Sec}[c+d\,x]^5+3465\,\text{Sec}[c+d\,x]^6\right)\right)$$

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

$$\int (a + a \operatorname{Sec}[c + d x])^{5/2} \operatorname{Tan}[c + d x]^3 \, dx$$

Optimal (type 3, 145 leaves, 8 steps):

$$\frac{2 a^{5/2} \operatorname{ArcTanh}\left[\frac{\sqrt{a+a \operatorname{Sec}[c+d x]}}{\sqrt{a}}\right]}{d} - \frac{2 a^2 \sqrt{a + a \operatorname{Sec}[c + d x]}}{d} - \frac{2 a (a + a \operatorname{Sec}[c + d x])^{3/2}}{3 d} - \frac{2 (a + a \operatorname{Sec}[c + d x])^{5/2}}{5 d} - \frac{2 (a + a \operatorname{Sec}[c + d x])^{7/2}}{7 a d} + \frac{2 (a + a \operatorname{Sec}[c + d x])^{9/2}}{9 a^2 d}$$

Result (type 3, 603 leaves):

$$\frac{1}{576 d} 7 (1 - 2 \operatorname{Cos}[c + d x] + 2 \operatorname{Cos}[2 (c + d x)] - 2 \operatorname{Cos}[3 (c + d x)] + 2 \operatorname{Cos}[4 (c + d x)]) \operatorname{Sec}\left[\frac{1}{2} (c + d x)\right]^4 \operatorname{Sec}[c + d x]^2 (a (1 + \operatorname{Sec}[c + d x]))^{5/2} - \frac{1}{2016 d} 11 (11 - 22 \operatorname{Cos}[c + d x] + 22 \operatorname{Cos}[2 (c + d x)] - 4 \operatorname{Cos}[3 (c + d x)] + 4 \operatorname{Cos}[4 (c + d x)]) \operatorname{Sec}\left[\frac{1}{2} (c + d x)\right]^4 \operatorname{Sec}[c + d x]^2 (a (1 + \operatorname{Sec}[c + d x]))^{5/2} + \frac{1}{1440 d} (107 - 88 \operatorname{Cos}[c + d x] + 88 \operatorname{Cos}[2 (c + d x)] - 16 \operatorname{Cos}[3 (c + d x)] + 16 \operatorname{Cos}[4 (c + d x)]) \operatorname{Sec}\left[\frac{1}{2} (c + d x)\right]^4 \operatorname{Sec}[c + d x]^2 (a (1 + \operatorname{Sec}[c + d x]))^{5/2} + \frac{1}{4032 d} (109 + 34 \operatorname{Cos}[c + d x] + 176 \operatorname{Cos}[2 (c + d x)] - 32 \operatorname{Cos}[3 (c + d x)] + 32 \operatorname{Cos}[4 (c + d x)]) \operatorname{Sec}\left[\frac{1}{2} (c + d x)\right]^4 \operatorname{Sec}[c + d x]^2 (a (1 + \operatorname{Sec}[c + d x]))^{5/2} - \frac{1}{4032 d} (557 + 902 \operatorname{Cos}[c + d x] + 778 \operatorname{Cos}[2 (c + d x)] + 374 \operatorname{Cos}[3 (c + d x)] + 256 \operatorname{Cos}[4 (c + d x)]) \operatorname{Sec}\left[\frac{1}{2} (c + d x)\right]^4 \operatorname{Sec}[c + d x]^2 (a (1 + \operatorname{Sec}[c + d x]))^{5/2} - \frac{1}{20160 d} \operatorname{Cos}[c + d x]^2 \operatorname{Sec}\left[\frac{1}{2} (c + d x)\right]^5 (a (1 + \operatorname{Sec}[c + d x]))^{5/2} \left(5040 \sqrt{2} \operatorname{Cos}\left[\frac{1}{4} (c + d x)\right]^2 \left(\operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{4} (c + d x)\right]^2\right] - \operatorname{Log}\left[2 + \sqrt{2} \sqrt{\operatorname{Cos}[c + d x] \operatorname{Sec}\left[\frac{1}{4} (c + d x)\right]^4} - 2 \operatorname{Tan}\left[\frac{1}{4} (c + d x)\right]^2\right]\right) \sqrt{\operatorname{Cos}[c + d x] \operatorname{Sec}\left[\frac{1}{4} (c + d x)\right]^4} + \operatorname{Cos}\left[\frac{1}{2} (c + d x)\right] (9008 - 1984 \operatorname{Sec}[c + d x] - 1032 \operatorname{Sec}[c + d x]^2 + 230 \operatorname{Sec}[c + d x]^3 + 35 \operatorname{Sec}[c + d x]^4)\right)$$

Problem 161: Result more than twice size of optimal antiderivative.

$$\int (a + a \operatorname{Sec}[c + d x])^{5/2} \operatorname{Tan}[c + d x] \, dx$$

Optimal (type 3, 97 leaves, 6 steps):

$$-\frac{2 a^{5/2} \operatorname{ArcTanh}\left[\frac{\sqrt{a+a \operatorname{Sec}[c+d x]}}{\sqrt{a}}\right]}{d}+\frac{2 a^2 \sqrt{a+a \operatorname{Sec}[c+d x]}}{d}+\frac{2 a (a+a \operatorname{Sec}[c+d x])^{3/2}}{3 d}+\frac{2 (a+a \operatorname{Sec}[c+d x])^{5/2}}{5 d}$$

Result (type 3, 337 leaves):

$$-\frac{1}{80 d} 9 (1-2 \operatorname{Cos}[c+d x]+2 \operatorname{Cos}[2 (c+d x)]) \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^4 (a (1+\operatorname{Sec}[c+d x]))^{5/2}+\frac{1}{48 d} (7-4 \operatorname{Cos}[c+d x]+4 \operatorname{Cos}[2 (c+d x)]) \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^4 (a (1+\operatorname{Sec}[c+d x]))^{5/2}+\frac{1}{48 d} (13+14 \operatorname{Cos}[c+d x]+16 \operatorname{Cos}[2 (c+d x)]) \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^4 (a (1+\operatorname{Sec}[c+d x]))^{5/2}-\frac{1}{240 d} \operatorname{Cos}[c+d x]^2 \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^5 (a (1+\operatorname{Sec}[c+d x]))^{5/2} \left(60 \sqrt{2} \operatorname{Cos}\left[\frac{1}{4} (c+d x)\right]^2 \left(-\operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{4} (c+d x)\right]^2\right]+\operatorname{Log}\left[2+\sqrt{2} \sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4} (c+d x)\right]^4}-2 \operatorname{Tan}\left[\frac{1}{4} (c+d x)\right]^2\right]\right) \sqrt{\operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{4} (c+d x)\right]^4}+\operatorname{Cos}\left[\frac{1}{2} (c+d x)\right] \left(-92+16 \operatorname{Sec}[c+d x]+3 \operatorname{Sec}[c+d x]^2\right)\right)$$

Problem 162: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cot}[c + d x] (a + a \operatorname{Sec}[c + d x])^{5/2} \, dx$$

Optimal (type 3, 95 leaves, 7 steps):

$$\frac{2 a^{5/2} \operatorname{ArcTanh}\left[\frac{\sqrt{a+a \operatorname{Sec}[c+d x]}}{\sqrt{a}}\right]}{d}-\frac{4 \sqrt{2} a^{5/2} \operatorname{ArcTanh}\left[\frac{\sqrt{a+a \operatorname{Sec}[c+d x]}}{\sqrt{2} \sqrt{a}}\right]}{d}+\frac{2 a^2 \sqrt{a+a \operatorname{Sec}[c+d x]}}{d}$$

Result (type 3, 268 leaves):

$$-\frac{1}{4d}a^2\left(1+\text{Cos}[c+dx]\right)^2\text{Sec}\left[\frac{1}{2}(c+dx)\right]^4$$
$$\left(-2+\text{Cos}\left[\frac{1}{4}(c+dx)\right]^2\left(\sqrt{2}\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2\right]-2\,\text{Log}\left[\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2\right]+\right.\right.$$
$$2\,\text{Log}\left[1+\sqrt{\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^4}-3\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2\right]-$$
$$\sqrt{2}\,\text{Log}\left[2+\sqrt{2}\sqrt{\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2\right]-$$
$$\left.2\,\text{Log}\left[3-\sqrt{\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^4}-\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2\right]\right)$$
$$\left.\sqrt{\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{4}(c+dx)\right]^4}\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]\right)\sqrt{a\left(1+\text{Sec}[c+dx]\right)}$$

Problem 163: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+dx]^3\left(a+a\,\text{Sec}[c+dx]\right)^{5/2}dx$$

Optimal (type 3, 106 leaves, 7 steps):

$$-\frac{2\,a^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sec}[c+dx]}}{\sqrt{a}}\right]}{d}+\frac{3\,a^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sec}[c+dx]}}{\sqrt{2}\sqrt{a}}\right]}{\sqrt{2}\,d}+\frac{a^2\sqrt{a+a\,\text{Sec}[c+dx]}}{d\left(1-\text{Sec}[c+dx]\right)}$$

Result (type 3, 329 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]^2 \left(\frac{1}{4}\text{Cos}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{8}\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]\right) \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 \left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}+$$

$$\frac{1}{16 d}\text{Cos}\left[\frac{1}{4}(c+d x)\right]^2 \text{Cos}[c+d x]^2 \left(4\sqrt{2}\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right]-3\,\text{Log}\left[\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]+ 3\,\text{Log}\left[1+\sqrt{\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]- 4\sqrt{2}\,\text{Log}\left[2+\sqrt{2}\sqrt{\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]- 3\,\text{Log}\left[3-\sqrt{\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]\right) \sqrt{\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 \left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}$$

Problem 164: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 147 leaves, 8 steps):

$$\frac{2 a^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sec}[c+d x]}}{\sqrt{a}}\right]}{d}-\frac{43 a^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sec}[c+d x]}}{\sqrt{2}\sqrt{a}}\right]}{16\sqrt{2}\,d}-\frac{a^2\sqrt{a+a\,\text{Sec}[c+d x]}}{4 d\left(1-\text{Sec}[c+d x]\right)^2}-\frac{11 a^2\sqrt{a+a\,\text{Sec}[c+d x]}}{16 d\left(1-\text{Sec}[c+d x]\right)}$$

Result (type 3, 355 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]^2\left(-\frac{15}{64}\text{Cos}\left[\frac{1}{2}(c+d x)\right]+\frac{19}{128}\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{64}\text{Cot}\left[\frac{1}{2}(c+d x)\right]\text{Csc}\left[\frac{1}{2}(c+d x)\right]^3\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5(a(1+\text{Sec}[c+d x]))^{5/2}+\frac{1}{256 d}$$

$$\text{Cos}\left[\frac{1}{4}(c+d x)\right]^2\text{Cos}[c+d x]^2\left(-64\sqrt{2}\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right]+43\,\text{Log}\left[\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]-\right.$$

$$43\,\text{Log}\left[1+\sqrt{\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-3\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]+$$

$$64\sqrt{2}\,\text{Log}\left[2+\sqrt{2}\sqrt{\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]+$$

$$\left.43\,\text{Log}\left[3-\sqrt{\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]\right)$$

$$\sqrt{\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{4}(c+d x)\right]^4}\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5(a(1+\text{Sec}[c+d x]))^{5/2}$$

Problem 165: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int(a+a\,\text{Sec}[c+d x])^{5/2}\,\text{Tan}[c+d x]^6\,dx$$

Optimal (type 3, 290 leaves, 4 steps):

$$-\frac{2 a^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{d}+\frac{2 a^3\,\text{Tan}[c+d x]}{d\sqrt{a+a\,\text{Sec}[c+d x]}}-\frac{2 a^4\,\text{Tan}[c+d x]^3}{3 d(a+a\,\text{Sec}[c+d x])^{3/2}}+$$

$$\frac{2 a^5\,\text{Tan}[c+d x]^5}{5 d(a+a\,\text{Sec}[c+d x])^{5/2}}+\frac{62 a^6\,\text{Tan}[c+d x]^7}{7 d(a+a\,\text{Sec}[c+d x])^{7/2}}+\frac{98 a^7\,\text{Tan}[c+d x]^9}{9 d(a+a\,\text{Sec}[c+d x])^{9/2}}+$$

$$\frac{62 a^8\,\text{Tan}[c+d x]^{11}}{11 d(a+a\,\text{Sec}[c+d x])^{11/2}}+\frac{18 a^9\,\text{Tan}[c+d x]^{13}}{13 d(a+a\,\text{Sec}[c+d x])^{13/2}}+\frac{2 a^{10}\,\text{Tan}[c+d x]^{15}}{15 d(a+a\,\text{Sec}[c+d x])^{15/2}}$$

Result (type 4, 1415 leaves):

$$\frac{1}{1024\,d\,\text{Sec}[c+d x]^{5/2}}\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5(a(1+\text{Sec}[c+d x]))^{5/2}$$

$$\left(\frac{1}{45045}2\,(636923+4980406\,\text{Cos}[c+d x]+984986\,\text{Cos}[2(c+d x)]+\right.$$

$$3075074\,\text{Cos}[3(c+d x)]+437114\,\text{Cos}[4(c+d x)]+1097774\,\text{Cos}[5(c+d x)]+$$

$$92054\,\text{Cos}\left[6\,(c+d\,x)\right]+182144\,\text{Cos}\left[7\,(c+d\,x)\right]\Big)\,\text{Sec}[c+d\,x]^{15/2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+$$

$$2048\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}$$

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

$$\Bigg(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+$$

$$2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\Bigg)$$

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

$$\text{Sec}[c+d\,x]^{3/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2}\Bigg)-\frac{1}{1920\,d}$$

$$\big(1+2\,\text{Cos}[c+d\,x]+2\,\text{Cos}[2\,(c+d\,x)]+2\,\text{Cos}[3\,(c+d\,x)]+2\,\text{Cos}[4\,(c+d\,x)]+$$
$$2\,\text{Cos}[5\,(c+d\,x)]+2\,\text{Cos}[6\,(c+d\,x)]+2\,\text{Cos}[7\,(c+d\,x)]\big)$$
$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\text{Sec}[c+d\,x]^5$$
$$\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{2496\,d}$$
$$\big(17+34\,\text{Cos}[c+d\,x]+34\,\text{Cos}[2\,(c+d\,x)]+34\,\text{Cos}[3\,(c+d\,x)]+$$
$$34\,\text{Cos}[4\,(c+d\,x)]+34\,\text{Cos}[5\,(c+d\,x)]+4\,\text{Cos}[6\,(c+d\,x)]+4\,\text{Cos}[7\,(c+d\,x)]\big)$$
$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\text{Sec}[c+d\,x]^5\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-\frac{1}{54912\,d}$$
$$5\,\big(263+526\,\text{Cos}[c+d\,x]+526\,\text{Cos}[2\,(c+d\,x)]+526\,\text{Cos}[3\,(c+d\,x)]+$$
$$136\,\text{Cos}[4\,(c+d\,x)]+136\,\text{Cos}[5\,(c+d\,x)]+16\,\text{Cos}[6\,(c+d\,x)]+16\,\text{Cos}[7\,(c+d\,x)]\big)$$
$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\text{Sec}[c+d\,x]^5\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{1}{29952\,d}$$
$$\big(1241+2482\,\text{Cos}[c+d\,x]+1052\,\text{Cos}[2\,(c+d\,x)]+1052\,\text{Cos}[3\,(c+d\,x)]+$$
$$272\,\text{Cos}[4\,(c+d\,x)]+272\,\text{Cos}[5\,(c+d\,x)]+32\,\text{Cos}[6\,(c+d\,x)]+32\,\text{Cos}[7\,(c+d\,x)]\big)$$
$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\text{Sec}[c+d\,x]^5\left(a\,(1+\text{Sec}[c+d\,x])\right)^{5/2}$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{524160 d}$$
$$(3493+19856 \text{Cos}[c+d x]+8416 \text{Cos}[2(c+d x)]+8416 \text{Cos}[3(c+d x)]+$$
$$2176 \text{Cos}[4(c+d x)]+2176 \text{Cos}[5(c+d x)]+256 \text{Cos}[6(c+d x)]+256 \text{Cos}[7(c+d x)])$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4 \text{Sec}[c+d x]^5 (a(1+\text{Sec}[c+d x]))^{5/2}$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{1441440 d}$$
$$(-2023+21694 \text{Cos}[c+d x]-1186 \text{Cos}[2(c+d x)]+16832 \text{Cos}[3(c+d x)]+$$
$$4352 \text{Cos}[4(c+d x)]+4352 \text{Cos}[5(c+d x)]+512 \text{Cos}[6(c+d x)]+512 \text{Cos}[7(c+d x)])$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4 \text{Sec}[c+d x]^5 (a(1+\text{Sec}[c+d x]))^{5/2} \text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{1153152 d}$$
$$(-23107+56746 \text{Cos}[c+d x]-34774 \text{Cos}[2(c+d x)]+37298 \text{Cos}[3(c+d x)]-$$
$$12622 \text{Cos}[4(c+d x)]+17408 \text{Cos}[5(c+d x)]+2048 \text{Cos}[6(c+d x)]+2048 \text{Cos}[7(c+d x)])$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4 \text{Sec}[c+d x]^5 (a(1+\text{Sec}[c+d x]))^{5/2} \text{Tan}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{658944 d}$$
$$(-52649+100622 \text{Cos}[c+d x]-82418 \text{Cos}[2(c+d x)]+61726 \text{Cos}[3(c+d x)]-$$
$$38114 \text{Cos}[4(c+d x)]+21946 \text{Cos}[5(c+d x)]-8774 \text{Cos}[6(c+d x)]+4096 \text{Cos}[7(c+d x)])$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4 \text{Sec}[c+d x]^5 (a(1+\text{Sec}[c+d x]))^{5/2} \text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

Problem 166: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+a \text{Sec}[c+d x])^{5/2} \text{Tan}[c+d x]^4 \, dx$$

Optimal (type 3, 224 leaves, 4 steps):

$$\frac{2 a^{5/2} \text{ArcTan}\left[\frac{\sqrt{a} \text{Tan}[c+d x]}{\sqrt{a+a \text{Sec}[c+d x]}}\right]}{d}-\frac{2 a^3 \text{Tan}[c+d x]}{d \sqrt{a+a \text{Sec}[c+d x]}}+$$
$$\frac{2 a^4 \text{Tan}[c+d x]^3}{3 d (a+a \text{Sec}[c+d x])^{3/2}}+\frac{6 a^5 \text{Tan}[c+d x]^5}{d (a+a \text{Sec}[c+d x])^{5/2}}+\frac{34 a^6 \text{Tan}[c+d x]^7}{7 d (a+a \text{Sec}[c+d x])^{7/2}}+$$
$$\frac{14 a^7 \text{Tan}[c+d x]^9}{9 d (a+a \text{Sec}[c+d x])^{9/2}}+\frac{2 a^8 \text{Tan}[c+d x]^{11}}{11 d (a+a \text{Sec}[c+d x])^{11/2}}$$

Result (type 4, 1033 leaves):

$$\frac{1}{256 d \text{Sec}[c+d x]^{5/2}} \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\text{Sec}[c+d x]))^{5/2}$$
$$\left(-\frac{1}{3465} 2 (14153+108232 \text{Cos}[c+d x]+19924 \text{Cos}[2(c+d x)]+56884 \text{Cos}[3(c+d x)]+\right.$$
$$6086 \text{Cos}[4(c+d x)]+13016 \text{Cos}[5(c+d x)]) \text{Sec}[c+d x]^{11/2} \text{Sin}\left[\frac{1}{2}(c+d x)\right]-$$

$$512\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

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

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

$$\frac{1}{704\,d}3\left(1+2\,\text{Cos}[c+d\,x]+2\,\text{Cos}[2(c+d\,x)]+2\,\text{Cos}[3(c+d\,x)]+\right.$$
$$\left.2\,\text{Cos}[4(c+d\,x)]+2\,\text{Cos}[5(c+d\,x)]\right)$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Sec}[c+d\,x]^3\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\frac{1}{12\,672\,d}$$
$$29\left(13+26\,\text{Cos}[c+d\,x]+26\,\text{Cos}[2(c+d\,x)]+\right.$$
$$\left.26\,\text{Cos}[3(c+d\,x)]+4\,\text{Cos}[4(c+d\,x)]+4\,\text{Cos}[5(c+d\,x)]\right)$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Sec}[c+d\,x]^3\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{2464\,d}$$
$$\left(151+302\,\text{Cos}[c+d\,x]+104\,\text{Cos}[2(c+d\,x)]+104\,\text{Cos}[3(c+d\,x)]+\right.$$
$$\left.16\,\text{Cos}[4(c+d\,x)]+16\,\text{Cos}[5(c+d\,x)]\right)$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Sec}[c+d\,x]^3\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\frac{1}{49\,280\,d}$$
$$3\left(71+604\,\text{Cos}[c+d\,x]+208\,\text{Cos}[2(c+d\,x)]+208\,\text{Cos}[3(c+d\,x)]+\right.$$
$$\left.32\,\text{Cos}[4(c+d\,x)]+32\,\text{Cos}[5(c+d\,x)]\right)$$
$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\text{Sec}[c+d\,x]^3\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-$$
$$\frac{1}{44\,352\,d}\left(-587+2522\,\text{Cos}[c+d\,x]-646\,\text{Cos}[2(c+d\,x)]+\right.$$

$$1664\,\text{Cos}[3\,(c+d\,x)]+256\,\text{Cos}[4\,(c+d\,x)]+256\,\text{Cos}[5\,(c+d\,x)])$$
$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\text{Sec}[c+d\,x]^3\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$\frac{1}{88\,704\,d}5\,(-1867+3658\,\text{Cos}[c+d\,x]-2678\,\text{Cos}[2\,(c+d\,x)]+$$
$$1942\,\text{Cos}[3\,(c+d\,x)]-874\,\text{Cos}[4\,(c+d\,x)]+512\,\text{Cos}[5\,(c+d\,x)])$$
$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\text{Sec}[c+d\,x]^3\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]$$

Problem 167: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int(a+a\,\text{Sec}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]^2\,dx$$

Optimal (type 3, 160 leaves, 4 steps):

$$-\frac{2\,a^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{d}+\frac{2\,a^3\,\text{Tan}[c+d\,x]}{d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}+$$
$$\frac{14\,a^4\,\text{Tan}[c+d\,x]^3}{3\,d\,(a+a\,\text{Sec}[c+d\,x])^{3/2}}+\frac{2\,a^5\,\text{Tan}[c+d\,x]^5}{d\,(a+a\,\text{Sec}[c+d\,x])^{5/2}}+\frac{2\,a^6\,\text{Tan}[c+d\,x]^7}{7\,d\,(a+a\,\text{Sec}[c+d\,x])^{7/2}}$$

Result (type 4, 644 leaves):

$$\frac{1}{64\,d\,\text{Sec}[c+d\,x]^{5/2}}\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,(a\,(1+\text{Sec}[c+d\,x]))^{5/2}$$
$$\left(\frac{2}{105}\,(127+954\,\text{Cos}[c+d\,x]+142\,\text{Cos}[2\,(c+d\,x)]+352\,\text{Cos}[3\,(c+d\,x)])\right.$$
$$\text{Sec}[c+d\,x]^{7/2}\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]+$$
$$128\,\left(-3-2\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,\sqrt{\frac{7-5\,\sqrt{2}+\left(10-7\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}$$
$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}\,\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$
$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]+\right.$$
$$\left.\left.2\,\text{EllipticPi}\left[-3+2\,\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\right)\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2}$$

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

$$\frac{1}{28\,d}(1+2\,\mathrm{Cos}[c+d\,x]+2\,\mathrm{Cos}[2\,(c+d\,x)]+2\,\mathrm{Cos}[3\,(c+d\,x)])$$
$$\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4$$
$$\mathrm{Sec}[c+d\,x]$$
$$(a\,(1+\mathrm{Sec}[c+d\,x]))^{5/2}$$
$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{80\,d}$$
$$(9+18\,\mathrm{Cos}[c+d\,x]+4\,\mathrm{Cos}[2\,(c+d\,x)]+4\,\mathrm{Cos}[3\,(c+d\,x)])$$
$$\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4$$
$$\mathrm{Sec}[c+d\,x]$$
$$(a\,(1+\mathrm{Sec}[c+d\,x]))^{5/2}$$
$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\frac{1}{224\,d}$$
$$(-33+74\,\mathrm{Cos}[c+d\,x]-38\,\mathrm{Cos}[2\,(c+d\,x)]+32\,\mathrm{Cos}[3\,(c+d\,x)])$$
$$\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^4\mathrm{Sec}[c+d\,x]$$
$$(a\,(1+\mathrm{Sec}[c+d\,x]))^{5/2}\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

Problem 168: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cot}[c+d\,x]^2\,(a+a\,\mathrm{Sec}[c+d\,x])^{5/2}\,dx$$

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

$$-\frac{2\,a^{5/2}\,\mathrm{ArcTan}\left[\frac{\sqrt{a}\,\mathrm{Tan}[c+d\,x]}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\right]}{d}-\frac{4\,a^2\,\mathrm{Cot}[c+d\,x]\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}{d}$$

Result (type 4, 397 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]^2\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\left(-\frac{1}{2}\text{Csc}\left[\frac{1}{2}(c+d x)\right]+\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)+$$

$$\frac{1}{d}2\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

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

$$\text{Cos}[c+d x]\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\ \text{Sec}\left[\frac{1}{2}(c+d x)\right]^5$$

$$\left(a\left(1+\text{Sec}[c+d x]\right)\right)^{5/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 169: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x]^4\left(a+a\,\text{Sec}[c+d x]\right)^{5/2}dx$$

Optimal (type 3, 96 leaves, 4 steps):

$$\frac{2a^{5/2}\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d x]}{\sqrt{a+a\,\text{Sec}[c+d x]}}\right]}{d}+\frac{2a^2\,\text{Cot}[c+d x]\sqrt{a+a\,\text{Sec}[c+d x]}}{d}-\frac{2a\,\text{Cot}[c+d x]^3\left(a+a\,\text{Sec}[c+d x]\right)^{3/2}}{3d}$$

Result (type 4, 417 leaves):

$$\frac{1}{d}\text{Cos}[c+d x]^2\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5 (a(1+\text{Sec}[c+d x]))^{5/2}$$
$$\left(\frac{5}{12}\text{Csc}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{24}\text{Csc}\left[\frac{1}{2}(c+d x)\right]^3-\frac{2}{3}\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)-$$
$$\frac{1}{d}2\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d x)\right]^4\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$
$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)$$
$$\text{Cos}[c+d x]\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$
$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$
$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d x)\right]\right)\text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}\;\text{Sec}\left[\frac{1}{2}(c+d x)\right]^5$$
$$(a(1+\text{Sec}[c+d x]))^{5/2}\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 172: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 78 leaves, 5 steps):

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

Result (type 3, 165 leaves):

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

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

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

Optimal (type 3, 31 leaves, 3 steps):

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

Result (type 3, 131 leaves):

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

Problem 174: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 92 leaves, 7 steps):

$$\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sec}[c+d\,x]}}{\sqrt{a}}\right]}{\sqrt{a}\,d}-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sec}[c+d\,x]}}{\sqrt{2}\sqrt{a}}\right]}{\sqrt{2}\sqrt{a}\,d}-\frac{1}{d\sqrt{a+a\,\text{Sec}[c+d\,x]}}$$

Result (type 3, 263 leaves):

$$\frac{1}{2\,d\,\sqrt{a\,(1+\operatorname{Sec}[c+d\,x])}}\left(2-4\operatorname{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2-\operatorname{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\operatorname{Cos}\left[\frac{1}{2}(c+d\,x)\right]\left(4\sqrt{2}\operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\operatorname{Log}\left[\operatorname{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]+\operatorname{Log}\left[1+\sqrt{\operatorname{Cos}[c+d\,x]\operatorname{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}-3\operatorname{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-4\sqrt{2}\operatorname{Log}\left[2+\sqrt{2}\sqrt{\operatorname{Cos}[c+d\,x]\operatorname{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}-2\operatorname{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-\operatorname{Log}\left[3-\sqrt{\operatorname{Cos}[c+d\,x]\operatorname{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}-\operatorname{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]\right)\sqrt{\operatorname{Cos}[c+d\,x]\operatorname{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}\right)\operatorname{Sec}[c+d\,x]$$

Problem 175: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cot}[c+d\,x]^3}{\sqrt{a+a\operatorname{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 152 leaves, 9 steps):

$$-\frac{2\operatorname{ArcTanh}\left[\frac{\sqrt{a+a\operatorname{Sec}[c+d\,x]}}{\sqrt{a}}\right]}{\sqrt{a}\,d}+\frac{9\operatorname{ArcTanh}\left[\frac{\sqrt{a+a\operatorname{Sec}[c+d\,x]}}{\sqrt{2}\sqrt{a}}\right]}{8\sqrt{2}\sqrt{a}\,d}-\frac{a}{12\,d\,(a+a\operatorname{Sec}[c+d\,x])^{3/2}}+\frac{a}{2\,d\,(1-\operatorname{Sec}[c+d\,x])\,(a+a\operatorname{Sec}[c+d\,x])^{3/2}}+\frac{7}{8\,d\sqrt{a+a\operatorname{Sec}[c+d\,x]}}$$

Result (type 3, 351 leaves):

$$\frac{1}{16\,d\,\sqrt{a\,(1+\mathrm{Sec}[c+d\,x])}}\mathrm{Cos}\left[\frac{1}{4}(c+d\,x)\right]^2\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\left(32\sqrt{2}\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-9\,\mathrm{Log}\left[\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]+\right.$$

$$9\,\mathrm{Log}\left[1+\sqrt{\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}-3\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-$$

$$32\sqrt{2}\,\mathrm{Log}\left[2+\sqrt{2}\sqrt{\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}-2\,\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]-$$

$$\left.9\,\mathrm{Log}\left[3-\sqrt{\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}-\mathrm{Tan}\left[\frac{1}{4}(c+d\,x)\right]^2\right]\right)$$

$$\sqrt{\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{4}(c+d\,x)\right]^4}\;\mathrm{Sec}[c+d\,x]+$$

$$\left(\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]\left(\frac{31}{12}\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]-\frac{1}{8}\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]\mathrm{Csc}\left[\frac{1}{2}(c+d\,x)\right]-\right.\right.$$

$$\left.\left.\frac{4}{3}\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{12}\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^3\right)\mathrm{Sec}[c+d\,x]\right)\Big/\left(d\sqrt{a\,(1+\mathrm{Sec}[c+d\,x])}\right)$$

Problem 177: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\mathrm{Tan}[c+d\,x]^6}{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}\,dx$$

Optimal (type 3, 189 leaves, 4 steps):

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

$$\frac{2\,a^2\,\mathrm{Tan}[c+d\,x]^5}{5\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^{5/2}}+\frac{6\,a^3\,\mathrm{Tan}[c+d\,x]^7}{7\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^{7/2}}+\frac{2\,a^4\,\mathrm{Tan}[c+d\,x]^9}{9\,d\,(a+a\,\mathrm{Sec}[c+d\,x])^{9/2}}$$

Result (type 4, 469 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]\text{Sec}[c+dx]\left(\frac{1532}{315}\text{Sin}\left[\frac{1}{2}(c+dx)\right]+\frac{136}{315}\text{Sec}[c+dx]\text{Sin}\left[\frac{1}{2}(c+dx)\right]-\frac{176}{105}\text{Sec}[c+dx]^2\text{Sin}\left[\frac{1}{2}(c+dx)\right]-\frac{4}{63}\text{Sec}[c+dx]^3\text{Sin}\left[\frac{1}{2}(c+dx)\right]+\frac{4}{9}\text{Sec}[c+dx]^4\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)\Big/\left(d\sqrt{a(1+\text{Sec}[c+dx])}\right)+\frac{1}{d\sqrt{a(1+\text{Sec}[c+dx])}}16\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+dx)\right]^4$$

$$\text{Cos}\left[\frac{1}{2}(c+dx)\right]\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+dx)\right]}}$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+dx)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]\right)$$

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]\right)\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2}$$

$$\text{Sec}[c+dx]^2\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}$$

Problem 178: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Tan}[c+dx]^4}{\sqrt{a+a\,\text{Sec}[c+dx]}}\,dx$$

Optimal (type 3, 125 leaves, 5 steps):

$$\frac{2\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+dx]}{\sqrt{a+a\,\text{Sec}[c+dx]}}\right]}{\sqrt{a}\,d}-\frac{2\,\text{Tan}[c+dx]}{d\sqrt{a+a\,\text{Sec}[c+dx]}}+\frac{2\,a\,\text{Tan}[c+dx]^3}{3d\left(a+a\,\text{Sec}[c+dx]\right)^{3/2}}+\frac{2\,a^2\,\text{Tan}[c+dx]^5}{5d\left(a+a\,\text{Sec}[c+dx]\right)^{5/2}}$$

Result (type 4, 425 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right] \text{Sec}[c+d x]\left(-\frac{68}{15} \text{Sin}\left[\frac{1}{2}(c+d x)\right]-\frac{4}{15} \text{Sec}[c+d x] \text{Sin}\left[\frac{1}{2}(c+d x)\right]+\frac{4}{5} \text{Sec}[c+d x]^2 \text{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/ \left(d \sqrt{a(1+\text{Sec}[c+d x])}\right)-\frac{1}{d \sqrt{a(1+\text{Sec}[c+d x])}}$$

$$16\left(-3-2\sqrt{2}\right) \text{Cos}\left[\frac{1}{4}(c+d x)\right]^4 \text{Cos}\left[\frac{1}{2}(c+d x)\right] \sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d x)\right]}}$$

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

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]+\right.$$

$$\left.2\, \text{EllipticPi}\left[-3+2\sqrt{2}, -\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d x)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right) \text{Cos}\left[\frac{1}{2}(c+d x)\right]\right) \text{Sec}\left[\frac{1}{4}(c+d x)\right]^2}$$

$$\text{Sec}[c+d x]^2 \sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+d x)\right]^2}$$

Problem 179: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 3, 63 leaves, 3 steps):

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

Result (type 4, 379 leaves):

$$\frac{4\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]}{d\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}}+$$

$$\frac{1}{d\,\sqrt{a\,(1+\text{Sec}[c+d\,x])}}\,16\,\left(-3-2\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^4\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]$$

$$\sqrt{\frac{7-5\,\sqrt{2}+\left(10-7\,\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}\,\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\,\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\,\sqrt{2},\,-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]}{\sqrt{3-2\,\sqrt{2}}}\right],\,17-12\,\sqrt{2}\right]\right)$$

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

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

Problem 184: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 54 leaves, 4 steps):

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

Result (type 3, 155 leaves):

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

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

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

Problem 185: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 54 leaves, 4 steps):

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

Result (type 3, 179 leaves):

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

Problem 186: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 120 leaves, 8 steps):

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

Result (type 3, 292 leaves):

$$\frac{1}{6\,a\,d\,\left(1+\mathrm{Cos}[c+d\,x]\right)\sqrt{a\,\left(1+\mathrm{Sec}[c+d\,x]\right)}}\left(-2+26\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2-44\,\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^4-3\,\mathrm{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right.$$

$$\mathrm{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^3\left(8\,\sqrt{2}\,\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-\mathrm{Log}\left[\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]+\mathrm{Log}\left[\right.\right.$$

$$1+\sqrt{\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-3\,\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\Big]-$$

$$8\,\sqrt{2}\,\mathrm{Log}\left[2+\sqrt{2}\,\sqrt{\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-2\,\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-$$

$$\left.\mathrm{Log}\left[3-\sqrt{\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-\mathrm{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]\right)$$

$$\left.\sqrt{\mathrm{Cos}[c+d\,x]\,\mathrm{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}\right)\mathrm{Sec}[c+d\,x]$$

Problem 187: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 176 leaves, 10 steps):

$$-\frac{2\,\mathrm{ArcTanh}\left[\frac{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}{\sqrt{a}}\right]}{a^{3/2}\,d}+\frac{11\,\mathrm{ArcTanh}\left[\frac{\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}{\sqrt{2}\,\sqrt{a}}\right]}{16\,\sqrt{2}\,a^{3/2}\,d}-\frac{3\,a}{20\,d\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}}+\frac{a}{2\,d\,\left(1-\mathrm{Sec}[c+d\,x]\right)\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{5/2}}+\frac{5}{24\,d\,\left(a+a\,\mathrm{Sec}[c+d\,x]\right)^{3/2}}+\frac{21}{16\,a\,d\,\sqrt{a+a\,\mathrm{Sec}[c+d\,x]}}$$

Result (type 3, 375 leaves):

$$\frac{1}{16\,d\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}}$$

$$\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^2\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^3\,\Bigg(64\,\sqrt{2}\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-11\,\text{Log}\left[\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]+$$

$$11\,\text{Log}\left[1+\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-3\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-$$

$$64\,\sqrt{2}\,\text{Log}\left[2+\sqrt{2}\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-$$

$$11\,\text{Log}\left[3-\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]\Bigg)$$

$$\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}\,\text{Sec}[c+d\,x]^2+\Bigg(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^3$$

$$\left(\frac{449}{60}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]-\frac{1}{8}\,\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]-\frac{281}{60}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]+\right.$$

$$\left.\frac{19}{30}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3-\frac{1}{20}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\right)\,\text{Sec}[c+d\,x]^2\Bigg)\Big/\left(d\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)$$

Problem 189: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Tan}[c+d\,x]^6}{\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}\,dx$$

Optimal (type 3, 157 leaves, 5 steps):

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

$$\frac{2\,\text{Tan}[c+d\,x]^3}{3\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}+\frac{2\,a\,\text{Tan}[c+d\,x]^5}{5\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}+\frac{2\,a^2\,\text{Tan}[c+d\,x]^7}{7\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{7/2}}$$

Result (type 4, 453 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]^3 \text{Sec}[c+dx]^2 \left(\frac{1168}{105}\text{Sin}\left[\frac{1}{2}(c+dx)\right]-\frac{256}{105}\text{Sec}[c+dx]\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]-\frac{64}{35}\text{Sec}[c+dx]^2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]+\frac{8}{7}\text{Sec}[c+dx]^3\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)\Big/\left(d\,(a\,(1+\text{Sec}[c+dx]))^{3/2}\right)+\frac{1}{d\,(a\,(1+\text{Sec}[c+dx]))^{3/2}}$$

$$32\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+dx)\right]^4\text{Cos}\left[\frac{1}{2}(c+dx)\right]^3\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+dx)\right]}}$$

$$\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+dx)\right]}}\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]\right)$$

$$\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]\right)\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2}$$

$$\text{Sec}[c+dx]^3\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}$$

Problem 190: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\frac{\text{Tan}[c+dx]^4}{(a+a\,\text{Sec}[c+dx])^{3/2}}\,dx$$

Optimal (type 3, 95 leaves, 4 steps):

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

Result (type 4, 409 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^3\,\text{Sec}[c+d\,x]^2\left(-\frac{32}{3}\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]+\frac{8}{3}\,\text{Sec}[c+d\,x]\,\text{Sin}\left[\frac{1}{2}(c+d\,x)\right]\right)\right)\Big/\left(d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}\right)-$$

$$\frac{1}{d\left(a\left(1+\text{Sec}[c+d\,x]\right)\right)^{3/2}}\,32\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+d\,x)\right]^4\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^3$$

$$\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]+\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2},-\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+d\,x)\right]}{\sqrt{3-2\sqrt{2}}}\right],17-12\sqrt{2}\right]\right)$$

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

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

Problem 195: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 78 leaves, 5 steps):

$$-\frac{2\,\text{ArcTanh}\left[\frac{\sqrt{a+a\,\text{Sec}[c+d\,x]}}{\sqrt{a}}\right]}{a^{5/2}\,d}-\frac{6\sqrt{a+a\,\text{Sec}[c+d\,x]}}{a^3\,d}+\frac{2\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}{3\,a^4\,d}$$

Result (type 3, 215 leaves):

$$\left(8\sqrt{2}\,\mathrm{Cos}\left[\frac{1}{4}(c+d x)\right]^2 \mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^5 \left(\mathrm{Log}\left[\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^2\right]-\mathrm{Log}\left[2+\sqrt{2}\sqrt{\mathrm{Cos}[c+d x]\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^4}-2\,\mathrm{Tan}\left[\frac{1}{4}(c+d x)\right]^2\right]\right) \sqrt{\mathrm{Cos}[c+d x]\,\mathrm{Sec}\left[\frac{1}{4}(c+d x)\right]^4}\,\mathrm{Sec}[c+d x]^3\right) \Big/ \left(d\,(a\,(1+\mathrm{Sec}[c+d x]))^{5/2}\right)+$$
$$\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^5 \mathrm{Sec}[c+d x]^3\left(-\frac{128}{3}\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]+\frac{16}{3}\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]\mathrm{Sec}[c+d x]\right)\right) \Big/ \left(d\,(a\,(1+\mathrm{Sec}[c+d x]))^{5/2}\right)$$

Problem 196: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Tan}[c+d x]^3}{(a+a\,\mathrm{Sec}[c+d x])^{5/2}}\,dx$$

Optimal (type 3, 54 leaves, 4 steps):

$$\frac{2\,\mathrm{ArcTanh}\left[\frac{\sqrt{a+a\,\mathrm{Sec}[c+d x]}}{\sqrt{a}}\right]}{a^{5/2}\,d}-\frac{4}{a^2\,d\,\sqrt{a+a\,\mathrm{Sec}[c+d x]}}$$

Result (type 3, 179 leaves):

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

Problem 197: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 78 leaves, 5 steps):

$$-\frac{2 \text{ArcTanh}\left[\frac{\sqrt{a+a \text{Sec}[c+d x]}}{\sqrt{a}}\right]}{a^{5/2} d}+\frac{2}{3 a d (a+a \text{Sec}[c+d x])^{3/2}}+\frac{2}{a^2 d \sqrt{a+a \text{Sec}[c+d x]}}$$

Result (type 3, 197 leaves):

$$\left(4 \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]^2-10 \text{Cos}\left[\frac{1}{2} (c+d x)\right]^4+16 \text{Cos}\left[\frac{1}{2} (c+d x)\right]^6+ 6 \sqrt{2} \text{Cos}\left[\frac{1}{4} (c+d x)\right]^2 \text{Cos}\left[\frac{1}{2} (c+d x)\right]^5 \left(\text{Log}\left[\text{Sec}\left[\frac{1}{4} (c+d x)\right]^2\right]- \text{Log}\left[2+\sqrt{2} \sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4} (c+d x)\right]^4}-2 \text{Tan}\left[\frac{1}{4} (c+d x)\right]^2\right]\right) \sqrt{\text{Cos}[c+d x] \text{Sec}\left[\frac{1}{4} (c+d x)\right]^4}\right) \text{Sec}[c+d x]\right) \Big/ \left(3 a^2 d (1+\text{Cos}[c+d x])^2 \sqrt{a (1+\text{Sec}[c+d x])}\right)$$

Problem 198: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 144 leaves, 9 steps):

$$\frac{2 \text{ArcTanh}\left[\frac{\sqrt{a+a \text{Sec}[c+d x]}}{\sqrt{a}}\right]}{a^{5/2} d}-\frac{\text{ArcTanh}\left[\frac{\sqrt{a+a \text{Sec}[c+d x]}}{\sqrt{2} \sqrt{a}}\right]}{4 \sqrt{2} a^{5/2} d}- \frac{1}{5 d (a+a \text{Sec}[c+d x])^{5/2}}-\frac{1}{2 a d (a+a \text{Sec}[c+d x])^{3/2}}-\frac{7}{4 a^2 d \sqrt{a+a \text{Sec}[c+d x]}}$$

Result (type 3, 347 leaves):

$$\frac{1}{2\,d\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}}$$

$$\text{Cos}\left[\frac{1}{4}\,(c+d\,x)\right]^2\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5\,\Bigg(-16\,\sqrt{2}\,\text{Log}\left[\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]+\text{Log}\left[\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]-$$

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

$$16\,\sqrt{2}\,\text{Log}\left[2+\sqrt{2}\,\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}-2\,\text{Tan}\left[\frac{1}{4}\,(c+d\,x)\right]^2\right]+$$

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

$$\sqrt{\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{4}\,(c+d\,x)\right]^4}\,\text{Sec}[c+d\,x]^3+\Bigg(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^5$$

$$\left(-\frac{98}{5}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]+\frac{67}{5}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]-\frac{11}{5}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^3+\frac{1}{5}\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^5\right)$$

$$\text{Sec}[c+d\,x]^3\Bigg)\Big/\left(d\,\left(a\,\left(1+\text{Sec}[c+d\,x]\right)\right)^{5/2}\right)$$

Problem 201: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[c+d\,x]^6}{\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}\,dx$$

Optimal (type 3, 127 leaves, 4 steps):

$$-\frac{2\,\text{ArcTan}\left[\frac{\sqrt{a}\,\text{Tan}[c+d\,x]}{\sqrt{a+a\,\text{Sec}[c+d\,x]}}\right]}{a^{5/2}\,d}+\frac{2\,\text{Tan}[c+d\,x]}{a^2\,d\,\sqrt{a+a\,\text{Sec}[c+d\,x]}}-\frac{2\,\text{Tan}[c+d\,x]^3}{3\,a\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{3/2}}+\frac{2\,\text{Tan}[c+d\,x]^5}{5\,d\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{5/2}}$$

Result (type 4, 431 leaves):

$$\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]^5 \text{Sec}[c+dx]^3 \left(\frac{368}{15}\text{Sin}\left[\frac{1}{2}(c+dx)\right] - \frac{176}{15}\text{Sec}[c+dx]\,\text{Sin}\left[\frac{1}{2}(c+dx)\right] + \frac{16}{5}\text{Sec}[c+dx]^2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right) \Big/ \left(d\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}\right) +$$

$$\frac{1}{d\left(a\left(1+\text{Sec}[c+dx]\right)\right)^{5/2}} 64\left(-3-2\sqrt{2}\right)\text{Cos}\left[\frac{1}{4}(c+dx)\right]^4 \text{Cos}\left[\frac{1}{2}(c+dx)\right]^5$$

$$\sqrt{\frac{7-5\sqrt{2}+\left(10-7\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+dx)\right]}}\sqrt{\frac{-1+\sqrt{2}-\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]}{1+\text{Cos}\left[\frac{1}{2}(c+dx)\right]}}$$

$$\left(1-\sqrt{2}+\left(-2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]\right)\left(\text{EllipticF}\left[\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right] +\right.$$

$$\left.2\,\text{EllipticPi}\left[-3+2\sqrt{2}, -\text{ArcSin}\left[\frac{\text{Tan}\left[\frac{1}{4}(c+dx)\right]}{\sqrt{3-2\sqrt{2}}}\right], 17-12\sqrt{2}\right]\right)$$

$$\sqrt{\left(-1-\sqrt{2}+\left(2+\sqrt{2}\right)\text{Cos}\left[\frac{1}{2}(c+dx)\right]\right)\text{Sec}\left[\frac{1}{4}(c+dx)\right]^2}$$

$$\text{Sec}[c+dx]^4\sqrt{3-2\sqrt{2}-\text{Tan}\left[\frac{1}{4}(c+dx)\right]^2}$$

Problem 208: Unable to integrate problem.

$$\int \left(a+a\,\text{Sec}[c+dx]\right)^n \left(e\,\text{Tan}[c+dx]\right)^m dx$$

Optimal (type 6, 125 leaves, 1 step):

$$\frac{1}{de(1+m)}2^{1+m+n}\,\text{AppellF1}\left[\frac{1+m}{2}, m+n, 1, \frac{3+m}{2}, -\frac{a-a\,\text{Sec}[c+dx]}{a+a\,\text{Sec}[c+dx]}, \frac{a-a\,\text{Sec}[c+dx]}{a+a\,\text{Sec}[c+dx]}\right]$$
$$\left(\frac{1}{1+\text{Sec}[c+dx]}\right)^{1+m+n}\left(a+a\,\text{Sec}[c+dx]\right)^n\left(e\,\text{Tan}[c+dx]\right)^{1+m}$$

Result (type 8, 25 leaves):

$$\int \left(a+a\,\text{Sec}[c+dx]\right)^n \left(e\,\text{Tan}[c+dx]\right)^m dx$$

Problem 209: Unable to integrate problem.

$$\int \left(a+a\,\text{Sec}[c+dx]\right)^3 \left(e\,\text{Tan}[c+dx]\right)^m dx$$

Optimal (type 5, 243 leaves, 8 steps):

$$\frac{3 a^3 (e \operatorname{Tan}[c+d x])^{1+m}}{d e (1+m)}+\frac{1}{d e (1+m)} a^3 \operatorname{Hypergeometric2F1}\left[1, \frac{1+m}{2}, \frac{3+m}{2}, -\operatorname{Tan}[c+d x]^2\right] (e \operatorname{Tan}[c+d x])^{1+m}+\frac{1}{d e (1+m)} 3 a^3 \left(\operatorname{Cos}[c+d x]^2\right)^{\frac{2+m}{2}} \operatorname{Hypergeometric2F1}\left[\frac{1+m}{2}, \frac{2+m}{2}, \frac{3+m}{2}, \operatorname{Sin}[c+d x]^2\right] \operatorname{Sec}[c+d x] (e \operatorname{Tan}[c+d x])^{1+m}+\frac{1}{d e (1+m)} a^3 \left(\operatorname{Cos}[c+d x]^2\right)^{\frac{4+m}{2}} \operatorname{Hypergeometric2F1}\left[\frac{1+m}{2}, \frac{4+m}{2}, \frac{3+m}{2}, \operatorname{Sin}[c+d x]^2\right] \operatorname{Sec}[c+d x]^3 (e \operatorname{Tan}[c+d x])^{1+m}$$

Result (type 8, 25 leaves) :

$$\int (a+a \operatorname{Sec}[c+d x])^3 (e \operatorname{Tan}[c+d x])^m \, dx$$

Problem 210: Unable to integrate problem.

$$\int (a+a \operatorname{Sec}[c+d x])^2 (e \operatorname{Tan}[c+d x])^m \, dx$$

Optimal (type 5, 161 leaves, 7 steps) :

$$\frac{a^2 (e \operatorname{Tan}[c+d x])^{1+m}}{d e (1+m)}+\frac{1}{d e (1+m)} a^2 \operatorname{Hypergeometric2F1}\left[1, \frac{1+m}{2}, \frac{3+m}{2}, -\operatorname{Tan}[c+d x]^2\right] (e \operatorname{Tan}[c+d x])^{1+m}+\frac{1}{d e (1+m)} 2 a^2 \left(\operatorname{Cos}[c+d x]^2\right)^{\frac{2+m}{2}} \operatorname{Hypergeometric2F1}\left[\frac{1+m}{2}, \frac{2+m}{2}, \frac{3+m}{2}, \operatorname{Sin}[c+d x]^2\right] \operatorname{Sec}[c+d x] (e \operatorname{Tan}[c+d x])^{1+m}$$

Result (type 8, 25 leaves) :

$$\int (a+a \operatorname{Sec}[c+d x])^2 (e \operatorname{Tan}[c+d x])^m \, dx$$

Problem 211: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+a \operatorname{Sec}[c+d x]) (e \operatorname{Tan}[c+d x])^m \, dx$$

Optimal (type 5, 129 leaves, 4 steps) :

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

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

$$\text{Hypergeometric2F1}\left[\frac{1+m}{2},\frac{2+m}{2},\frac{3+m}{2},\text{Sin}[c+d x]^2\right]\text{Sec}[c+d x]\left(e\,\text{Tan}[c+d x]\right)^{1+m}$$

Result (type 6, 2548 leaves):

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

$$\Bigg(\text{Hypergeometric2F1}\left[\frac{1+m}{2},1+m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^m+$$

$$\Bigg((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg/$$

$$\Bigg((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$2\Bigg(\text{AppellF1}\left[\frac{3+m}{2},m,2,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m\,\text{AppellF1}\Big[$$

$$\frac{3+m}{2},1+m,1,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Bigg)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg)$$

$$\text{Tan}[c+d x]^m\left(e\,\text{Tan}[c+d x]\right)^m\Bigg)\Bigg/\Bigg(d\,(1+m)\,\Bigg(\frac{1}{1+m}m\,\text{Sec}[c+d x]^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\Bigg(\text{Hypergeometric2F1}\left[\frac{1+m}{2},1+m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\left(\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^m+\Bigg((3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},m,1,$$

$$\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg/$$

$$\Bigg((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$2\Bigg(\text{AppellF1}\left[\frac{3+m}{2},m,2,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-m$$

$$\text{AppellF1}\left[\frac{3+m}{2},1+m,1,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg)\text{Tan}[c+d x]^{-1+m}+\frac{1}{2\,(1+m)}$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\Bigg(\text{Hypergeometric2F1}\left[\frac{1+m}{2},1+m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\left(\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^m+\Bigg((3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},m,1,$$

$$\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg/$$

$$\Bigg((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},m,1,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$2\,\Big(\text{AppellF1}\Big[\frac{3+m}{2},\,m,\,2,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$m\,\text{AppellF1}\Big[\frac{3+m}{2},\,1+m,\,1,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)\,\text{Tan}[c+d\,x]^m+$$

$$\frac{1}{1+m}\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\Big(m\,\text{Hypergeometric2F1}\Big[\frac{1+m}{2},\,1+m,\,\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

$$\Big(\text{Cos}[c+d\,x]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^{-1+m}$$

$$\Big(-\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Sin}[c+d\,x]+\text{Cos}[c+d\,x]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)-$$

$$\Big((3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,m,\,1,\,\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]$$

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

$$\Big((3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,m,\,1,\,\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$2\,\Big(\text{AppellF1}\Big[\frac{3+m}{2},\,m,\,2,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-m$$

$$\text{AppellF1}\Big[\frac{3+m}{2},\,1+m,\,1,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)+\Big((3+m)\,\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\Big(-\frac{1}{3+m}(1+m)\,\text{AppellF1}\Big[1+\frac{1+m}{2},$$

$$m,\,2,\,1+\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\frac{1}{3+m}m\,(1+m)\,\text{AppellF1}\Big[1+\frac{1+m}{2},\,1+m,\,1,\,1+\frac{3+m}{2},$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)\Big)\Big/$$

$$\Big((3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,m,\,1,\,\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$2\,\Big(\text{AppellF1}\Big[\frac{3+m}{2},\,m,\,2,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-m\,\text{AppellF1}\Big[\frac{3+m}{2},\,1+m,\,1,\,\frac{5+m}{2},$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)+$$

$$\frac{1}{2}\,(1+m)\,\text{Csc}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\Big(\text{Cos}[c+d\,x]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^m$$

$$\Big(-\text{Hypergeometric2F1}\Big[\frac{1+m}{2},\,1+m,\,\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+$$

$$\Big(1-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^{-1-m}\Big)-\Big((3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,m,\,1,$$

$$\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2$$

$$\Bigg(-2\,\Big(\text{AppellF1}\Big[\frac{3+m}{2},\,m,\,2,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$m\,\text{AppellF1}\Big[\frac{3+m}{2},\,1+m,\,1,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)$$

$$\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+(3+m)\,\Big(-\frac{1}{3+m}\,(1+m)\,\text{AppellF1}\Big[1+\frac{1+m}{2},$$

$$m,\,2,\,1+\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\frac{1}{3+m}m\,(1+m)\,\text{AppellF1}\Big[1+\frac{1+m}{2},\,1+m,\,1,\,1+\frac{3+m}{2},$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)-$$

$$2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\Big(-\frac{1}{5+m}2\,(3+m)\,\text{AppellF1}\Big[1+\frac{3+m}{2},\,m,\,3,\,1+\frac{5+m}{2},$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$

$$\frac{1}{5+m}m\,(3+m)\,\text{AppellF1}\Big[1+\frac{3+m}{2},\,1+m,\,2,\,1+\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]-$$

$$m\,\Big(-\frac{1}{5+m}(3+m)\,\text{AppellF1}\Big[1+\frac{3+m}{2},\,1+m,\,2,\,1+\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\frac{1}{5+m}$$

$$(1+m)\,(3+m)\,\text{AppellF1}\Big[1+\frac{3+m}{2},\,2+m,\,1,\,1+\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)\Big)\Big)\Bigg)\Big/$$

$$\Bigg(\Big((3+m)\,\text{AppellF1}\Big[\frac{1+m}{2},\,m,\,1,\,\frac{3+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$2\,\Big(\text{AppellF1}\Big[\frac{3+m}{2},\,m,\,2,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]-$$

$$m\,\text{AppellF1}\Big[\frac{3+m}{2},\,1+m,\,1,\,\frac{5+m}{2},\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^2\,\text{Tan}[c+d\,x]^m\Bigg)\Bigg)$$

Problem 212: Unable to integrate problem.

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

Optimal (type 5, 130 leaves, 5 steps):

$$\frac{1}{a\,d\,(1-m)} e\,\text{Hypergeometric2F1}\left[1, \frac{1}{2}(-1+m), \frac{1+m}{2}, -\text{Tan}[c+d\,x]^2\right] (e\,\text{Tan}[c+d\,x])^{-1+m} - \frac{1}{a\,d\,(1-m)} e\,\left(\text{Cos}[c+d\,x]^2\right)^{m/2} \text{Hypergeometric2F1}\left[\frac{1}{2}(-1+m), \frac{m}{2}, \frac{1+m}{2}, \text{Sin}[c+d\,x]^2\right] \text{Sec}[c+d\,x]\,(e\,\text{Tan}[c+d\,x])^{-1+m}$$

Result (type 8, 25 leaves):

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

Problem 213: Unable to integrate problem.

$$\int \frac{(e\,\text{Tan}[c+d\,x])^m}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 5, 169 leaves, 8 steps):

$$-\frac{e^3\,(e\,\text{Tan}[c+d\,x])^{-3+m}}{a^2\,d\,(3-m)} - \frac{1}{a^2\,d\,(3-m)} e^3\,\text{Hypergeometric2F1}\left[1, \frac{1}{2}(-3+m), \frac{1}{2}(-1+m), -\text{Tan}[c+d\,x]^2\right] (e\,\text{Tan}[c+d\,x])^{-3+m} + \frac{1}{a^2\,d\,(3-m)} 2\,e^3\,\left(\text{Cos}[c+d\,x]^2\right)^{\frac{1}{2}(-2+m)} \text{Hypergeometric2F1}\left[\frac{1}{2}(-3+m), \frac{1}{2}(-2+m), \frac{1}{2}(-1+m), \text{Sin}[c+d\,x]^2\right] \text{Sec}[c+d\,x]\,(e\,\text{Tan}[c+d\,x])^{-3+m}$$

Result (type 8, 25 leaves):

$$\int \frac{(e\,\text{Tan}[c+d\,x])^m}{(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Problem 214: Unable to integrate problem.

$$\int \frac{(e\,\text{Tan}[c+d\,x])^m}{(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Optimal (type 5, 252 leaves, 9 steps):

$$\frac{3\,e^5\,(e\,\text{Tan}[c+d\,x])^{-5+m}}{a^3\,d\,(5-m)}+\frac{1}{a^3\,d\,(5-m)}$$
$$e^5\,\text{Hypergeometric2F1}\left[1,\frac{1}{2}(-5+m),\frac{1}{2}(-3+m),-\text{Tan}[c+d\,x]^2\right](e\,\text{Tan}[c+d\,x])^{-5+m}-\frac{1}{a^3\,d\,(5-m)}$$
$$3\,e^5\,(\text{Cos}[c+d\,x]^2)^{\frac{1}{2}(-4+m)}\,\text{Hypergeometric2F1}\left[\frac{1}{2}(-5+m),\frac{1}{2}(-4+m),\frac{1}{2}(-3+m),\text{Sin}[c+d\,x]^2\right]$$
$$\text{Sec}[c+d\,x]\,(e\,\text{Tan}[c+d\,x])^{-5+m}-\frac{1}{a^3\,d\,(5-m)}$$
$$e^5\,(\text{Cos}[c+d\,x]^2)^{\frac{1}{2}(-2+m)}\,\text{Hypergeometric2F1}\left[\frac{1}{2}(-5+m),\frac{1}{2}(-2+m),\frac{1}{2}(-3+m),\text{Sin}[c+d\,x]^2\right]$$
$$\text{Sec}[c+d\,x]^3\,(e\,\text{Tan}[c+d\,x])^{-5+m}$$

Result (type 8, 25 leaves):

$$\int\frac{(e\,\text{Tan}[c+d\,x])^m}{(a+a\,\text{Sec}[c+d\,x])^3}\,dx$$

Problem 215: Unable to integrate problem.

$$\int(a+a\,\text{Sec}[c+d\,x])^{3/2}\,(e\,\text{Tan}[c+d\,x])^m\,dx$$

Optimal (type 6, 131 leaves, 1 step):

$$\frac{1}{d\,e\,(1+m)}2^{\frac{5}{2}+m}\,\text{AppellF1}\left[\frac{1+m}{2},\frac{3}{2}+m,1,\frac{3+m}{2},-\frac{a-a\,\text{Sec}[c+d\,x]}{a+a\,\text{Sec}[c+d\,x]},\frac{a-a\,\text{Sec}[c+d\,x]}{a+a\,\text{Sec}[c+d\,x]}\right]$$
$$\left(\frac{1}{1+\text{Sec}[c+d\,x]}\right)^{\frac{5}{2}+m}(a+a\,\text{Sec}[c+d\,x])^{3/2}\,(e\,\text{Tan}[c+d\,x])^{1+m}$$

Result (type 8, 27 leaves):

$$\int(a+a\,\text{Sec}[c+d\,x])^{3/2}\,(e\,\text{Tan}[c+d\,x])^m\,dx$$

Problem 216: Unable to integrate problem.

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

Optimal (type 6, 131 leaves, 1 step):

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

Result (type 8, 27 leaves):

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

Problem 217: Unable to integrate problem.

$$\int \frac{(e \operatorname{Tan}[c+d x])^m}{\sqrt{a+a \operatorname{Sec}[c+d x]}} \, dx$$

Optimal (type 6, 131 leaves, 1 step):

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

Result (type 8, 27 leaves):

$$\int \frac{(e \operatorname{Tan}[c+d x])^m}{\sqrt{a+a \operatorname{Sec}[c+d x]}} \, dx$$

Problem 218: Unable to integrate problem.

$$\int \frac{(e \operatorname{Tan}[c+d x])^m}{(a+a \operatorname{Sec}[c+d x])^{3/2}} \, dx$$

Optimal (type 6, 131 leaves, 1 step):

$$\left(2^{-\frac{1}{2}+m} \operatorname{AppellF1}\left[\frac{1+m}{2}, -\frac{3}{2}+m, 1, \frac{3+m}{2}, -\frac{a-a \operatorname{Sec}[c+d x]}{a+a \operatorname{Sec}[c+d x]}, \frac{a-a \operatorname{Sec}[c+d x]}{a+a \operatorname{Sec}[c+d x]}\right] \left(\frac{1}{1+\operatorname{Sec}[c+d x]}\right)^{-\frac{1}{2}+m} (e \operatorname{Tan}[c+d x])^{1+m}\right) \Big/ \left(d e (1+m) (a+a \operatorname{Sec}[c+d x])^{3/2}\right)$$

Result (type 8, 27 leaves):

$$\int \frac{(e \operatorname{Tan}[c+d x])^m}{(a+a \operatorname{Sec}[c+d x])^{3/2}} \, dx$$

Problem 219: Unable to integrate problem.

$$\int (a+a \operatorname{Sec}[c+d x])^n \operatorname{Tan}[c+d x]^7 \, dx$$

Optimal (type 5, 123 leaves, 4 steps):

$$\frac{7 (a+a \operatorname{Sec}[c+d x])^{4+n}}{a^4 d (4+n)} + \frac{1}{a^4 d (4+n)} \operatorname{Hypergeometric2F1}[1, 4+n, 5+n, 1+\operatorname{Sec}[c+d x]] (a+a \operatorname{Sec}[c+d x])^{4+n} - \frac{5 (a+a \operatorname{Sec}[c+d x])^{5+n}}{a^5 d (5+n)} + \frac{(a+a \operatorname{Sec}[c+d x])^{6+n}}{a^6 d (6+n)}$$

Result (type 8, 23 leaves):

$$\int (a + a \operatorname{Sec}[c + d x])^n \operatorname{Tan}[c + d x]^7 \, dx$$

Problem 220: Unable to integrate problem.

$$\int (a + a \operatorname{Sec}[c + d x])^n \operatorname{Tan}[c + d x]^5 \, dx$$

Optimal (type 5, 97 leaves, 4 steps):

$$-\frac{3 (a + a \operatorname{Sec}[c + d x])^{3+n}}{a^3 d (3 + n)} - \frac{1}{a^3 d (3 + n)} \operatorname{Hypergeometric2F1}[1, 3 + n, 4 + n, 1 + \operatorname{Sec}[c + d x]] (a + a \operatorname{Sec}[c + d x])^{3+n} + \frac{(a + a \operatorname{Sec}[c + d x])^{4+n}}{a^4 d (4 + n)}$$

Result (type 8, 23 leaves):

$$\int (a + a \operatorname{Sec}[c + d x])^n \operatorname{Tan}[c + d x]^5 \, dx$$

Problem 221: Unable to integrate problem.

$$\int (a + a \operatorname{Sec}[c + d x])^n \operatorname{Tan}[c + d x]^3 \, dx$$

Optimal (type 5, 69 leaves, 3 steps):

$$\frac{(a + a \operatorname{Sec}[c + d x])^{2+n}}{a^2 d (2 + n)} + \frac{1}{a^2 d (2 + n)} \operatorname{Hypergeometric2F1}[1, 2 + n, 3 + n, 1 + \operatorname{Sec}[c + d x]] (a + a \operatorname{Sec}[c + d x])^{2+n}$$

Result (type 8, 23 leaves):

$$\int (a + a \operatorname{Sec}[c + d x])^n \operatorname{Tan}[c + d x]^3 \, dx$$

Problem 223: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \operatorname{Cot}[c + d x] (a + a \operatorname{Sec}[c + d x])^n \, dx$$

Optimal (type 5, 74 leaves, 4 steps):

$$-\frac{1}{2 d n} \operatorname{Hypergeometric2F1}\left[1, n, 1 + n, \frac{1}{2} (1 + \operatorname{Sec}[c + d x])\right] (a + a \operatorname{Sec}[c + d x])^n + \frac{1}{d n} \operatorname{Hypergeometric2F1}[1, n, 1 + n, 1 + \operatorname{Sec}[c + d x]] (a + a \operatorname{Sec}[c + d x])^n$$

Result (type 6, 2553 leaves):

$$\left(2^{-2+n} \operatorname{Cos}[c+d x] \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right.$$

$$(a(1+\operatorname{Sec}[c+d x]))^n\left(\frac{1}{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\left(-\frac{1}{n}\left(1-\operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right)^n\right.$$

$$\text{Hypergeometric2F1}\left[n, n, 1+n, \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$

$$\left(4 \text{AppellF1}\left[1, n, 1, 2, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) \Big/$$

$$\left(-2 \text{AppellF1}\left[1, n, 1, 2, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$\left(\text{AppellF1}\left[2, n, 2, 3, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-n \text{AppellF1}\left[2,\right.\right.$$

$$\left.\left.\left.\left.\left.1+n, 1, 3, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right) \Big/$$

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

$$2^{-1+n} \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\left(\frac{1}{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\left(\frac{1}{2} \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2+\right.$$

$$\left.\frac{3}{2} \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(-\frac{1}{n}\left(1-\operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right)^n\right.$$

$$\text{Hypergeometric2F1}\left[n, n, 1+n, \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$

$$\left(4 \text{AppellF1}\left[1, n, 1, 2, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) \Big/$$

$$\left(-2 \text{AppellF1}\left[1, n, 1, 2, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$\left(\text{AppellF1}\left[2, n, 2, 3, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-n \text{AppellF1}\left[2,\right.\right.$$

$$\left.\left.\left.1+n, 1, 3, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+$$

$$\left(2^{-2+n} \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(\frac{1}{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\left(-\frac{1}{n}\left(1-\operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right)^n\right.\right.$$

$$\text{Hypergeometric2F1}\left[n, n, 1+n, \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$

$$\left(4 \text{AppellF1}\left[1, n, 1, 2, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) \Big/$$

$$\left(-2 \text{AppellF1}\left[1, n, 1, 2, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$\left(\text{AppellF1}\left[2,n,2,3,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-n\,\text{AppellF1}\left[2,1+n,1,3,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg)\Bigg/$$

$$\left(\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3\right)+\Bigg(2^{-1+n}\,n\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{1+n}\left(-\frac{1}{n}\left(1-\text{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right)^n\right.$$

$$\text{Hypergeometric2F1}\left[n,n,1+n,\text{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$

$$\left(4\,\text{AppellF1}\left[1,n,1,2,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg/$$

$$\Bigg(-2\,\text{AppellF1}\left[1,n,1,2,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

$$\left(\text{AppellF1}\left[2,n,2,3,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-n\,\text{AppellF1}\left[2,1+n,1,3,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg)\Bigg/$$

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

$$2^{-1+n}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n$$

$$\left(-\frac{1}{n}\left(1-\text{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right)^n\text{Hypergeometric2F1}\left[n,n,1+n,\text{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-\text{Cot}\left[\frac{1}{2}(c+d x)\right]\left(1-\text{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-1+n}$$

$$\text{Csc}\left[\frac{1}{2}(c+d x)\right]^2\text{Hypergeometric2F1}\left[n,n,1+n,\text{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+\left(1-\text{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right)^n\text{Csc}\left[\frac{1}{2}(c+d x)\right]$$

$$\left(\left(1-\text{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-n}-\text{Hypergeometric2F1}\left[n,n,1+n,\text{Cot}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$

$$\left(4\,\text{AppellF1}\left[1,n,1,2,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\Bigg/\Bigg(-2\,\text{AppellF1}\left[1,n,1,2,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

$$\Bigg(\text{AppellF1}\left[2,n,2,3,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-n\,\text{AppellF1}\Big[2,$$

$$1+n,\ 1,\ 3,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\Big)\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)+$$

$$\Big(4\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big(-\frac{1}{2}\,\mathrm{AppellF1}\Big[2,\ n,\ 2,\ 3,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{2}\,n\,\mathrm{AppellF1}\Big[2,\ 1+n,\ 1,\ 3,$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)\Big)\Big/$$

$$\Big(-2\,\mathrm{AppellF1}\Big[1,\ n,\ 1,\ 2,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]+$$

$$\Big(\mathrm{AppellF1}\Big[2,\ n,\ 2,\ 3,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]-n\,\mathrm{AppellF1}\Big[2,$$

$$1+n,\ 1,\ 3,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\Big)\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big)-$$

$$\Big(4\,\mathrm{AppellF1}\Big[1,\ n,\ 1,\ 2,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\Big(\Big(\mathrm{AppellF1}\Big[2,\ n,\ 2,\ 3,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]-n\,\mathrm{AppellF1}\Big[2,\ 1+n,$$

$$1,\ 3,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\Big)\ \mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\Big[\frac{1}{2}$$

$$(c+d\,x)\Big]-2\,\Big(-\frac{1}{2}\,\mathrm{AppellF1}\Big[2,\ n,\ 2,\ 3,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{2}\,n\,\mathrm{AppellF1}\Big[2,\ 1+n,\ 1,\ 3,$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)+$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big(-\frac{4}{3}\,\mathrm{AppellF1}\Big[3,\ n,\ 3,\ 4,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+$$

$$\frac{2}{3}\,n\,\mathrm{AppellF1}\Big[3,\ 1+n,\ 2,\ 4,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]-n\,\Big(-\frac{2}{3}\,\mathrm{AppellF1}\Big[3,\ 1+n,\ 2,$$

$$4,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{2}{3}\,(1+n)\ \mathrm{AppellF1}\Big[3,\ 2+n,\ 1,\ 4,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(-2\,\mathrm{AppellF1}\Big[1,\ n,\ 1,\ 2,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]+$$

$$\Big(\mathrm{AppellF1}\Big[2,\ n,\ 2,\ 3,\ \mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\Big]-n\,\mathrm{AppellF1}\Big[2,$$

$$1+n,\ 1,\ 3,\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\right)\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)^2\Big)\Big)\Big)$$

Problem 224: Unable to integrate problem.

$$\int \text{Cot}[c+d\,x]^3\,\left(a+a\,\text{Sec}[c+d\,x]\right)^n\,dx$$

Optimal (type 5, 127 leaves, 5 steps):

$$-\frac{1}{4\,d\,\left(1-n\right)}a\,\left(4-n\right)\,\text{Hypergeometric2F1}\left[1,\ -1+n,\ n,\ \frac{1}{2}\left(1+\text{Sec}[c+d\,x]\right)\right]\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{-1+n}+$$
$$\frac{1}{d\,\left(1-n\right)}a\,\text{Hypergeometric2F1}[1,\ -1+n,\ n,\ 1+\text{Sec}[c+d\,x]]\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{-1+n}+$$
$$\frac{a\,\left(a+a\,\text{Sec}[c+d\,x]\right)^{-1+n}}{2\,d\,\left(1-\text{Sec}[c+d\,x]\right)}$$

Result (type 8, 23 leaves):

$$\int \text{Cot}[c+d\,x]^3\,\left(a+a\,\text{Sec}[c+d\,x]\right)^n\,dx$$

Problem 225: Unable to integrate problem.

$$\int \left(a+a\,\text{Sec}[c+d\,x]\right)^n\,\text{Tan}[c+d\,x]^4\,dx$$

Optimal (type 6, 106 leaves, 1 step):

$$\frac{1}{5\,d}2^{5+n}\,\text{AppellF1}\left[\frac{5}{2},\ 4+n,\ 1,\ \frac{7}{2},\ -\frac{a-a\,\text{Sec}[c+d\,x]}{a+a\,\text{Sec}[c+d\,x]},\ \frac{a-a\,\text{Sec}[c+d\,x]}{a+a\,\text{Sec}[c+d\,x]}\right]$$
$$\left(\frac{1}{1+\text{Sec}[c+d\,x]}\right)^{5+n}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^n\,\text{Tan}[c+d\,x]^5$$

Result (type 8, 23 leaves):

$$\int \left(a+a\,\text{Sec}[c+d\,x]\right)^n\,\text{Tan}[c+d\,x]^4\,dx$$

Problem 226: Result more than twice size of optimal antiderivative.

$$\int \left(a+a\,\text{Sec}[c+d\,x]\right)^n\,\text{Tan}[c+d\,x]^2\,dx$$

Optimal (type 6, 106 leaves, 1 step):

$$\frac{1}{3\,d}2^{3+n}\,\text{AppellF1}\left[\frac{3}{2},\ 2+n,\ 1,\ \frac{5}{2},\ -\frac{a-a\,\text{Sec}[c+d\,x]}{a+a\,\text{Sec}[c+d\,x]},\ \frac{a-a\,\text{Sec}[c+d\,x]}{a+a\,\text{Sec}[c+d\,x]}\right]$$
$$\left(\frac{1}{1+\text{Sec}[c+d\,x]}\right)^{3+n}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^n\,\text{Tan}[c+d\,x]^3$$

Result (type 6, 2419 leaves):

$$\Big(2^{3+n}\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}[c+d\,x]^2$$

$$\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^n\,(a\,(1+\text{Sec}[c+d\,x]))^n\,\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]^3$$

$$\Big(-\Big(\text{Hypergeometric2F1}\left[\frac{1}{2},\,1+n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-2\,\text{Hypergeometric2F1}\Big[$$

$$\frac{1}{2},\,2+n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\Big)\,\left(\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^n+$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,1,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big/$$

$$\Big(-3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,1,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

$$2\,\Big(\text{AppellF1}\left[\frac{3}{2},\,n,\,2,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-n\,\text{AppellF1}\Big[\frac{3}{2},$$

$$1+n,\,1,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)\Big)\Big/$$

$$\Big(d\,\Big(2^n\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^n$$

$$\Big(-\Big(\text{Hypergeometric2F1}\left[\frac{1}{2},\,1+n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-2\,\text{Hypergeometric2F1}\Big[$$

$$\frac{1}{2},\,2+n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\Big)\,\left(\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^n+$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,1,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big/$$

$$\Big(-3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,1,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

$$2\,\Big(\text{AppellF1}\left[\frac{3}{2},\,n,\,2,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-n\,\text{AppellF1}\Big[\frac{3}{2},$$

$$1+n,\,1,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)+$$

$$2^{1+n}\left(\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right)^n\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]$$

$$\Big(-n\,\Big(\text{Hypergeometric2F1}\left[\frac{1}{2},\,1+n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-2\,\text{Hypergeometric2F1}\Big[$$

$$\frac{1}{2},\,2+n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\Big)\,\left(\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{-1+n}$$

$$\left(-\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Sin}[c+d\,x]+\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)-$$

$$\Big(3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,1,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sin}\Big[$$

$$\frac{1}{2}\,(c+d\,x)\Big]\Big)\Big/\Big(-3\,\text{AppellF1}\left[\frac{1}{2},\,n,\,1,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$

$$2\,\Big(\text{AppellF1}\left[\frac{3}{2},\,n,\,2,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-n\,\text{AppellF1}\Big[$$

$$\frac{3}{2}, 1+n, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Big) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big) +$$

$$\Bigg(3 \text{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \Bigg(-\frac{1}{3} \text{AppellF1}\left[\frac{3}{2}, n, 2, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{1}{3} n \text{AppellF1}\Big[\frac{3}{2}, 1+n, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg) \Bigg/$$

$$\Bigg(-3 \text{AppellF1}\left[\frac{1}{2}, n, 1, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] + 2 \Bigg(\text{AppellF1}\left[\frac{3}{2}, n, 2, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] - n \text{AppellF1}\Big[\frac{3}{2}, 1+n, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Bigg) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg) -$$

$$\Bigg(3 \text{AppellF1}\left[\frac{1}{2}, n, 1, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \Bigg(2 \Bigg(\text{AppellF1}\left[\frac{3}{2}, n, 2, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] - n \text{AppellF1}\Big[\frac{3}{2}, 1+n, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Bigg) \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] - 3 \Bigg(-\frac{1}{3} \text{AppellF1}\left[\frac{3}{2}, n, 2, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{1}{3} n \text{AppellF1}\Big[\frac{3}{2}, 1+n, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg) +$$

$$2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2 \Bigg(-\frac{6}{5} \text{AppellF1}\Big[\frac{5}{2}, n, 3, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{3}{5} n \text{AppellF1}\left[\frac{5}{2}, 1+n, 2, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] - n \Bigg(-\frac{3}{5} \text{AppellF1}\Big[\frac{5}{2}, 1+n, 2, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{3}{5}(1+n) \text{AppellF1}\Big[\frac{5}{2}, 2+n, 1, \frac{7}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)\Bigg)\Bigg) \Bigg/$$

$$\Bigg(-3 \text{AppellF1}\left[\frac{1}{2}, n, 1, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] + 2 \Bigg(\text{AppellF1}\left[\frac{3}{2}, n, 2, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] - n \text{AppellF1}\Big[\frac{3}{2}, 1+n, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\Bigg) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)^2 -$$

$$\left(\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^n\left(-\text{Csc}\left[\frac{1}{2}(c+d x)\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]\right.$$

$$\left(-\text{Hypergeometric2F1}\left[\frac{1}{2},2+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$\left.\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-2-n}\right)+$$

$$\frac{1}{2}\text{Csc}\left[\frac{1}{2}(c+d x)\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(-\text{Hypergeometric2F1}\left[\frac{1}{2},1+n,\right.\right.$$

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

$$2^{1+n}\,n\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^{-1+n}\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\left(-\left(\text{Hypergeometric2F1}\left[\frac{1}{2},1+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-2\,\text{Hypergeometric2F1}\left[\right.\right.\right.$$

$$\left.\left.\frac{1}{2},2+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\left(\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^n+$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},n,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big/$$

$$\left(-3\,\text{AppellF1}\left[\frac{1}{2},n,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$2\left(\text{AppellF1}\left[\frac{3}{2},n,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-n\,\text{AppellF1}\left[\frac{3}{2},\right.\right.$$

$$\left.\left.\left.1+n,1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)$$

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

$$\left.\left.\left.\text{Sec}[c+d x]\,\text{Tan}[c+d x]\right)\right)\right)$$

Problem 227: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x]^2\,(a+a\,\text{Sec}[c+d x])^n\,dx$$

Optimal (type 6, 102 leaves, 1 step):

$$-\frac{1}{d}2^{-1+n}\,\text{AppellF1}\left[-\frac{1}{2},-2+n,1,\frac{1}{2},-\frac{a-a\,\text{Sec}[c+d x]}{a+a\,\text{Sec}[c+d x]},\frac{a-a\,\text{Sec}[c+d x]}{a+a\,\text{Sec}[c+d x]}\right]$$

$$\text{Cot}[c+d x]\left(\frac{1}{1+\text{Sec}[c+d x]}\right)^{-1+n}(a+a\,\text{Sec}[c+d x])^n$$

Result (type 6, 2492 leaves):

$$\left(2^{-3+n}\,\text{Cos}[c+d x]^2\,\text{Csc}\left[\frac{1}{2}(c+d x)\right]^3\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^n\left(a\,(1+\text{Sec}[c+d x])\right)^n$$

$$\left(\left(12\,\text{AppellF1}\left[\frac{1}{2},n,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sin}\left[\frac{1}{2}(c+dx)\right]^2\right)\right/$$
$$\left(-3\,\text{AppellF1}\left[\frac{1}{2},n,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.$$
$$2\left(\text{AppellF1}\left[\frac{3}{2},n,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-n\,\text{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$\left.\left.1+n,1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)+$$
$$\left(\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\right)^n\left(-\text{Hypergeometric2F1}\left[-\frac{1}{2},n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.$$
$$\left.\left.\left.\text{Hypergeometric2F1}\left[\frac{1}{2},n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\right)\right/$$
$$\left(d\left(-2^{-2+n}\,\text{Csc}\left[\frac{1}{2}(c+dx)\right]^2\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]^2\text{Sec}[c+dx]\right)^n\right.\right.$$
$$\left(\left(12\,\text{AppellF1}\left[\frac{1}{2},n,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sin}\left[\frac{1}{2}(c+dx)\right]^2\right)\right/$$
$$\left(-3\,\text{AppellF1}\left[\frac{1}{2},n,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.$$
$$2\left(\text{AppellF1}\left[\frac{3}{2},n,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-n\,\text{AppellF1}\left[\frac{3}{2},\right.\right.$$
$$\left.\left.1+n,1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)+$$
$$\left(\text{Cos}[c+dx]\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\right)^n\left(-\text{Hypergeometric2F1}\left[-\frac{1}{2},n,\frac{1}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.$$
$$\left.\left.\text{Hypergeometric2F1}\left[\frac{1}{2},n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)+$$
$$2^{-1+n}\,\text{Cot}\left[\frac{1}{2}(c+dx)\right]\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]^2\text{Sec}[c+dx]\right)^n$$
$$\left(\left(12\,\text{AppellF1}\left[\frac{1}{2},n,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Cos}\left[\frac{1}{2}(c+dx)\right]\text{Sin}\left[\right.\right.\right.$$
$$\left.\left.\left.\frac{1}{2}(c+dx)\right]\right)\right/\left(-3\,\text{AppellF1}\left[\frac{1}{2},n,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.$$
$$2\left(\text{AppellF1}\left[\frac{3}{2},n,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-n\,\text{AppellF1}\left[\right.\right.$$
$$\left.\left.\frac{3}{2},1+n,1,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)+$$
$$\left(12\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]^2\left(-\frac{1}{3}\text{AppellF1}\left[\frac{3}{2},n,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{1}{3}n\,\text{AppellF1}\left[\frac{3}{2},1+n,1,\frac{5}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\right)\right/$$
$$\left(-3\,\text{AppellF1}\left[\frac{1}{2},n,1,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.$$
$$2\left(\text{AppellF1}\left[\frac{3}{2},n,2,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-n\,\text{AppellF1}\left[\frac{3}{2},\right.\right.$$

$$1+n,\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)+$$

$$n\left(\text{Cos}[c+d\,x]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^{-1+n}\Big(-\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Sin}[c+d\,x]+$$

$$\text{Cos}[c+d\,x]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)$$

$$\Big(-\text{Hypergeometric2F1}\left[-\frac{1}{2},\ n,\ \frac{1}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+$$

$$\text{Hypergeometric2F1}\left[\frac{1}{2},\ n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)-$$

$$\Big(12\,\text{AppellF1}\left[\frac{1}{2},\ n,\ 1,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]\text{Sin}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\Big(2\,\Big(\text{AppellF1}\left[\frac{3}{2},\ n,\ 2,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]-n\,\text{AppellF1}\Big[\frac{3}{2},$$

$$1+n,\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\Big)\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\Big[\frac{1}{2}$$

$$\left(c+d\,x\right)\Big]-3\,\Big(-\frac{1}{3}\,\text{AppellF1}\left[\frac{3}{2},\ n,\ 2,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{1}{3}\,n\,\text{AppellF1}\Big[\frac{3}{2},\ 1+n,\ 1,\ \frac{5}{2},$$

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)+$$

$$2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big(-\frac{6}{5}\,\text{AppellF1}\Big[\frac{5}{2},\ n,\ 3,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+$$

$$\frac{3}{5}\,n\,\text{AppellF1}\left[\frac{5}{2},\ 1+n,\ 2,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]-n\,\Big(-\frac{3}{5}\,\text{AppellF1}\Big[\frac{5}{2},\ 1+n,\ 2,$$

$$\frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]+\frac{3}{5}\left(1+n\right)\text{AppellF1}\Big[\frac{5}{2},\ 2+n,\ 1,\ \frac{7}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(-3\,\text{AppellF1}\left[\frac{1}{2},\ n,\ 1,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]+$$

$$2\,\Big(\text{AppellF1}\left[\frac{3}{2},\ n,\ 2,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]-n\,\text{AppellF1}\Big[\frac{3}{2},$$

$$1+n,\ 1,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\Big)^2+$$

$$\left(\text{Cos}[c+d\,x]\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^n\Big(\text{Hypergeometric2F1}\left[\frac{1}{2},\ n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right]$$

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

$$\left(\text{Hypergeometric2F1}\left[-\frac{1}{2}, n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] - \left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-n}\right) + \frac{1}{2}\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] \left(-\text{Hypergeometric2F1}\left[\frac{1}{2}, n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] + \left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-n}\right)\Bigg)\Bigg) +$$

$$2^{-1+n}\, n\, \text{Cot}\left[\frac{1}{2}(c+d x)\right] \left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sec}[c+d x]\right)^{-1+n} \Bigg(\Bigg(12\,\text{AppellF1}\left[\frac{1}{2}, n, 1, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Sin}\left[\frac{1}{2}(c+d x)\right]^2\Bigg) \Big/ \left(-3\,\text{AppellF1}\left[\frac{1}{2}, n, 1, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] + 2\left(\text{AppellF1}\left[\frac{3}{2}, n, 2, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] - n\,\text{AppellF1}\left[\frac{3}{2}, 1+n, 1, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) + \left(\text{Cos}[c+d x]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^n \left(-\text{Hypergeometric2F1}\left[-\frac{1}{2}, n, \frac{1}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] + \text{Hypergeometric2F1}\left[\frac{1}{2}, n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) \left(-\text{Cos}\left[\frac{1}{2}(c+d x)\right] \text{Sec}[c+d x]\,\text{Sin}\left[\frac{1}{2}(c+d x)\right] + \text{Cos}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sec}[c+d x]\,\text{Tan}[c+d x]\right)\Bigg)\Bigg)$$

Problem 228: Unable to integrate problem.

$$\int \text{Cot}[c+d x]^4 \,(a + a\,\text{Sec}[c+d x])^n \,dx$$

Optimal (type 6, 106 leaves, 1 step):

$$-\frac{1}{3 d} 2^{-3+n} \text{AppellF1}\left[-\frac{3}{2}, -4+n, 1, -\frac{1}{2}, -\frac{a - a\,\text{Sec}[c+d x]}{a + a\,\text{Sec}[c+d x]}, \frac{a - a\,\text{Sec}[c+d x]}{a + a\,\text{Sec}[c+d x]}\right] \text{Cot}[c+d x]^3 \left(\frac{1}{1+\text{Sec}[c+d x]}\right)^{-3+n} (a + a\,\text{Sec}[c+d x])^n$$

Result (type 8, 23 leaves):

$$\int \text{Cot}[c+d x]^4 \,(a + a\,\text{Sec}[c+d x])^n \,dx$$

Problem 229: Result more than twice size of optimal antiderivative.

$$\int (a + a\,\text{Sec}[c+d x])^n \,\text{Tan}[c+d x]^{3/2} \,dx$$

Optimal (type 6, 114 leaves, 1 step):

$$\frac{1}{5 d} 2^{\frac{7}{2}+n} \text{AppellF1}\left[\frac{5}{4}, \frac{3}{2}+n, 1, \frac{9}{4}, -\frac{a-a \operatorname{Sec}[c+d x]}{a+a \operatorname{Sec}[c+d x]}, \frac{a-a \operatorname{Sec}[c+d x]}{a+a \operatorname{Sec}[c+d x]}\right] \left(\frac{1}{1+\operatorname{Sec}[c+d x]}\right)^{\frac{5}{2}+n} (a+a \operatorname{Sec}[c+d x])^n \operatorname{Tan}[c+d x]^{5/2}$$

Result (type 6, 11 753 leaves):

$$\left((a (1+\operatorname{Sec}[c+d x]))^n \left(\left(3\times 2^{\frac{3}{2}+n} \text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}+n, \frac{3}{2}+n, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right], -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right] \left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{1}{2}-n} \left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{3}{2}-n} \left(\frac{1}{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n \sqrt{-\frac{\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}} \left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{\frac{1}{2}+n}\right) \Bigg/ \left(3 \text{AppellF1}\left[\frac{1}{2}, \frac{1}{2}+n, \frac{3}{2}+n, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right], -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right] - (3+2 n) \text{AppellF1}\left[\frac{3}{2}, \frac{1}{2}+n, \frac{5}{2}+n, \frac{5}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right], -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right] + (1+2 n) \text{HypergeometricPFQ}\left[\left\{\frac{3}{4}, \frac{3}{2}+n\right\}, \left\{\frac{7}{4}\right\}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right) - \left(2^{\frac{3}{2}+n} \left(-1+\sqrt{\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}\right) \left(1+\sqrt{\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}\right) \left(\frac{1}{1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n \sqrt{-\frac{\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}} \left(\left(3 \text{AppellF1}\left[\frac{1}{2}, \frac{3}{2}+n, \frac{1}{2}+n, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right], -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right] \left(1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{\frac{1}{2}+n} \left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{3}{2}-n} \left(1-\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{1}{2}-n} \left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{1+n} \left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right) \Bigg/ \left(3 \text{AppellF1}\left[\frac{1}{2}, \frac{3}{2}+n, \frac{1}{2}+n, \frac{3}{2}, \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right], -\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right] + (3+2 n) \text{AppellF1}\left[\frac{3}{2}, \frac{5}{2}+\right.\right.\right.\right.\right.$$

$$n,\ \frac{1}{2}+n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}(c+d x)\right],\ -\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]-(1+2 n)$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\ \frac{3}{2}+n\right\},\ \left\{\frac{7}{4}\right\},\ \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)-$$

$$\Bigg(10\,\text{AppellF1}\left[\frac{1}{4},\ \frac{1}{2}+n,\ 1,\ \frac{5}{4},\ \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\sqrt{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\Bigg)\Bigg/\Bigg(-5\,\text{AppellF1}\left[\frac{1}{4},\ \frac{1}{2}+n,\ 1,\ \frac{5}{4},\ \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+2\Bigg(2\,\text{AppellF1}\left[\frac{5}{4},\ \frac{1}{2}+n,\ 2,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]-(1+2 n)\,\text{AppellF1}\left[\frac{5}{4},\ \frac{3}{2}+n,\ 1,\ \frac{9}{4},\right.$$

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

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

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

$$\Bigg(d\Bigg(\Bigg(3\times 2^{\frac{3}{2}+n}\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{1}{2},\ \frac{1}{2}+n,\ \frac{3}{2}+n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}(c+d x)\right],\ -\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{1}{2}-n}\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{3}{2}-n}\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n$$

$$\sqrt{-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{1}{2}+n}\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\ \frac{1}{2}+n,\ \frac{3}{2}+n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}(c+d x)\right],\ -\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]-(3+2 n)$$

$$\text{AppellF1}\left[\frac{3}{2},\ \frac{1}{2}+n,\ \frac{5}{2}+n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}(c+d x)\right],\ -\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$(1+2 n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\ \frac{3}{2}+n\right\},\ \left\{\frac{7}{4}\right\},\ \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)+$$

$$\left(3\times 2^{\frac{1}{2}+n}\left(-\frac{3}{2}-n\right)\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+n,\frac{3}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right],-\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)^{-\frac{1}{2}-n}\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)^{-\frac{5}{2}-n}$$
$$\left.\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^n\sqrt{-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^{\frac{1}{2}+n}\right)\Bigg/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+n,\frac{3}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right],-\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]-(3+2n)\right.$$
$$\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+n,\frac{5}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right],-\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\text{Tan}\left[\frac{1}{2}(c+dx)\right]+$$
$$\left.(1+2n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)+$$
$$\left(3\times 2^{\frac{1}{2}+n}\left(-\frac{1}{2}-n\right)\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+n,\frac{3}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right],-\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)^{-\frac{3}{2}-n}\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)^{-\frac{3}{2}-n}$$
$$\left.\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^n\sqrt{-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^{\frac{1}{2}+n}\right)\Bigg/$$
$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+n,\frac{3}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right],-\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]-(3+2n)\right.$$
$$\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+n,\frac{5}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right],-\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\text{Tan}\left[\frac{1}{2}(c+dx)\right]+$$
$$\left.(1+2n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)+$$
$$\left(3\times 2^{\frac{3}{2}+n}\left(-\frac{1}{6}\left(\frac{3}{2}+n\right)\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+n,\frac{5}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right],\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2+$$
$$\left.\frac{1}{6}\left(\frac{1}{2}+n\right)\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\right)$$
$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)^{-\frac{1}{2}-n}\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)^{-\frac{3}{2}-n}\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^n$$

$$\sqrt{-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{\frac{1}{2}+n}\Bigg)\Bigg/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+n,\frac{3}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]-(3+2 n)\right.$$
$$\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+n,\frac{5}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\left.(1+2 n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+$$

$$\Bigg(3\times 2^{\frac{3}{2}+n}\,n\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+n,\frac{3}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{1}{2}-n}\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{3}{2}-n}$$
$$\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{1+n}\sqrt{-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{\frac{1}{2}+n}\Bigg)\Bigg/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+n,\frac{3}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]-(3+2 n)\right.$$
$$\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+n,\frac{5}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\left.(1+2 n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+$$

$$\Bigg(3\times 2^{\frac{1}{2}+n}\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+n,\frac{3}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]$$
$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{1}{2}-n}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{3}{2}-n}$$
$$\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{n}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{\frac{1}{2}+n}$$
$$\left(\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}\right)\Bigg)\Bigg/$$

$$\Bigg(\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+n,\frac{3}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]-(3+2 n)\right.$$
$$\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+n,\frac{5}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\left.(1+2 n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

$$\sqrt{-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\Bigg) + \Bigg(2^{\frac{3}{2}+n}\left(-1+\sqrt{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)\left(1+\sqrt{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)$$

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

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right] + \frac{3}{2}\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\Bigg(\Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, \frac{3}{2}+n, \frac{1}{2}+n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right], -\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]$$

$$\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{\frac{1}{2}+n}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{3}{2}-n}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{1}{2}-n}$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{1+n}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg) \Big/ \Bigg(3\,\text{AppellF1}\left[\frac{1}{2}, \frac{3}{2}+n, \frac{1}{2}+\right.$$

$$\left. n, \frac{3}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right], -\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right] + (3+2n)\,\text{AppellF1}\left[\frac{3}{2}, \frac{5}{2}+\right.$$

$$\left. n, \frac{1}{2}+n, \frac{5}{2}, \text{Tan}\left[\frac{1}{2}(c+d x)\right], -\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right] - (1+2n)$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{3}{4}, \frac{3}{2}+n\right\}, \left\{\frac{7}{4}\right\}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg) -$$

$$\Bigg(10\,\text{AppellF1}\left[\frac{1}{4}, \frac{1}{2}+n, 1, \frac{5}{4}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\sqrt{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\Bigg) \Big/ \Bigg(-5\,\text{AppellF1}\left[\frac{1}{4}, \frac{1}{2}+n, 1, \frac{5}{4}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] + 2\Bigg(2\,\text{AppellF1}\left[\frac{5}{4}, \frac{1}{2}+n, 2, \frac{9}{4}, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right] - (1+2n)\,\text{AppellF1}\left[\frac{5}{4}, \frac{3}{2}+n, 1, \frac{9}{4},\right.$$

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

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

$$\Bigg(2^{\frac{1}{2}+n}\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(-1+\sqrt{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)\left(1+\sqrt{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)$$

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

$$\left(\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\right.\right.$$

$$\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{\frac{1}{2}+n}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{3}{2}-n}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{1}{2}-n}$$

$$\left.\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{1+n}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]+\right.$$

$$(3+2n)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\frac{1}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-(1+2n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)-\left(10\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}+n,1,\frac{5}{4},\right.\right.$$

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

$$\left(-5\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}+n,1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$2\left(2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$

$$\left.(1+2n)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2}+n,1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)\Big/\left(\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}\right.$$

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

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

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

$$\left(\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right],-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\right.\right.$$

$$\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^{\frac{1}{2}+n}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)^{-\frac{3}{2}-n}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{-\frac{1}{2}-n}$$

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

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right],-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]+\right.$$

$$(3+2\,n)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\frac{1}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right],-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-(1+2\,n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)-\left(10\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}+n,1,\frac{5}{4},\right.\right.$$

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

$$\left(-5\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}+n,1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$2\left(2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]-\right.$$

$$\left.(1+2\,n)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2}+n,1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right)$$

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

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

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

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

$$\left(\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right],-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right]\right.\right.$$

$$\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{\frac{1}{2}+n}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{3}{2}-n}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{1}{2}-n}$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{1+n}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Big/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]+$$

$$(3+2n)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\frac{1}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-(1+2n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)-\Bigg(10\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}+n,1,\frac{5}{4},\right.$$

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

$$\Bigg(-5\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}+n,1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

$$2\Bigg(2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$(1+2n)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2}+n,1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)$$

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

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3\right)\Bigg)-$$

$$\Bigg(2^{\frac{3}{2}+n}\,n\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(-1+\sqrt{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)\left(1+\sqrt{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)$$

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

$$\Bigg(\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]$$

$$\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{\frac{1}{2}+n}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{3}{2}-n}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{1}{2}-n}$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{1+n}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]+$$

$$(3+2n)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\frac{1}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-(1+2n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)-\Bigg(10\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}+n,1,\frac{5}{4},\right.$$

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

$$\Bigg(-5\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}+n,1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

$$2\Bigg(2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$(1+2n)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2}+n,1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

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

$$\Bigg(2^{\frac{1}{2}+n}\left(-1+\sqrt{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)\left(1+\sqrt{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n$$

$$\left(\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}\right)$$

$$\Bigg(\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]$$

$$\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{\frac{1}{2}+n}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{3}{2}-n}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{1}{2}-n}$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{1+n}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]+$$

$$(3+2n)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\frac{1}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right],-\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]$$

$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]-(1+2n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)-\left(10\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}+n,1,\frac{5}{4},\right.\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\sqrt{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)\Big/$$

$$\left(-5\,\text{AppellF1}\left[\frac{1}{4},\frac{1}{2}+n,1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.$$

$$2\left(2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-\right.$$

$$(1+2n)\,\text{AppellF1}\left[\frac{5}{4},\frac{3}{2}+n,1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.$$

$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\Big/$$

$$\left(\sqrt{-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}\sqrt{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]-\right.\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^3\right)\right)-$$

$$\left(3\times 2^{\frac{3}{2}+n}\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+n,\frac{3}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right],-\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\right.$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)^{-\frac{1}{2}-n}\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)^{-\frac{3}{2}-n}$$

$$\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^n\sqrt{-\frac{\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^{\frac{1}{2}+n}$$

$$\left(-\frac{1}{2}(3+2n)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+n,\frac{5}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right],-\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2+\frac{1}{2}(1+2n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2+3\left(-\frac{1}{6}\left(\frac{3}{2}+n\right)\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+n,\frac{5}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2+\frac{1}{6}\left(\frac{1}{2}+n\right)\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)-$$

$$(3+2 n)\left(-\frac{3}{10}\left(\frac{5}{2}+n\right)\text{AppellF1}\left[\frac{5}{2},\frac{1}{2}+n,\frac{7}{2}+n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2+\frac{3}{10}\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{5}{2},\frac{3}{2}+n,\frac{5}{2}+n,\frac{7}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$\frac{3}{4}(1+2 n)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(-\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{3}{2}-n}\right)\Bigg)\Bigg)\Bigg/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{1}{2}+n,\frac{3}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]-(3+2 n)\,\text{AppellF1}\left[\frac{3}{2},\frac{1}{2}+n,\frac{5}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]+(1+2 n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\left\{\frac{7}{4}\right\},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^2-$$

$$\Bigg(2^{\frac{3}{2}+n}\left(-1+\sqrt{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)\left(1+\sqrt{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}\right)\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\sqrt{-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}$$

$$\Bigg(\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{\frac{1}{2}+n}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)^{-\frac{3}{2}-n}\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{1}{2}-n}\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{1+n}\Bigg)\Bigg/$$

$$\left(3\,\text{AppellF1}\left[\frac{1}{2},\frac{3}{2}+n,\frac{1}{2}+n,\frac{3}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]+(3+2 n)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\frac{1}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+d x)\right],-\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]-(1+2 n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\right.\right.\right.$$

$\frac{3}{2}+n\}, \{\frac{7}{4}\}, \text{Tan}[\frac{1}{2}(c+d x)]^2] \text{Tan}[\frac{1}{2}(c+d x)]\Big) +$

$\Big(3(1+n) \text{AppellF1}[\frac{1}{2}, \frac{3}{2}+n, \frac{1}{2}+n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(c+d x)], -\text{Tan}[\frac{1}{2}(c+d x)]]$

$\text{Sec}[\frac{1}{2}(c+d x)]^2 (1-\text{Tan}[\frac{1}{2}(c+d x)])^{\frac{1}{2}+n} (-1+\text{Tan}[\frac{1}{2}(c+d x)])^{-\frac{3}{2}-n}$

$\text{Tan}[\frac{1}{2}(c+d x)] (1-\text{Tan}[\frac{1}{2}(c+d x)]^2)^{-\frac{1}{2}-n} (-1+\text{Tan}[\frac{1}{2}(c+d x)]^2)^n$

$(1+\text{Tan}[\frac{1}{2}(c+d x)]^2)\Big) \Big/ \Big(3 \text{AppellF1}[\frac{1}{2}, \frac{3}{2}+n, \frac{1}{2}+n, \frac{3}{2}, \text{Tan}[$

$\frac{1}{2}(c+d x)], -\text{Tan}[\frac{1}{2}(c+d x)]] + (3+2n) \text{AppellF1}[\frac{3}{2}, \frac{5}{2}+n, \frac{1}{2}+$

$n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(c+d x)], -\text{Tan}[\frac{1}{2}(c+d x)]] \text{Tan}[\frac{1}{2}(c+d x)] - (1+2n)$

$\text{HypergeometricPFQ}[\{\frac{3}{4}, \frac{3}{2}+n\}, \{\frac{7}{4}\}, \text{Tan}[\frac{1}{2}(c+d x)]^2] \text{Tan}[\frac{1}{2}(c+d x)]\Big) -$

$\Big(3(-\frac{1}{2}-n) \text{AppellF1}[\frac{1}{2}, \frac{3}{2}+n, \frac{1}{2}+n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(c+d x)], -\text{Tan}[\frac{1}{2}(c+d x)]]$

$\text{Sec}[\frac{1}{2}(c+d x)]^2 (1-\text{Tan}[\frac{1}{2}(c+d x)])^{\frac{1}{2}+n} (-1+\text{Tan}[\frac{1}{2}(c+d x)])^{-\frac{3}{2}-n}$

$\text{Tan}[\frac{1}{2}(c+d x)] (1-\text{Tan}[\frac{1}{2}(c+d x)]^2)^{-\frac{3}{2}-n} (-1+\text{Tan}[\frac{1}{2}(c+d x)]^2)^{1+n}$

$(1+\text{Tan}[\frac{1}{2}(c+d x)]^2)\Big) \Big/ \Big(3 \text{AppellF1}[\frac{1}{2}, \frac{3}{2}+n, \frac{1}{2}+n, \frac{3}{2}, \text{Tan}[$

$\frac{1}{2}(c+d x)], -\text{Tan}[\frac{1}{2}(c+d x)]] + (3+2n) \text{AppellF1}[\frac{3}{2}, \frac{5}{2}+n, \frac{1}{2}+$

$n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(c+d x)], -\text{Tan}[\frac{1}{2}(c+d x)]] \text{Tan}[\frac{1}{2}(c+d x)] - (1+2n)$

$\text{HypergeometricPFQ}[\{\frac{3}{4}, \frac{3}{2}+n\}, \{\frac{7}{4}\}, \text{Tan}[\frac{1}{2}(c+d x)]^2] \text{Tan}[\frac{1}{2}(c+d x)]\Big) +$

$\Big(3(-\frac{3}{2}-n) \text{AppellF1}[\frac{1}{2}, \frac{3}{2}+n, \frac{1}{2}+n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(c+d x)], -\text{Tan}[\frac{1}{2}(c+d x)]]$

$\text{Sec}[\frac{1}{2}(c+d x)]^2 (1-\text{Tan}[\frac{1}{2}(c+d x)])^{\frac{1}{2}+n} (-1+\text{Tan}[\frac{1}{2}(c+d x)])^{-\frac{5}{2}-n}$

$(1-\text{Tan}[\frac{1}{2}(c+d x)]^2)^{-\frac{1}{2}-n} (-1+\text{Tan}[\frac{1}{2}(c+d x)]^2)^{1+n} (1+\text{Tan}[\frac{1}{2}(c+d x)]^2)\Big) \Big/$

$\Big(2 \Big(3 \text{AppellF1}[\frac{1}{2}, \frac{3}{2}+n, \frac{1}{2}+n, \frac{3}{2}, \text{Tan}[\frac{1}{2}(c+d x)], -\text{Tan}[\frac{1}{2}(c+d x)]] +$

$(3+2n) \text{AppellF1}[\frac{3}{2}, \frac{5}{2}+n, \frac{1}{2}+n, \frac{5}{2}, \text{Tan}[\frac{1}{2}(c+d x)], -\text{Tan}[\frac{1}{2}(c+d x)]]$

$\text{Tan}[\frac{1}{2}(c+d x)] - (1+2n) \text{HypergeometricPFQ}[$

$$\left\{\frac{3}{4},\ \frac{3}{2}+n\right\},\ \left\{\frac{7}{4}\right\},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\Big]\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\Big)\Big)\ -$$

$$\Bigg(3\ \left(\frac{1}{2}+n\right)\ \text{AppellF1}\left[\frac{1}{2},\ \frac{3}{2}+n,\ \frac{1}{2}+n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right],\ -\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\right]$$

$$\text{Sec}\left[\frac{1}{2}\ (c+d\,x)\right]^2\ \left(1-\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\right)^{-\frac{1}{2}+n}\ \left(-1+\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\right)^{-\frac{3}{2}-n}$$

$$\left(1-\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right)^{-\frac{1}{2}-n}\ \left(-1+\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right)^{1+n}\ \left(1+\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right)\Bigg)\Big/$$

$$\Bigg(2\ \Big(3\ \text{AppellF1}\left[\frac{1}{2},\ \frac{3}{2}+n,\ \frac{1}{2}+n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right],\ -\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\right]+$$

$$(3+2\,n)\ \text{AppellF1}\left[\frac{3}{2},\ \frac{5}{2}+n,\ \frac{1}{2}+n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right],\ -\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\right]$$

$$\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]-(1+2\,n)\ \text{HypergeometricPFQ}\Big[\left\{\frac{3}{4},\ \frac{3}{2}+n\right\},\ \left\{\frac{7}{4}\right\},$$

$$\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\Big]\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\Big)\Bigg)+\Bigg(3\ \Big(\frac{1}{6}\ \left(\frac{3}{2}+n\right)\ \text{AppellF1}\Big[\frac{3}{2},\ \frac{5}{2}+n,$$

$$\frac{1}{2}+n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right],\ -\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\Big]\ \text{Sec}\left[\frac{1}{2}\ (c+d\,x)\right]^2-\frac{1}{6}\ \left(\frac{1}{2}+n\right)$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\ \frac{3}{2}+n\right\},\ \left\{\frac{7}{4}\right\},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right]\ \text{Sec}\left[\frac{1}{2}\ (c+d\,x)\right]^2\Big)$$

$$\left(1-\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\right)^{\frac{1}{2}+n}\ \left(-1+\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\right)^{-\frac{3}{2}-n}\ \left(1-\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right)^{-\frac{1}{2}-n}$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right)^{1+n}\ \left(1+\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right)\Bigg)\Big/$$

$$\Big(3\ \text{AppellF1}\left[\frac{1}{2},\ \frac{3}{2}+n,\ \frac{1}{2}+n,\ \frac{3}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right],\ -\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\right]+$$

$$(3+2\,n)\ \text{AppellF1}\left[\frac{3}{2},\ \frac{5}{2}+n,\ \frac{1}{2}+n,\ \frac{5}{2},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right],\ -\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\right]$$

$$\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]-(1+2\,n)\ \text{HypergeometricPFQ}\Big[\Big\{\frac{3}{4},$$

$$\frac{3}{2}+n\Big\},\ \left\{\frac{7}{4}\right\},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\Big]\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\Big)\ -$$

$$\Big(5\ \text{AppellF1}\left[\frac{1}{4},\ \frac{1}{2}+n,\ 1,\ \frac{5}{4},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\ (c+d\,x)\right]^2\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]\Big)\Big/\Bigg(\sqrt{-1+\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2}\ \Big(-5\ \text{AppellF1}\Big[\frac{1}{4},$$

$$\frac{1}{2}+n,\ 1,\ \frac{5}{4},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\Big]+2\ \Big(2\ \text{AppellF1}\Big[\frac{5}{4},\ \frac{1}{2}+n,$$

$$2,\ \frac{9}{4},\ \text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\ (c+d\,x)\right]^2\Big]-(1+2\,n)\ \text{AppellF1}\Big[\frac{5}{4},$$

$$\frac{3}{2}+n,1,\frac{9}{4},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big]\Big)\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big)\Bigg)-$$

$$\Bigg(10\left(-\frac{1}{5}\,\mathrm{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,2,\frac{9}{4},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{1}{5}\left(\frac{1}{2}+n\right)$$

$$\mathrm{AppellF1}\left[\frac{5}{4},\frac{3}{2}+n,1,\frac{9}{4},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$

$$\left.\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\sqrt{-1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\Bigg)\Big/$$

$$\Bigg(-5\,\mathrm{AppellF1}\left[\frac{1}{4},\frac{1}{2}+n,1,\frac{5}{4},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+$$

$$2\left(2\,\mathrm{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,2,\frac{9}{4},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-\right.$$

$$\left.(1+2n)\,\mathrm{AppellF1}\left[\frac{5}{4},\frac{3}{2}+n,1,\frac{9}{4},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)+\Bigg(10\,\mathrm{AppellF1}\left[\frac{1}{4},\frac{1}{2}+n,1,\frac{5}{4},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\sqrt{-1+\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}$$

$$\Bigg(2\left(2\,\mathrm{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,2,\frac{9}{4},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-\right.$$

$$\left.(1+2n)\,\mathrm{AppellF1}\left[\frac{5}{4},\frac{3}{2}+n,1,\frac{9}{4},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]-5\left(-\frac{1}{5}\,\mathrm{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,2,\frac{9}{4},\right.\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]+$$

$$\frac{1}{5}\left(\frac{1}{2}+n\right)\mathrm{AppellF1}\left[\frac{5}{4},\frac{3}{2}+n,1,\frac{9}{4},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$

$$\left.\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\right)+2\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2$$

$$\Bigg(2\left(-\frac{10}{9}\,\mathrm{AppellF1}\left[\frac{9}{4},\frac{1}{2}+n,3,\frac{13}{4},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{5}{9}\left(\frac{1}{2}+n\right)\mathrm{AppellF1}\left[\frac{9}{4},\frac{3}{2}+n,\right.$$

$$\left.2,\frac{13}{4},\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+dx)\right]^2$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]\right)-(1+2n)\left(-\frac{5}{9}\,\mathrm{AppellF1}\left[\frac{9}{4},\frac{3}{2}+n,2,\frac{13}{4},\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\Big[$$

$$\frac{1}{2}\,(c+d\,x)\Big]+\frac{5}{9}\left(\frac{3}{2}+n\right)\text{AppellF1}\left[\frac{9}{4},\,\frac{5}{2}+n,\,1,\,\frac{13}{4},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

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

$$\Bigg(-5\,\text{AppellF1}\left[\frac{1}{4},\,\frac{1}{2}+n,\,1,\,\frac{5}{4},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+2$$

$$\Bigg(2\,\text{AppellF1}\left[\frac{5}{4},\,\frac{1}{2}+n,\,2,\,\frac{9}{4},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]-$$

$$(1+2\,n)\,\text{AppellF1}\left[\frac{5}{4},\,\frac{3}{2}+n,\,1,\,\frac{9}{4},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$

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

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\,\frac{3}{2}+n,\,\frac{1}{2}+n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]$$

$$\left(1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{\frac{1}{2}+n}\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)^{-\frac{3}{2}-n}\left(1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{-\frac{1}{2}-n}$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{1+n}\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Bigg(\frac{1}{2}\,(3+2\,n)\,\text{AppellF1}\Big[\frac{3}{2},\,\frac{5}{2}+n,$$

$$\frac{1}{2}+n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Big]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2-\frac{1}{2}\,(1+2\,n)$$

$$\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\,\frac{3}{2}+n\right\},\,\left\{\frac{7}{4}\right\},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2+3$$

$$\Bigg(\frac{1}{6}\left(\frac{3}{2}+n\right)\text{AppellF1}\left[\frac{3}{2},\,\frac{5}{2}+n,\,\frac{1}{2}+n,\,\frac{5}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]$$

$$\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2-\frac{1}{6}\left(\frac{1}{2}+n\right)\text{HypergeometricPFQ}\Big[\left\{\frac{3}{4},\,\frac{3}{2}+n\right\},$$

$$\left\{\frac{7}{4}\right\},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Bigg)+(3+2\,n)$$

$$\Bigg(-\frac{3}{10}\left(\frac{1}{2}+n\right)\text{AppellF1}\Big[\frac{5}{2},\,\frac{5}{2}+n,\,\frac{3}{2}+n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right],$$

$$-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Big]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2+\frac{3}{10}\left(\frac{5}{2}+n\right)\text{AppellF1}\Big[\frac{5}{2},\,\frac{7}{2}+n,$$

$$\frac{1}{2}+n,\,\frac{7}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Big]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Bigg)$$

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-\frac{3}{4}\,(1+2\,n)\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Bigg(-\text{HypergeometricPFQ}\Big[$$

$$\left\{\frac{3}{4},\,\frac{3}{2}+n\right\},\,\left\{\frac{7}{4}\right\},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]+\left(1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{-\frac{3}{2}-n}\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(3\,\text{AppellF1}\left[\frac{1}{2},\,\frac{3}{2}+n,\,\frac{1}{2}+n,\,\frac{3}{2},\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right],\,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right]+$$

$$(3+2n)\,\text{AppellF1}\left[\frac{3}{2},\frac{5}{2}+n,\frac{1}{2}+n,\frac{5}{2},\text{Tan}\left[\frac{1}{2}(c+dx)\right],-\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right]$$
$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]-(1+2n)\,\text{HypergeometricPFQ}\left[\left\{\frac{3}{4},\frac{3}{2}+n\right\},\right.$$
$$\left.\left.\left.\left.\left\{\frac{7}{4}\right\},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)^2\right)\right)\Big/$$
$$\left(\sqrt{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\left(-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2+\right.\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^3\right)\right)\right)$$

Problem 230: Result more than twice size of optimal antiderivative.

$$\int (a+a\,\text{Sec}[c+dx])^n\sqrt{\text{Tan}[c+dx]}\,dx$$

Optimal (type 6, 114 leaves, 1 step):

$$\frac{1}{3d}2^{\frac{5}{2}+n}\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}+n,1,\frac{7}{4},-\frac{a-a\,\text{Sec}[c+dx]}{a+a\,\text{Sec}[c+dx]},\frac{a-a\,\text{Sec}[c+dx]}{a+a\,\text{Sec}[c+dx]}\right]$$
$$\left(\frac{1}{1+\text{Sec}[c+dx]}\right)^{\frac{3}{2}+n}(a+a\,\text{Sec}[c+dx])^n\,\text{Tan}[c+dx]^{3/2}$$

Result (type 6, 2079 leaves):

$$\left(7\times 2^{1+n}\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.$$
$$\left.\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]^2\text{Sec}[c+dx]\right)^n(a\,(1+\text{Sec}[c+dx]))^n\,\text{Sin}[c+dx]\,\text{Tan}[c+dx]\right)\Big/$$
$$\left(d\left(21\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.\right.$$
$$6\left(-2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+(1+2n)\right.$$
$$\left.\left.\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)$$
$$\left(\left(7\times 2^{1+n}\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right.\right.$$
$$\left.\text{Cos}[c+dx]\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]^2\text{Sec}[c+dx]\right)^n\sqrt{\text{Tan}[c+dx]}\right)\Big/$$
$$\left(21\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.$$
$$6\left(-2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\right.$$

$$(1+2n)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Bigg)$$

$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)+\Bigg(7\times 2^n\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}[c+dx]\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]^2\text{Sec}[c+dx]\right)^n\sqrt{\text{Tan}[c+dx]}\Bigg)\Bigg/$$

$$\Bigg(21\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+$$

$$6\Bigg(-2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+$$

$$(1+2n)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Bigg)$$

$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)+\Bigg(7\times 2^{1+n}\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]^2\text{Sec}[c+dx]\right)^n\text{Sin}[c+dx]$$

$$\Bigg(-\frac{3}{7}\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{3}{7}\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\Bigg)\sqrt{\text{Tan}[c+dx]}\Bigg)\Bigg/$$

$$\Bigg(21\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+$$

$$6\Bigg(-2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+$$

$$(1+2n)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Bigg)$$

$$\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)-\Bigg(7\times 2^{1+n}\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]^2\text{Sec}[c+dx]\right)^n\text{Sin}[c+dx]$$

$$\Bigg(6\Bigg(-2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+$$

$$(1+2n)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Bigg)$$

$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+21\Bigg(-\frac{3}{7}\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,2,\frac{11}{4},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+$$

$$\frac{3}{7}\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\Bigg)+6\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2$$

$$\Bigg(-2\Bigg(-\frac{14}{11}\text{AppellF1}\left[\frac{11}{4},\frac{1}{2}+n,3,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{7}{11}\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{11}{4},\frac{3}{2}+n,2,\frac{15}{4},\right.$$

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

$$(1+2\,n)\left(-\frac{7}{11}\,\text{AppellF1}\left[\frac{11}{4},\ \frac{3}{2}+n,\ 2,\ \frac{15}{4},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{7}{11}\left(\frac{3}{2}+n\right)\text{AppellF1}\left[\frac{11}{4},\ \frac{5}{2}+n,\ 1,\ \frac{15}{4},\right.$$

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

$$\left.\sqrt{\text{Tan}[c+d\,x]}\right)\Big/\left(21\,\text{AppellF1}\left[\frac{3}{4},\ \frac{1}{2}+n,\ 1,\ \frac{7}{4},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$6\left(-2\,\text{AppellF1}\left[\frac{7}{4},\ \frac{1}{2}+n,\ 2,\ \frac{11}{4},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$(1+2\,n)\ \text{AppellF1}\left[\frac{7}{4},\ \frac{3}{2}+n,\ 1,\ \frac{11}{4},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

$$\left(7\times 2^{1+n}\,n\ \text{AppellF1}\left[\frac{3}{4},\ \frac{1}{2}+n,\ 1,\ \frac{7}{4},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$

$$\left(\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\ \text{Sec}[c+d\,x]\right)^{-1+n}\ \text{Sin}[c+d\,x]\ \sqrt{\text{Tan}[c+d\,x]}$$

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

$$\left.\left.\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\ \text{Sec}[c+d\,x]\ \text{Tan}[c+d\,x]\right)\right)\Big/$$

$$\left(21\,\text{AppellF1}\left[\frac{3}{4},\ \frac{1}{2}+n,\ 1,\ \frac{7}{4},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$6\left(-2\,\text{AppellF1}\left[\frac{7}{4},\ \frac{1}{2}+n,\ 2,\ \frac{11}{4},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$(1+2\,n)\ \text{AppellF1}\left[\frac{7}{4},\ \frac{3}{2}+n,\ 1,\ \frac{11}{4},\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

Problem 231: Result more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sec}[c+d\,x])^n}{\sqrt{\text{Tan}[c+d\,x]}}\,dx$$

Optimal (type 6, 111 leaves, 1 step):

$$\frac{1}{d}2^{\frac{3}{2}+n}\ \text{AppellF1}\left[\frac{1}{4},\ -\frac{1}{2}+n,\ 1,\ \frac{5}{4},\ -\frac{a-a\,\text{Sec}[c+d\,x]}{a+a\,\text{Sec}[c+d\,x]},\ \frac{a-a\,\text{Sec}[c+d\,x]}{a+a\,\text{Sec}[c+d\,x]}\right]$$

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

Result (type 6, 2073 leaves):

$$\left(5\times 2^{1+n}\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}+n,1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\left.\text{Cos}[c+d x]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^n\left(a\,(1+\text{Sec}[c+d x])\right)^n\right)\Big/$$

$$\left(d\left(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}+n,1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.\right.$$

$$2\left(2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}+n,2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(1-2 n)\right.$$

$$\left.\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)$$

$$\left(\left(5\times 2^{n}\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}+n,1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.\right.$$

$$\left.\text{Sec}[c+d x]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^n\right)\Big/$$

$$\left(\left(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}+n,1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.\right.$$

$$2\left(2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}+n,2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$\left.(1-2 n)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$

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

$$\left(5\times 2^{1+n}\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}+n,1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

$$\left.\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^n\text{Sin}[c+d x]\sqrt{\text{Tan}[c+d x]}\right)\Big/$$

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}+n,1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$

$$2\left(2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}+n,2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$\left.(1-2 n)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+\left(5\times 2^{1+n}\,\text{Cos}[c+d x]\left(\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\text{Sec}[c+d x]\right)^n\right.$$

$$\left(-\frac{1}{5}\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}+n,2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{5}\left(-\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

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

$$\left(5\,\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2}+n,1,\frac{5}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-\right.$$

$$2\left(2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}+n,2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$\left.(1-2 n)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)$$

$$\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big) - \Big(5\times 2^{1+n}\,\mathrm{AppellF1}\left[\frac{1}{4}, -\frac{1}{2}+n, 1, \frac{5}{4}, \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\mathrm{Cos}[c+d x]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Sec}[c+d x]\right)^n$$

$$\Big(-2\Big(2\,\mathrm{AppellF1}\left[\frac{5}{4}, -\frac{1}{2}+n, 2, \frac{9}{4}, \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

$$(1-2n)\,\mathrm{AppellF1}\left[\frac{5}{4}, \frac{1}{2}+n, 1, \frac{9}{4}, \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]+5\Big(-\frac{1}{5}\,\mathrm{AppellF1}\left[\frac{5}{4}, -\frac{1}{2}+n, 2, \frac{9}{4},\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$\frac{1}{5}\left(-\frac{1}{2}+n\right)\mathrm{AppellF1}\left[\frac{5}{4}, \frac{1}{2}+n, 1, \frac{9}{4}, \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)-2\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\Big(2\Big(-\frac{10}{9}\,\mathrm{AppellF1}\left[\frac{9}{4}, -\frac{1}{2}+n, 3, \frac{13}{4}, \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{5}{9}\left(-\frac{1}{2}+n\right)\mathrm{AppellF1}\left[\frac{9}{4}, \frac{1}{2}+n, 2, \frac{13}{4},\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)+$$

$$(1-2n)\Big(-\frac{5}{9}\,\mathrm{AppellF1}\left[\frac{9}{4}, \frac{1}{2}+n, 2, \frac{13}{4}, \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{5}{9}\left(\frac{1}{2}+n\right)\mathrm{AppellF1}\left[\frac{9}{4}, \frac{3}{2}+n, 1, \frac{13}{4},\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]\Big)\Big)\Big)$$

$$\sqrt{\mathrm{Tan}[c+d x]}\Big)\Big/\Big(5\,\mathrm{AppellF1}\left[\frac{1}{4}, -\frac{1}{2}+n, 1, \frac{5}{4}, \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$2\Big(2\,\mathrm{AppellF1}\left[\frac{5}{4}, -\frac{1}{2}+n, 2, \frac{9}{4}, \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+$$

$$(1-2n)\,\mathrm{AppellF1}\left[\frac{5}{4}, \frac{1}{2}+n, 1, \frac{9}{4}, \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Big)\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)^2+$$

$$\Big(5\times 2^{1+n}\,n\,\mathrm{AppellF1}\left[\frac{1}{4}, -\frac{1}{2}+n, 1, \frac{5}{4}, \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$

$$\mathrm{Cos}[c+d x]\left(\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Sec}[c+d x]\right)^{-1+n}\sqrt{\mathrm{Tan}[c+d x]}$$

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

$$\mathrm{Cos}\left[\frac{1}{2}(c+d x)\right]^2\mathrm{Sec}[c+d x]\,\mathrm{Tan}[c+d x]\Big)\Big)\Big/$$

$$\Big(5\,\mathrm{AppellF1}\left[\frac{1}{4}, -\frac{1}{2}+n, 1, \frac{5}{4}, \mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]-$$

$$2\left(2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2}+n,2,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+(1-2n)\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2}+n,1,\frac{9}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Big)\Big)\Big)$$

Problem 232: Result more than twice size of optimal antiderivative.

$$\int\frac{(a+a\,\text{Sec}[c+dx])^n}{\text{Tan}[c+dx]^{3/2}}\,dx$$

Optimal (type 6, 112 leaves, 1 step):

$$-\frac{1}{d\sqrt{\text{Tan}[c+dx]}}2^{\frac{1}{2}+n}\,\text{AppellF1}\left[-\frac{1}{4},-\frac{3}{2}+n,1,\frac{3}{4},-\frac{a-a\,\text{Sec}[c+dx]}{a+a\,\text{Sec}[c+dx]},\frac{a-a\,\text{Sec}[c+dx]}{a+a\,\text{Sec}[c+dx]}\right]\left(\frac{1}{1+\text{Sec}[c+dx]}\right)^{-\frac{1}{2}+n}(a+a\,\text{Sec}[c+dx])^n$$

Result (type 6, 5312 leaves):

$$-\left(\left(2^{\frac{1}{2}+n}\,(a\,(1+\text{Sec}[c+dx]))^n\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\right)^n\right.\right.$$

$$\left(-\left(\left(49\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Big/\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\left(-7\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+2\left(2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+(1-2n)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right)\right)+\right.$$

$$\left(33\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+dx)\right]^4\right)\Big/\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\right.$$

$$\left(-11\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+2\left(2\,\text{AppellF1}\left[\frac{11}{4},-\frac{1}{2}+n,2,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+(1-2n)\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2}+n,1,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\right.$$

$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)+7\left(1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{-\frac{1}{2}+n}$$
$$\Big(3\,\text{Hypergeometric2F1}\left[-\frac{1}{4},-\frac{1}{2}+n,\frac{3}{4},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$
$$\text{Hypergeometric2F1}\left[\frac{3}{4},-\frac{1}{2}+n,\frac{7}{4},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)\Big)\Big/$$
$$\left(21\,d\,\sqrt{-\frac{\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}\,\left(-\frac{1}{21\,\sqrt{-\frac{\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]}{-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}}\right.\right.$$
$$2^{\frac{1}{2}+n}\,n\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\right)^{1+n}$$
$$\Big(-\Big(\Big(49\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big/\Big(\Big(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\,\Big(-7\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}+n,1,\frac{7}{4},\right.$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]+2\,\Big(2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,2,\frac{11}{4},\right.$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]+(1-2\,n)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,\right.$$
$$1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)\Big)+$$
$$\Big(33\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]$$
$$\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^4\Big)\Big/\Big(\Big(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)$$
$$\Big(-11\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$
$$2\,\Big(2\,\text{AppellF1}\left[\frac{11}{4},-\frac{1}{2}+n,2,\frac{15}{4},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$
$$(1-2\,n)\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2}+n,1,\frac{15}{4},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2,\right.$$
$$-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)+7\left(1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{-\frac{1}{2}+n}$$
$$\Big(3\,\text{Hypergeometric2F1}\left[-\frac{1}{4},-\frac{1}{2}+n,\frac{3}{4},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]+$$
$$\text{Hypergeometric2F1}\left[\frac{3}{4},-\frac{1}{2}+n,\frac{7}{4},\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\Big)\Big)+$$

$$\frac{1}{21\left(-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{3/2}} 2^{-\frac{1}{2}+n}\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n$$

$$\left(\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2}-\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2}{2\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}\right)$$

$$\left(-\left(\left(49\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big/\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(-7\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}+n,1,\frac{7}{4},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\left(2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,2,\frac{11}{4},\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(1-2n)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,\right.$$

$$\left.\left.\left.\left.1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)+$$

$$\left(33\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$

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

$$\left(-11\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$2\left(2\,\text{AppellF1}\left[\frac{11}{4},-\frac{1}{2}+n,2,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$(1-2n)\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2}+n,1,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$

$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+7\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{1}{2}+n}$$

$$\left(3\,\text{Hypergeometric2F1}\left[-\frac{1}{4},-\frac{1}{2}+n,\frac{3}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$\left.\left.\text{Hypergeometric2F1}\left[\frac{3}{4},-\frac{1}{2}+n,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)-$$

$$\frac{1}{21\sqrt{-\frac{\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}} 2^{\frac{1}{2}+n}\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n$$

$$\left(\left(49\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3\right)\Big/\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right.$$

$$\left(-7\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$2\left(2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$(1-2\,n)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

$$\left(49\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Big/\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right.$$

$$\left(-7\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$2\left(2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$(1-2\,n)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

$$\left(49\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\left(-\frac{3}{7}\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$

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

$$\frac{3}{7}\left(-\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

$$\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(-7\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+2\left(2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+(1-2\,n)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,1,\frac{11}{4},\right.$$

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

$$\left(33\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5\right)\Big/\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right.$$

$$\left(-11\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$2\left(2\,\text{AppellF1}\left[\frac{11}{4},-\frac{1}{2}+n,2,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+\right.$$

$$(1-2\,n)\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2}+n,1,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2,\right.$$

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

$$\left(66\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^3\right)\Big/\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right.$$
$$\left(-11\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$2\left(2\,\text{AppellF1}\left[\frac{11}{4},-\frac{1}{2}+n,2,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$(1-2n)\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2}+n,1,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)+$$
$$\left(33\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4\left(-\frac{7}{11}\text{AppellF1}\left[\frac{11}{4},-\frac{1}{2}+n,2,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\frac{7}{11}\left(-\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{11}{4},\frac{1}{2}+n,1,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/$$
$$\left(\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(-11\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\left(2\,\text{AppellF1}\left[\frac{11}{4},-\frac{1}{2}+n,2,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(1-2n)\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2}+n,1,\frac{15}{4},\right.$$
$$\left.\left.\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)-$$
$$7\left(-\frac{1}{2}+n\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-\frac{3}{2}+n}$$
$$\left(3\,\text{Hypergeometric2F1}\left[-\frac{1}{4},-\frac{1}{2}+n,\frac{3}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$
$$\left.\text{Hypergeometric2F1}\left[\frac{3}{4},-\frac{1}{2}+n,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$
$$\left(49\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\left(2\left(2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(1-2n)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,1,\frac{11}{4},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-7\left(-\frac{3}{7}\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{3}{7}\left(-\frac{1}{2}+n\right)$$

$$\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)+2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\Bigg(2\Bigg(-\frac{14}{11}\text{AppellF1}\left[\frac{11}{4},-\frac{1}{2}+n,3,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{7}{11}\left(-\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{11}{4},\frac{1}{2}+n,\right.$$
$$\left.2,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)+(1-2n)\Bigg(-\frac{7}{11}\text{AppellF1}\left[\frac{11}{4},\frac{1}{2}+n,2,\frac{15}{4},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+$$
$$d x)\Big]+\frac{7}{11}\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{11}{4},\frac{3}{2}+n,1,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg(-7\,\text{AppellF1}\left[\frac{3}{4},-\frac{1}{2}+n,1,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+2\Bigg(2\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,2,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(1-2n)\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2}+n,1,\frac{11}{4},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)^2\Bigg)-$$
$$\Bigg(33\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^4\Bigg(2\Bigg(2\,\text{AppellF1}\left[\frac{11}{4},-\frac{1}{2}+n,2,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+(1-2n)\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2}+n,1,\frac{15}{4},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\Bigg)\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]-11\Bigg(-\frac{7}{11}\text{AppellF1}\left[\frac{11}{4},-\frac{1}{2}+n,2,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$
$$\frac{7}{11}\left(-\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{11}{4},\frac{1}{2}+n,1,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)+$$
$$2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg(2\Bigg(-\frac{22}{15}\text{AppellF1}\left[\frac{15}{4},-\frac{1}{2}+n,3,\frac{19}{4},\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+$$

$$\frac{11}{15}\left(-\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{15}{4},\frac{1}{2}+n,2,\frac{19}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\Bigg)+$$
$$(1-2n)\left(-\frac{11}{15}\text{AppellF1}\left[\frac{15}{4},\frac{1}{2}+n,2,\frac{19}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+\frac{11}{15}\left(\frac{1}{2}+n\right)\text{AppellF1}\left[\frac{15}{4},\frac{3}{2}+n,1,\frac{19}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$
$$\Bigg(\left(1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)\Bigg(-11\,\text{AppellF1}\left[\frac{7}{4},-\frac{1}{2}+n,1,\frac{11}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+2\Bigg(2\,\text{AppellF1}\left[\frac{11}{4},-\frac{1}{2}+n,2,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+(1-2n)\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2}+n,1,\frac{15}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2,-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)^2\Bigg)+$$
$$7\left(1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^{-\frac{1}{2}+n}\Bigg(\text{Hypergeometric2F1}\left[\frac{3}{4},-\frac{1}{2}+n,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]+$$
$$\frac{3}{4}\text{Csc}\left[\frac{1}{2}(c+dx)\right]\text{Sec}\left[\frac{1}{2}(c+dx)\right]\left(\text{Hypergeometric2F1}\left[-\frac{1}{4},-\frac{1}{2}+n,\frac{3}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]-\left(1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^{\frac{1}{2}-n}\right)+$$
$$\frac{3}{4}\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\text{Tan}\left[\frac{1}{2}(c+dx)\right]\left(-\text{Hypergeometric2F1}\left[\frac{3}{4},-\frac{1}{2}+n,\frac{7}{4},\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\left(1-\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right)^{\frac{1}{2}-n}\right)\Bigg)\Bigg)\Bigg)\text{Tan}[c+dx]^{3/2}\Bigg)\Bigg)$$

Problem 233: Result unnecessarily involves imaginary or complex numbers.

$$\int(e\,\text{Cot}[c+dx])^{5/2}(a+a\,\text{Sec}[c+dx])\,dx$$

Optimal (type 4, 320 leaves, 17 steps):

$$-\frac{2\,(e\,\text{Cot}[c+d\,x])^{5/2}\,(a+a\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]}{3\,d}-\frac{1}{3\,d}a\,(e\,\text{Cot}[c+d\,x])^{5/2}\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,2\right]\,\text{Sec}[c+d\,x]\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}\,\text{Tan}[c+d\,x]^2+\frac{a\,\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]\,(e\,\text{Cot}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]^{5/2}}{\sqrt{2}\,d}-\frac{a\,\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]\,(e\,\text{Cot}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]^{5/2}}{\sqrt{2}\,d}+\frac{1}{2\,\sqrt{2}\,d}a\,(e\,\text{Cot}[c+d\,x])^{5/2}\,\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\,\text{Tan}[c+d\,x]^{5/2}-\frac{1}{2\,\sqrt{2}\,d}a\,(e\,\text{Cot}[c+d\,x])^{5/2}\,\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\,\text{Tan}[c+d\,x]^{5/2}$$

Result (type 4, 185 leaves):

$$-\frac{1}{6\,d\,\text{Cot}[c+d\,x]^{5/2}}a\,(e\,\text{Cot}[c+d\,x])^{5/2}\,\text{Sec}[c+d\,x]\,\Big(\sqrt{\text{Cot}[c+d\,x]}\,\Big(4\,(1+\text{Cos}[c+d\,x])\,\text{Cot}[c+d\,x]-3\,\text{ArcSin}[\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\,\sqrt{\text{Sin}[2\,(c+d\,x)]}+3\,\text{Log}\left[\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]+\sqrt{\text{Sin}[2\,(c+d\,x)]}\right]\,\sqrt{\text{Sin}[2\,(c+d\,x)]}\Big)+2\,(-1)^{1/4}\,\sqrt{\text{Csc}[c+d\,x]^2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Cot}[c+d\,x]}\right],-1\right]\,\text{Sin}[2\,(c+d\,x)]\Big)$$

Problem 234: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 346 leaves, 18 steps):

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

Result (type 4, 210 leaves):

$$\frac{1}{2\,d\,\sqrt{\text{Csc}[c+d\,x]^2}}\,a\,e\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\,\text{Sec}[c+d\,x]\\ \left(4\,(-1)^{3/4}\,\sqrt{\text{Cot}[c+d\,x]}\,\,\text{EllipticE}\left[\text{i}\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Cot}[c+d\,x]}\,\right],\,-1\right]-\right.\\ 4\,(-1)^{3/4}\,\sqrt{\text{Cot}[c+d\,x]}\,\,\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Cot}[c+d\,x]}\,\right],\,-1\right]+\\ \sqrt{\text{Csc}[c+d\,x]^2}\,\left(-4\,\text{Cos}[c+d\,x]+\text{ArcSin}[\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\,\sqrt{\text{Sin}[2\,(c+d\,x)]}\,+\right.\\ \left.\left.\text{Log}\left[\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]+\sqrt{\text{Sin}[2\,(c+d\,x)]}\,\right]\,\sqrt{\text{Sin}[2\,(c+d\,x)]}\,\right)\right)$$

Problem 235: Result unnecessarily involves imaginary or complex numbers.

$$\int\sqrt{e\,\text{Cot}[c+d\,x]}\,\,(a+a\,\text{Sec}[c+d\,x])\,\text{d}x$$

Optimal (type 4, 274 leaves, 16 steps):

$$\frac{1}{d}a\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,\,2\right]\,\text{Sec}[c+d\,x]\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}\,-\\ \frac{a\,\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\,\right]\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]}}{\sqrt{2}\,d}+\\ \frac{a\,\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\,\right]\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]}}{\sqrt{2}\,d}-\frac{1}{2\,\sqrt{2}\,d}\\ a\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\,\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\,+\text{Tan}[c+d\,x]\right]\,\sqrt{\text{Tan}[c+d\,x]}\,+\\ \frac{1}{2\,\sqrt{2}\,d}a\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\,\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\,+\text{Tan}[c+d\,x]\right]\,\sqrt{\text{Tan}[c+d\,x]}$$

Result (type 4, 169 leaves):

$$\left(a\,(1+\text{Cos}[c+d\,x])\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\text{Sec}[c+d\,x]\right.\\ \left(4\,(-1)^{1/4}\,\sqrt{\text{Cot}[c+d\,x]}\,\,\text{EllipticF}\left[\text{i}\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Cot}[c+d\,x]}\,\right],\,-1\right]+\right.\\ \sqrt{\text{Csc}[c+d\,x]^2}\,\left(-\text{ArcSin}[\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]+\text{Log}\left[\text{Cos}[c+d\,x]+\right.\right.\\ \left.\left.\left.\left.\text{Sin}[c+d\,x]+\sqrt{\text{Sin}[2\,(c+d\,x)]}\,\right]\right)\,\sqrt{\text{Sin}[2\,(c+d\,x)]}\,\right)\right)\bigg/\left(4\,d\,\sqrt{\text{Csc}[c+d\,x]^2}\right)$$

Problem 236: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{a+a\,\text{Sec}[c+d\,x]}{\sqrt{e\,\text{Cot}[c+d\,x]}}\,\text{d}x$$

Optimal (type 4, 299 leaves, 17 steps):

$$\frac{2\,a\,\text{Sin}[c+d\,x]}{d\,\sqrt{e\,\text{Cot}[c+d\,x]}}-\frac{2\,a\,\text{Cos}[c+d\,x]\,\text{EllipticE}\left[c-\frac{\pi}{4}+d\,x,\,2\right]}{d\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}-\frac{a\,\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]}}+\frac{a\,\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]}}+\frac{a\,\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\,\sqrt{2}\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]}}-\frac{a\,\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\,\sqrt{2}\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]}}$$

Result (type 4, 200 leaves):

$$-\left(\left(a\,\text{Csc}[c+d\,x]\left(-4-\left(4\,(-1)^{3/4}\,\sqrt{\text{Cot}[c+d\,x]}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Cot}[c+d\,x]}\right],\,-1\right]\right)\Big/\left(\sqrt{\text{Csc}[c+d\,x]^2}\right)+\left(4\,(-1)^{3/4}\,\sqrt{\text{Cot}[c+d\,x]}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Cot}[c+d\,x]}\right],\,-1\right]\right)\Big/\left(\sqrt{\text{Csc}[c+d\,x]^2}\right)+\text{ArcSin}[\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\,\sqrt{\text{Sin}[2\,(c+d\,x)]}+\text{Log}\left[\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]+\sqrt{\text{Sin}[2\,(c+d\,x)]}\right]\sqrt{\text{Sin}[2\,(c+d\,x)]}\right)\right)\Big/\left(2\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}\right)\right)$$

Problem 237: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 320 leaves, 17 steps):

$$\frac{2\,\text{Cot}[c+d\,x]\,(3\,a+a\,\text{Sec}[c+d\,x])}{3\,d\,(e\,\text{Cot}[c+d\,x])^{3/2}}-\left(a\,\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,\,2\right]\sqrt{\text{Sin}[2\,c+2\,d\,x]}\right)\Big/\left(3\,d\,(e\,\text{Cot}[c+d\,x])^{3/2}\right)+\frac{a\,\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,d\,(e\,\text{Cot}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]^{3/2}}-\frac{a\,\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,d\,(e\,\text{Cot}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]^{3/2}}+\frac{a\,\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\,\sqrt{2}\,d\,(e\,\text{Cot}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]^{3/2}}-\frac{a\,\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\,\sqrt{2}\,d\,(e\,\text{Cot}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]^{3/2}}$$

Result (type 4, 224 leaves):

$$\frac{1}{12\,d\,\left(e\,\text{Cot}[c+d\,x]\right)^{3/2}\left(-1+\text{Cot}[c+d\,x]^2\right)}$$
$$a\left(1+\text{Cos}[c+d\,x]\right)\text{Cos}\left[2\left(c+d\,x\right)\right]\text{Csc}[c+d\,x]\sqrt{\text{Csc}[c+d\,x]^2}\ \text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$
$$\left(-4\left(-1\right)^{1/4}\text{Cot}[c+d\,x]^{3/2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\left(-1\right)^{1/4}\sqrt{\text{Cot}[c+d\,x]}\right],-1\right]+\sqrt{\text{Csc}[c+d\,x]^2}\right.$$
$$\left(4+12\,\text{Cos}[c+d\,x]+3\,\text{ArcSin}[\text{Cos}[c+d\,x]-\text{Sin}[c+d\,x]]\,\text{Cot}[c+d\,x]\sqrt{\text{Sin}\left[2\left(c+d\,x\right)\right]}-\right.$$
$$\left.\left.3\,\text{Cot}[c+d\,x]\,\text{Log}\left[\text{Cos}[c+d\,x]+\text{Sin}[c+d\,x]+\sqrt{\text{Sin}\left[2\left(c+d\,x\right)\right]}\right]\sqrt{\text{Sin}\left[2\left(c+d\,x\right)\right]}\right)\right)$$

Problem 238: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 357 leaves, 21 steps):

$$-\frac{4\,a^2\left(e\,\text{Cot}[c+d\,x]\right)^{5/2}\text{Tan}[c+d\,x]}{3\,d}-\frac{4\,a^2\left(e\,\text{Cot}[c+d\,x]\right)^{5/2}\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{3\,d}-\frac{1}{3\,d}$$
$$2\,a^2\left(e\,\text{Cot}[c+d\,x]\right)^{5/2}\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,2\right]\text{Sec}[c+d\,x]\sqrt{\text{Sin}[2\,c+2\,d\,x]}\ \text{Tan}[c+d\,x]^2+$$
$$\frac{a^2\,\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]\left(e\,\text{Cot}[c+d\,x]\right)^{5/2}\text{Tan}[c+d\,x]^{5/2}}{\sqrt{2}\,d}-$$
$$\frac{a^2\,\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]\left(e\,\text{Cot}[c+d\,x]\right)^{5/2}\text{Tan}[c+d\,x]^{5/2}}{\sqrt{2}\,d}+\frac{1}{2\sqrt{2}\,d}$$
$$a^2\left(e\,\text{Cot}[c+d\,x]\right)^{5/2}\text{Log}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\text{Tan}[c+d\,x]^{5/2}-$$
$$\frac{1}{2\sqrt{2}\,d}a^2\left(e\,\text{Cot}[c+d\,x]\right)^{5/2}\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\text{Tan}[c+d\,x]^{5/2}$$

Result (type 4, 332 leaves):

$$\left(\left(1+\text{Cos}\left[2\left(\frac{c}{2}+\frac{d x}{2}\right)\right]\right)^2 (e\,\text{Cot}[c+d x])^{5/2}\,\text{Csc}[c+d x]^2\right.$$

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

$$2\left(\frac{1}{4\sqrt{2}}\left(2\,\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Cot}[c+d x]}\right]-2\,\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Cot}[c+d x]}\right]-\right.\right.$$

$$\left.\text{Log}\left[1-\sqrt{2}\sqrt{\text{Cot}[c+d x]}+\text{Cot}[c+d x]\right]+\text{Log}\left[1+\sqrt{2}\sqrt{\text{Cot}[c+d x]}+\text{Cot}[c+d x]\right]\right)+$$

$$\left(2(-1)^{1/4}\,\text{Cot}[c+d x]\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Cot}[c+d x]}\right],-1\right]\right.$$

$$\left.\left.\left.\left.\sqrt{1+\text{Tan}[c+d x]^2}\right)\Big/\left(3\sqrt{1+\text{Cot}[c+d x]^2}\right)\right)\right)\right)\Big/$$

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

$$\left.\left(1+\text{Cot}[c+d x]^2\right)^2\right)$$

Problem 239: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 343 leaves, 21 steps):

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

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

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

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

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

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

Result (type 4, 410 leaves):

$$\Bigg(\left(1+\text{Cos}\left[2\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right]\right)^2\sqrt{\text{Cot}[c+d\,x]}$$

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

$$\Bigg(-\frac{4\sqrt{\text{Cot}[c+d\,x]}}{d}-\frac{1}{d}2\Bigg(-\frac{\text{ArcTan}\left[\frac{-\sqrt{2}+2\sqrt{\text{Cot}[c+d\,x]}}{\sqrt{2}}\right]}{2\sqrt{2}}-\frac{\text{ArcTan}\left[\frac{\sqrt{2}+2\sqrt{\text{Cot}[c+d\,x]}}{\sqrt{2}}\right]}{2\sqrt{2}}+$$

$$\frac{\text{Log}\left[1-\sqrt{2}\sqrt{\text{Cot}[c+d\,x]}+\text{Cot}[c+d\,x]\right]}{4\sqrt{2}}-\frac{\text{Log}\left[1+\sqrt{2}\sqrt{\text{Cot}[c+d\,x]}+\text{Cot}[c+d\,x]\right]}{4\sqrt{2}}-$$

$$\Big(2\,(-1)^{3/4}\sqrt{1-i\,\text{Cot}[c+d\,x]}\sqrt{1+i\,\text{Cot}[c+d\,x]}\,\text{Cot}[c+d\,x]\,\Big(\text{EllipticE}\Big[i\,\text{ArcSinh}\Big[$$

$$(-1)^{1/4}\sqrt{\text{Cot}[c+d\,x]}\Big],-1\Big]-\text{EllipticF}\Big[i\,\text{ArcSinh}\Big[(-1)^{1/4}\sqrt{\text{Cot}[c+d\,x]}\Big],$$

$$-1\Big]\Big)\sqrt{\left(1+\text{Cot}[c+d\,x]^2\right)\text{Tan}[c+d\,x]^2}\Big)\Big/\left(1+\text{Cot}[c+d\,x]^2\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

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

Problem 240: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 311 leaves, 19 steps):

$$\frac{1}{d}2\,a^2\sqrt{e\,\text{Cot}[c+d\,x]}\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,2\right]\text{Sec}[c+d\,x]\sqrt{\text{Sin}[2\,c+2\,d\,x]}-$$

$$\frac{a^2\,\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]\sqrt{e\,\text{Cot}[c+d\,x]}\sqrt{\text{Tan}[c+d\,x]}}{\sqrt{2}\,d}+$$

$$\frac{a^2\,\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]\sqrt{e\,\text{Cot}[c+d\,x]}\sqrt{\text{Tan}[c+d\,x]}}{\sqrt{2}\,d}-\frac{1}{2\sqrt{2}\,d}$$

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

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

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

Result (type 4, 284 leaves):

$$\frac{1}{16\, d\, \sqrt{e\,\mathrm{Cot}[c+d\,x]}\,\sqrt{\mathrm{Csc}[c+d\,x]^2}}$$
$$a^2\, e\, (1+\mathrm{Cos}[c+d\,x])^2 \Bigg(\sqrt{\mathrm{Csc}[c+d\,x]^2}\,\Big(8+2\sqrt{2}\,\mathrm{ArcTan}\big[1-\sqrt{2}\,\sqrt{\mathrm{Cot}[c+d\,x]}\big]\,\sqrt{\mathrm{Cot}[c+d\,x]}\,-$$
$$2\sqrt{2}\,\mathrm{ArcTan}\big[1+\sqrt{2}\,\sqrt{\mathrm{Cot}[c+d\,x]}\big]\,\sqrt{\mathrm{Cot}[c+d\,x]}\,-$$
$$\sqrt{2}\,\sqrt{\mathrm{Cot}[c+d\,x]}\,\mathrm{Log}\big[1-\sqrt{2}\,\sqrt{\mathrm{Cot}[c+d\,x]}+\mathrm{Cot}[c+d\,x]\big]\,+$$
$$\sqrt{2}\,\sqrt{\mathrm{Cot}[c+d\,x]}\,\mathrm{Log}\big[1+\sqrt{2}\,\sqrt{\mathrm{Cot}[c+d\,x]}+\mathrm{Cot}[c+d\,x]\big]\Big)\,+$$
$$16\,(-1)^{1/4}\,\mathrm{Cot}[c+d\,x]^{3/2}\,\mathrm{EllipticF}\Big[i\,\mathrm{ArcSinh}\big[(-1)^{1/4}\sqrt{\mathrm{Cot}[c+d\,x]}\big],-1\Big]\,\sqrt{\mathrm{Sec}[c+d\,x]^2}\Bigg)$$
$$\mathrm{Sec}\Big[\frac{1}{2}\,\mathrm{ArcCot}[\mathrm{Cot}[c+d\,x]]\Big]^4$$

Problem 241: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 339 leaves, 20 steps):

$$\frac{4\,a^2\,\mathrm{Sin}[c+d\,x]}{d\,\sqrt{e\,\mathrm{Cot}[c+d\,x]}}-\frac{4\,a^2\,\mathrm{Cos}[c+d\,x]\,\mathrm{EllipticE}\big[c-\frac{\pi}{4}+d\,x,2\big]}{d\,\sqrt{e\,\mathrm{Cot}[c+d\,x]}\,\sqrt{\mathrm{Sin}[2\,c+2\,d\,x]}}-$$
$$\frac{a^2\,\mathrm{ArcTan}\big[1-\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}\big]}{\sqrt{2}\,d\,\sqrt{e\,\mathrm{Cot}[c+d\,x]}\,\sqrt{\mathrm{Tan}[c+d\,x]}}+\frac{a^2\,\mathrm{ArcTan}\big[1+\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}\big]}{\sqrt{2}\,d\,\sqrt{e\,\mathrm{Cot}[c+d\,x]}\,\sqrt{\mathrm{Tan}[c+d\,x]}}+$$
$$\frac{a^2\,\mathrm{Log}\big[1-\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}+\mathrm{Tan}[c+d\,x]\big]}{2\sqrt{2}\,d\,\sqrt{e\,\mathrm{Cot}[c+d\,x]}\,\sqrt{\mathrm{Tan}[c+d\,x]}}-$$
$$\frac{a^2\,\mathrm{Log}\big[1+\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}+\mathrm{Tan}[c+d\,x]\big]}{2\sqrt{2}\,d\,\sqrt{e\,\mathrm{Cot}[c+d\,x]}\,\sqrt{\mathrm{Tan}[c+d\,x]}}+\frac{2\,a^2\,\mathrm{Tan}[c+d\,x]}{3\,d\,\sqrt{e\,\mathrm{Cot}[c+d\,x]}}$$

Result (type 4, 441 leaves):

$$\left(\left(1+\text{Cos}\left[2\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right]\right)^2\,\text{Cot}[c+d\,x]^{5/2}\,\text{Csc}[c+d\,x]^2\,\text{Sec}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^4\right.$$

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

$$\frac{\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Cot}[c+d\,x]}+\text{Cot}[c+d\,x]\right]}{4\sqrt{2}}+\frac{\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Cot}[c+d\,x]}+\text{Cot}[c+d\,x]\right]}{4\sqrt{2}}-$$

$$\left(2\,(-1)^{3/4}\sqrt{1-i\,\text{Cot}[c+d\,x]}\,\sqrt{1+i\,\text{Cot}[c+d\,x]}\,\text{Cot}[c+d\,x]\,\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\right.\right.\right.\right.$$

$$\left.(-1)^{1/4}\sqrt{\text{Cot}[c+d\,x]}\right],-1\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Cot}[c+d\,x]}\right],\right.$$

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

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

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

$$\sqrt{e\,\text{Cot}[c+d\,x]}$$

$$\left.\left(1+\text{Cot}[c+d\,x]^2\right)^2\right)$$

Problem 242: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 375 leaves, 21 steps):

$$\frac{2 a^2 \text{Cot}[c+d x]}{d (e \text{Cot}[c+d x])^{3/2}}+\frac{4 a^2 \text{Csc}[c+d x]}{3 d (e \text{Cot}[c+d x])^{3/2}}-\left(2 a^2 \text{Cot}[c+d x] \text{Csc}[c+d x] \text{EllipticF}\left[c-\frac{\pi}{4}+d x, 2\right] \sqrt{\text{Sin}[2 c+2 d x]}\right) \Big/ \left(3 d (e \text{Cot}[c+d x])^{3/2}\right)+\frac{a^2 \text{ArcTan}\left[1-\sqrt{2} \sqrt{\text{Tan}[c+d x]}\right]}{\sqrt{2} d (e \text{Cot}[c+d x])^{3/2} \text{Tan}[c+d x]^{3/2}}-\frac{a^2 \text{ArcTan}\left[1+\sqrt{2} \sqrt{\text{Tan}[c+d x]}\right]}{\sqrt{2} d (e \text{Cot}[c+d x])^{3/2} \text{Tan}[c+d x]^{3/2}}+\frac{a^2 \text{Log}\left[1-\sqrt{2} \sqrt{\text{Tan}[c+d x]}+\text{Tan}[c+d x]\right]}{2 \sqrt{2} d (e \text{Cot}[c+d x])^{3/2} \text{Tan}[c+d x]^{3/2}}-\frac{a^2 \text{Log}\left[1+\sqrt{2} \sqrt{\text{Tan}[c+d x]}+\text{Tan}[c+d x]\right]}{2 \sqrt{2} d (e \text{Cot}[c+d x])^{3/2} \text{Tan}[c+d x]^{3/2}}+\frac{2 a^2 \text{Tan}[c+d x]}{5 d (e \text{Cot}[c+d x])^{3/2}}$$

Result (type 4, 346 leaves) :

$$\left(\left(1+\text{Cos}\left[2\left(\frac{c}{2}+\frac{d x}{2}\right)\right]\right)^2 \text{Cot}[c+d x]^{7/2} \text{Csc}[c+d x]^2 \text{Sec}\left[\frac{c}{2}+\frac{d x}{2}\right]^4 (a+a \text{Sec}[c+d x])^2 \left(-\frac{1}{d}2\left(\frac{1}{4 \sqrt{2}}\left(2 \text{ArcTan}\left[1-\sqrt{2} \sqrt{\text{Cot}[c+d x]}\right]-2 \text{ArcTan}\left[1+\sqrt{2} \sqrt{\text{Cot}[c+d x]}\right]-\text{Log}\left[1-\sqrt{2} \sqrt{\text{Cot}[c+d x]}+\text{Cot}[c+d x]\right]+\text{Log}\left[1+\sqrt{2} \sqrt{\text{Cot}[c+d x]}+\text{Cot}[c+d x]\right]\right)+\left(2 (-1)^{1/4} \text{Cot}[c+d x] \text{EllipticF}\left[i \text{ArcSinh}\left[(-1)^{1/4} \sqrt{\text{Cot}[c+d x]}\right],-1\right] \sqrt{1+\text{Tan}[c+d x]^2}\right) \Big/ \left(3 \sqrt{1+\text{Cot}[c+d x]^2}\right)\right)+\frac{2\left(3+5 \text{Cot}[c+d x]^2\left(3+2 \sqrt{1+\text{Tan}[c+d x]^2}\right)\right)}{15 d \text{Cot}[c+d x]^{5/2}}\right)\right) \Big/ \left(4\left(1+\text{Cos}\left[2\left(\frac{c}{2}+\frac{1}{2}(-c+\text{ArcCot}[\text{Cot}[c+d x]])\right)\right]\right)^2 (e \text{Cot}[c+d x])^{3/2}\left(1+\text{Cot}[c+d x]^2\right)^2\right)$$

Problem 243: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 4, 405 leaves, 20 steps) :

$$\frac{2\,\text{Cot}[c+d\,x]\,\left(e\,\text{Cot}[c+d\,x]\right)^{3/2}\left(1-\text{Sec}[c+d\,x]\right)}{5\,a\,d}-\frac{2\left(e\,\text{Cot}[c+d\,x]\right)^{3/2}\left(5-3\,\text{Sec}[c+d\,x]\right)\text{Tan}[c+d\,x]}{5\,a\,d}+$$
$$\left(6\left(e\,\text{Cot}[c+d\,x]\right)^{3/2}\text{EllipticE}\left[c-\frac{\pi}{4}+d\,x,\,2\right]\text{Sin}[c+d\,x]\,\text{Tan}[c+d\,x]\right)\Big/$$
$$\left(5\,a\,d\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}\right)+\frac{\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]\left(e\,\text{Cot}[c+d\,x]\right)^{3/2}\text{Tan}[c+d\,x]^{3/2}}{\sqrt{2}\,a\,d}-$$
$$\frac{\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]\left(e\,\text{Cot}[c+d\,x]\right)^{3/2}\text{Tan}[c+d\,x]^{3/2}}{\sqrt{2}\,a\,d}-\frac{1}{2\sqrt{2}\,a\,d}$$
$$\left(e\,\text{Cot}[c+d\,x]\right)^{3/2}\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\text{Tan}[c+d\,x]^{3/2}+$$
$$\frac{1}{2\sqrt{2}\,a\,d}\left(e\,\text{Cot}[c+d\,x]\right)^{3/2}\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]\text{Tan}[c+d\,x]^{3/2}-$$
$$\frac{6\left(e\,\text{Cot}[c+d\,x]\right)^{3/2}\text{Sin}[c+d\,x]\,\text{Tan}[c+d\,x]^2}{5\,a\,d}$$

Result (type 4, 424 leaves):

$$\Bigg(2\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\left(e\,\text{Cot}[c+d\,x]\right)^{3/2}\text{Csc}[c+d\,x]\,\text{Sec}[c+d\,x]$$
$$\left(1+\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\Bigg(-\frac{1}{d}2\Bigg(-\frac{\text{ArcTan}\left[\frac{-\sqrt{2}+2\sqrt{\text{Cot}[c+d\,x]}}{\sqrt{2}}\right]}{2\sqrt{2}}-\frac{\text{ArcTan}\left[\frac{\sqrt{2}+2\sqrt{\text{Cot}[c+d\,x]}}{\sqrt{2}}\right]}{2\sqrt{2}}+$$
$$\frac{\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Cot}[c+d\,x]}+\text{Cot}[c+d\,x]\right]}{4\sqrt{2}}-\frac{\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Cot}[c+d\,x]}+\text{Cot}[c+d\,x]\right]}{4\sqrt{2}}+$$
$$\Big(3\,(-1)^{3/4}\sqrt{1-i\,\text{Cot}[c+d\,x]}\,\sqrt{1+i\,\text{Cot}[c+d\,x]}\,\text{Cot}[c+d\,x]\,\Big(\text{EllipticE}\Big[i\,\text{ArcSinh}\Big[$$
$$(-1)^{1/4}\sqrt{\text{Cot}[c+d\,x]}\Big],-1\Big]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Cot}[c+d\,x]}\right],\right.$$
$$\left.-1\right]\Big)\sqrt{\left(1+\text{Cot}[c+d\,x]^2\right)\text{Tan}[c+d\,x]^2}\Big)\Big/\left(5\left(1+\text{Cot}[c+d\,x]^2\right)\right)\Bigg)-$$
$$\frac{2\left(\sqrt{\text{Cot}[c+d\,x]}+\frac{1}{5}\text{Cot}[c+d\,x]^{5/2}\left(-1+\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\right)}{d}\Bigg)\Bigg)\Bigg/$$
$$\Big(\left(1+\text{Cos}[c+d\,x]\right)\sqrt{\text{Cot}[c+d\,x]}$$
$$\left(1+\text{Cot}[c+d\,x]^2\right)$$
$$\left(a+a\,\text{Sec}[c+d\,x]\right)\Big)$$

Problem 244: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{\sqrt{e \operatorname{Cot}[c+d x]}}{a+a \operatorname{Sec}[c+d x]} \, dx$$

Optimal (type 4, 325 leaves, 18 steps):

$$\frac{2 \operatorname{Cot}[c+d x] \sqrt{e \operatorname{Cot}[c+d x]} \, (1-\operatorname{Sec}[c+d x])}{3 a d}-\frac{1}{3 a d}\sqrt{e \operatorname{Cot}[c+d x]} \operatorname{EllipticF}\left[c-\frac{\pi}{4}+d x, 2\right] \operatorname{Sec}[c+d x] \sqrt{\operatorname{Sin}[2 c+2 d x]}-\frac{\operatorname{ArcTan}\left[1-\sqrt{2} \sqrt{\operatorname{Tan}[c+d x]}\right] \sqrt{e \operatorname{Cot}[c+d x]} \sqrt{\operatorname{Tan}[c+d x]}}{\sqrt{2} a d}+\frac{\operatorname{ArcTan}\left[1+\sqrt{2} \sqrt{\operatorname{Tan}[c+d x]}\right] \sqrt{e \operatorname{Cot}[c+d x]} \sqrt{\operatorname{Tan}[c+d x]}}{\sqrt{2} a d}-\frac{1}{2 \sqrt{2} a d}\sqrt{e \operatorname{Cot}[c+d x]} \operatorname{Log}\left[1-\sqrt{2} \sqrt{\operatorname{Tan}[c+d x]}+\operatorname{Tan}[c+d x]\right] \sqrt{\operatorname{Tan}[c+d x]}+\frac{1}{2 \sqrt{2} a d}\sqrt{e \operatorname{Cot}[c+d x]} \operatorname{Log}\left[1+\sqrt{2} \sqrt{\operatorname{Tan}[c+d x]}+\operatorname{Tan}[c+d x]\right] \sqrt{\operatorname{Tan}[c+d x]}$$

Result (type 4, 313 leaves):

$$\frac{1}{(1+\operatorname{Cos}[c+d x]) \left(1+\operatorname{Cot}[c+d x]^2\right) (a+a \operatorname{Sec}[c+d x])} 2 \operatorname{Cos}\left[\frac{c}{2}+\frac{d x}{2}\right]^2 \sqrt{\operatorname{Cot}[c+d x]} \sqrt{e \operatorname{Cot}[c+d x]} \operatorname{Csc}[c+d x] \operatorname{Sec}[c+d x] \left(1+\sqrt{1+\operatorname{Tan}[c+d x]^2}\right) \left(-\frac{2 \operatorname{Cot}[c+d x]^{3/2} \left(-1+\sqrt{1+\operatorname{Tan}[c+d x]^2}\right)}{3 d}-\frac{1}{d} 2 \left(\frac{1}{4 \sqrt{2}}\left(-2 \operatorname{ArcTan}\left[1-\sqrt{2} \sqrt{\operatorname{Cot}[c+d x]}\right]+2 \operatorname{ArcTan}\left[1+\sqrt{2} \sqrt{\operatorname{Cot}[c+d x]}\right]+\operatorname{Log}\left[1-\sqrt{2} \sqrt{\operatorname{Cot}[c+d x]}+\operatorname{Cot}[c+d x]\right]-\operatorname{Log}\left[1+\sqrt{2} \sqrt{\operatorname{Cot}[c+d x]}+\operatorname{Cot}[c+d x]\right]\right)+\left((-1)^{1/4} \operatorname{Cot}[c+d x] \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[(-1)^{1/4} \sqrt{\operatorname{Cot}[c+d x]}\right], -1\right] \sqrt{1+\operatorname{Tan}[c+d x]^2}\right) \Big/ \left(3 \sqrt{1+\operatorname{Cot}[c+d x]^2}\right)\right)\right)$$

Problem 245: Result unnecessarily involves imaginary or complex numbers.

$$\int \frac{1}{\sqrt{e \operatorname{Cot}[c+d x]} \, (a+a \operatorname{Sec}[c+d x])} \, dx$$

Optimal (type 4, 347 leaves, 19 steps):

$$\frac{2\,\text{Cot}[c+d\,x]\,(1-\text{Sec}[c+d\,x])}{a\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}}+\frac{2\,\text{Sin}[c+d\,x]}{a\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}}-\frac{2\,\text{Cos}[c+d\,x]\,\text{EllipticE}\left[c-\frac{\pi}{4}+d\,x,2\right]}{a\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}-\frac{\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]}}+\frac{\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]}}+\frac{\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\,\sqrt{2}\,a\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]}}-\frac{\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\,\sqrt{2}\,a\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]}}$$

Result (type 4, 310 leaves):

$$\frac{1}{4\,a\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}}\text{Cot}[c+d\,x]^{3/2}\left(1+\sqrt{\text{Sec}[c+d\,x]^2}\right)\Big(2\,\sqrt{2}\,\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Cot}[c+d\,x]}\right]-2\,\sqrt{2}\,\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Cot}[c+d\,x]}\right]+8\,\sqrt{\text{Cot}[c+d\,x]}+\sqrt{2}\,\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Cot}[c+d\,x]}+\text{Cot}[c+d\,x]\right]-\sqrt{2}\,\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Cot}[c+d\,x]}+\text{Cot}[c+d\,x]\right]+4\,(-1)^{3/4}\,\sqrt{\text{Csc}[c+d\,x]^2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Cot}[c+d\,x]}\right],-1\right]\sqrt{\text{Sec}[c+d\,x]^2}\,\text{Sin}[2\,(c+d\,x)]-4\,(-1)^{3/4}\,\sqrt{\text{Csc}[c+d\,x]^2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\,\sqrt{\text{Cot}[c+d\,x]}\right],-1\right]\sqrt{\text{Sec}[c+d\,x]^2}\,\text{Sin}[2\,(c+d\,x)]\Big)\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]$$

Problem 246: Unable to integrate problem.

$$\int\frac{1}{(e\,\text{Cot}[c+d\,x])^{3/2}\,(a+a\,\text{Sec}[c+d\,x])}\,dx$$

Optimal (type 4, 290 leaves, 17 steps):

$$\frac{\text{Cot}[c+d\,x]\,\text{Csc}[c+d\,x]\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,2\right]\sqrt{\text{Sin}[2\,c+2\,d\,x]}}{a\,d\,(e\,\text{Cot}[c+d\,x])^{3/2}}+\frac{\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a\,d\,(e\,\text{Cot}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]^{3/2}}-\frac{\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a\,d\,(e\,\text{Cot}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]^{3/2}}+\frac{\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\,\sqrt{2}\,a\,d\,(e\,\text{Cot}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]^{3/2}}-\frac{\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\,\sqrt{2}\,a\,d\,(e\,\text{Cot}[c+d\,x])^{3/2}\,\text{Tan}[c+d\,x]^{3/2}}$$

Result (type 8, 27 leaves):

$$\int\frac{1}{(e\,\text{Cot}[c+d\,x])^{3/2}\,(a+a\,\text{Sec}[c+d\,x])}\,dx$$

Problem 247: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{(e\,\text{Cot}[c+d\,x])^{5/2}\,(a+a\,\text{Sec}[c+d\,x])}\,dx$$

Optimal (type 4, 325 leaves, 18 steps):

$$\frac{2\,\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]}{a\,d\,(e\,\text{Cot}[c+d\,x])^{5/2}}-\frac{2\,\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]^2\,\text{EllipticE}\left[c-\frac{\pi}{4}+d\,x,2\right]}{a\,d\,(e\,\text{Cot}[c+d\,x])^{5/2}\sqrt{\text{Sin}[2\,c+2\,d\,x]}}+\frac{\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a\,d\,(e\,\text{Cot}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]^{5/2}}-\frac{\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a\,d\,(e\,\text{Cot}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]^{5/2}}-\frac{\text{Log}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\sqrt{2}\,a\,d\,(e\,\text{Cot}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]^{5/2}}+\frac{\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\sqrt{2}\,a\,d\,(e\,\text{Cot}[c+d\,x])^{5/2}\,\text{Tan}[c+d\,x]^{5/2}}$$

Result (type 4, 324 leaves):

$$\frac{1}{2\sqrt{2}\,a\,d\,e^3}\sqrt{\text{Cot}[c+d\,x]}\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\left(1+\sqrt{\text{Sec}[c+d\,x]^2}\right)\Big(-2\,\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Cot}[c+d\,x]}\right]+2\,\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Cot}[c+d\,x]}\right]-\text{Log}\left[1-\sqrt{2}\sqrt{\text{Cot}[c+d\,x]}+\text{Cot}[c+d\,x]\right]+\text{Log}\left[1+\sqrt{2}\sqrt{\text{Cot}[c+d\,x]}+\text{Cot}[c+d\,x]\right]+4\sqrt{2}\sqrt{\text{Cot}[c+d\,x]}\sqrt{\text{Sec}[c+d\,x]^2}+2\,(-1)^{3/4}\sqrt{2}\sqrt{\text{Csc}[c+d\,x]^2}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Cot}[c+d\,x]}\right],-1\right]\sqrt{\text{Sec}[c+d\,x]^2}\,\text{Sin}[2\,(c+d\,x)]-2\,(-1)^{3/4}\sqrt{2}\sqrt{\text{Csc}[c+d\,x]^2}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Cot}[c+d\,x]}\right],-1\right]\sqrt{\text{Sec}[c+d\,x]^2}\,\text{Sin}[2\,(c+d\,x)]\Big)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

Problem 248: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{(e\,\text{Cot}[c+d\,x])^{7/2}\,(a+a\,\text{Sec}[c+d\,x])}\,dx$$

Optimal (type 4, 335 leaves, 18 steps):

$$-\frac{2\,\text{Cot}[c+d\,x]^3\,(3-\text{Sec}[c+d\,x])}{3\,a\,d\,(e\,\text{Cot}[c+d\,x])^{7/2}}-\frac{\text{Cot}[c+d\,x]^3\,\text{Csc}[c+d\,x]\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,2\right]\sqrt{\text{Sin}[2\,c+2\,d\,x]}}{3\,a\,d\,(e\,\text{Cot}[c+d\,x])^{7/2}}-\frac{\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a\,d\,(e\,\text{Cot}[c+d\,x])^{7/2}\,\text{Tan}[c+d\,x]^{7/2}}+\frac{\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a\,d\,(e\,\text{Cot}[c+d\,x])^{7/2}\,\text{Tan}[c+d\,x]^{7/2}}-\frac{\text{Log}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\sqrt{2}\,a\,d\,(e\,\text{Cot}[c+d\,x])^{7/2}\,\text{Tan}[c+d\,x]^{7/2}}+\frac{\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\sqrt{2}\,a\,d\,(e\,\text{Cot}[c+d\,x])^{7/2}\,\text{Tan}[c+d\,x]^{7/2}}$$

Result (type 4, 313 leaves):

$$\left(2\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\text{Cot}[c+d\,x]^{9/2}\,\text{Csc}[c+d\,x]\right.$$

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

$$2\left(\frac{1}{4\sqrt{2}}\left(-2\,\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Cot}[c+d\,x]}\right]+2\,\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Cot}[c+d\,x]}\right]+\right.\right.$$

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

$$\left((-1)^{1/4}\,\text{Cot}[c+d\,x]\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Cot}[c+d\,x]}\right],-1\right]\right.$$

$$\left.\left.\left.\left.\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\Big/\left(3\sqrt{1+\text{Cot}[c+d\,x]^2}\right)\right)\right)\right)\Big/$$

$$\left((1+\text{Cos}[c+d\,x])\,(e\,\text{Cot}[c+d\,x])^{7/2}\,\left(1+\text{Cot}[c+d\,x]^2\right)\,(a+a\,\text{Sec}[c+d\,x])\right)$$

Problem 249: Result unnecessarily involves imaginary or complex numbers.

$$\int\frac{1}{(e\,\text{Cot}[c+d\,x])^{9/2}\,(a+a\,\text{Sec}[c+d\,x])}\,dx$$

Optimal (type 4, 371 leaves, 19 steps):

$$-\frac{6\,\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]^3}{5\,a\,d\,(e\,\text{Cot}[c+d\,x])^{9/2}}-\frac{2\,\text{Cot}[c+d\,x]^3\,(5-3\,\text{Sec}[c+d\,x])}{15\,a\,d\,(e\,\text{Cot}[c+d\,x])^{9/2}}+$$

$$\frac{6\,\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]^4\,\text{EllipticE}\left[c-\frac{\pi}{4}+d\,x,2\right]}{5\,a\,d\,(e\,\text{Cot}[c+d\,x])^{9/2}\sqrt{\text{Sin}[2\,c+2\,d\,x]}}-$$

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

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

Result (type 4, 425 leaves):

$$\left(2\,\text{Cos}\left[\frac{c}{2}+\frac{d\,x}{2}\right]^2\,\text{Cot}[c+d\,x]^{11/2}\,\text{Csc}[c+d\,x]\,\text{Sec}[c+d\,x]\right.$$

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

$$\frac{\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Cot}[c+d\,x]}+\text{Cot}[c+d\,x]\right]}{4\sqrt{2}}+\frac{\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Cot}[c+d\,x]}+\text{Cot}[c+d\,x]\right]}{4\sqrt{2}}+$$

$$\left(3\,(-1)^{3/4}\sqrt{1-i\,\text{Cot}[c+d\,x]}\,\sqrt{1+i\,\text{Cot}[c+d\,x]}\,\text{Cot}[c+d\,x]\,\left(\text{EllipticE}\left[i\,\text{ArcSinh}\left[\right.\right.\right.\right.$$

$$\left.\left.(-1)^{1/4}\sqrt{\text{Cot}[c+d\,x]}\right],-1\right]-\text{EllipticF}\left[i\,\text{ArcSinh}\left[(-1)^{1/4}\sqrt{\text{Cot}[c+d\,x]}\right],\right.$$

$$\left.\left.\left.\left.-1\right]\right)\sqrt{\left(1+\text{Cot}[c+d\,x]^2\right)\text{Tan}[c+d\,x]^2}\right)\Big/\left(5\left(1+\text{Cot}[c+d\,x]^2\right)\right)\right)-$$

$$\left.\left.\frac{2\left(5+3\left(-1+3\,\text{Cot}[c+d\,x]^2\right)\sqrt{1+\text{Tan}[c+d\,x]^2}\right)}{15\,d\,\text{Cot}[c+d\,x]^{3/2}}\right)\right)\Big/\left(\left(1+\text{Cos}[c+d\,x]\right)\right.$$

$$\left.\left(e\,\text{Cot}[c+d\,x]\right)^{9/2}\left(1+\text{Cot}[c+d\,x]^2\right)\left(a+a\,\text{Sec}[c+d\,x]\right)\right)$$

Problem 250: Unable to integrate problem.

$$\int\frac{1}{\sqrt{e\,\text{Cot}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

Optimal (type 4, 413 leaves, 24 steps):

$$\frac{2\,\text{Cot}[c+d\,x]}{a^2\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}}-\frac{12\,\text{Cos}[c+d\,x]\,\text{Cot}[c+d\,x]}{5\,a^2\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}}-\frac{4\,\text{Cot}[c+d\,x]^3}{5\,a^2\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}}+$$

$$\frac{4\,\text{Cot}[c+d\,x]^2\,\text{Csc}[c+d\,x]}{5\,a^2\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}}-\frac{12\,\text{Cos}[c+d\,x]\,\text{EllipticE}\left[c-\frac{\pi}{4}+d\,x,2\right]}{5\,a^2\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}-$$

$$\frac{\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a^2\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]}}+\frac{\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a^2\,d\,\sqrt{e\,\text{Cot}[c+d\,x]}\,\sqrt{\text{Tan}[c+d\,x]}}+$$

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

Result (type 8, 27 leaves):

$$\int\frac{1}{\sqrt{e\,\text{Cot}[c+d\,x]}\,\left(a+a\,\text{Sec}[c+d\,x]\right)^2}\,dx$$

Problem 251: Unable to integrate problem.

$$\int \frac{1}{(e\,\mathrm{Cot}[c+d\,x])^{3/2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 359 leaves, 22 steps):

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

Result (type 8, 27 leaves):

$$\int \frac{1}{(e\,\mathrm{Cot}[c+d\,x])^{3/2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2}\,dx$$

Problem 252: Unable to integrate problem.

$$\int \frac{1}{(e\,\mathrm{Cot}[c+d\,x])^{5/2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 355 leaves, 22 steps):

$$-\frac{4\,\mathrm{Cot}[c+d\,x]^3}{a^2\,d\,(e\,\mathrm{Cot}[c+d\,x])^{5/2}}+\frac{4\,\mathrm{Cos}[c+d\,x]\,\mathrm{Cot}[c+d\,x]^3}{a^2\,d\,(e\,\mathrm{Cot}[c+d\,x])^{5/2}}+\frac{4\,\mathrm{Cos}[c+d\,x]\,\mathrm{Cot}[c+d\,x]^2\,\mathrm{EllipticE}\left[c-\frac{\pi}{4}+d\,x,\,2\right]}{a^2\,d\,(e\,\mathrm{Cot}[c+d\,x])^{5/2}\,\sqrt{\mathrm{Sin}[2\,c+2\,d\,x]}}+\frac{\mathrm{ArcTan}\left[1-\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a^2\,d\,(e\,\mathrm{Cot}[c+d\,x])^{5/2}\,\mathrm{Tan}[c+d\,x]^{5/2}}-\frac{\mathrm{ArcTan}\left[1+\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a^2\,d\,(e\,\mathrm{Cot}[c+d\,x])^{5/2}\,\mathrm{Tan}[c+d\,x]^{5/2}}-\frac{\mathrm{Log}\left[1-\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}+\mathrm{Tan}[c+d\,x]\right]}{2\,\sqrt{2}\,a^2\,d\,(e\,\mathrm{Cot}[c+d\,x])^{5/2}\,\mathrm{Tan}[c+d\,x]^{5/2}}+\frac{\mathrm{Log}\left[1+\sqrt{2}\,\sqrt{\mathrm{Tan}[c+d\,x]}+\mathrm{Tan}[c+d\,x]\right]}{2\,\sqrt{2}\,a^2\,d\,(e\,\mathrm{Cot}[c+d\,x])^{5/2}\,\mathrm{Tan}[c+d\,x]^{5/2}}$$

Result (type 8, 27 leaves):

$$\int \frac{1}{(e\,\mathrm{Cot}[c+d\,x])^{5/2}\,(a+a\,\mathrm{Sec}[c+d\,x])^2}\,dx$$

Problem 253: Unable to integrate problem.

$$\int \frac{1}{(e \operatorname{Cot}[c+d x])^{7/2} (a+a \operatorname{Sec}[c+d x])^2} \, dx$$

Optimal (type 4, 321 leaves, 20 steps):

$$\frac{2 \operatorname{Cot}[c+d x]^3}{a^2 d (e \operatorname{Cot}[c+d x])^{7/2}} - \left(2 \operatorname{Cot}[c+d x]^3 \operatorname{Csc}[c+d x] \operatorname{EllipticF}\left[c-\frac{\pi}{4}+d x, 2\right] \sqrt{\operatorname{Sin}[2 c+2 d x]}\right) \Big/ \left(a^2 d (e \operatorname{Cot}[c+d x])^{7/2}\right) - \frac{\operatorname{ArcTan}\left[1-\sqrt{2} \sqrt{\operatorname{Tan}[c+d x]}\right]}{\sqrt{2} a^2 d (e \operatorname{Cot}[c+d x])^{7/2} \operatorname{Tan}[c+d x]^{7/2}} + \frac{\operatorname{ArcTan}\left[1+\sqrt{2} \sqrt{\operatorname{Tan}[c+d x]}\right]}{\sqrt{2} a^2 d (e \operatorname{Cot}[c+d x])^{7/2} \operatorname{Tan}[c+d x]^{7/2}} - \frac{\operatorname{Log}\left[1-\sqrt{2} \sqrt{\operatorname{Tan}[c+d x]}+\operatorname{Tan}[c+d x]\right]}{2 \sqrt{2} a^2 d (e \operatorname{Cot}[c+d x])^{7/2} \operatorname{Tan}[c+d x]^{7/2}} + \frac{\operatorname{Log}\left[1+\sqrt{2} \sqrt{\operatorname{Tan}[c+d x]}+\operatorname{Tan}[c+d x]\right]}{2 \sqrt{2} a^2 d (e \operatorname{Cot}[c+d x])^{7/2} \operatorname{Tan}[c+d x]^{7/2}}$$

Result (type 8, 27 leaves):

$$\int \frac{1}{(e \operatorname{Cot}[c+d x])^{7/2} (a+a \operatorname{Sec}[c+d x])^2} \, dx$$

Problem 254: Unable to integrate problem.

$$\int \frac{1}{(e \operatorname{Cot}[c+d x])^{9/2} (a+a \operatorname{Sec}[c+d x])^2} \, dx$$

Optimal (type 4, 357 leaves, 21 steps):

$$\frac{2 \operatorname{Cot}[c+d x]^3}{3 a^2 d (e \operatorname{Cot}[c+d x])^{9/2}} - \frac{4 \operatorname{Cos}[c+d x] \operatorname{Cot}[c+d x]^3}{a^2 d (e \operatorname{Cot}[c+d x])^{9/2}} + \frac{4 \operatorname{Cos}[c+d x] \operatorname{Cot}[c+d x]^4 \operatorname{EllipticE}\left[c-\frac{\pi}{4}+d x, 2\right]}{a^2 d (e \operatorname{Cot}[c+d x])^{9/2} \sqrt{\operatorname{Sin}[2 c+2 d x]}} - \frac{\operatorname{ArcTan}\left[1-\sqrt{2} \sqrt{\operatorname{Tan}[c+d x]}\right]}{\sqrt{2} a^2 d (e \operatorname{Cot}[c+d x])^{9/2} \operatorname{Tan}[c+d x]^{9/2}} + \frac{\operatorname{ArcTan}\left[1+\sqrt{2} \sqrt{\operatorname{Tan}[c+d x]}\right]}{\sqrt{2} a^2 d (e \operatorname{Cot}[c+d x])^{9/2} \operatorname{Tan}[c+d x]^{9/2}} + \frac{\operatorname{Log}\left[1-\sqrt{2} \sqrt{\operatorname{Tan}[c+d x]}+\operatorname{Tan}[c+d x]\right]}{2 \sqrt{2} a^2 d (e \operatorname{Cot}[c+d x])^{9/2} \operatorname{Tan}[c+d x]^{9/2}} - \frac{\operatorname{Log}\left[1+\sqrt{2} \sqrt{\operatorname{Tan}[c+d x]}+\operatorname{Tan}[c+d x]\right]}{2 \sqrt{2} a^2 d (e \operatorname{Cot}[c+d x])^{9/2} \operatorname{Tan}[c+d x]^{9/2}}$$

Result (type 8, 27 leaves):

$$\int \frac{1}{(e \operatorname{Cot}[c+d x])^{9/2} (a+a \operatorname{Sec}[c+d x])^2} \, dx$$

Problem 255: Unable to integrate problem.

$$\int \frac{1}{(e\,\text{Cot}[c+d\,x])^{11/2}\,(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Optimal (type 4, 389 leaves, 22 steps):

$$\frac{2\,\text{Cot}[c+d\,x]^3}{5\,a^2\,d\,(e\,\text{Cot}[c+d\,x])^{11/2}}+\frac{2\,\text{Cot}[c+d\,x]^5}{a^2\,d\,(e\,\text{Cot}[c+d\,x])^{11/2}}-\frac{4\,\text{Cot}[c+d\,x]^4\,\text{Csc}[c+d\,x]}{3\,a^2\,d\,(e\,\text{Cot}[c+d\,x])^{11/2}}+$$
$$\left(2\,\text{Cot}[c+d\,x]^5\,\text{Csc}[c+d\,x]\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,\,2\right]\sqrt{\text{Sin}[2\,c+2\,d\,x]}\right)\Big/$$
$$\left(3\,a^2\,d\,(e\,\text{Cot}[c+d\,x])^{11/2}\right)+\frac{\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a^2\,d\,(e\,\text{Cot}[c+d\,x])^{11/2}\,\text{Tan}[c+d\,x]^{11/2}}-$$
$$\frac{\text{ArcTan}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]}{\sqrt{2}\,a^2\,d\,(e\,\text{Cot}[c+d\,x])^{11/2}\,\text{Tan}[c+d\,x]^{11/2}}+\frac{\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\,\sqrt{2}\,a^2\,d\,(e\,\text{Cot}[c+d\,x])^{11/2}\,\text{Tan}[c+d\,x]^{11/2}}-$$
$$\frac{\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]}{2\,\sqrt{2}\,a^2\,d\,(e\,\text{Cot}[c+d\,x])^{11/2}\,\text{Tan}[c+d\,x]^{11/2}}$$

Result (type 8, 27 leaves):

$$\int \frac{1}{(e\,\text{Cot}[c+d\,x])^{11/2}\,(a+a\,\text{Sec}[c+d\,x])^2}\,dx$$

Problem 265: Result more than twice size of optimal antiderivative.

$$\int (a+b\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]^4\,dx$$

Optimal (type 3, 73 leaves, 4 steps):

$$a\,x+\frac{3\,b\,\text{ArcTanh}[\text{Sin}[c+d\,x]]}{8\,d}-$$
$$\frac{(8\,a+3\,b\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]}{8\,d}+\frac{(4\,a+3\,b\,\text{Sec}[c+d\,x])\,\text{Tan}[c+d\,x]^3}{12\,d}$$

Result (type 3, 230 leaves):

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

Problem 266: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 45 leaves, 3 steps):

$$-a x-\frac{b \operatorname{ArcTanh}[\operatorname{Sin}[c+d x]]}{2 d}+\frac{(2 a+b \operatorname{Sec}[c+d x]) \operatorname{Tan}[c+d x]}{2 d}$$

Result (type 3, 142 leaves):

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

Problem 268: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Cot}[c+d x]^4 (a+b \operatorname{Sec}[c+d x]) \, dx$$

Optimal (type 3, 55 leaves, 3 steps):

$$a x-\frac{\operatorname{Cot}[c+d x]^3 (a+b \operatorname{Sec}[c+d x])}{3 d}+\frac{\operatorname{Cot}[c+d x] (3 a+2 b \operatorname{Sec}[c+d x])}{3 d}$$

Result (type 3, 136 leaves):

$$a x+\frac{5 b \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]}{12 d}+\frac{4 a \operatorname{Cot}[c+d x]}{3 d}-\frac{b \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{24 d}-\frac{a \operatorname{Cot}[c+d x] \operatorname{Csc}[c+d x]^2}{3 d}+\frac{5 b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{12 d}-\frac{b \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{24 d}$$

Problem 269: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x]^6 \, (a+b \,\text{Sec}[c+d x]) \, dx$$

Optimal (type 3, 84 leaves, 4 steps):

$$-a x-\frac{\text{Cot}[c+d x]^5 \,(a+b \,\text{Sec}[c+d x])}{5 d}+\frac{\text{Cot}[c+d x]^3 \,(5 a+4 b \,\text{Sec}[c+d x])}{15 d}-\frac{\text{Cot}[c+d x] \,(15 a+8 b \,\text{Sec}[c+d x])}{15 d}$$

Result (type 3, 219 leaves):

$$-a x-\frac{89 b \,\text{Cot}\left[\frac{1}{2}(c+d x)\right]}{240 d}-\frac{23 a \,\text{Cot}[c+d x]}{15 d}+\frac{31 b \,\text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^2}{480 d}-\frac{b \,\text{Cot}\left[\frac{1}{2}(c+d x)\right] \text{Csc}\left[\frac{1}{2}(c+d x)\right]^4}{160 d}+\frac{11 a \,\text{Cot}[c+d x] \,\text{Csc}[c+d x]^2}{15 d}-\frac{a \,\text{Cot}[c+d x] \,\text{Csc}[c+d x]^4}{5 d}-\frac{89 b \,\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{240 d}+\frac{31 b \,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{480 d}-\frac{b \,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{160 d}$$

Problem 270: Result more than twice size of optimal antiderivative.

$$\int \text{Cot}[c+d x]^8 \, (a+b \,\text{Sec}[c+d x]) \, dx$$

Optimal (type 3, 111 leaves, 5 steps):

$$a x-\frac{\text{Cot}[c+d x]^7 \,(a+b \,\text{Sec}[c+d x])}{7 d}+\frac{\text{Cot}[c+d x]^5 \,(7 a+6 b \,\text{Sec}[c+d x])}{35 d}+\frac{\text{Cot}[c+d x] \,(35 a+16 b \,\text{Sec}[c+d x])}{35 d}-\frac{\text{Cot}[c+d x]^3 \,(35 a+24 b \,\text{Sec}[c+d x])}{105 d}$$

Result (type 3, 300 leaves):

$$a x+\frac{381 b \text{Cot}\left[\frac{1}{2} (c+d x)\right]}{1120 d}+\frac{176 a \text{Cot}[c+d x]}{105 d}-\frac{179 b \text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2}{2240 d}+\frac{b \text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]^4}{70 d}-\frac{b \text{Cot}\left[\frac{1}{2} (c+d x)\right] \text{Csc}\left[\frac{1}{2} (c+d x)\right]^6}{896 d}-\frac{122 a \text{Cot}[c+d x] \text{Csc}[c+d x]^2}{105 d}+\frac{22 a \text{Cot}[c+d x] \text{Csc}[c+d x]^4}{35 d}-\frac{a \text{Cot}[c+d x] \text{Csc}[c+d x]^6}{7 d}+\frac{381 b \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{1120 d}-\frac{179 b \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{2240 d}+\frac{b \text{Sec}\left[\frac{1}{2} (c+d x)\right]^4 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{70 d}-\frac{b \text{Sec}\left[\frac{1}{2} (c+d x)\right]^6 \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{896 d}$$

Problem 278: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 126 leaves, 5 steps):

$$\frac{a^2 \text{Log}[\text{Cos}[c+d x]]}{d}+\frac{a (4 a+3 b) \text{Log}[1-\text{Sec}[c+d x]]}{8 d}+\frac{a (4 a-3 b) \text{Log}[1+\text{Sec}[c+d x]]}{8 d}+\frac{a \text{Cot}[c+d x]^2 (2 a+3 b \text{Sec}[c+d x])}{4 d}-\frac{\text{Cot}[c+d x]^4 \left(a^2+b^2+2 a b \text{Sec}[c+d x]\right)}{4 d}$$

Result (type 3, 385 leaves):

$$\left(\left(7 a^2+10 a b+3 b^2\right) \text{Cos}[c+d x]^2 \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2 (a+b \text{Sec}[c+d x])^2\right)\Big/\left(32 d (b+a \text{Cos}[c+d x])^2\right)+\frac{\left(-a^2-2 a b-b^2\right) \text{Cos}[c+d x]^2 \text{Csc}\left[\frac{1}{2} (c+d x)\right]^4 (a+b \text{Sec}[c+d x])^2}{64 d (b+a \text{Cos}[c+d x])^2}+\left(\left(4 a^2-3 a b\right) \text{Cos}[c+d x]^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]\right] (a+b \text{Sec}[c+d x])^2\right)\Big/\left(4 d (b+a \text{Cos}[c+d x])^2\right)+\left(\left(4 a^2+3 a b\right) \text{Cos}[c+d x]^2 \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right] (a+b \text{Sec}[c+d x])^2\right)\Big/\left(4 d (b+a \text{Cos}[c+d x])^2\right)+\left(\left(7 a^2-10 a b+3 b^2\right) \text{Cos}[c+d x]^2 \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 (a+b \text{Sec}[c+d x])^2\right)\Big/\left(32 d (b+a \text{Cos}[c+d x])^2\right)+\frac{\left(-a^2+2 a b-b^2\right) \text{Cos}[c+d x]^2 \text{Sec}\left[\frac{1}{2} (c+d x)\right]^4 (a+b \text{Sec}[c+d x])^2}{64 d (b+a \text{Cos}[c+d x])^2}$$

Problem 280: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 116 leaves, 10 steps):

$$a^2\,x + \frac{3\,a\,b\,\text{ArcTanh}[\text{Sin}[c + d\,x]]}{4\,d} - \frac{a^2\,\text{Tan}[c + d\,x]}{d} - \frac{3\,a\,b\,\text{Sec}[c + d\,x]\,\text{Tan}[c + d\,x]}{4\,d} + \frac{a^2\,\text{Tan}[c + d\,x]^3}{3\,d} + \frac{a\,b\,\text{Sec}[c + d\,x]\,\text{Tan}[c + d\,x]^3}{2\,d} + \frac{b^2\,\text{Tan}[c + d\,x]^5}{5\,d}$$

Result (type 3, 355 leaves):

$$\frac{1}{960\,d}\text{Sec}[c + d\,x]^5\,\Big(60\,a^2\,c\,\text{Cos}[5\,(c + d\,x)] + 60\,a^2\,d\,x\,\text{Cos}[5\,(c + d\,x)] - 45\,a\,b\,\text{Cos}[5\,(c + d\,x)]\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c + d\,x)\Big] - \text{Sin}\Big[\frac{1}{2}\,(c + d\,x)\Big]\Big] + 45\,a\,b\,\text{Cos}[5\,(c + d\,x)]\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c + d\,x)\Big] + \text{Sin}\Big[\frac{1}{2}\,(c + d\,x)\Big]\Big] + 150\,a\,\text{Cos}[c + d\,x]\,\Big(4\,a\,(c + d\,x) - 3\,b\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c + d\,x)\Big] - \text{Sin}\Big[\frac{1}{2}\,(c + d\,x)\Big]\Big] + 3\,b\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c + d\,x)\Big] + \text{Sin}\Big[\frac{1}{2}\,(c + d\,x)\Big]\Big]\Big) + 75\,a\,\text{Cos}[3\,(c + d\,x)]\,\Big(4\,a\,(c + d\,x) - 3\,b\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c + d\,x)\Big] - \text{Sin}\Big[\frac{1}{2}\,(c + d\,x)\Big]\Big] + 3\,b\,\text{Log}\Big[\text{Cos}\Big[\frac{1}{2}\,(c + d\,x)\Big] + \text{Sin}\Big[\frac{1}{2}\,(c + d\,x)\Big]\Big]\Big) - 80\,a^2\,\text{Sin}[c + d\,x] + 120\,b^2\,\text{Sin}[c + d\,x] - 60\,a\,b\,\text{Sin}[2\,(c + d\,x)] - 160\,a^2\,\text{Sin}[3\,(c + d\,x)] - 60\,b^2\,\text{Sin}[3\,(c + d\,x)] - 150\,a\,b\,\text{Sin}[4\,(c + d\,x)] - 80\,a^2\,\text{Sin}[5\,(c + d\,x)] + 12\,b^2\,\text{Sin}[5\,(c + d\,x)]\Big)$$

Problem 281: Result more than twice size of optimal antiderivative.

$$\int (a + b\,\text{Sec}[c + d\,x])^2\,\text{Tan}[c + d\,x]^2\,dx$$

Optimal (type 3, 70 leaves, 8 steps):

$$-a^2\,x - \frac{a\,b\,\text{ArcTanh}[\text{Sin}[c + d\,x]]}{d} + \frac{a^2\,\text{Tan}[c + d\,x]}{d} + \frac{a\,b\,\text{Sec}[c + d\,x]\,\text{Tan}[c + d\,x]}{d} + \frac{b^2\,\text{Tan}[c + d\,x]^3}{3\,d}$$

Result (type 3, 201 leaves):

$$\frac{1}{12\,d}\,\mathrm{Sec}[c+d\,x]^3\,\Big(-9\,a\,\mathrm{Cos}[c+d\,x]\,\Big(a\,(c+d\,x)-b\,\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]+b\,\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\Big)-3\,a\,\mathrm{Cos}[3\,(c+d\,x)]\,\Big(a\,(c+d\,x)-b\,\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]-\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]+b\,\mathrm{Log}\Big[\mathrm{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]+\mathrm{Sin}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big]\Big)+2\,\big(3\,a^2+b^2+6\,a\,b\,\mathrm{Cos}[c+d\,x]+(3\,a^2-b^2)\,\mathrm{Cos}[2\,(c+d\,x)]\big)\,\mathrm{Sin}[c+d\,x]\Big)$$

Problem 286: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Tan}[c+d\,x]^9}{a+b\,\mathrm{Sec}[c+d\,x]}\,dx$$

Optimal (type 3, 250 leaves, 3 steps):

$$-\frac{\mathrm{Log}[\mathrm{Cos}[c+d\,x]]}{a\,d}-\frac{(a^2-b^2)^4\,\mathrm{Log}[a+b\,\mathrm{Sec}[c+d\,x]]}{a\,b^8\,d}+\frac{(a^6-4\,a^4\,b^2+6\,a^2\,b^4-4\,b^6)\,\mathrm{Sec}[c+d\,x]}{b^7\,d}-\frac{a\,(a^4-4\,a^2\,b^2+6\,b^4)\,\mathrm{Sec}[c+d\,x]^2}{2\,b^6\,d}+\frac{(a^4-4\,a^2\,b^2+6\,b^4)\,\mathrm{Sec}[c+d\,x]^3}{3\,b^5\,d}-\frac{a\,(a^2-4\,b^2)\,\mathrm{Sec}[c+d\,x]^4}{4\,b^4\,d}+\frac{(a^2-4\,b^2)\,\mathrm{Sec}[c+d\,x]^5}{5\,b^3\,d}-\frac{a\,\mathrm{Sec}[c+d\,x]^6}{6\,b^2\,d}+\frac{\mathrm{Sec}[c+d\,x]^7}{7\,b\,d}$$

Result (type 3, 520 leaves):

$$\big((a^7-4\,a^5\,b^2+6\,a^3\,b^4-4\,a\,b^6)\,(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Log}[\mathrm{Cos}[c+d\,x]]\,\mathrm{Sec}[c+d\,x]\big)\Big/\big(b^8\,d\,(a+b\,\mathrm{Sec}[c+d\,x])\big)+\big((-a^8+4\,a^6\,b^2-6\,a^4\,b^4+4\,a^2\,b^6-b^8)\,(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Log}[b+a\,\mathrm{Cos}[c+d\,x]]\,\mathrm{Sec}[c+d\,x]\big)\Big/\big(a\,b^8\,d\,(a+b\,\mathrm{Sec}[c+d\,x])\big)-\frac{(-a^2+2\,b^2)\,(a^4-2\,a^2\,b^2+2\,b^4)\,(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]^2}{b^7\,d\,(a+b\,\mathrm{Sec}[c+d\,x])}-\frac{a\,(a^4-4\,a^2\,b^2+6\,b^4)\,(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]^3}{2\,b^6\,d\,(a+b\,\mathrm{Sec}[c+d\,x])}+\frac{(a^4-4\,a^2\,b^2+6\,b^4)\,(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]^4}{3\,b^5\,d\,(a+b\,\mathrm{Sec}[c+d\,x])}+\frac{a\,(-a+2\,b)\,(a+2\,b)\,(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]^5}{4\,b^4\,d\,(a+b\,\mathrm{Sec}[c+d\,x])}-\frac{(-a+2\,b)\,(a+2\,b)\,(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]^6}{5\,b^3\,d\,(a+b\,\mathrm{Sec}[c+d\,x])}-\frac{a\,(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]^7}{6\,b^2\,d\,(a+b\,\mathrm{Sec}[c+d\,x])}+\frac{(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]^8}{7\,b\,d\,(a+b\,\mathrm{Sec}[c+d\,x])}$$

Problem 287: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[c+d x]^7}{a+b\,\text{Sec}[c+d x]}\,dx$$

Optimal (type 3, 170 leaves, 3 steps):

$$\frac{\text{Log}[\text{Cos}[c+d x]]}{a d}-\frac{\left(a^2-b^2\right)^3 \text{Log}[a+b\,\text{Sec}[c+d x]]}{a b^6 d}+\frac{\left(a^4-3 a^2 b^2+3 b^4\right) \text{Sec}[c+d x]}{b^5 d}-\frac{a \left(a^2-3 b^2\right) \text{Sec}[c+d x]^2}{2 b^4 d}+\frac{\left(a^2-3 b^2\right) \text{Sec}[c+d x]^3}{3 b^3 d}-\frac{a\,\text{Sec}[c+d x]^4}{4 b^2 d}+\frac{\text{Sec}[c+d x]^5}{5 b d}$$

Result (type 3, 371 leaves):

$$\left(\left(a^5-3 a^3 b^2+3 a b^4\right) (b+a\,\text{Cos}[c+d x])\,\text{Log}[\text{Cos}[c+d x]]\,\text{Sec}[c+d x]\right) \Big/ \left(b^6 d\,(a+b\,\text{Sec}[c+d x])\right)+\left(\left(-a^6+3 a^4 b^2-3 a^2 b^4+b^6\right) (b+a\,\text{Cos}[c+d x])\,\text{Log}[b+a\,\text{Cos}[c+d x]]\,\text{Sec}[c+d x]\right) \Big/ \left(a b^6 d\,(a+b\,\text{Sec}[c+d x])\right)+\frac{\left(a^4-3 a^2 b^2+3 b^4\right) (b+a\,\text{Cos}[c+d x])\,\text{Sec}[c+d x]^2}{b^5 d\,(a+b\,\text{Sec}[c+d x])}+\frac{a \left(-a^2+3 b^2\right) (b+a\,\text{Cos}[c+d x])\,\text{Sec}[c+d x]^3}{2 b^4 d\,(a+b\,\text{Sec}[c+d x])}+\frac{\left(a^2-3 b^2\right) (b+a\,\text{Cos}[c+d x])\,\text{Sec}[c+d x]^4}{3 b^3 d\,(a+b\,\text{Sec}[c+d x])}-\frac{a\,(b+a\,\text{Cos}[c+d x])\,\text{Sec}[c+d x]^5}{4 b^2 d\,(a+b\,\text{Sec}[c+d x])}+\frac{(b+a\,\text{Cos}[c+d x])\,\text{Sec}[c+d x]^6}{5 b d\,(a+b\,\text{Sec}[c+d x])}$$

Problem 293: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 234 leaves, 3 steps):

$$\frac{\text{Log}[\text{Cos}[c+d x]]}{a d}+\frac{\left(8 a^2+21 a b+15 b^2\right) \text{Log}[1-\text{Sec}[c+d x]]}{16 (a+b)^3 d}+\frac{\left(8 a^2-21 a b+15 b^2\right) \text{Log}[1+\text{Sec}[c+d x]]}{16 (a-b)^3 d}-\frac{b^6\,\text{Log}[a+b\,\text{Sec}[c+d x]]}{a \left(a^2-b^2\right)^3 d}-\frac{1}{16 (a+b) d\,(1-\text{Sec}[c+d x])^2}-\frac{5 a+7 b}{16 (a+b)^2 d\,(1-\text{Sec}[c+d x])}-\frac{1}{16 (a-b) d\,(1+\text{Sec}[c+d x])^2}-\frac{5 a-7 b}{16 (a-b)^2 d\,(1+\text{Sec}[c+d x])}$$

Result (type 3, 625 leaves):

$$\frac{2\,i\,(a^5-3a^3b^2+3ab^4)\,(c+dx)\,(b+a\,\text{Cos}[c+dx])\,\text{Sec}[c+dx]}{(a-b)^3\,(a+b)^3\,d\,(a+b\,\text{Sec}[c+dx])}-$$
$$\left(i\,(-8a^2+21ab-15b^2)\,\text{ArcTan}[\text{Tan}[c+dx]]\,(b+a\,\text{Cos}[c+dx])\,\text{Sec}[c+dx]\right)\Big/$$
$$\left(8\,(-a+b)^3\,d\,(a+b\,\text{Sec}[c+dx])\right)-$$
$$\left(i\,(8a^2+21ab+15b^2)\,\text{ArcTan}[\text{Tan}[c+dx]]\,(b+a\,\text{Cos}[c+dx])\,\text{Sec}[c+dx]\right)\Big/$$
$$\left(8\,(a+b)^3\,d\,(a+b\,\text{Sec}[c+dx])\right)+\frac{(7a+9b)\,(b+a\,\text{Cos}[c+dx])\,\text{Csc}\left[\frac{1}{2}(c+dx)\right]^2\,\text{Sec}[c+dx]}{32\,(a+b)^2\,d\,(a+b\,\text{Sec}[c+dx])}-$$
$$\frac{(b+a\,\text{Cos}[c+dx])\,\text{Csc}\left[\frac{1}{2}(c+dx)\right]^4\,\text{Sec}[c+dx]}{64\,(a+b)\,d\,(a+b\,\text{Sec}[c+dx])}+$$
$$\left((-8a^2+21ab-15b^2)\,(b+a\,\text{Cos}[c+dx])\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]^2\right]\,\text{Sec}[c+dx]\right)\Big/$$
$$\left(16\,(-a+b)^3\,d\,(a+b\,\text{Sec}[c+dx])\right)+\frac{b^6\,(b+a\,\text{Cos}[c+dx])\,\text{Log}[b+a\,\text{Cos}[c+dx]]\,\text{Sec}[c+dx]}{a\,(-a^2+b^2)^3\,d\,(a+b\,\text{Sec}[c+dx])}+$$
$$\left((8a^2+21ab+15b^2)\,(b+a\,\text{Cos}[c+dx])\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(c+dx)\right]^2\right]\,\text{Sec}[c+dx]\right)\Big/$$
$$\left(16\,(a+b)^3\,d\,(a+b\,\text{Sec}[c+dx])\right)+\frac{(7a-9b)\,(b+a\,\text{Cos}[c+dx])\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\,\text{Sec}[c+dx]}{32\,(-a+b)^2\,d\,(a+b\,\text{Sec}[c+dx])}+$$
$$\frac{(b+a\,\text{Cos}[c+dx])\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^4\,\text{Sec}[c+dx]}{64\,(-a+b)\,d\,(a+b\,\text{Sec}[c+dx])}$$

Problem 294: Result more than twice size of optimal antiderivative.

$$\int\frac{\text{Tan}[c+dx]^6}{a+b\,\text{Sec}[c+dx]}\,dx$$

Optimal (type 3, 198 leaves, 15 steps):

$$-\frac{x}{a}+\frac{(8a^4-20a^2b^2+15b^4)\,\text{ArcTanh}[\text{Sin}[c+dx]]}{8\,b^5\,d}-$$
$$\frac{2\,(a-b)^{5/2}\,(a+b)^{5/2}\,\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a+b}}\right]}{a\,b^5\,d}-\frac{a\,(a^2-2b^2)\,\text{Tan}[c+dx]}{b^4\,d}+$$
$$\frac{(4a^2-7b^2)\,\text{Sec}[c+dx]\,\text{Tan}[c+dx]}{8\,b^3\,d}-\frac{a\,\text{Tan}[c+dx]^3}{3\,b^2\,d}+\frac{\text{Sec}[c+dx]\,\text{Tan}[c+dx]^3}{4\,b\,d}$$

Result (type 3, 907 leaves):

$$-\frac{(c+d x)\ (b+a \operatorname{Cos}[c+d x])\ \operatorname{Sec}[c+d x]}{a\, d\ (a+b \operatorname{Sec}[c+d x])}-$$

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

$$\left(a\, b^5 \sqrt{a^2-b^2}\ d\ (a+b \operatorname{Sec}[c+d x])\right)+\left(\left(-8 a^4+20 a^2 b^2-15 b^4\right)\ (b+a \operatorname{Cos}[c+d x])\right.$$

$$\left.\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}\ (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]\right] \operatorname{Sec}[c+d x]\right)\Big/\ \left(8 b^5 d\ (a+b \operatorname{Sec}[c+d x])\right)+$$

$$\left(\left(8 a^4-20 a^2 b^2+15 b^4\right)\ (b+a \operatorname{Cos}[c+d x])\ \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}\ (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]\right]\right.$$

$$\left.\operatorname{Sec}[c+d x]\right)\Big/\ \left(8 b^5 d\ (a+b \operatorname{Sec}[c+d x])\right)+$$

$$\frac{(b+a \operatorname{Cos}[c+d x])\ \operatorname{Sec}[c+d x]}{16 b\, d\ (a+b \operatorname{Sec}[c+d x])\ \left(\operatorname{Cos}\left[\frac{1}{2}\ (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]\right)^4}+$$

$$\frac{\left(12 a^2-4 a b-27 b^2\right)\ (b+a \operatorname{Cos}[c+d x])\ \operatorname{Sec}[c+d x]}{48 b^3 d\ (a+b \operatorname{Sec}[c+d x])\ \left(\operatorname{Cos}\left[\frac{1}{2}\ (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]\right)^2}-$$

$$\frac{a\ (b+a \operatorname{Cos}[c+d x])\ \operatorname{Sec}[c+d x] \operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]}{6 b^2 d\ (a+b \operatorname{Sec}[c+d x])\ \left(\operatorname{Cos}\left[\frac{1}{2}\ (c+d x)\right]-\operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]\right)^3}-$$

$$\frac{(b+a \operatorname{Cos}[c+d x])\ \operatorname{Sec}[c+d x]}{16 b\, d\ (a+b \operatorname{Sec}[c+d x])\ \left(\operatorname{Cos}\left[\frac{1}{2}\ (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]\right)^4}-$$

$$\frac{a\ (b+a \operatorname{Cos}[c+d x])\ \operatorname{Sec}[c+d x] \operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]}{6 b^2 d\ (a+b \operatorname{Sec}[c+d x])\ \left(\operatorname{Cos}\left[\frac{1}{2}\ (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]\right)^3}+$$

$$\frac{\left(-12 a^2+4 a b+27 b^2\right)\ (b+a \operatorname{Cos}[c+d x])\ \operatorname{Sec}[c+d x]}{48 b^3 d\ (a+b \operatorname{Sec}[c+d x])\ \left(\operatorname{Cos}\left[\frac{1}{2}\ (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]\right)^2}+$$

$$\left((b+a \operatorname{Cos}[c+d x])\ \operatorname{Sec}[c+d x]\ \left(-3 a^3 \operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]+7 a b^2 \operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]\right)\right)\Big/$$

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

$$\left((b+a \operatorname{Cos}[c+d x])\ \operatorname{Sec}[c+d x]\ \left(-3 a^3 \operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]+7 a b^2 \operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]\right)\right)\Big/$$

$$\left(3 b^4 d\ (a+b \operatorname{Sec}[c+d x])\ \left(\operatorname{Cos}\left[\frac{1}{2}\ (c+d x)\right]+\operatorname{Sin}\left[\frac{1}{2}\ (c+d x)\right]\right)\right)$$

Problem 295: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 126 leaves, 6 steps):

$$\frac{x}{a}+\frac{\left(2 a^2-3 b^2\right) \text{ArcTanh}[\text{Sin}[c+d x]]}{2 b^3 d}-\frac{2 (a-b)^{3/2} (a+b)^{3/2} \text{ArcTanh}\left[\frac{\sqrt{a-b} \text{ Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a+b}}\right]}{a b^3 d}-\frac{a \text{Tan}[c+d x]}{b^2 d}+\frac{\text{Sec}[c+d x] \text{Tan}[c+d x]}{2 b d}$$

Result (type 3, 287 leaves):

$$\left((b+a \text{Cos}[c+d x]) \text{Sec}[c+d x] \left(\frac{4 c}{a}+\frac{4 d x}{a}+\frac{8 \left(a^2-b^2\right)^{3/2} \text{ArcTanh}\left[\frac{(-a+b) \text{Tan}\left[\frac{1}{2} (c+d x)\right]}{\sqrt{a^2-b^2}}\right]}{a b^3}-\frac{4 a^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]}{b^3}+\frac{6 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]}{b}+\frac{4 a^2 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]}{b^3}-\frac{6 \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right]}{b}+\frac{1}{b \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]-\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}-\frac{1}{b \left(\text{Cos}\left[\frac{1}{2} (c+d x)\right]+\text{Sin}\left[\frac{1}{2} (c+d x)\right]\right)^2}-\frac{4 a \text{Tan}[c+d x]}{b^2}\right)\right)\Big/ (4 d (a+b \text{Sec}[c+d x]))$$

Problem 298: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 177 leaves, 15 steps):

$$\frac{x}{a}-\frac{2 b^5 \text{ArcTanh}\left[\frac{\sqrt{a^2-b^2} \text{ Tan}\left[\frac{1}{2} (c+d x)\right]}{a+b}\right]}{a \left(a^2-b^2\right)^{5/2} d}+\frac{a \left(a^2-2 b^2\right) \text{Cot}[c+d x]}{\left(a^2-b^2\right)^2 d}-\frac{a \text{Cot}[c+d x]^3}{3 \left(a^2-b^2\right) d}-\frac{b \left(a^2-2 b^2\right) \text{Csc}[c+d x]}{\left(a^2-b^2\right)^2 d}+\frac{b \text{Csc}[c+d x]^3}{3 \left(a^2-b^2\right) d}$$

Result (type 3, 416 leaves):

$$\frac{(c+d x)\,(b+a \operatorname{Cos}[c+d x])\operatorname{Sec}[c+d x]}{a\, d\,(a+b \operatorname{Sec}[c+d x])}+$$

$$\frac{2\, b^5 \operatorname{ArcTanh}\left[\frac{(-a+b) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{\sqrt{a^2-b^2}}\right](b+a \operatorname{Cos}[c+d x]) \operatorname{Sec}[c+d x]}{a \sqrt{a^2-b^2}\left(-a^2+b^2\right)^2 d\,(a+b \operatorname{Sec}[c+d x])}+$$

$$\left(\left(8\, a \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]+11\, b \operatorname{Cos}\left[\frac{1}{2}(c+d x)\right]\right)(b+a \operatorname{Cos}[c+d x]) \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right] \operatorname{Sec}[c+d x]\right) \Big/ \left(12\,(a+b)^2 d\,(a+b \operatorname{Sec}[c+d x])\right)-$$

$$\frac{(b+a \operatorname{Cos}[c+d x]) \operatorname{Cot}\left[\frac{1}{2}(c+d x)\right] \operatorname{Csc}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Sec}[c+d x]}{24\,(a+b)\, d\,(a+b \operatorname{Sec}[c+d x])}+$$

$$\left((b+a \operatorname{Cos}[c+d x]) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right] \operatorname{Sec}[c+d x]\left(-8\, a \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]+11\, b \operatorname{Sin}\left[\frac{1}{2}(c+d x)\right]\right)\right) \Big/ \left(12\,(-a+b)^2 d\,(a+b \operatorname{Sec}[c+d x])\right)-$$

$$\frac{(b+a \operatorname{Cos}[c+d x]) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Sec}[c+d x] \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{24\,(-a+b)\, d\,(a+b \operatorname{Sec}[c+d x])}$$

Problem 299: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Tan}[c+d x]^9}{(a+b \operatorname{Sec}[c+d x])^2}\, dx$$

Optimal (type 3, 255 leaves, 3 steps):

$$-\frac{\operatorname{Log}[\operatorname{Cos}[c+d x]]}{a^2 d}+\frac{\left(a^2-b^2\right)^3\left(7 a^2+b^2\right) \operatorname{Log}[a+b \operatorname{Sec}[c+d x]]}{a^2 b^8 d}-\frac{2 a\left(3 a^4-8 a^2 b^2+6 b^4\right) \operatorname{Sec}[c+d x]}{b^7 d}+\frac{\left(5 a^4-12 a^2 b^2+6 b^4\right) \operatorname{Sec}[c+d x]^2}{2 b^6 d}-\frac{4 a\left(a^2-2 b^2\right) \operatorname{Sec}[c+d x]^3}{3 b^5 d}+\frac{\left(3 a^2-4 b^2\right) \operatorname{Sec}[c+d x]^4}{4 b^4 d}-\frac{2 a \operatorname{Sec}[c+d x]^5}{5 b^3 d}+\frac{\operatorname{Sec}[c+d x]^6}{6 b^2 d}+\frac{\left(a^2-b^2\right)^4}{a b^8 d\,(a+b \operatorname{Sec}[c+d x])}$$

Result (type 3, 528 leaves):

$$-\frac{(-a+b)^4 (a+b)^4 (b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]^2}{a^2 b^7 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2}+$$
$$\left((-7 a^6+20 a^4 b^2-18 a^2 b^4+4 b^6)\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Log}[\mathrm{Cos}[c+d\,x]]\,\mathrm{Sec}[c+d\,x]^2\right)\Big/$$
$$\left(b^8 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2\right)+$$
$$\left((7 a^8-20 a^6 b^2+18 a^4 b^4-4 a^2 b^6-b^8)\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Log}[b+a\,\mathrm{Cos}[c+d\,x]]\,\mathrm{Sec}[c+d\,x]^2\right)\Big/$$
$$\left(a^2 b^8 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2\right)-\frac{2 a\,(3 a^4-8 a^2 b^2+6 b^4)\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c+d\,x]^3}{b^7 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2}+$$
$$\frac{(5 a^4-12 a^2 b^2+6 b^4)\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c+d\,x]^4}{2 b^6 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2}+$$
$$\frac{4 a\,(-a^2+2 b^2)\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c+d\,x]^5}{3 b^5 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2}+\frac{(3 a^2-4 b^2)\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c+d\,x]^6}{4 b^4 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2}-$$
$$\frac{2 a\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c+d\,x]^7}{5 b^3 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2}+\frac{(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c+d\,x]^8}{6 b^2 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2}$$

Problem 300: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Tan}[c+d\,x]^7}{(a+b\,\mathrm{Sec}[c+d\,x])^2}\,dx$$

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

$$\frac{\mathrm{Log}[\mathrm{Cos}[c+d\,x]]}{a^2 d}+\frac{(a^2-b^2)^2\,(5 a^2+b^2)\,\mathrm{Log}[a+b\,\mathrm{Sec}[c+d\,x]]}{a^2 b^6 d}-\frac{2 a\,(2 a^2-3 b^2)\,\mathrm{Sec}[c+d\,x]}{b^5 d}+$$
$$\frac{3\,(a^2-b^2)\,\mathrm{Sec}[c+d\,x]^2}{2 b^4 d}-\frac{2 a\,\mathrm{Sec}[c+d\,x]^3}{3 b^3 d}+\frac{\mathrm{Sec}[c+d\,x]^4}{4 b^2 d}+\frac{(a^2-b^2)^3}{a b^6 d\,(a+b\,\mathrm{Sec}[c+d\,x])}$$

Result (type 3, 383 leaves):

$$\frac{(-a+b)^3 (a+b)^3 (b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]^2}{a^2 b^5 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2}+$$
$$\left((-5 a^4+9 a^2 b^2-3 b^4)\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Log}[\mathrm{Cos}[c+d\,x]]\,\mathrm{Sec}[c+d\,x]^2\right)\Big/$$
$$\left(b^6 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2\right)+$$
$$\left((5 a^6-9 a^4 b^2+3 a^2 b^4+b^6)\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Log}[b+a\,\mathrm{Cos}[c+d\,x]]\,\mathrm{Sec}[c+d\,x]^2\right)\Big/$$
$$\left(a^2 b^6 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2\right)+\frac{2 a\,(-2 a^2+3 b^2)\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c+d\,x]^3}{b^5 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2}-$$
$$\frac{3\,(-a+b)\,(a+b)\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c+d\,x]^4}{2 b^4 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2}-$$
$$\frac{2 a\,(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c+d\,x]^5}{3 b^3 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2}+\frac{(b+a\,\mathrm{Cos}[c+d\,x])^2\,\mathrm{Sec}[c+d\,x]^6}{4 b^2 d\,(a+b\,\mathrm{Sec}[c+d\,x])^2}$$

Problem 305: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 197 leaves, 3 steps):

$$-\frac{\text{Log}[\text{Cos}[c+d\,x]]}{a^2\,d}-\frac{(a+2\,b)\,\text{Log}[1-\text{Sec}[c+d\,x]]}{2\,(a+b)^3\,d}-\frac{(a-2\,b)\,\text{Log}[1+\text{Sec}[c+d\,x]]}{2\,(a-b)^3\,d}-\frac{b^4\,(5\,a^2-b^2)\,\text{Log}[a+b\,\text{Sec}[c+d\,x]]}{a^2\,(a^2-b^2)^3\,d}+\frac{1}{4\,(a+b)^2\,d\,(1-\text{Sec}[c+d\,x])}+\frac{1}{4\,(a-b)^2\,d\,(1+\text{Sec}[c+d\,x])}+\frac{b^4}{a\,(a^2-b^2)^2\,d\,(a+b\,\text{Sec}[c+d\,x])}$$

Result (type 3, 351 leaves):

$$\frac{1}{8\,d\,(a+b\,\text{Sec}[c+d\,x])^2}(b+a\,\text{Cos}[c+d\,x])\left(-\frac{8\,b^5}{a^2\,(a-b)^2\,(a+b)^2}-\frac{16\,i\,(a^4-3\,a^2\,b^2-2\,b^4)\,(c+d\,x)\,(b+a\,\text{Cos}[c+d\,x])}{(a-b)^3\,(a+b)^3}+\frac{8\,i\,(a-2\,b)\,\text{ArcTan}[\text{Tan}[c+d\,x]]\,(b+a\,\text{Cos}[c+d\,x])}{(a-b)^3}+\frac{8\,i\,(a+2\,b)\,\text{ArcTan}[\text{Tan}[c+d\,x]]\,(b+a\,\text{Cos}[c+d\,x])}{(a+b)^3}-\frac{(b+a\,\text{Cos}[c+d\,x])\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{(a+b)^2}+\frac{4\,(a-2\,b)\,(b+a\,\text{Cos}[c+d\,x])\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]}{(-a+b)^3}+\frac{8\,b^4\,(-5\,a^2+b^2)\,(b+a\,\text{Cos}[c+d\,x])\,\text{Log}[b+a\,\text{Cos}[c+d\,x]]}{a^2\,(a^2-b^2)^3}-\frac{4\,(a+2\,b)\,(b+a\,\text{Cos}[c+d\,x])\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]}{(a+b)^3}-\frac{(b+a\,\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{(a-b)^2}\right)\text{Sec}[c+d\,x]^2$$

Problem 306: Result unnecessarily involves imaginary or complex numbers.

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

Optimal (type 3, 278 leaves, 3 steps):

$$\frac{\text{Log}[\text{Cos}[c+d x]]}{a^2 d}+\frac{\left(4 a^2+13 a b+12 b^2\right) \text{Log}[1-\text{Sec}[c+d x]]}{8 (a+b)^4 d}+$$
$$\frac{\left(4 a^2-13 a b+12 b^2\right) \text{Log}[1+\text{Sec}[c+d x]]}{8 (a-b)^4 d}-\frac{b^6 \left(7 a^2-b^2\right) \text{Log}[a+b \text{Sec}[c+d x]]}{a^2 \left(a^2-b^2\right)^4 d}-$$
$$\frac{1}{16 (a+b)^2 d (1-\text{Sec}[c+d x])^2}-\frac{5 a+9 b}{16 (a+b)^3 d (1-\text{Sec}[c+d x])}-$$
$$\frac{1}{16 (a-b)^2 d (1+\text{Sec}[c+d x])^2}-\frac{5 a-9 b}{16 (a-b)^3 d (1+\text{Sec}[c+d x])}+\frac{b^6}{a \left(a^2-b^2\right)^3 d (a+b \text{Sec}[c+d x])}$$

Result (type 3, 473 leaves):

$$\frac{1}{64 d (a+b \text{Sec}[c+d x])^2}(b+a \text{Cos}[c+d x])$$
$$\left(\frac{64 b^7}{a^2 (-a+b)^3 (a+b)^3}+\frac{128 i \left(a^6-4 a^4 b^2+6 a^2 b^4+3 b^6\right) (c+d x) (b+a \text{Cos}[c+d x])}{(a-b)^4 (a+b)^4}-\right.$$
$$\frac{1}{(a-b)^4} 16 i \left(4 a^2-13 a b+12 b^2\right) \text{ArcTan}[\text{Tan}[c+d x]] (b+a \text{Cos}[c+d x])-$$
$$\frac{1}{(a+b)^4} 16 i \left(4 a^2+13 a b+12 b^2\right) \text{ArcTan}[\text{Tan}[c+d x]] (b+a \text{Cos}[c+d x])+$$
$$\frac{2 (7 a+11 b) (b+a \text{Cos}[c+d x]) \text{Csc}\left[\frac{1}{2} (c+d x)\right]^2}{(a+b)^3}-\frac{(b+a \text{Cos}[c+d x]) \text{Csc}\left[\frac{1}{2} (c+d x)\right]^4}{(a+b)^2}+$$
$$\frac{1}{(a-b)^4} 8 \left(4 a^2-13 a b+12 b^2\right) (b+a \text{Cos}[c+d x]) \text{Log}\left[\text{Cos}\left[\frac{1}{2} (c+d x)\right]^2\right]+$$
$$\frac{64 \left(-7 a^2 b^6+b^8\right) (b+a \text{Cos}[c+d x]) \text{Log}[b+a \text{Cos}[c+d x]]}{a^2 \left(a^2-b^2\right)^4}+\frac{1}{(a+b)^4}$$
$$8 \left(4 a^2+13 a b+12 b^2\right) (b+a \text{Cos}[c+d x]) \text{Log}\left[\text{Sin}\left[\frac{1}{2} (c+d x)\right]^2\right]+$$
$$\frac{2 (7 a-11 b) (b+a \text{Cos}[c+d x]) \text{Sec}\left[\frac{1}{2} (c+d x)\right]^2}{(a-b)^3}-$$
$$\left.\frac{(b+a \text{Cos}[c+d x]) \text{Sec}\left[\frac{1}{2} (c+d x)\right]^4}{(a-b)^2}\right) \text{Sec}[c+d x]^2$$

Problem 307: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Tan}[c+d x]^6}{(a+b \text{Sec}[c+d x])^2} \, dx$$

Optimal (type 3, 200 leaves, 16 steps):

$$-\frac{x}{a^2}-\frac{a\left(4a^2-5b^2\right)\text{ArcTanh}[\text{Sin}[c+dx]]}{b^5 d}+$$

$$\frac{2(a-b)^{3/2}(a+b)^{3/2}\left(4a^2+b^2\right)\text{ArcTanh}\left[\frac{\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a+b}}\right]}{a^2 b^5 d}+\frac{\left(a^2-b^2\right)^2\text{Sin}[c+dx]}{a b^4 d\,(b+a\,\text{Cos}[c+dx])}+$$

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

Result (type 3, 865 leaves):

$$-\frac{(c+dx)\,(b+a\,\text{Cos}[c+dx])^2\,\text{Sec}[c+dx]^2}{a^2 d\,(a+b\,\text{Sec}[c+dx])^2}-$$

$$\left(2\left(-a^2+b^2\right)^2\left(4a^2+b^2\right)\text{ArcTanh}\left[\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]}{\sqrt{a^2-b^2}}\right](b+a\,\text{Cos}[c+dx])^2\,\text{Sec}[c+dx]^2\right)\Big/$$

$$\left(a^2 b^5\sqrt{a^2-b^2}\,d\,(a+b\,\text{Sec}[c+dx])^2\right)+$$

$$\left(\left(4a^3-5ab^2\right)(b+a\,\text{Cos}[c+dx])^2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}[c+dx]^2\right)\Big/$$

$$\left(b^5 d\,(a+b\,\text{Sec}[c+dx])^2\right)+$$

$$\left(\left(-4a^3+5ab^2\right)(b+a\,\text{Cos}[c+dx])^2\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\text{Sec}[c+dx]^2\right)\Big/$$

$$\left(b^5 d\,(a+b\,\text{Sec}[c+dx])^2\right)+\frac{(-6a+b)\,(b+a\,\text{Cos}[c+dx])^2\,\text{Sec}[c+dx]^2}{12b^3 d\,(a+b\,\text{Sec}[c+dx])^2\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+$$

$$\frac{(b+a\,\text{Cos}[c+dx])^2\,\text{Sec}[c+dx]^2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]}{6b^2 d\,(a+b\,\text{Sec}[c+dx])^2\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^3}+$$

$$\frac{(b+a\,\text{Cos}[c+dx])^2\,\text{Sec}[c+dx]^2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]}{6b^2 d\,(a+b\,\text{Sec}[c+dx])^2\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^3}+$$

$$\frac{(6a-b)\,(b+a\,\text{Cos}[c+dx])^2\,\text{Sec}[c+dx]^2}{12b^3 d\,(a+b\,\text{Sec}[c+dx])^2\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)^2}+$$

$$\left((b+a\,\text{Cos}[c+dx])^2\,\text{Sec}[c+dx]^2\left(9a^2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]-7b^2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)\Big/$$

$$\left(3b^4 d\,(a+b\,\text{Sec}[c+dx])^2\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)+$$

$$\left((b+a\,\text{Cos}[c+dx])^2\,\text{Sec}[c+dx]^2\left(9a^2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]-7b^2\,\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)\Big/$$

$$\left(3b^4 d\,(a+b\,\text{Sec}[c+dx])^2\left(\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right)\right)+$$

$$\left((b+a\,\text{Cos}[c+dx])\,\text{Sec}[c+dx]^2\left(a^4\,\text{Sin}[c+dx]-2a^2b^2\,\text{Sin}[c+dx]+b^4\,\text{Sin}[c+dx]\right)\right)\Big/$$

$$\left(a b^4 d\,(a+b\,\text{Sec}[c+dx])^2\right)$$

Problem 308: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 150 leaves, 6 steps):

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

Result (type 3, 327 leaves):

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

Problem 312: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 761 leaves, 38 steps):

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

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

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

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

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

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

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

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

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

Result (type 6, 2965 leaves):

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

$$\frac{1}{b\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)\,\text{Tan}[c+d\,x]^{5/2}}\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}[c+d\,x]\,\left(e\,\text{Tan}[c+d\,x]\right)^{5/2}$$

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

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

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

$$\left(7\,a\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\,\text{Tan}[c+d\,x]^{3/2}\right)\Big/$$

$$\Bigg(3\,\sqrt{1+\text{Tan}[c+d\,x]^2}\,\Bigg(-7\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]-2\,\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\Bigg)\,\text{Tan}[c+d\,x]^2\Bigg)\,\left(-a^2+b^2\,\left(1+\text{Tan}[c+d\,x]^2\right)\right)\Bigg)\Bigg)+$$

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

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

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

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

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

$$\left(56\,b\,\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\,\text{Tan}[c+d\,x]^{3/2}\right)\Big/\Bigg(\sqrt{1+\text{Tan}[c+d\,x]^2}$$

$$\Bigg(7\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+2\,\Bigg(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\Bigg)$$

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

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

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

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

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

$$\left(2\,\sqrt{2}\,a^2\,\sqrt{b}\,\left(-a^2+b^2\right)\right)+\left(\left(-1\right)^{1/4}\,\left(a^2-b^2\right)^{3/4}\,\left(-a^2+2\,b^2\right)\right.$$

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

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

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

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

$$\left(4\,\sqrt{2}\,a^2\,\sqrt{b}\,\left(-a^2+b^2\right)\right)-\left(\left(-1\right)^{1/4}\,\left(a^2-b^2\right)^{3/4}\,\left(-a^2+2\,b^2\right)\right.$$

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

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

$$\left(14\,a\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,-\text{Tan}[c+d\,x]^2,\,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\,\text{Tan}[c+d\,x]^{3/2}\right)\Big/$$

$$\left(3\,\sqrt{1+\text{Tan}[c+d\,x]^2}\,\left(-7\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,-\text{Tan}[c+d\,x]^2,\right.\right.\right.$$

$$\left.\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]-2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\,\frac{1}{2},\,2,\,\frac{11}{4},\,-\text{Tan}[c+d\,x]^2,\right.\right.$$

$$\left.\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\,\frac{3}{2},\,1,\,\frac{11}{4},\,-\text{Tan}[c+d\,x]^2,\right.$$

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

$$\left(7\,b^2\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\,\frac{1}{2},\,1,\,\frac{7}{4},\,-\text{Tan}[c+d\,x]^2,\,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\right.$$

$$\text{Tan}[c+d x]^{3/2}\Bigg) \Bigg/ \left(a \sqrt{1+\text{Tan}[c+d x]^2}\right.$$

$$\left(-7 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{3}{4}, \frac{1}{2}, 1, \frac{7}{4}, -\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\right] - \right.$$

$$2 \left(2 b^2 \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 2, \frac{11}{4}, -\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\right] + \left(-a^2+b^2\right)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{7}{4}, \frac{3}{2}, 1, \frac{11}{4}, -\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\right]\right) \text{Tan}[c+d x]^2\right)$$

$$\left.\left(-a^2+b^2 \left(1+\text{Tan}[c+d x]^2\right)\right)\right) - \left(11 b^2 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4},\right.\right.$$

$$\left.\left.-\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\right] \text{Tan}[c+d x]^{7/2}\right) \Bigg/ \left(7 a \sqrt{1+\text{Tan}[c+d x]^2}\right.$$

$$\left(-11 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{7}{4}, \frac{1}{2}, 1, \frac{11}{4}, -\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\right] - \right.$$

$$2 \left(2 b^2 \text{AppellF1}\left[\frac{11}{4}, \frac{1}{2}, 2, \frac{15}{4}, -\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\right] + \right.$$

$$\left.\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{11}{4}, \frac{3}{2}, 1, \frac{15}{4}, -\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\right]\right)$$

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

Problem 313: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 740 leaves, 35 steps):

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

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

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

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

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

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

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

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

$$\frac{e^2\,\text{EllipticF}\left[c-\frac{\pi}{4}+d\,x,2\right]\text{Sec}[c+d\,x]\,\sqrt{\text{Sin}[2\,c+2\,d\,x]}}{b\,d\,\sqrt{e\,\text{Tan}[c+d\,x]}}$$

Result (type 6, 755 leaves) :

$$\frac{1}{d\left(a+b\,\text{Sec}[c+d\,x]\right)\text{Tan}[c+d\,x]^{3/2}\left(1+\text{Tan}[c+d\,x]^2\right)}2\,\text{Sec}[c+d\,x]^2\left(e\,\text{Tan}[c+d\,x]\right)^{3/2}\left(a+b\sqrt{1+\text{Tan}[c+d\,x]^2}\right)$$
$$\left(\frac{1}{8\,a}\left(2\sqrt{2}\,\text{ArcTan}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]+\frac{1}{\sqrt{b}}\left(-2\sqrt{2}\sqrt{b}\,\text{ArcTan}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}\right]-\right.\right.\right.$$
$$(2-2\,i)\left(a^2-b^2\right)^{1/4}\text{ArcTan}\left[1-\frac{(1+i)\sqrt{b}\sqrt{\text{Tan}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+$$
$$(2-2\,i)\left(a^2-b^2\right)^{1/4}\text{ArcTan}\left[1+\frac{(1+i)\sqrt{b}\sqrt{\text{Tan}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+$$
$$\sqrt{2}\sqrt{b}\,\text{Log}\left[1-\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]-$$
$$\sqrt{2}\sqrt{b}\,\text{Log}\left[1+\sqrt{2}\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]-(1-i)\left(a^2-b^2\right)^{1/4}$$
$$\text{Log}\left[\sqrt{a^2-b^2}-(1+i)\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[c+d\,x]}+i\,b\,\text{Tan}[c+d\,x]\right]+(1-i)$$
$$\left.\left.\left(a^2-b^2\right)^{1/4}\text{Log}\left[\sqrt{a^2-b^2}+(1+i)\sqrt{b}\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[c+d\,x]}+i\,b\,\text{Tan}[c+d\,x]\right]\right)\right)-$$
$$\left(9\,b\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\text{Tan}[c+d\,x]^{5/2}\right)\Big/$$
$$\left(5\sqrt{1+\text{Tan}[c+d\,x]^2}\left(9\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\right.\right.$$
$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{9}{4},\frac{1}{2},2,\frac{13}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\right.$$
$$\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{9}{4},\frac{3}{2},1,\frac{13}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\right)$$
$$\left.\left.\text{Tan}[c+d\,x]^2\right)\left(-a^2+b^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)\right)\right)$$

Problem 314: Result unnecessarily involves higher level functions.

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

Optimal (type 4, 415 leaves, 21 steps):

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

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

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

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

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

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

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

Result (type 6, 753 leaves) :

$$
\begin{aligned}
&\frac{1}{12\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)\,\sqrt{\text{Tan}[c+d\,x]}\,\left(1+\text{Tan}[c+d\,x]^2\right)}\\
&\text{Sec}[c+d\,x]^2\,\sqrt{e\,\text{Tan}[c+d\,x]}\,\left(a+b\,\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\\
&\left(\frac{1}{a}\left(-6\,\sqrt{2}\,\text{ArcTan}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\right]+\frac{1}{\left(a^2-b^2\right)^{1/4}}\,3\,\left(2\,\sqrt{2}\,\left(a^2-b^2\right)^{1/4}\,\text{ArcTan}\left[\right.\right.\right.\right.\\
&\qquad 1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}\left.\right]+\left(2+2\,i\right)\,\sqrt{b}\,\text{ArcTan}\left[1-\frac{\left(1+i\right)\,\sqrt{b}\,\sqrt{\text{Tan}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]-\\
&\qquad \left(2+2\,i\right)\,\sqrt{b}\,\text{ArcTan}\left[1+\frac{\left(1+i\right)\,\sqrt{b}\,\sqrt{\text{Tan}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\\
&\qquad \sqrt{2}\,\left(a^2-b^2\right)^{1/4}\,\text{Log}\left[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]-\\
&\qquad \sqrt{2}\,\left(a^2-b^2\right)^{1/4}\,\text{Log}\left[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\right]-\left(1+i\right)\,\sqrt{b}\\
&\qquad \text{Log}\left[\sqrt{a^2-b^2}-\left(1+i\right)\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Tan}[c+d\,x]}+i\,b\,\text{Tan}[c+d\,x]\right]+\left(1+i\right)\\
&\qquad \left.\left.\sqrt{b}\,\text{Log}\left[\sqrt{a^2-b^2}+\left(1+i\right)\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\,\sqrt{\text{Tan}[c+d\,x]}+i\,b\,\text{Tan}[c+d\,x]\right]\right)\right)-\\
&\quad \left(56\,b\,\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\,\text{Tan}[c+d\,x]^{3/2}\right)\Big/\\
&\quad \left(\sqrt{1+\text{Tan}[c+d\,x]^2}\,\left(7\,\left(a^2-b^2\right)\,\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\right.\right.\\
&\qquad 2\,\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\right.\\
&\qquad\quad \left.\left(-a^2+b^2\right)\,\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\right)\\
&\qquad \left.\left.\left.\text{Tan}[c+d\,x]^2\right)\,\left(-a^2+b^2\,\left(1+\text{Tan}[c+d\,x]^2\right)\right)\right)\right)
\end{aligned}
$$

Problem 315: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 4, 422 leaves, 19 steps):

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

Result (type 6, 1860 leaves):

$$\frac{1}{2\,d\,\left(a+b\,\text{Sec}[c+d\,x]\right)\sqrt{e\,\text{Tan}[c+d\,x]}}\left(b+a\,\text{Cos}[c+d\,x]\right)\text{Sec}[c+d\,x]\,\sqrt{\text{Tan}[c+d\,x]}\left(\frac{1}{\left(b+a\,\text{Cos}[c+d\,x]\right)\left(1+\text{Tan}[c+d\,x]^2\right)^2}\,2\,\text{Sec}[c+d\,x]^3\left(a+b\,\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\left(-\left(\left(\left(\frac{1}{8}-\frac{i}{8}\right)a\left(2\,\text{ArcTan}\left[1-\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Tan}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]-2\,\text{ArcTan}\left[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Tan}[c+d\,x]}}{\left(a^2-b^2\right)^{1/4}}\right]+\text{Log}\left[\sqrt{a^2-b^2}-(1+i)\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[c+d\,x]}+i\,b\,\text{Tan}[c+d\,x]\right]-\text{Log}\left[\sqrt{a^2-b^2}+(1+i)\,\sqrt{b}\,\left(a^2-b^2\right)^{1/4}\sqrt{\text{Tan}[c+d\,x]}+i\,b\,\text{Tan}[c+d\,x]\right]\right)\right)\Big/\left(\sqrt{b}\,\left(a^2-b^2\right)^{3/4}\right)\right)+\left(5\,b\,\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\sqrt{\text{Tan}[c+d\,x]}\,\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\Big/\left(\left(5\,\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\right)\right.\right.$$

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

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

$$2\,\text{Cos}\left[2\left(c+d x\right)\right]\,\text{Sec}[c+d x]^3\left(a+b\sqrt{1+\text{Tan}[c+d x]^2}\right)$$

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

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

$$\left(2\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)\right)-\left((-1)^{3/4}\left(a^2-b^2\right)^{1/4}\left(-a^2+2 b^2\right)\right.$$

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

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

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

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

$$\left(4\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)\right)-\left((-1)^{3/4}\left(a^2-b^2\right)^{1/4}\left(-a^2+2 b^2\right)\right.$$

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

$$\left(4\sqrt{2}\,a\sqrt{b}\left(-a^2+b^2\right)\right)+\left(5 b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},-\text{Tan}[c+d x]^2,\right.\right.$$

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

$$\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},-\text{Tan}[c+d x]^2,\frac{b^2\,\text{Tan}[c+d x]^2}{a^2-b^2}\right]-\right.$$

$$2\left(2 b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},-\text{Tan}[c+d x]^2,\frac{b^2\,\text{Tan}[c+d x]^2}{a^2-b^2}\right]+\left(-a^2+b^2\right)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},-\text{Tan}[c+d x]^2,\frac{b^2\,\text{Tan}[c+d x]^2}{a^2-b^2}\right]\right)\text{Tan}[c+d x]^2\right)$$

$$\left.\left(-a^2+b^2\left(1+\text{Tan}[c+d x]^2\right)\right)\right)-\left(9 b\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},\right.\right.$$

$$-\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\Big] \text{Tan}[c+d x]^{5/2}\Bigg) \Bigg/ \Bigg(5 \sqrt{1+\text{Tan}[c+d x]^2}$$

$$\Bigg(-9 \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, -\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\Big] -$$

$$2 \Bigg(2 b^2 \text{AppellF1}\Big[\frac{9}{4}, \frac{1}{2}, 2, \frac{13}{4}, -\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\Big] +$$

$$\left(-a^2+b^2\right) \text{AppellF1}\Big[\frac{9}{4}, \frac{3}{2}, 1, \frac{13}{4}, -\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\Big]\Bigg)$$

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

Problem 316: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{1}{(a+b \text{Sec}[c+d x]) (e \text{Tan}[c+d x])^{3/2}} \, dx$$

Optimal (type 4, 863 leaves, 39 steps) :

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

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

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

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

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

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

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

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

Result (type 6, 2483 leaves):

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

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

$$\left(\frac{1}{12\,\left(b+a\,\text{Cos}[c+d\,x]\right)\,\left(1+\text{Tan}[c+d\,x]^2\right)}\,\left(-a^2+3\,b^2\right)\,\text{Sec}[c+d\,x]\,\left(a+b\,\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\right.$$

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

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

$$(2+2\,i)\,\sqrt{b}\;\text{ArcTan}\Big[1+\frac{(1+i)\,\sqrt{b}\,\sqrt{\text{Tan}[c+d\,x]}}{(a^2-b^2)^{1/4}}\Big]+$$
$$\sqrt{2}\,(a^2-b^2)^{1/4}\,\text{Log}\Big[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\Big]-\sqrt{2}\,(a^2-b^2)^{1/4}$$
$$\text{Log}\Big[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\Big]-(1+i)\,\sqrt{b}\;\text{Log}\Big[\sqrt{a^2-b^2}-$$
$$(1+i)\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[c+d\,x]}+i\,b\,\text{Tan}[c+d\,x]\Big]+(1+i)\,\sqrt{b}$$
$$\text{Log}\Big[\sqrt{a^2-b^2}+(1+i)\,\sqrt{b}\,(a^2-b^2)^{1/4}\sqrt{\text{Tan}[c+d\,x]}+i\,b\,\text{Tan}[c+d\,x]\Big]\Big)\Big)-$$
$$\Big(56\,b\,(-a^2+b^2)\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\Big]$$
$$\text{Tan}[c+d\,x]^{3/2}\Big)\Big/\Big(\sqrt{1+\text{Tan}[c+d\,x]^2}$$
$$\Big(7\,(a^2-b^2)\,\text{AppellF1}\Big[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\Big]+$$
$$2\,\Big(2\,b^2\,\text{AppellF1}\Big[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\Big]+$$
$$(-a^2+b^2)\,\text{AppellF1}\Big[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\Big]\Big)$$
$$\text{Tan}[c+d\,x]^2\Big)\,\big(-a^2+b^2\,(1+\text{Tan}[c+d\,x]^2)\big)\Big)\Big)+$$
$$\frac{1}{(b+a\,\text{Cos}[c+d\,x])\,(-1+\text{Tan}[c+d\,x]^2)\,\sqrt{1+\text{Tan}[c+d\,x]^2}}$$
$$2\,a\,b\,\text{Cos}[2\,(c+d\,x)]\,\text{Sec}[c+d\,x]^2$$
$$\Big(a+b\,\sqrt{1+\text{Tan}[c+d\,x]^2}\Big)$$
$$\Bigg(\frac{b\,\text{ArcTan}\Big[\frac{-\sqrt{2}+2\sqrt{\text{Tan}[c+d\,x]}}{\sqrt{2}}\Big]}{\sqrt{2}\,a^2}+\frac{b\,\text{ArcTan}\Big[\frac{\sqrt{2}+2\sqrt{\text{Tan}[c+d\,x]}}{\sqrt{2}}\Big]}{\sqrt{2}\,a^2}+\Big((-1)^{1/4}\,(a^2-b^2)^{3/4}$$
$$(-a^2+2\,b^2)\,\text{ArcTan}\Big[\frac{-\sqrt{2}\,(a^2-b^2)^{1/4}+2\,(-1)^{1/4}\sqrt{b}\,\sqrt{\text{Tan}[c+d\,x]}}{\sqrt{2}\,(a^2-b^2)^{1/4}}\Big]\Big)\Big/$$
$$\Big(2\sqrt{2}\,a^2\sqrt{b}\,(-a^2+b^2)\Big)+\Big((-1)^{1/4}\,(a^2-b^2)^{3/4}\,(-a^2+2\,b^2)$$
$$\text{ArcTan}\Big[\frac{\sqrt{2}\,(a^2-b^2)^{1/4}+2\,(-1)^{1/4}\sqrt{b}\,\sqrt{\text{Tan}[c+d\,x]}}{\sqrt{2}\,(a^2-b^2)^{1/4}}\Big]\Big)\Big/$$
$$\Big(2\sqrt{2}\,a^2\sqrt{b}\,(-a^2+b^2)\Big)+\frac{b\,\text{Log}\Big[1-\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\Big]}{2\sqrt{2}\,a^2}-$$
$$\frac{b\,\text{Log}\Big[1+\sqrt{2}\,\sqrt{\text{Tan}[c+d\,x]}+\text{Tan}[c+d\,x]\Big]}{2\sqrt{2}\,a^2}+\Big((-1)^{1/4}\,(a^2-b^2)^{3/4}\,(-a^2+2\,b^2)$$

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

$$\left(4\sqrt{2}\,a^2\sqrt{b}\left(-a^2+b^2\right)\right)-\left(\left(-1\right)^{1/4}\left(a^2-b^2\right)^{3/4}\left(-a^2+2\,b^2\right)\right.$$

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

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

$$\left(14\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\text{Tan}[c+d\,x]^{3/2}\right)\bigg/$$

$$\left(3\sqrt{1+\text{Tan}[c+d\,x]^2}\left(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[c+d\,x]^2,\right.\right.\right.$$

$$\left.\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]-2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[c+d\,x]^2,\right.\right.$$

$$\left.\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[c+d\,x]^2,\right.$$

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

$$\left(7\,b^2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\right.$$

$$\left.\text{Tan}[c+d\,x]^{3/2}\right)\bigg/\left(a\sqrt{1+\text{Tan}[c+d\,x]^2}\right.$$

$$\left(-7\left(a^2-b^2\right)\text{AppellF1}\left[\frac{3}{4},\frac{1}{2},1,\frac{7}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]-\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},2,\frac{11}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\left(-a^2+b^2\right)\right.$$

$$\left.\left.\text{AppellF1}\left[\frac{7}{4},\frac{3}{2},1,\frac{11}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\right)\text{Tan}[c+d\,x]^2\right)$$

$$\left.\left(-a^2+b^2\left(1+\text{Tan}[c+d\,x]^2\right)\right)\right)-\left(11\,b^2\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},\right.\right.$$

$$\left.\left.-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\text{Tan}[c+d\,x]^{7/2}\right)\bigg/\left(7\,a\sqrt{1+\text{Tan}[c+d\,x]^2}\right.$$

$$\left(-11\left(a^2-b^2\right)\text{AppellF1}\left[\frac{7}{4},\frac{1}{2},1,\frac{11}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]-\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{11}{4},\frac{1}{2},2,\frac{15}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\right.$$

$$\left.\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{11}{4},\frac{3}{2},1,\frac{15}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\right)$$

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

Problem 317: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \frac{1}{(a+b\,\mathrm{Sec}[c+d\,x])\,(e\,\mathrm{Tan}[c+d\,x])^{5/2}}\,dx$$

Optimal (type 4, 836 leaves, 36 steps):

$$\frac{a\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,(a^2-b^2)\,d\,e^{5/2}}-\frac{b^2\,\mathrm{ArcTan}\left[1-\frac{\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,(a^2-b^2)\,d\,e^{5/2}}-\frac{a\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,(a^2-b^2)\,d\,e^{5/2}}+$$
$$\frac{b^2\,\mathrm{ArcTan}\left[1+\frac{\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}{\sqrt{e}}\right]}{\sqrt{2}\,a\,(a^2-b^2)\,d\,e^{5/2}}+\frac{a\,\mathrm{Log}\left[\sqrt{e}+\sqrt{e}\,\mathrm{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,(a^2-b^2)\,d\,e^{5/2}}-$$
$$\frac{b^2\,\mathrm{Log}\left[\sqrt{e}+\sqrt{e}\,\mathrm{Tan}[c+d\,x]-\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,a\,(a^2-b^2)\,d\,e^{5/2}}-$$
$$\frac{a\,\mathrm{Log}\left[\sqrt{e}+\sqrt{e}\,\mathrm{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,(a^2-b^2)\,d\,e^{5/2}}+$$
$$\frac{b^2\,\mathrm{Log}\left[\sqrt{e}+\sqrt{e}\,\mathrm{Tan}[c+d\,x]+\sqrt{2}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}\right]}{2\sqrt{2}\,a\,(a^2-b^2)\,d\,e^{5/2}}-\frac{2\,(a-b\,\mathrm{Sec}[c+d\,x])}{3\,(a^2-b^2)\,d\,e\,(e\,\mathrm{Tan}[c+d\,x])^{3/2}}-$$
$$\left(2\sqrt{2}\,b^3\,\mathrm{EllipticPi}\left[\frac{b}{a-\sqrt{a^2-b^2}},\,\mathrm{ArcSin}\left[\frac{\sqrt{-\mathrm{Cos}[c+d\,x]}}{\sqrt{1+\mathrm{Sin}[c+d\,x]}}\right],\,-1\right]\sqrt{\mathrm{Sin}[c+d\,x]}\right)\Big/$$
$$\left(a\,(a^2-b^2)^{3/2}\,d\,e^2\,\sqrt{-\mathrm{Cos}[c+d\,x]}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}\right)+$$
$$\left(2\sqrt{2}\,b^3\,\mathrm{EllipticPi}\left[\frac{b}{a+\sqrt{a^2-b^2}},\,\mathrm{ArcSin}\left[\frac{\sqrt{-\mathrm{Cos}[c+d\,x]}}{\sqrt{1+\mathrm{Sin}[c+d\,x]}}\right],\,-1\right]\sqrt{\mathrm{Sin}[c+d\,x]}\right)\Big/$$
$$\left(a\,(a^2-b^2)^{3/2}\,d\,e^2\,\sqrt{-\mathrm{Cos}[c+d\,x]}\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}\right)+$$
$$\frac{b\,\mathrm{EllipticF}\left[c-\frac{\pi}{4}+d\,x,\,2\right]\mathrm{Sec}[c+d\,x]\,\sqrt{\mathrm{Sin}[2\,c+2\,d\,x]}}{3\,(a^2-b^2)\,d\,e^2\,\sqrt{e\,\mathrm{Tan}[c+d\,x]}}$$

Result (type 6, 2554 leaves):

$$\left((b+a\,\mathrm{Cos}[c+d\,x])\left(\frac{2\,a}{3\,(a^2-b^2)}-\frac{2\,(-a+b\,\mathrm{Cos}[c+d\,x])\,\mathrm{Csc}[c+d\,x]^2}{3\,(-a^2+b^2)}\right)\right.$$
$$\left.\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]^3\right)\Big/\left(d\,(a+b\,\mathrm{Sec}[c+d\,x])\,(e\,\mathrm{Tan}[c+d\,x])^{5/2}\right)-$$
$$\frac{1}{6\,(a-b)\,(a+b)\,d\,(a+b\,\mathrm{Sec}[c+d\,x])\,(e\,\mathrm{Tan}[c+d\,x])^{5/2}}$$
$$(b+a\,\mathrm{Cos}[c+d\,x])\,\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]^{5/2}$$

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

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

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

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

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

$$\left(5\,b\left(-a^2+b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\right.$$

$$\left.\sqrt{\text{Tan}[c+d\,x]}\sqrt{1+\text{Tan}[c+d\,x]^2}\right)\Big/$$

$$\left(\left(5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},-\frac{1}{2},1,\frac{5}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\right.\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},-\frac{1}{2},2,\frac{9}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\right.$$

$$\left.\left(a^2-b^2\right)\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]\right)$$

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

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

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

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

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

$$\left(4\sqrt{2}\left(-a^2+b^2\right)^{3/4}\right)+\left(5\,a\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},-\text{Tan}[c+d\,x]^2,\right.\right.$$

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

$$\left(-5\left(a^2-b^2\right)\text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]-\right.$$

$$2\left(2\,b^2\,\text{AppellF1}\left[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},-\text{Tan}[c+d\,x]^2,\frac{b^2\,\text{Tan}[c+d\,x]^2}{a^2-b^2}\right]+\right.$$

$$\left(-a^2+b^2\right) \text{AppellF1}\left[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},-\text{Tan}[c+d x]^2,\frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\right]\Big)$$

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

$$\frac{1}{\left(b+a \text{Cos}[c+d x]\right) \left(1-\text{Tan}[c+d x]^2\right) \left(1+\text{Tan}[c+d x]^2\right)} 2 \left(3 a^2-3 b^2\right)$$

$$\text{Cos}\left[2 \left(c+d x\right)\right] \text{Sec}[c+d x]^3$$

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

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

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

$$\left(2 \sqrt{2}\, a \sqrt{b} \left(-a^2+b^2\right)\right)-\Bigg(\left(-1\right)^{3/4} \left(a^2-b^2\right)^{1/4} \left(-a^2+2 b^2\right)$$

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

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

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

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

$$\left(4 \sqrt{2}\, a \sqrt{b} \left(-a^2+b^2\right)\right)-\Bigg(\left(-1\right)^{3/4} \left(a^2-b^2\right)^{1/4} \left(-a^2+2 b^2\right) \text{Log}\Big[\sqrt{a^2-b^2}+\left(-1\right)^{1/4} \sqrt{2}$$

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

$$\left(5 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},-\text{Tan}[c+d x]^2,\frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\right] \sqrt{\text{Tan}[c+d x]}\right) \Big/$$

$$\Bigg(\sqrt{1+\text{Tan}[c+d x]^2} \Bigg(-5 \left(a^2-b^2\right) \text{AppellF1}\Big[\frac{1}{4},\frac{1}{2},1,\frac{5}{4},-\text{Tan}[c+d x]^2,$$

$$\frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\Big]-2 \Bigg(2 b^2 \text{AppellF1}\Big[\frac{5}{4},\frac{1}{2},2,\frac{9}{4},-\text{Tan}[c+d x]^2,$$

$$\frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\Big]+\left(-a^2+b^2\right) \text{AppellF1}\Big[\frac{5}{4},\frac{3}{2},1,\frac{9}{4},-\text{Tan}[c+d x]^2,$$

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

$$\left(9 b \left(a^2-b^2\right) \text{AppellF1}\left[\frac{5}{4},\frac{1}{2},1,\frac{9}{4},-\text{Tan}[c+d x]^2,\frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\right] \text{Tan}[c+d x]^{5/2}\right) \Big/$$

$$\left(5 \sqrt{1+\text{Tan}[c+d x]^2} \left(-9 \left(a^2-b^2\right) \text{AppellF1}\left[\frac{5}{4}, \frac{1}{2}, 1, \frac{9}{4}, -\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\right] - 2 \left(2 b^2 \text{AppellF1}\left[\frac{9}{4}, \frac{1}{2}, 2, \frac{13}{4}, -\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\right] + \left(-a^2+b^2\right) \text{AppellF1}\left[\frac{9}{4}, \frac{3}{2}, 1, \frac{13}{4}, -\text{Tan}[c+d x]^2, \frac{b^2 \text{Tan}[c+d x]^2}{a^2-b^2}\right]\right) \text{Tan}[c+d x]^2\right) \left(-a^2+b^2 \left(1+\text{Tan}[c+d x]^2\right)\right)\right)\right)$$

Problem 320: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 51 leaves, 4 steps):

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

Result (type 3, 137 leaves):

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

Problem 321: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 106 leaves, 7 steps):

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

Result (type 3, 4527 leaves):

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

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

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

$$\sqrt{a+b\,\text{Sec}[c+d\,x]}\sqrt{a+b-a\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2+b\,\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}\Bigg/\Bigg(2\sqrt{a-b}\,d\sqrt{-1+\text{Tan}\Big[\frac{1}{2}(c+d\,x)\Big]^2}\sqrt{\frac{1+\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2}{1-\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2}}\sqrt{\frac{a+b-a\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2+b\,\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2}{1+\text{Tan}\big[\frac{1}{2}(c+d\,x)\big]^2}}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\left(\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big/$$

$$\left.\left.\left(1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\right)\Big/$$

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

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

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

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

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

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

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

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

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

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

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

$$\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+b\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Bigg)\Bigg/$$

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)-\Bigg(\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]$$

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

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

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

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

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

$$\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Bigg)\Bigg)+\Bigg(\Bigg(-a\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+$$

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

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

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

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

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

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

$$\sqrt{a-b}\left(\left(8\,a^2\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(\left(2\,i\,a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\right.\right.\right.\right.$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\frac{1}{(a+b)^{3/2}}\text{Cot}\left[\frac{1}{2}(c+d\,x)\right]\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]^2\;\Bigg(2\,\mathrm{i}\,b-2\,\mathrm{i}\,a$$

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

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

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

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

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

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

Problem 322: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 215 leaves, 13 steps):

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

Result (type 3, 4909 leaves):

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

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

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

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

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

$$\left(16\,a^{3/2}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\Bigg]+(4\,a+3\,b)\,\text{Log}\Bigg[\Bigg(\text{Cot}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

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

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

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

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

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

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

$$\sqrt{a-b}$$
$$\sqrt{a+b}$$
$$d$$
$$\sqrt{b+a\,\text{Cos}[c+d\,x]}$$
$$\sqrt{\text{Sec}[c+d\,x]}$$

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

$$\Bigg(\Bigg(i\,\Bigg(\sqrt{a+b}\,\left(-4\,a+3\,b\right)$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\left(16 a^{3/2}\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big]+(4 a+3 b) \operatorname{Log}\Big[\left(\operatorname{Cot}\left[\frac{1}{2}(c+d x)\right]^2\left(-2\, \mathrm{i}\, b+\right.\right.$$

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

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

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

$$\left(-\left(\left(\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right/\right.$$

$$\left.\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)+\frac{\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\Bigg)-$$

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

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

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

$$\sqrt{a-b}\left(-8 \sqrt{a} \sqrt{a+b} \operatorname{Log}\left[\left(-2\, \mathrm{i}\, a\left(-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+\right.\right.\right.$$

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

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

$$\left(16\,a^{3/2}\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Big]+(4\,a+3\,b)\,\mathrm{Log}\Big[\Bigg(\mathrm{Cot}\left[\frac{1}{2}(c+d\,x)\right]^2$$

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

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

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

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

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

$$\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-\Bigg(\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

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

$$\frac{1}{8\sqrt{a-b}\,\sqrt{a+b}\,\sqrt{\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}}\,\mathrm{i}\,\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}$$

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

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

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

$$(c+d\,x)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)+\Bigg(\Big(-a\,\mathrm{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+$$

$$b\,\mathrm{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)\,\sqrt{-1+\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2}\Bigg)\Big/$$

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

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

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

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

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

$$\sqrt{a-b}\,\Bigg(-\Bigg(\Bigg(128\,a^2\,\sqrt{a+b}\,\left(1+\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\right)\Bigg(\Bigg(-2\,i\,a\,\mathrm{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2$$

$$\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]+i\,b\,\mathrm{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]-$$

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

$$\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Big)\,\sqrt{-1+\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2}\Bigg)\Big/$$

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

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

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

$$\left(16\, a^{3/2} \left(1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\right) - \left(\text{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \text{Tan}\left[\frac{1}{2} (c+d x)\right]\right.$$

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

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

$$\left.\left.\left. b\, \text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\right)\right) \Big/ \left(16\, a^{3/2} \left(1+\text{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^2\right)\Bigg)\Bigg) \Big/$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Problem 323: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 344 leaves, 7 steps):

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

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{3 b d}$$

$$2\sqrt{a+b}\,(a+2 b)\,\text{Cot}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

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

$$2\sqrt{a+b}\,\text{Cot}[c+d x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$

$$\sqrt{\frac{b\,(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d x])}{a-b}}+\frac{2\sqrt{a+b\,\text{Sec}[c+d x]}\,\text{Tan}[c+d x]}{3 d}$$

Result (type 4, 692 leaves) :

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

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

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

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

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

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

$$6\,\mathrm{i}\,a\,b\,\mathrm{EllipticPi}\left[-\frac{a+b}{a-b},\mathrm{i}\,\mathrm{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$

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

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

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

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

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

$$\frac{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}\,\left(\frac{2\,a\,\mathrm{Sin}[c+d\,x]}{3\,b}+\frac{2}{3}\,\mathrm{Tan}[c+d\,x]\right)}{d}$$

Problem 324: Unable to integrate problem.

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

Optimal (type 4, 125 leaves, 1 step):

$$-\frac{1}{\sqrt{a+b}\,d}2\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a}{a+b},\,\text{ArcSin}\left[\frac{\sqrt{a+b}}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\right],\,\frac{a-b}{a+b}\right]\sqrt{-\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b\,\text{Sec}[c+d\,x]}}\,\sqrt{\frac{b\,(1+\text{Sec}[c+d\,x])}{a+b\,\text{Sec}[c+d\,x]}}\,(a+b\,\text{Sec}[c+d\,x])$$

Result (type 8, 16 leaves):

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

Problem 327: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 79 leaves, 5 steps):

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

Result (type 3, 194 leaves):

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

Problem 328: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 31 leaves, 3 steps):

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

Result (type 3, 108 leaves):

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

Problem 329: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 106 leaves, 7 steps):

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

Result (type 3, 5506 leaves):

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$i\sqrt{-\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\ \sqrt{b+a\,\text{Cos}[c+d x]}\ \sqrt{\text{Sec}[c+d x]}$$

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

$$\text{Cot}\Big[\frac{1}{2}(c+d x)\Big]\ \text{Csc}\Big[\frac{1}{2}(c+d x)\Big]^2+\text{Cot}\Big[\frac{1}{2}(c+d x)\Big]^2\left(\left(2\sqrt{a+b}\right.\right.$$

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

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

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

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

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

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

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

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

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

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

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

$$2$$

$$\left.(c+d x)\right]$$

$$\text{Csc}[c+d x]\left(\sqrt{a}\right.$$

$$\sqrt{a-b}$$

$$\text{Log}\left[\frac{1}{\sqrt{a+b}}\right.$$

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

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

$$\sqrt{a+b}\left(\sqrt{a}\,\text{Log}\left[\frac{2\,i\,a}{\sqrt{a-b}}+4\sqrt{-\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}-2\,i\,\sqrt{a-b}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+4\sqrt{a-b}\,\text{Log}\left[-\frac{1}{8\sqrt{a}}i\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\left(-2\,a-b-4\,i\,\sqrt{a}\sqrt{-\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}+(2\,a-b)\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]\right)\right)$$

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

$$\sqrt{a+b\,\text{Sec}[c+d\,x]}$$

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

$$i\,\sqrt{a}\sqrt{-1-\text{Cos}[c+d\,x]}\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}$$

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

$$\frac{1}{4\sqrt{a}\ \sqrt{a-b}\ \sqrt{a+b}\ \sqrt{-1-\text{Cos}[c+d\,x]}\ \sqrt{b+a\,\text{Cos}[c+d\,x]}}\ \mathrm{i}\ \sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}$$

$$\Bigg(\sqrt{a}\ \sqrt{a-b}\ \text{Log}\Big[\frac{1}{\sqrt{a+b}}\Big(2\,\mathrm{i}\,a+\Big(-2\,\mathrm{i}\,a-2\,\mathrm{i}\,b+$$

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

$$\sqrt{a+b}\ \Big(\sqrt{a}\ \text{Log}\Big[\frac{2\,\mathrm{i}\,a}{\sqrt{a-b}}+4\sqrt{-\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\ \sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\ -2\,\mathrm{i}\,\sqrt{a-b}$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+4\sqrt{a-b}\ \text{Log}\Big[-\frac{1}{8\sqrt{a}}\,\mathrm{i}\,\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\ \Big(-2\,a-b-4\,\mathrm{i}\,\sqrt{a}$$

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

$$\text{Sin}[c+d\,x]-\frac{1}{4\sqrt{a}\ \sqrt{a-b}\ \sqrt{a+b}\ \sqrt{b+a\,\text{Cos}[c+d\,x]}\ \sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}}$$

$$\mathrm{i}\ \sqrt{-1-\text{Cos}[c+d\,x]}\ \Bigg(\sqrt{a}\ \sqrt{a-b}\ \text{Log}\Big[\frac{1}{\sqrt{a+b}}\Big(2\,\mathrm{i}\,a+\Big(-2\,\mathrm{i}\,a-2\,\mathrm{i}\,b+$$

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

$$\sqrt{a+b}\ \Big(\sqrt{a}\ \text{Log}\Big[\frac{2\,\mathrm{i}\,a}{\sqrt{a-b}}+4\sqrt{-\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\ \sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\ -2\,\mathrm{i}\,\sqrt{a-b}$$

$$\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big]+4\sqrt{a-b}\ \text{Log}\Big[-\frac{1}{8\sqrt{a}}\,\mathrm{i}\,\text{Cos}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\ \Big(-2\,a-b-4\,\mathrm{i}\,\sqrt{a}$$

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

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

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

$$\dot{\imath}\,\sqrt{-1-\mathrm{Cos}[c+d\,x]}\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{1+\mathrm{Cos}[c+d\,x]}}$$

$$\Bigg(\Bigg(\sqrt{a}\,\sqrt{a-b}\,\Bigg(-\Bigg(-2\,\dot{\imath}\,a-2\,\dot{\imath}\,b+4\,\sqrt{a+b}\,\sqrt{-\frac{\mathrm{Cos}[c+d\,x]}{1+\mathrm{Cos}[c+d\,x]}}\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{1+\mathrm{Cos}[c+d\,x]}}\Bigg)$$

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

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

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

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

$$\Bigg(2\,\dot{\imath}\,a+\Bigg(-2\,\dot{\imath}\,a-2\,\dot{\imath}\,b+4\,\sqrt{a+b}\,\sqrt{-\frac{\mathrm{Cos}[c+d\,x]}{1+\mathrm{Cos}[c+d\,x]}}\,\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{1+\mathrm{Cos}[c+d\,x]}}\Bigg)$$

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

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

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

$$\Bigg(\sqrt{\frac{b+a\,\mathrm{Cos}[c+d\,x]}{1+\mathrm{Cos}[c+d\,x]}}\Bigg)-2\,\dot{\imath}\,\sqrt{a-b}\,\mathrm{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\Bigg)\Bigg)\Bigg/$$

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

$$\left.\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)+\left(32\,\mathrm{i}\,\sqrt{a}\,\sqrt{a-b}\,\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\left(-\frac{1}{8\sqrt{a}}\mathrm{i}\,\mathrm{Cos}\left[\frac{1}{2}\left(c+d\right.\right.\right.\right.$$

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

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

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

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

$$\left.\left(2\,a-b\right)\mathrm{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\mathrm{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\right)+\frac{1}{8\sqrt{a}}$$

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

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

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

Problem 330: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 260 leaves, 11 steps):

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

Result (type 3, 3876 leaves):

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

$$\left((b+a\,\text{Cos}[c+d\,x])\left(-\frac{8\,(a^2-b^2)\,\text{Log}\left[\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]}{\sqrt{a}}+\frac{(a-b)\,(4\,a+5\,b)\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right]}{\sqrt{a+b}}-\frac{1}{\sqrt{a+b}}(a-b)\,(4\,a+5\,b)\right.\right.$$

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

$$\frac{1}{\sqrt{a-b}}\left(4\,a^2-a\,b-5\,b^2\right)\,\text{Log}\left[-a+2\,\sqrt{a-b}\,\sqrt{-\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\,\sqrt{\frac{-b-a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}+\right.$$

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

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

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

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

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

$$\left(8\left(a^2-b^2\right) d \sqrt{-\left(b+a \operatorname{Cos}[c+d x]\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{a+b \operatorname{Sec}[c+d x]}\right.$$

$$\left(\left(\sqrt{b+a \operatorname{Cos}[c+d x]}\left(-\frac{8\left(a^2-b^2\right) \operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right]}{\sqrt{a}}+\right.\right.\right.$$

$$\frac{(a-b)(4 a+5 b) \operatorname{Log}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]}{\sqrt{a+b}}-\frac{1}{\sqrt{a+b}}(a-b)(4 a+5 b) \operatorname{Log}\Big[$$

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

$$\frac{1}{\sqrt{a-b}}\left(4 a^2-a b-5 b^2\right) \operatorname{Log}\Big[-a+2 \sqrt{a-b} \sqrt{-\frac{\operatorname{Cos}[c+d x]}{1+\operatorname{Cos}[c+d x]}}$$

$$\sqrt{\frac{-b-a \operatorname{Cos}[c+d x]}{1+\operatorname{Cos}[c+d x]}}+(a-b) \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+\frac{1}{\sqrt{a}} 8\left(a^2-b^2\right) \operatorname{Log}\Big[2 a+b+$$

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

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

$$\left(16\left(a^2-b^2\right) \sqrt{-\left(b+a \operatorname{Cos}[c+d x]\right) \operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2} \sqrt{-1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)-$$

$$\left(a\left(-\frac{8\left(a^2-b^2\right) \operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right]}{\sqrt{a}}+\frac{(a-b)(4 a+5 b) \operatorname{Log}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]}{\sqrt{a+b}}-\frac{1}{\sqrt{a+b}}\right.\right.$$

$$(a-b)(4 a+5 b) \operatorname{Log}\Big[a+b+2 \sqrt{a+b} \sqrt{-\frac{\operatorname{Cos}[c+d x]}{1+\operatorname{Cos}[c+d x]}} \sqrt{\frac{-b-a \operatorname{Cos}[c+d x]}{1+\operatorname{Cos}[c+d x]}}-$$

$$a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+\frac{1}{\sqrt{a-b}}\left(4 a^2-a b-5 b^2\right) \operatorname{Log}\Big[-a+$$

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

$$\frac{1}{\sqrt{a}}8\left(a^2-b^2\right)\text{Log}\left[2a+b+4\sqrt{a}\sqrt{-\frac{\text{Cos}[c+dx]}{1+\text{Cos}[c+dx]}}\sqrt{\frac{-b-a\,\text{Cos}[c+dx]}{1+\text{Cos}[c+dx]}}+(-2a+b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]\right)\sqrt{\text{Sec}[c+dx]}\,\text{Sin}[c+dx]\sqrt{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}\Bigg)\Bigg/$$

$$\left(16\left(a^2-b^2\right)\sqrt{b+a\,\text{Cos}[c+dx]}\sqrt{-(b+a\,\text{Cos}[c+dx])\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2}\right)+$$

$$\frac{1}{16\left(a^2-b^2\right)\sqrt{-(b+a\,\text{Cos}[c+dx])\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2}}$$

$$\sqrt{b+a\,\text{Cos}[c+dx]}\left(-\frac{8\left(a^2-b^2\right)\text{Log}\left[\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\right]}{\sqrt{a}}+\right.$$

$$\frac{(a-b)(4a+5b)\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]}{\sqrt{a+b}}-\frac{1}{\sqrt{a+b}}(a-b)(4a+5b)$$

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

$$\frac{1}{\sqrt{a-b}}\left(4a^2-ab-5b^2\right)\text{Log}\left[-a+2\sqrt{a-b}\sqrt{-\frac{\text{Cos}[c+dx]}{1+\text{Cos}[c+dx]}}\sqrt{\frac{-b-a\,\text{Cos}[c+dx]}{1+\text{Cos}[c+dx]}}+\right.$$

$$\left.(a-b)\,\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]+\frac{1}{\sqrt{a}}8\left(a^2-b^2\right)\text{Log}\left[2a+b+\right.$$

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

$$\text{Sec}[c+dx]^{3/2}\,\text{Sin}[c+dx]\sqrt{-1+\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2}-$$

$$\frac{1}{16\left(a^2-b^2\right)\left(-(b+a\,\text{Cos}[c+dx])\,\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\right)^{3/2}}$$

$$\sqrt{b+a\,\text{Cos}[c+dx]}\left(-\frac{8\left(a^2-b^2\right)\text{Log}\left[\text{Sec}\left[\frac{1}{2}(c+dx)\right]^2\right]}{\sqrt{a}}+\right.$$

$$\frac{(a-b)(4a+5b)\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+dx)\right]^2\right]}{\sqrt{a+b}}-\frac{1}{\sqrt{a+b}}(a-b)(4a+5b)$$

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

$$\frac{1}{\sqrt{a-b}}\left(4\,a^2-a\,b-5\,b^2\right)\text{Log}\left[-a+2\sqrt{a-b}\sqrt{-\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\sqrt{\frac{-b-a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}+\right.$$

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

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

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

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

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

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

$$\left(\frac{(a-b)\,(4\,a+5\,b)\,\text{Csc}\left[\frac{1}{2}(c+d\,x)\right]\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a+b}}-\frac{8\left(a^2-b^2\right)\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]}{\sqrt{a}}-\right.$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$(-2a+b)\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 331: Result more than twice size of optimal antiderivative.

$$\int \frac{\mathrm{Tan}[c+dx]^4}{\sqrt{a+b\,\mathrm{Sec}[c+dx]}}\,dx$$

Optimal (type 4, 404 leaves, 11 steps):

$$-\frac{1}{a\,d}2\sqrt{a+b}\,\mathrm{Cot}[c+dx]\,\mathrm{EllipticPi}\left[\frac{a+b}{a},\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+dx]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b(1-\mathrm{Sec}[c+dx])}{a+b}}\sqrt{-\frac{b(1+\mathrm{Sec}[c+dx])}{a-b}}-\frac{1}{15\,b^4\,d}$$
$$2(a-b)\sqrt{a+b}\,(8a^2-21b^2)\,\mathrm{Cot}[c+dx]\,\mathrm{EllipticE}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+dx]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{-\frac{b(-1+\mathrm{Sec}[c+dx])}{a+b}}\sqrt{-\frac{b(1+\mathrm{Sec}[c+dx])}{a-b}}+\frac{1}{15\,b^3\,d}$$
$$2\sqrt{a+b}\,(-8a^2+2ab+21b^2)\,\mathrm{Cot}[c+dx]\,\mathrm{EllipticF}\left[\mathrm{ArcSin}\left[\frac{\sqrt{a+b\,\mathrm{Sec}[c+dx]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{-\frac{b(-1+\mathrm{Sec}[c+dx])}{a+b}}\sqrt{\frac{b(1+\mathrm{Sec}[c+dx])}{-a+b}}-$$
$$\frac{8a\sqrt{a+b\,\mathrm{Sec}[c+dx]}\,\mathrm{Tan}[c+dx]}{15\,b^2\,d}+\frac{2\,\mathrm{Sec}[c+dx]\sqrt{a+b\,\mathrm{Sec}[c+dx]}\,\mathrm{Tan}[c+dx]}{5\,b\,d}$$

Result (type 4, 839 leaves):

$$-\Bigg(\Bigg(2\sqrt{b+a\,\mathrm{Cos}[c+dx]}\,\sqrt{\mathrm{Sec}[c+dx]}\,\sqrt{\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^2}}$$
$$\Bigg(8a^3\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]+8a^2b\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]-21ab^2\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]-$$
$$21b^3\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]-16a^3\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^3+42ab^2\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^3+$$
$$8a^3\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^5-8a^2b\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^5-21ab^2\,\mathrm{Tan}\left[\frac{1}{2}(c+dx)\right]^5+$$

$$21\,b^3\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^5+30\,b^3\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

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

$$30\,b^3\,\text{EllipticPi}\left[-1,\,-\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

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

$$\left(8\,a^3+8\,a^2\,b-21\,a\,b^2-21\,b^3\right)\,\text{EllipticE}\left[\text{ArcSin}\left[\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a-b}{a+b}\right]$$

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

$$\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-2\,b\,\left(4\,a^2+a\,b-18\,b^2\right)$$

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

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

$$\left(15\,b^3\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{3/2}\right.$$

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

$$\left(\left(b+a\,\text{Cos}[c+d\,x]\right)\,\text{Sec}[c+d\,x]\,\left(-\frac{2\,\left(-8\,a^2+21\,b^2\right)\,\text{Sin}[c+d\,x]}{15\,b^3}-\frac{8\,a\,\text{Tan}[c+d\,x]}{15\,b^2}+\right.\right.$$

$$\left.\left.\frac{2\,\text{Sec}[c+d\,x]\,\text{Tan}[c+d\,x]}{5\,b}\right)\right)\Bigg/\left(d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}\right)$$

Problem 332: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 310 leaves, 6 steps):

$$-\frac{1}{b^2 d}2(a-b)\sqrt{a+b}\,\text{Cot}[c+d x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}-\frac{1}{b d}2\sqrt{a+b}\,\text{Cot}[c+d x]\,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}+\frac{1}{a d}2\sqrt{a+b}\,\text{Cot}[c+d x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b(1-\text{Sec}[c+d x])}{a+b}}\sqrt{-\frac{b(1+\text{Sec}[c+d x])}{a-b}}$$

Result (type 4, 2752 leaves):

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

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

$$2\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\sqrt{\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]}\ \text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\left(-\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,\text{Sin}[c+d\,x]+2\,\text{Cos}[c+d\,x]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^4\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)$$

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

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

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

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

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

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

$$\left.\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\Bigg/\left(\sqrt{2}\;\sqrt{\frac{\mathrm{Cos}[c+d\,x]}{1+\mathrm{Cos}[c+d\,x]}}\right)-$$

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

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

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

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

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

$$\left.\left.\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)\right)\Bigg/\left(\sqrt{\frac{(b+a\,\mathrm{Cos}[c+d\,x])\;\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\right)+$$

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

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

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

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

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

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

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

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

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

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

$$\left.\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Sec}[c+d\,x]\,\mathrm{Tan}[c+d\,x]\right)\Bigg/$$

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

$$\sqrt{\mathrm{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Sec}[c+d\,x]}\Bigg)\Bigg)$$

Problem 333: Unable to integrate problem.

$$\int\frac{1}{\sqrt{a+b\,\mathrm{Sec}[c+d\,x]}}\,dx$$

Optimal (type 4, 106 leaves, 1 step):

$$-\frac{1}{a\,d}2\sqrt{a+b}\;\text{Cot}[c+d\,x]\;\text{EllipticPi}\left[\frac{a+b}{a},\,\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\,\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}$$

Result (type 8, 16 leaves):

$$\int\frac{1}{\sqrt{a+b\,\text{Sec}[c+d\,x]}}\,dx$$

Problem 334: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 361 leaves, 9 steps):

$$\frac{1}{\sqrt{a+b}\;d}\text{Cot}[c+d\,x]\;\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\,\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{\sqrt{a+b}\;d}\text{Cot}[c+d\,x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\,\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+$$
$$\frac{1}{a\,d}2\sqrt{a+b}\;\text{Cot}[c+d\,x]\;\text{EllipticPi}\left[\frac{a+b}{a},\,\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\,\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\;\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-$$
$$\frac{\text{Cot}[c+d\,x]}{d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}+\frac{b^2\,\text{Tan}[c+d\,x]}{\left(a^2-b^2\right)\,d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 4, 1198 leaves):

$$\frac{(b+a\,\text{Cos}[c+d\,x])\;\text{Sec}[c+d\,x]\left(\frac{(-b+a\,\text{Cos}[c+d\,x])\,\text{Csc}[c+d\,x]}{-a^2+b^2}+\frac{b\,\text{Sin}[c+d\,x]}{-a^2+b^2}\right)}{d\,\sqrt{a+b\,\text{Sec}[c+d\,x]}}-$$
$$\Bigg(\sqrt{b+a\,\text{Cos}[c+d\,x]}\;\sqrt{\text{Sec}[c+d\,x]}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Problem 337: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 54 leaves, 4 steps):

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

Result (type 3, 128 leaves):

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

Problem 338: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 142 leaves, 7 steps):

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

Result (type 3, 6484 leaves):

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

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

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

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

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

$$a^{5/2}\,\sqrt{a+b}\,\text{Log}\Big[-a+2\,\sqrt{a-b}\,\sqrt{-\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\,\sqrt{\frac{-b-a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}+$$

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

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

$$2\,a^2\,\sqrt{a-b}\,\sqrt{a+b}\,\text{Log}\Big[2\,a+b+4\,\sqrt{a}\,\sqrt{-\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\,\sqrt{\frac{-b-a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}+$$

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

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

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

$$\frac{b^2\,\text{Csc}[c+d\,x]\,\sqrt{\text{Sec}[c+d\,x]}}{2\,a\,(a^2-b^2)\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}+\frac{a\,\text{Cos}[2\,(c+d\,x)]\,\text{Csc}[c+d\,x]\,\sqrt{\text{Sec}[c+d\,x]}}{2\,(a^2-b^2)\,\sqrt{b+a\,\text{Cos}[c+d\,x]}}-$$

$$\left.\left.\frac{b^2 \operatorname{Cos}\left[2\ (c+d\,x)\right] \operatorname{Csc}[c+d\,x] \sqrt{\operatorname{Sec}[c+d\,x]}}{2\,a\,\left(a^2-b^2\right) \sqrt{b+a \operatorname{Cos}[c+d\,x]}}\right) \operatorname{Sec}[c+d\,x]^2\right) \Big/$$

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

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

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

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

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

$$a^{3/2} \sqrt{a-b}\ b \operatorname{Log}\left[a+b+2 \sqrt{a+b}\, \sqrt{-\frac{\operatorname{Cos}[c+d\,x]}{1+\operatorname{Cos}[c+d\,x]}}\, \sqrt{\frac{-b-a \operatorname{Cos}[c+d\,x]}{1+\operatorname{Cos}[c+d\,x]}}-\right.$$

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

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

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

$$2\,a^2 \sqrt{a-b}\, \sqrt{a+b} \operatorname{Log}\left[2\,a+b+4 \sqrt{a}\, \sqrt{-\frac{\operatorname{Cos}[c+d\,x]}{1+\operatorname{Cos}[c+d\,x]}}\, \sqrt{\frac{-b-a \operatorname{Cos}[c+d\,x]}{1+\operatorname{Cos}[c+d\,x]}}+\right.$$

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

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

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

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

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

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

$$a^{3/2}\sqrt{a-b}\ b \text{Log}\left[a+b+2\sqrt{a+b}\ \sqrt{-\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\ \sqrt{\frac{-b-a \text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\ -\right.$$

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

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

$$a^{3/2}\ b\sqrt{a+b}\ \text{Log}\left[-a+2\sqrt{a-b}\ \sqrt{-\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\ \sqrt{\frac{-b-a \text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\ +\right.$$

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

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

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

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

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

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

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

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

$$a^{3/2}\sqrt{a-b}\,b\,\text{Log}\left[a+b+2\sqrt{a+b}\sqrt{-\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\sqrt{\frac{-b-a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}-\right.$$

$$\left.a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right]+a^{5/2}\sqrt{a+b}\,\text{Log}\left[-a+2\sqrt{a-b}\sqrt{-\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\right.$$

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

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

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

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

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

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

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

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

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

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

$$a^{3/2}\sqrt{a-b}\,b\,\text{Log}\left[a+b+2\sqrt{a+b}\sqrt{-\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\sqrt{\frac{-b-a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}-\right.$$

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

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

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

$$2\,a^2\sqrt{a-b}\sqrt{a+b}\,\mathrm{Log}\Big[2\,a+b+4\sqrt{a}\sqrt{-\frac{\mathrm{Cos}[c+d\,x]}{1+\mathrm{Cos}[c+d\,x]}}\sqrt{\frac{-b-a\,\mathrm{Cos}[c+d\,x]}{1+\mathrm{Cos}[c+d\,x]}}+$$

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

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

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

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

$$\sqrt{-\frac{\mathrm{Cos}[c+d\,x]}{1+\mathrm{Cos}[c+d\,x]}}\sqrt{b+a\,\mathrm{Cos}[c+d\,x]}\sqrt{\mathrm{Sec}[c+d\,x]}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\Bigg(2\,a+b+4\,\sqrt{a}\,\sqrt{-\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\,\sqrt{\frac{-b-a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}+$$

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

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

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

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

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

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

Problem 339: Result more than twice size of optimal antiderivative.

$$\int \frac{\operatorname{Cot}[c+d x]^3}{(a+b \operatorname{Sec}[c+d x])^{3/2}} \, dx$$

Optimal (type 3, 236 leaves, 11 steps):

$$-\frac{2 \operatorname{ArcTanh}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a}}\right]}{a^{3/2} d}+\frac{(4 a-7 b) \operatorname{ArcTanh}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a-b}}\right]}{4 (a-b)^{5/2} d}+$$

$$\frac{(4 a+7 b) \operatorname{ArcTanh}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right]}{4 (a+b)^{5/2} d}+\frac{2 b^4}{a \left(a^2-b^2\right)^2 d \sqrt{a+b \operatorname{Sec}[c+d x]}}+$$

$$\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{4 (a+b)^2 d (1-\operatorname{Sec}[c+d x])}+\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{4 (a-b)^2 d (1+\operatorname{Sec}[c+d x])}$$

Result (type 3, 4191 leaves):

$$\left((b+a \operatorname{Cos}[c+d x])^2 \left(\frac{a^4+a^2 b^2+4 b^4}{2 a^2 \left(-a^2+b^2\right)^2}-\frac{2 b^5}{a^2 \left(a^2-b^2\right)^2 (b+a \operatorname{Cos}[c+d x])}+\right.\right.$$

$$\left.\left.\frac{\left(-a^2-b^2+2 a b \operatorname{Cos}[c+d x]\right) \operatorname{Csc}[c+d x]^2}{2 \left(-a^2+b^2\right)^2}\right) \operatorname{Sec}[c+d x]^2\right) \Big/ \left(d (a+b \operatorname{Sec}[c+d x])^{3/2}\right)+$$

$$\left((b+a \operatorname{Cos}[c+d x])^2 \left(-8 \left(a^2-b^2\right)^2 \operatorname{Log}\left[\operatorname{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.\right.$$

$$\frac{a^{3/2} (a-b)^2 (4 a+7 b) \operatorname{Log}\left[\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]}{\sqrt{a+b}}-\frac{1}{\sqrt{a+b}} a^{3/2} (a-b)^2 (4 a+7 b)$$

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

$$\frac{1}{\sqrt{a-b}} a^{3/2} (4 a-7 b) (a+b)^2 \operatorname{Log}\left[-a+2 \sqrt{a-b} \sqrt{-\frac{\operatorname{Cos}[c+d x]}{1+\operatorname{Cos}[c+d x]}} \sqrt{\frac{-b-a \operatorname{Cos}[c+d x]}{1+\operatorname{Cos}[c+d x]}}+\right.$$

$$(a-b)\,\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]+8\left(a^2-b^2\right)^2\,\mathrm{Log}\Big[$$

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

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

$$\frac{7 b^3\,\mathrm{Csc}[c+d x]}{4\left(a^2-b^2\right)^2\sqrt{b+a\,\mathrm{Cos}[c+d x]}\sqrt{\mathrm{Sec}[c+d x]}}-\frac{a^3\,\mathrm{Csc}[c+d x]\sqrt{\mathrm{Sec}[c+d x]}}{2\left(a^2-b^2\right)^2\sqrt{b+a\,\mathrm{Cos}[c+d x]}}+$$

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

$$\frac{a^3\,\mathrm{Cos}[2(c+d x)]\,\mathrm{Csc}[c+d x]\sqrt{\mathrm{Sec}[c+d x]}}{2\left(a^2-b^2\right)^2\sqrt{b+a\,\mathrm{Cos}[c+d x]}}+$$

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

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

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

$$\Bigg(\Bigg(\sqrt{b+a\,\mathrm{Cos}[c+d x]}\Bigg(-8\left(a^2-b^2\right)^2\,\mathrm{Log}\Big[\mathrm{Sec}\left[\frac{1}{2}(c+d x)\right]^2\Big]+$$

$$\frac{a^{3/2}(a-b)^2(4 a+7 b)\,\mathrm{Log}\Big[\mathrm{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big]}{\sqrt{a+b}}-\frac{1}{\sqrt{a+b}}a^{3/2}(a-b)^2(4 a+7 b)\,\mathrm{Log}\Big[$$

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

$$\frac{1}{\sqrt{a-b}}a^{3/2}(4 a-7 b)(a+b)^2\,\mathrm{Log}\Big[-a+2\sqrt{a-b}\sqrt{-\frac{\mathrm{Cos}[c+d x]}{1+\mathrm{Cos}[c+d x]}}$$

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

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

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\sqrt{\text{Sec}[c+d x]}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\Bigg)\Big/$$

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

$$\Bigg(\Bigg(-8\left(a^2-b^2\right)^2\text{Log}\left[\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right]+\frac{a^{3/2}(a-b)^2(4 a+7 b)\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]}{\sqrt{a+b}}-$$

$$\frac{1}{\sqrt{a+b}}a^{3/2}(a-b)^2(4 a+7 b)\,\text{Log}\Bigg[$$

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

$$\frac{1}{\sqrt{a-b}}a^{3/2}(4 a-7 b)(a+b)^2\,\text{Log}\Bigg[-a+2\sqrt{a-b}\sqrt{-\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}$$

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

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

$$\sqrt{\text{Sec}[c+d x]}\,\text{Sin}[c+d x]\sqrt{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\Bigg)\Big/$$

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

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

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

$$\frac{a^{3/2}(a-b)^2(4 a+7 b)\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]}{\sqrt{a+b}}-\frac{1}{\sqrt{a+b}}a^{3/2}(a-b)^2(4 a+7 b)$$

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

$$\frac{1}{\sqrt{a-b}}a^{3/2}(4a-7b)(a+b)^2\,\text{Log}\left[-a+2\sqrt{a-b}\sqrt{-\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\right.$$

$$\left.\sqrt{\frac{-b-a\,\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}+(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+8\left(a^2-b^2\right)^2\text{Log}\left[2a+b+\right.$$

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

$$\text{Sec}[c+d x]^{3/2}\,\text{Sin}[c+d x]\sqrt{-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}-$$

$$\frac{1}{16a^{3/2}\left(a^2-b^2\right)^2\left(-(b+a\,\text{Cos}[c+d x])\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}}$$

$$\sqrt{b+a\,\text{Cos}[c+d x]}\left(-8\left(a^2-b^2\right)^2\text{Log}\left[\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right]+\right.$$

$$\frac{a^{3/2}(a-b)^2(4a+7b)\,\text{Log}\left[\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]}{\sqrt{a+b}}-\frac{1}{\sqrt{a+b}}a^{3/2}(a-b)^2(4a+7b)$$

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

$$\frac{1}{\sqrt{a-b}}a^{3/2}(4a-7b)(a+b)^2\,\text{Log}\left[-a+2\sqrt{a-b}\sqrt{-\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\right.$$

$$\left.\sqrt{\frac{-b-a\,\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}+(a-b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right]+8\left(a^2-b^2\right)^2\text{Log}\left[2a+b+\right.$$

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

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

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

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

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

$$\left(\frac{a^{3/2}\,(a-b)^2\,(4\,a+7\,b)\,\text{Csc}\left[\frac{1}{2}\,(c+d\,x)\right]\,\text{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]}{\sqrt{a+b}}-8\,\left(a^2-b^2\right)^2\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-\right.$$

$$\left(a^{3/2}\,(a-b)^2\,(4\,a+7\,b)\,\left(\left(\sqrt{a+b}\,\sqrt{\frac{-b-a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\,\left(-\frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{\left(1+\text{Cos}[c+d\,x]\right)^2}+\right.\right.\right.\right.$$

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

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

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

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

$$\left(a^{3/2}\,(4\,a-7\,b)\,(a+b)^2\,\left(\left(\sqrt{a-b}\,\sqrt{\frac{-b-a\,\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\,\left(-\frac{\text{Cos}[c+d\,x]\,\text{Sin}[c+d\,x]}{\left(1+\text{Cos}[c+d\,x]\right)^2}+\right.\right.\right.\right.$$

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

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

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

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

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

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

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

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

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

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

Problem 341: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 4, 344 leaves, 7 steps):

$$\frac{1}{a b^2 d}2 (a-b) \sqrt{a+b} \operatorname{Cot}[c+d x] \operatorname{EllipticE}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}}+\frac{1}{a b d}2 \sqrt{a+b} \operatorname{Cot}[c+d x] \operatorname{EllipticF}\left[\operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}}+\frac{1}{a^2 d}2 \sqrt{a+b} \operatorname{Cot}[c+d x] \operatorname{EllipticPi}\left[\frac{a+b}{a}, \operatorname{ArcSin}\left[\frac{\sqrt{a+b \operatorname{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\operatorname{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\operatorname{Sec}[c+d x])}{a-b}}+\frac{2 \operatorname{Tan}[c+d x]}{a d \sqrt{a+b \operatorname{Sec}[c+d x]}}$$

Result (type 4, 876 leaves):

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

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

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

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

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

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

$$\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{a+b}}+$$

$$2 i b \operatorname{EllipticPi}\left[-\frac{a+b}{a-b}, i \operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]\right], \frac{a+b}{a-b}\right]$$

$$\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2 \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$i (a-b) \operatorname{EllipticE}\left[i \operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a+b}{a-b}\right]$$

$$\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}-$$

$$2 i b \operatorname{EllipticF}\left[i \operatorname{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}} \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]\right], \frac{a+b}{a-b}\right]$$

$$\left.\left.\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right) \sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right) \Big/$$

$$\left(a b \sqrt{\frac{-a+b}{a+b}}\, d\, (a+b \operatorname{Sec}[c+d x])^{3/2}\left(1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{3/2}\right.$$

$$\left.\sqrt{\frac{a+b-a \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\operatorname{Tan}\left[\frac{1}{2}(c+d x)\right]^2}}\right)$$

Problem 342: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{1}{(a+b \operatorname{Sec}[c+d x])^{3/2}}\, dx$$

Optimal (type 4, 347 leaves, 6 steps):

$$\frac{1}{a\sqrt{a+b}\,d}2\,\text{Cot}[c+d\,x]\,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-\frac{1}{a\sqrt{a+b}\,d}2\,\text{Cot}[c+d\,x]$$
$$\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}-$$
$$\frac{1}{a^2\,d}2\sqrt{a+b}\,\text{Cot}[c+d\,x]\,\text{EllipticPi}\left[\frac{a+b}{a},\text{ArcSin}\left[\frac{\sqrt{a+b\,\text{Sec}[c+d\,x]}}{\sqrt{a+b}}\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{\frac{b\,(1-\text{Sec}[c+d\,x])}{a+b}}\sqrt{-\frac{b\,(1+\text{Sec}[c+d\,x])}{a-b}}+\frac{2\,b^2\,\text{Tan}[c+d\,x]}{a\,(a^2-b^2)\,d\sqrt{a+b\,\text{Sec}[c+d\,x]}}$$

Result (type 4, 1249 leaves):

$$\frac{(b+a\,\text{Cos}[c+d\,x])^2\,\text{Sec}[c+d\,x]^2\left(\frac{2\,b\,\text{Sin}[c+d\,x]}{a\,(-a^2+b^2)}+\frac{2\,b^2\,\text{Sin}[c+d\,x]}{a\,(a^2-b^2)\,(b+a\,\text{Cos}[c+d\,x])}\right)}{d\,(a+b\,\text{Sec}[c+d\,x])^{3/2}}+$$
$$\left(2\,(b+a\,\text{Cos}[c+d\,x])^{3/2}\,\text{Sec}[c+d\,x]^{3/2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}}\right.$$
$$\left(a\,b\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+b^2\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-2\,a\,b\sqrt{\frac{-a+b}{a+b}}\right.$$
$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^3+a\,b\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-b^2\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^5-$$
$$2\,i\,a^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}+$$
$$2\,i\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]$$
$$\sqrt{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{a+b}}-$$

$$2\,i\,a^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+$$

$$2\,i\,b^2\,\text{EllipticPi}\left[-\frac{a+b}{a-b},\,i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,-$$

$$i\,(a-b)\,b\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]\,\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,+$$

$$i\,(a^2+a\,b-2\,b^2)\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right],\,\frac{a+b}{a-b}\right]$$

$$\sqrt{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)$$

$$\left.\left.\sqrt{\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{a+b}}\,\right)\right)\Big/$$

$$\left(a\,\sqrt{\frac{-a+b}{a+b}}\,(a^2-b^2)\,d\,(a+b\,\text{Sec}[c+d\,x])^{3/2}\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right.$$

$$\sqrt{\frac{1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}}$$

$$\left.\left(a\,\left(-1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)-b\,\left(1+\text{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)\right)$$

Problem 343: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \frac{\text{Cot}[c+d x]^2}{(a+b \,\text{Sec}[c+d x])^{3/2}} \, dx$$

Optimal (type 4, 449 leaves, 14 steps):

$$\frac{1}{a^2 d} 2 \sqrt{a+b} \,\text{Cot}[c+d x] \,\text{EllipticPi}\left[\frac{a+b}{a}, \text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{\frac{b (1-\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}} + \left(2 \left(a^2+b^2\right) \text{Cot}[c+d x] \,\text{EllipticE}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{-\frac{b (-1+\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}\right) \Big/ \left(a (a-b) (a+b)^{3/2} d\right) - \left(\left(a^2-a b+2 b^2\right) \text{Cot}[c+d x] \,\text{EllipticF}\left[\text{ArcSin}\left[\frac{\sqrt{a+b \,\text{Sec}[c+d x]}}{\sqrt{a+b}}\right], \frac{a+b}{a-b}\right] \sqrt{-\frac{b (-1+\text{Sec}[c+d x])}{a+b}} \sqrt{-\frac{b (1+\text{Sec}[c+d x])}{a-b}}\right) \Big/ \left(a (a-b) (a+b)^{3/2} d\right) - \frac{\text{Cot}[c+d x]}{d (a+b \,\text{Sec}[c+d x])^{3/2}} + \frac{b^2 \,\text{Tan}[c+d x]}{\left(a^2-b^2\right) d (a+b \,\text{Sec}[c+d x])^{3/2}} + \frac{2 b^2 \left(a^2+b^2\right) \text{Tan}[c+d x]}{a \left(a^2-b^2\right)^2 d \sqrt{a+b \,\text{Sec}[c+d x]}}$$

Result (type 4, 4307 leaves):

$$\left((b+a \,\text{Cos}[c+d x])^2 \,\text{Sec}[c+d x]^2 \left(\frac{\left(2 a b-a^2 \,\text{Cos}[c+d x]-b^2 \,\text{Cos}[c+d x]\right) \text{Csc}[c+d x]}{\left(-a^2+b^2\right)^2} - \frac{2 b \left(a^2+b^2\right) \text{Sin}[c+d x]}{a \left(a^2-b^2\right)^2} + \frac{2 b^4 \,\text{Sin}[c+d x]}{a \left(a^2-b^2\right)^2 (b+a \,\text{Cos}[c+d x])}\right)\right) \Big/ \left(d (a+b \,\text{Sec}[c+d x])^{3/2}\right) - \left(2 \,\text{Cos}\left[\frac{1}{2} (c+d x)\right]^2 (b+a \,\text{Cos}[c+d x]) \left(-\frac{a^3}{\left(-a^2+b^2\right)^2 \sqrt{b+a \,\text{Cos}[c+d x]} \sqrt{\text{Sec}[c+d x]}} + \frac{3 a b^2}{\left(-a^2+b^2\right)^2 \sqrt{b+a \,\text{Cos}[c+d x]} \sqrt{\text{Sec}[c+d x]}} + \frac{a^2 b \sqrt{\text{Sec}[c+d x]}}{2 \left(-a^2+b^2\right)^2 \sqrt{b+a \,\text{Cos}[c+d x]}} - \frac{b^3 \sqrt{\text{Sec}[c+d x]}}{2 \left(-a^2+b^2\right)^2 \sqrt{b+a \,\text{Cos}[c+d x]}} + \frac{a^2 b \,\text{Cos}[2 (c+d x)] \sqrt{\text{Sec}[c+d x]}}{\left(-a^2+b^2\right)^2 \sqrt{b+a \,\text{Cos}[c+d x]}} + \frac{b^3 \,\text{Cos}[2 (c+d x)] \sqrt{\text{Sec}[c+d x]}}{\left(-a^2+b^2\right)^2 \sqrt{b+a \,\text{Cos}[c+d x]}}\right) \text{Sec}[c+d x]^2$$

$$\left(-2\,\mathrm{i}\,b\left(-a^3+a^2 b-a b^2+b^3\right)\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\,\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}\right.$$

$$\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]+$$

$$\mathrm{i}\left(2 a^4-a^3 b-2 a^2 b^2-3 a b^3+4 b^4\right)\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\,\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}$$

$$\text{EllipticF}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]-$$

$$4\,\mathrm{i}\left(a^2-b^2\right)^2\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\,\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}$$

$$\text{EllipticPi}\left[-\frac{a+b}{a-b},\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]-$$

$$\left.\left.b\sqrt{\frac{-a+b}{a+b}}\left(a^2+b^2\right)\text{Cos}[c+d x]\,(b+a\,\text{Cos}[c+d x])\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)\right)\Big/$$

$$\left(a\sqrt{\frac{-a+b}{a+b}}\left(a^2-b^2\right)^2 d\,(a+b\,\text{Sec}[c+d x])^{3/2}\right.$$

$$\left(\frac{1}{a\sqrt{\frac{-a+b}{a+b}}\left(a^2-b^2\right)^2\sqrt{b+a\,\text{Cos}[c+d x]}}\,2\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]\sqrt{\text{Sec}[c+d x]}\,\text{Sin}\left[\frac{1}{2}(c+d x)\right]\right.$$

$$\left(-2\,\mathrm{i}\,b\left(-a^3+a^2 b-a b^2+b^3\right)\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\,\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}\right.$$

$$\text{EllipticE}\left[\mathrm{i}\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]+$$

$$\mathrm{i}\left(2 a^4-a^3 b-2 a^2 b^2-3 a b^3+4 b^4\right)\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\,\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]-$$

$$4\,i\,(a^2-b^2)^2\sqrt{\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{(a+b)\,(1+\text{Cos}[c+d\,x])}}$$

$$\text{EllipticPi}\left[-\frac{a+b}{a-b},i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]-b\sqrt{\frac{-a+b}{a+b}}$$

$$\left.(a^2+b^2)\,\text{Cos}[c+d\,x]\,(b+a\,\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)-$$

$$\frac{1}{\sqrt{\frac{-a+b}{a+b}}\,(a^2-b^2)^2\,(b+a\,\text{Cos}[c+d\,x])^{3/2}}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\sqrt{\text{Sec}[c+d\,x]}\,\text{Sin}[c+d\,x]$$

$$\left(-2\,i\,b\,(-a^3+a^2\,b-a\,b^2+b^3)\sqrt{\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{(a+b)\,(1+\text{Cos}[c+d\,x])}}\right.$$

$$\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]+$$

$$i\,(2\,a^4-a^3\,b-2\,a^2\,b^2-3\,a\,b^3+4\,b^4)\sqrt{\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{(a+b)\,(1+\text{Cos}[c+d\,x])}}$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]-$$

$$4\,i\,(a^2-b^2)^2\sqrt{\frac{\text{Cos}[c+d\,x]}{1+\text{Cos}[c+d\,x]}}\sqrt{\frac{b+a\,\text{Cos}[c+d\,x]}{(a+b)\,(1+\text{Cos}[c+d\,x])}}$$

$$\text{EllipticPi}\left[-\frac{a+b}{a-b},i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right],\frac{a+b}{a-b}\right]-b\sqrt{\frac{-a+b}{a+b}}$$

$$\left.(a^2+b^2)\,\text{Cos}[c+d\,x]\,(b+a\,\text{Cos}[c+d\,x])\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)-$$

$$\frac{1}{a\sqrt{\frac{-a+b}{a+b}}\,(a^2-b^2)^2\sqrt{b+a\,\text{Cos}[c+d\,x]}}\,\text{Cos}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Sec}[c+d\,x]^{3/2}\,\text{Sin}[c+d\,x]$$

$$\left(-2\,i\,b\left(-a^3+a^2 b-a b^2+b^3\right)\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}\right.$$

$$\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]+$$

$$i\left(2 a^4-a^3 b-2 a^2 b^2-3 a b^3+4 b^4\right)\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]-$$

$$4\,i\left(a^2-b^2\right)^2\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}$$

$$\text{EllipticPi}\left[-\frac{a+b}{a-b},i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]-b\sqrt{\frac{-a+b}{a+b}}$$

$$\left.\left(a^2+b^2\right)\text{Cos}[c+d x]\,(b+a\,\text{Cos}[c+d x])\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)-$$

$$\frac{1}{a\sqrt{\frac{-a+b}{a+b}}\left(a^2-b^2\right)^2\sqrt{b+a\,\text{Cos}[c+d x]}}\,2\,\text{Cos}\left[\frac{1}{2}(c+d x)\right]^2\sqrt{\text{Sec}[c+d x]}$$

$$\left(-\frac{1}{2}b\sqrt{\frac{-a+b}{a+b}}\left(a^2+b^2\right)\text{Cos}[c+d x]\,(b+a\,\text{Cos}[c+d x])\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^4-\frac{1}{\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}}\right.$$

$$i\,b\left(-a^3+a^2 b-a b^2+b^3\right)\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\right.\right.$$

$$\left.\left.\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]\left(\frac{\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{(1+\text{Cos}[c+d x])^2}-\frac{\text{Sin}[c+d x]}{1+\text{Cos}[c+d x]}\right)+$$

$$\frac{1}{2\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}}\,i\left(2 a^4-a^3 b-2 a^2 b^2-3 a b^3+4 b^4\right)\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}$$

$$\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]\left(\frac{\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{(1+\text{Cos}[c+d x])^2}-\frac{\text{Sin}[c+d x]}{1+\text{Cos}[c+d x]}\right)-\frac{1}{\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}}2\,i\,(a^2-b^2)^2\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}$$

$$\text{EllipticPi}\left[-\frac{a+b}{a-b},i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]$$

$$\left(\frac{\text{Cos}[c+d x]\,\text{Sin}[c+d x]}{(1+\text{Cos}[c+d x])^2}-\frac{\text{Sin}[c+d x]}{1+\text{Cos}[c+d x]}\right)-\Bigg(i\,b\,(-a^3+a^2 b-a b^2+b^3)$$

$$\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\,\text{EllipticE}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]$$

$$\left.\left(-\frac{a\,\text{Sin}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}+\frac{(b+a\,\text{Cos}[c+d x])\,\text{Sin}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])^2}\right)\right)\Bigg/$$

$$\left(\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}\right)+\Bigg(i\,(2 a^4-a^3 b-2 a^2 b^2-3 a b^3+4 b^4)$$

$$\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\,\text{EllipticF}\left[i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]$$

$$\left.\left(-\frac{a\,\text{Sin}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}+\frac{(b+a\,\text{Cos}[c+d x])\,\text{Sin}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])^2}\right)\right)\Bigg/$$

$$\left(2\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}\right)-\Bigg(2\,i\,(a^2-b^2)^2\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}$$

$$\text{EllipticPi}\left[-\frac{a+b}{a-b},i\,\text{ArcSinh}\left[\sqrt{\frac{-a+b}{a+b}}\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right],\frac{a+b}{a-b}\right]$$

$$\left.\left(-\frac{a\,\text{Sin}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}+\frac{(b+a\,\text{Cos}[c+d x])\,\text{Sin}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])^2}\right)\right)\Bigg/$$

$$\left(\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)\,(1+\text{Cos}[c+d x])}}\right)+a\,b\sqrt{\frac{-a+b}{a+b}}\,(a^2+b^2)\,\text{Cos}[c+d x]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sin}[c+d x]\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]+b\sqrt{\frac{-a+b}{a+b}}\left(a^2+b^2\right)$$

$$(b+a\,\text{Cos}[c+d x])\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Sin}[c+d x]\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]-$$

$$b\sqrt{\frac{-a+b}{a+b}}\left(a^2+b^2\right)\text{Cos}[c+d x]\,(b+a\,\text{Cos}[c+d x])\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2-\left(\sqrt{\frac{-a+b}{a+b}}\left(2a^4-a^3 b-2a^2 b^2-3 a b^3+4 b^4\right)\right.$$

$$\left.\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)(1+\text{Cos}[c+d x])}}\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big/$$

$$\left(2\sqrt{1+\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a-b}}\sqrt{1+\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)+\left(2\sqrt{\frac{-a+b}{a+b}}\right.$$

$$\left.\left(a^2-b^2\right)^2\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)(1+\text{Cos}[c+d x])}}\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big/$$

$$\left(\left(1-\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a-b}\right)\sqrt{1+\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a-b}}\right.$$

$$\left.\sqrt{1+\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)+\left(b\sqrt{\frac{-a+b}{a+b}}\left(-a^3+a^2 b-a b^2+b^3\right)\right.$$

$$\sqrt{\frac{\text{Cos}[c+d x]}{1+\text{Cos}[c+d x]}}\sqrt{\frac{b+a\,\text{Cos}[c+d x]}{(a+b)(1+\text{Cos}[c+d x])}}\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\left.\left.\left.\sqrt{1+\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a-b}}\right)\Big/\left(\sqrt{1+\frac{(-a+b)\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{a+b}}\right)\right)\right)\right)$$

Problem 344: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+b\,\text{Sec}[e+f x])^3\,(d\,\text{Tan}[e+f x])^n\,dx$$

Optimal (type 5, 245 leaves, 8 steps):

$$\frac{3\,a\,b^2\,(d\,\text{Tan}[e+f\,x])^{1+n}}{d\,f\,(1+n)}+\frac{1}{d\,f\,(1+n)}a^3\,\text{Hypergeometric2F1}\left[1,\frac{1+n}{2},\frac{3+n}{2},-\text{Tan}[e+f\,x]^2\right](d\,\text{Tan}[e+f\,x])^{1+n}+\frac{1}{d\,f\,(1+n)}3\,a^2\,b\,(\text{Cos}[e+f\,x]^2)^{\frac{2+n}{2}}\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},\frac{2+n}{2},\frac{3+n}{2},\text{Sin}[e+f\,x]^2\right]\text{Sec}[e+f\,x]\,(d\,\text{Tan}[e+f\,x])^{1+n}+\frac{1}{d\,f\,(1+n)}b^3\,(\text{Cos}[e+f\,x]^2)^{\frac{4+n}{2}}\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},\frac{4+n}{2},\frac{3+n}{2},\text{Sin}[e+f\,x]^2\right]\text{Sec}[e+f\,x]^3\,(d\,\text{Tan}[e+f\,x])^{1+n}$$

Result (type 6, 3217 leaves):

$$-\Bigg(\Bigg(2\,\text{Cos}[e+f\,x]^3\,(a+b\,\text{Sec}[e+f\,x])^3\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\Bigg(-b\left((3\,a^2-3\,a\,b+b^2)\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},1+n,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+2\,b\left((3\,a-2\,b)\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},2+n,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+2\,b\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},3+n,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\right)\right)\left(\text{Cos}[e+f\,x]\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\right)^n-\Bigg(a^3\,(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\text{Cos}\left[\frac{1}{2}(e+f\,x)\right]^2\Bigg)\Big/\Bigg((3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]-n\,\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\Bigg)\Bigg)(d\,\text{Tan}[e+f\,x])^n\left(a^3\,\text{Tan}[e+f\,x]^n+3\,a^2\,b\,\text{Sec}[e+f\,x]\,\text{Tan}[e+f\,x]^n+3\,a\,b^2\,\text{Sec}[e+f\,x]^2\,\text{Tan}[e+f\,x]^n+b^3\,\text{Sec}[e+f\,x]^3\,\text{Tan}[e+f\,x]^n\right)\Bigg)\Big/$$

$$\Bigg(f\,(1+n)\,(b+a\,\text{Cos}[e+f\,x])^3\Bigg(-\frac{1}{1+n}2\,n\,\text{Sec}[e+f\,x]^2\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\Bigg(-b\left((3\,a^2-3\,a\,b+b^2)\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},1+n,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+2\,b\left((3\,a-2\,b)\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},2+n,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+2\,b\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},3+n,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\right)\right)\left(\text{Cos}[e+f\,x]\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\right)^n-\Bigg(a^3\,(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\right.$$

$$\frac{3+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] \mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]^2\Big) \Big/$$

$$\Big(\left(3+n\right) \mathrm{AppellF1}\left[\frac{1+n}{2}, n, 1, \frac{3+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] -$$

$$2\Big(\mathrm{AppellF1}\left[\frac{3+n}{2}, n, 2, \frac{5+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] -$$

$$n\,\mathrm{AppellF1}\left[\frac{3+n}{2}, 1+n, 1, \frac{5+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)$$

$$\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big) \mathrm{Tan}[e+f x]^{-1+n} - \frac{1}{1+n} \mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\Big(-b\Big(\left(3 a^2 - 3 a b + b^2\right) \mathrm{Hypergeometric2F1}\left[\frac{1+n}{2}, 1+n, \frac{3+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$2 b\Big(\left(3 a - 2 b\right) \mathrm{Hypergeometric2F1}\left[\frac{1+n}{2}, 2+n, \frac{3+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$2 b\,\mathrm{Hypergeometric2F1}\left[\frac{1+n}{2}, 3+n, \frac{3+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\Big)$$

$$\left(\mathrm{Cos}[e+f x]\, \mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^n - \Big(a^3 \left(3+n\right) \mathrm{AppellF1}\Big[\frac{1+n}{2}, n, 1,$$

$$\frac{3+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] \mathrm{Cos}\left[\frac{1}{2}(e+f x)\right]^2\Big) \Big/$$

$$\Big(\left(3+n\right) \mathrm{AppellF1}\left[\frac{1+n}{2}, n, 1, \frac{3+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] -$$

$$2\Big(\mathrm{AppellF1}\left[\frac{3+n}{2}, n, 2, \frac{5+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] -$$

$$n\,\mathrm{AppellF1}\left[\frac{3+n}{2}, 1+n, 1, \frac{5+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)$$

$$\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big)\Big) \mathrm{Tan}[e+f x]^n - \frac{1}{1+n} 2\, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]$$

$$\Big(-b\, n\Big(\left(3 a^2 - 3 a b + b^2\right) \mathrm{Hypergeometric2F1}\left[\frac{1+n}{2}, 1+n, \frac{3+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$2 b\Big(\left(3 a - 2 b\right) \mathrm{Hypergeometric2F1}\left[\frac{1+n}{2}, 2+n, \frac{3+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] +$$

$$2 b\,\mathrm{Hypergeometric2F1}\left[\frac{1+n}{2}, 3+n, \frac{3+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Big)\Big)$$

$$\left(\mathrm{Cos}[e+f x]\, \mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2\right)^{-1+n} \Big(-\mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \mathrm{Sin}[e+f x] +$$

$$\mathrm{Cos}[e+f x]\, \mathrm{Sec}\left[\frac{1}{2}(e+f x)\right]^2 \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]\Big) +$$

$$\Big(a^3 \left(3+n\right) \mathrm{AppellF1}\left[\frac{1+n}{2}, n, 1, \frac{3+n}{2}, \mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]$$

$$\mathrm{Cos}\left[\frac{1}{2}(e+f x)\right] \mathrm{Sin}\left[\frac{1}{2}(e+f x)\right]\Big) \Big/ \Big(\left(3+n\right) \mathrm{AppellF1}\Big[\frac{1+n}{2}, n, 1, \frac{3+n}{2},$$

$$\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] - 2\Big(\mathrm{AppellF1}\Big[\frac{3+n}{2}, n, 2, \frac{5+n}{2},$$

$$\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] - n\,\mathrm{AppellF1}\Big[\frac{3+n}{2}, 1+n, 1,$$

$$\frac{5+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\Big)\ \mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big)\ -$$

$$\Big(a^3\,(3+n)\,\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\Big(-\frac{1}{3+n}\,(1+n)\,\mathrm{AppellF1}\Big[1+\frac{1+n}{2},\ n,\ 2,\ 1+\frac{3+n}{2},$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\ +$$

$$\frac{1}{3+n}\,n\,(1+n)\,\mathrm{AppellF1}\Big[1+\frac{1+n}{2},\ 1+n,\ 1,\ 1+\frac{3+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Big]\Big)\Big)\Big/$$

$$\Big(\,(3+n)\,\mathrm{AppellF1}\Big[\frac{1+n}{2},\ n,\ 1,\ \frac{3+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\ -$$

$$2\,\Big(\mathrm{AppellF1}\Big[\frac{3+n}{2},\ n,\ 2,\ \frac{5+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\ -$$

$$n\,\mathrm{AppellF1}\Big[\frac{3+n}{2},\ 1+n,\ 1,\ \frac{5+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\Big)\ \mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big)\ +$$

$$\Big(a^3\,(3+n)\,\mathrm{AppellF1}\Big[\frac{1+n}{2},\ n,\ 1,\ \frac{3+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]$$

$$\mathrm{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\Big(-2\,\Big(\mathrm{AppellF1}\Big[\frac{3+n}{2},\ n,\ 2,\ \frac{5+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]-n\,\mathrm{AppellF1}\Big[\frac{3+n}{2},\ 1+n,\ 1,\ \frac{5+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\Big)\ \mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\ +$$

$$(3+n)\,\Big(-\frac{1}{3+n}\,(1+n)\,\mathrm{AppellF1}\Big[1+\frac{1+n}{2},\ n,\ 2,\ 1+\frac{3+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{1}{3+n}$$

$$n\,(1+n)\,\mathrm{AppellF1}\Big[1+\frac{1+n}{2},\ 1+n,\ 1,\ 1+\frac{3+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Big]\Big)\ -$$

$$2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\Big(-\frac{1}{5+n}\,2\,(3+n)\,\mathrm{AppellF1}\Big[1+\frac{3+n}{2},\ n,\ 3,\ 1+\frac{5+n}{2},$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\Big[$$

$$\frac{1}{2}\,(e+f\,x)\Big]+\frac{1}{5+n}\,n\,(3+n)\,\mathrm{AppellF1}\Big[1+\frac{3+n}{2},\ 1+n,\ 2,\ 1+\frac{5+n}{2},\ \mathrm{Tan}\Big[$$

$$\frac{1}{2}\,(e+f\,x)\Big]^2,\ -\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\ -$$

$$n\,\Big(-\frac{1}{5+n}\,(3+n)\,\mathrm{AppellF1}\Big[1+\frac{3+n}{2},\ 1+n,\ 2,\ 1+\frac{5+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{1}{5+n}\,(1+n)$$

$$(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2},\,2+n,\,1,\,1+\frac{5+n}{2},\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]\right)\right)\right)\right)\Big/$$
$$\left(\left((3+n)\,\text{AppellF1}\left[\frac{1+n}{2},\,n,\,1,\,\frac{3+n}{2},\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]-\right.\right.$$
$$2\left(\text{AppellF1}\left[\frac{3+n}{2},\,n,\,2,\,\frac{5+n}{2},\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]-\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3+n}{2},\,1+n,\,1,\,\frac{5+n}{2},\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)^2-b\left(\text{Cos}[e+f\,x]\,\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]^2\right)^n$$
$$\left(\frac{1}{2}\left(3\,a^2-3\,a\,b+b^2\right)(1+n)\,\text{Csc}\left[\frac{1}{2}(e+f\,x)\right]\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]\right.$$
$$\left(-\text{Hypergeometric2F1}\left[\frac{1+n}{2},\,1+n,\,\frac{3+n}{2},\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+\right.$$
$$\left.\left(1-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)^{-1-n}\right)+2\,b\left(b\,(1+n)\,\text{Csc}\left[\frac{1}{2}(e+f\,x)\right]\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]\right.$$
$$\left(-\text{Hypergeometric2F1}\left[\frac{1+n}{2},\,3+n,\,\frac{3+n}{2},\,\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+\right.$$
$$\left.\left(1-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)^{-3-n}\right)+\frac{1}{2}(3\,a-2\,b)\,(1+n)\,\text{Csc}\left[\frac{1}{2}(e+f\,x)\right]$$
$$\text{Sec}\left[\frac{1}{2}(e+f\,x)\right]\left(-\text{Hypergeometric2F1}\left[\frac{1+n}{2},\,2+n,\,\frac{3+n}{2},\right.\right.$$
$$\left.\left.\left.\left.\left.\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right]+\left(1-\text{Tan}\left[\frac{1}{2}(e+f\,x)\right]^2\right)^{-2-n}\right)\right)\right)\text{Tan}[e+f\,x]^n\right)\right)$$

Problem 345: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+b\,\text{Sec}[e+f\,x])^2\,(d\,\text{Tan}[e+f\,x])^n\,dx$$

Optimal (type 5, 160 leaves, 7 steps):

$$\frac{b^2\,(d\,\text{Tan}[e+f\,x])^{1+n}}{d\,f\,(1+n)}+\frac{1}{d\,f\,(1+n)}$$
$$a^2\,\text{Hypergeometric2F1}\left[1,\,\frac{1+n}{2},\,\frac{3+n}{2},\,-\text{Tan}[e+f\,x]^2\right](d\,\text{Tan}[e+f\,x])^{1+n}+$$
$$\frac{1}{d\,f\,(1+n)}2\,a\,b\,\left(\text{Cos}[e+f\,x]^2\right)^{\frac{2+n}{2}}$$
$$\text{Hypergeometric2F1}\left[\frac{1+n}{2},\,\frac{2+n}{2},\,\frac{3+n}{2},\,\text{Sin}[e+f\,x]^2\right]\text{Sec}[e+f\,x]\,(d\,\text{Tan}[e+f\,x])^{1+n}$$

Result (type 6, 2894 leaves):

$$\Big(2\,\text{Cos}[e+f x]^2\,(a+b\,\text{Sec}[e+f x])^2\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]$$
$$\Big(b\,\Big((2a-b)\,\text{Hypergeometric2F1}\Big[\frac{1+n}{2},1+n,\frac{3+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+$$
$$2b\,\text{Hypergeometric2F1}\Big[\frac{1+n}{2},2+n,\frac{3+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)$$
$$\Big(\text{Cos}[e+f x]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)^n+\Big(a^2(3+n)\,\text{AppellF1}\Big[\frac{1+n}{2},n,1,\frac{3+n}{2},$$
$$\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\Big/$$
$$\Big((3+n)\,\text{AppellF1}\Big[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]-$$
$$2\Big(\text{AppellF1}\Big[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]-n\,\text{AppellF1}\Big[$$
$$\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\Big)$$
$$(d\,\text{Tan}[e+f x])^n\,\big(a^2\,\text{Tan}[e+f x]^n+2ab\,\text{Sec}[e+f x]\,\text{Tan}[e+f x]^n+$$
$$b^2\,\text{Sec}[e+f x]^2\,\text{Tan}[e+f x]^n\big)\Big)\Big/$$
$$\Big(f(1+n)\,(b+a\,\text{Cos}[e+f x])^2\,\Big(\frac{1}{1+n}2n\,\text{Sec}[e+f x]^2\,\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]$$
$$\Big(b\,\Big((2a-b)\,\text{Hypergeometric2F1}\Big[\frac{1+n}{2},1+n,\frac{3+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+$$
$$2b\,\text{Hypergeometric2F1}\Big[\frac{1+n}{2},2+n,\frac{3+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)$$
$$\Big(\text{Cos}[e+f x]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)^n+\Big(a^2(3+n)\,\text{AppellF1}\Big[\frac{1+n}{2},n,1,$$
$$\frac{3+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\Big/$$
$$\Big((3+n)\,\text{AppellF1}\Big[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]-$$
$$2\Big(\text{AppellF1}\Big[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]-n$$
$$\text{AppellF1}\Big[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)$$
$$\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\Big)\,\text{Tan}[e+f x]^{-1+n}+\frac{1}{1+n}\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2$$
$$\Big(b\,\Big((2a-b)\,\text{Hypergeometric2F1}\Big[\frac{1+n}{2},1+n,\frac{3+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]+$$
$$2b\,\text{Hypergeometric2F1}\Big[\frac{1+n}{2},2+n,\frac{3+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\Big)$$
$$\Big(\text{Cos}[e+f x]\,\text{Sec}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)^n+\Big(a^2(3+n)\,\text{AppellF1}\Big[\frac{1+n}{2},n,1,$$
$$\frac{3+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]\,\text{Cos}\Big[\frac{1}{2}(e+f x)\Big]^2\Big)\Big/$$
$$\Big((3+n)\,\text{AppellF1}\Big[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(e+f x)\Big]^2\Big]-$$

$$2\left(\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-n\right.$$
$$\left.\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)\text{Tan}[e+fx]^n+\frac{1}{1+n}2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]$$
$$\left(b\,n\left((2a-b)\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},1+n,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\right.\right.$$
$$\left.2b\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},2+n,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)$$
$$\left(\text{Cos}[e+fx]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-1+n}\left(-\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Sin}[e+fx]+\right.$$
$$\left.\text{Cos}[e+fx]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)-\left(a^2(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\right.\right.$$
$$\left.\left.\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Cos}\left[\frac{1}{2}(e+fx)\right]\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\Big/$$
$$\left((3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.$$
$$2\left(\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-n\right.$$
$$\left.\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)+\left(a^2(3+n)\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\left(-\frac{1}{3+n}(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},\right.\right.\right.$$
$$n,2,1+\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]+\frac{1}{3+n}n(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},1+n,1,1+\frac{3+n}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)\Big/$$
$$\left((3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.$$
$$2\left(\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-n\right.$$
$$\left.\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)-\left(a^2(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2$$
$$\left(-2\left(\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-\right.\right.$$
$$\left.n\,\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+(3+n)\left(-\frac{1}{3+n}(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},\right.\right.$$

$$n,\,2,\,1+\frac{3+n}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{1}{3+n}n\,(1+n)\,\mathrm{AppellF1}\Big[1+\frac{1+n}{2},\,1+n,\,1,\,1+\frac{3+n}{2},$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Bigg)-$$

$$2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\Bigg(-\frac{1}{5+n}2\,(3+n)\,\mathrm{AppellF1}\Big[1+\frac{3+n}{2},\,n,\,3,\,1+\frac{5+n}{2},$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+$$

$$\frac{1}{5+n}n\,(3+n)\,\mathrm{AppellF1}\Big[1+\frac{3+n}{2},\,1+n,\,2,\,1+\frac{5+n}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]-$$

$$n\,\Bigg(-\frac{1}{5+n}(3+n)\,\mathrm{AppellF1}\Big[1+\frac{3+n}{2},\,1+n,\,2,\,1+\frac{5+n}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]+\frac{1}{5+n}$$

$$(1+n)\,(3+n)\,\mathrm{AppellF1}\Big[1+\frac{3+n}{2},\,2+n,\,1,\,1+\frac{5+n}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((3+n)\,\mathrm{AppellF1}\Big[\frac{1+n}{2},\,n,\,1,\,\frac{3+n}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]-$$

$$2\,\Bigg(\mathrm{AppellF1}\Big[\frac{3+n}{2},\,n,\,2,\,\frac{5+n}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]-$$

$$n\,\mathrm{AppellF1}\Big[\frac{3+n}{2},\,1+n,\,1,\,\frac{5+n}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,\,-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\Bigg)$$

$$\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Bigg)^2+b\,\left(\mathrm{Cos}[e+f\,x]\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^n$$

$$\Bigg(b\,(1+n)\,\mathrm{Csc}\left[\frac{1}{2}\,(e+f\,x)\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]\,\Bigg(-\mathrm{Hypergeometric2F1}\Big[\frac{1+n}{2},$$

$$2+n,\,\frac{3+n}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]+\left(1-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^{-2-n}\Bigg)+$$

$$\frac{1}{2}\,(2\,a-b)\,(1+n)\,\mathrm{Csc}\left[\frac{1}{2}\,(e+f\,x)\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]\,\Bigg(-\mathrm{Hypergeometric2F1}\Big[\frac{1+n}{2},$$

$$1+n,\,\frac{3+n}{2},\,\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]+\left(1-\mathrm{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^{-1-n}\Bigg)\Bigg)\,\mathrm{Tan}[e+f\,x]^n\Bigg)\Bigg)$$

Problem 346: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int(a+b\,\mathrm{Sec}[e+f\,x])\,(d\,\mathrm{Tan}[e+f\,x])^n\,dx$$

Optimal (type 5, 129 leaves, 4 steps):

$$\frac{a\,\text{Hypergeometric2F1}\left[1,\frac{1+n}{2},\frac{3+n}{2},-\text{Tan}[e+f\,x]^2\right]\,(d\,\text{Tan}[e+f\,x])^{1+n}}{d\,f\,(1+n)}+$$

$$\frac{1}{d\,f\,(1+n)}b\,\left(\text{Cos}[e+f\,x]^2\right)^{\frac{2+n}{2}}$$

$$\text{Hypergeometric2F1}\left[\frac{1+n}{2},\frac{2+n}{2},\frac{3+n}{2},\text{Sin}[e+f\,x]^2\right]\,\text{Sec}[e+f\,x]\,(d\,\text{Tan}[e+f\,x])^{1+n}$$

Result (type 6, 2597 leaves):

$$\Bigg(2\,\text{Cos}[e+f\,x]\,(a+b\,\text{Sec}[e+f\,x])\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]$$

$$\Bigg(b\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},1+n,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\,\left(\text{Cos}[e+f\,x]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^n+$$

$$\Bigg(a\,(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]$$

$$\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Bigg)\Bigg/$$

$$\Bigg((3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-$$

$$2\,\Bigg(\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]-n\,\text{AppellF1}\Big[$$

$$\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\Bigg)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Bigg)\Bigg)$$

$$(d\,\text{Tan}[e+f\,x])^n\,\left(a\,\text{Tan}[e+f\,x]^n+b\,\text{Sec}[e+f\,x]\,\text{Tan}[e+f\,x]^n\right)\Bigg)\Bigg/\Bigg(f$$

$$(1+n)$$

$$(b+a\,\text{Cos}[e+f\,x])$$

$$\Bigg(\frac{1}{1+n}2\,n\,\text{Sec}[e+f\,x]^2\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\,\Bigg(b\,\text{Hypergeometric2F1}\Big[\frac{1+n}{2},$$

$$1+n,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\left(\text{Cos}[e+f\,x]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^n+$$

$$\Bigg(a\,(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]$$

$$\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Bigg)\Bigg/\Bigg((3+n)\,\text{AppellF1}\Big[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]-2\,\Bigg(\text{AppellF1}\Big[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]-n\,\text{AppellF1}\Big[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\Bigg)\,\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Bigg)\Bigg)\,\text{Tan}[e+f\,x]^{-1+n}+$$

$$\frac{1}{1+n}\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\,\Bigg(b\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},1+n,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]$$

$$\left(\text{Cos}[e+f\,x]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^n+\Bigg(a\,(3+n)\,\text{AppellF1}\Big[\frac{1+n}{2},n,1,$$

$$\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Big]\,\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]^2\Bigg)\Bigg/$$

$$\left((3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-n\,\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)\right)\text{Tan}[e+fx]^n+$$

$$\frac{1}{1+n}2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]\left(b\,n\,\text{Hypergeometric2F1}\left[\frac{1+n}{2},1+n,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\left(\text{Cos}[e+fx]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-1+n}\left(-\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Sin}[e+fx]+\text{Cos}[e+fx]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)-\right.$$

$$\left(a\,(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Cos}\left[\frac{1}{2}(e+fx)\right]\text{Sin}\left[\frac{1}{2}(e+fx)\right]\right)\Big/$$

$$\left((3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-n\,\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)+\left(a\,(3+n)\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\left(-\frac{1}{3+n}(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},n,2,1+\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+\frac{1}{3+n}n\,(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},1+n,1,1+\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)\Big/$$

$$\left((3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-n\,\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)+\frac{1}{2}b\,(1+n)\,\text{Csc}\left[\frac{1}{2}(e+fx)\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]$$

$$\left(\text{Cos}[e+fx]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^n\left(-\text{Hypergeometric2F1}\left[\frac{1+n}{2},1+n,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+\left(1-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)^{-1-n}\right)-\left(a\,(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\right.$$

$$\left(-2\left(\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-n\,\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+(3+n)\left(-\frac{1}{3+n}(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},n,2,1+\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+\frac{1}{3+n}n(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},1+n,1,1+\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)-2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\left(-\frac{1}{5+n}2(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2},n,3,1+\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+\frac{1}{5+n}n(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2},1+n,2,1+\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]-n\left(-\frac{1}{5+n}(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2},1+n,2,1+\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]+\frac{1}{5+n}(1+n)(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2},2+n,1,1+\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)\right)\Big/$$

$$\left((3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-2\left(\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-n\,\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right)^2\text{Tan}[e+fx]^n\Big)\Big)$$

Problem 347: Result more than twice size of optimal antiderivative.

$$\int\frac{(d\,\text{Tan}[e+fx])^n}{a+b\,\text{Sec}[e+fx]}\,dx$$

Optimal (type 6, 266 leaves, ? steps):

$$\frac{1}{a f (1-n)} d \, \text{AppellF1}\left[1-n, \frac{1-n}{2}, \frac{1-n}{2}, 2-n, \frac{a+b}{a+b \, \text{Sec}[e+f x]}, \frac{a-b}{a+b \, \text{Sec}[e+f x]}\right] \left(-\frac{b (1-\text{Sec}[e+f x])}{a+b \, \text{Sec}[e+f x]}\right)^{\frac{1-n}{2}} \left(\frac{b (1+\text{Sec}[e+f x])}{a+b \, \text{Sec}[e+f x]}\right)^{\frac{1-n}{2}} (d \, \text{Tan}[e+f x])^{-1+n} \left(-\text{Tan}[e+f x]^2\right)^{\frac{1-n}{2}+\frac{1}{2}(-1+n)} - \frac{1}{a f (1+n)} d \, \text{Hypergeometric2F1}\left[1, \frac{1+n}{2}, \frac{3+n}{2}, -\text{Tan}[e+f x]^2\right] (d \, \text{Tan}[e+f x])^{-1+n} \left(-\text{Tan}[e+f x]^2\right)^{\frac{1-n}{2}+\frac{1+n}{2}}$$

Result (type 6, 4911 leaves):

$$\Bigg(2 (3+n) \text{Cos}\left[\frac{1}{2}(e+f x)\right] \text{Sin}\left[\frac{1}{2}(e+f x)\right] \Bigg(\text{AppellF1}\left[\frac{1+n}{2}, n, 1, \frac{3+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] \Big/ \Bigg((3+n) \text{AppellF1}\left[\frac{1+n}{2}, n, 1, \frac{3+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] - 2 \Bigg(\text{AppellF1}\left[\frac{3+n}{2}, n, 2, \frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right] - n \, \text{AppellF1}\left[\frac{3+n}{2}, 1+n, 1, \frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2 \Bigg) - \Bigg(b (a+b) \text{AppellF1}\left[\frac{1+n}{2}, n, 1, \frac{3+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, \frac{(a-b) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\right] \Bigg) \Big/ \Bigg((b + a \, \text{Cos}[e+f x]) \Bigg((a+b) (3+n) \text{AppellF1}\left[\frac{1+n}{2}, n, 1, \frac{3+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, \frac{(a-b) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\right] + 2 \Bigg((a-b) \text{AppellF1}\left[\frac{3+n}{2}, n, 2, \frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, \frac{(a-b) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\right] + (a+b) n \, \text{AppellF1}\left[\frac{3+n}{2}, 1+n, 1, \frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, \frac{(a-b) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\right] \Bigg) \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2 \Bigg)\Bigg)\Bigg) \text{Tan}[e+f x]^n (d \, \text{Tan}[e+f x])^n \Bigg) \Big/ \Bigg(a f (1+n) (a + b \, \text{Sec}[e+f x])$$

$$\Bigg(\frac{1}{a (1+n)} 2 n (3+n) \text{Cos}\left[\frac{1}{2}(e+f x)\right] \text{Sec}[e+f x]^2 \text{Sin}\left[\frac{1}{2}(e+f x)\right]$$

$$\left(\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\middle/\left((3+n)\right.\right.$$

$$\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-2\left(\text{AppellF1}\left[\right.\right.$$

$$\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-n\,\text{AppellF1}\left[\frac{3+n}{2},$$

$$1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)-$$

$$\left(b(a+b)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\right]\right)\Big/$$

$$\Big((b+a\,\text{Cos}[e+fx])\,\Big((a+b)(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\right]+2\Big((a-b)\,\text{AppellF1}\Big[\frac{3+n}{2},n,2,\frac{5+n}{2},$$

$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\Big]+(a+b)\,n\,\text{AppellF1}\Big[$$

$$\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\Big]\Big)$$

$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)\Big)\Big)\,\text{Tan}[e+fx]^{-1+n}+\frac{1}{a(1+n)}(3+n)\,\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2$$

$$\left(\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right/$$

$$\Big((3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-$$

$$2\Big(\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]-n\,\text{AppellF1}\Big[\frac{3+n}{2},1+n,1,\frac{5+n}{2},$$

$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)-$$

$$\left(b(a+b)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\right]\right)\Big/$$

$$\Big((b+a\,\text{Cos}[e+fx])\,\Big((a+b)(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\Big] + 2\Bigg((a-b)\,\text{AppellF1}\Big[\frac{3+n}{2}, n, 2, \frac{5+n}{2},$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\Big] + (a+b)\,n\,\text{AppellF1}\Big[$$

$$\frac{3+n}{2}, 1+n, 1, \frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\Big]\Bigg)$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg)\Bigg)\,\text{Tan}[e+f x]^n - \frac{1}{a\,(1+n)}\,(3+n)\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]^2$$

$$\Bigg(\text{AppellF1}\Big[\frac{1+n}{2}, n, 1, \frac{3+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Big/$$

$$\Bigg((3+n)\,\text{AppellF1}\Big[\frac{1+n}{2}, n, 1, \frac{3+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] -$$

$$2\Bigg(\text{AppellF1}\Big[\frac{3+n}{2}, n, 2, \frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big] - n\,\text{AppellF1}\Big[\frac{3+n}{2}, 1+n, 1, \frac{5+n}{2},$$

$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg) -$$

$$\Bigg(b\,(a+b)\,\text{AppellF1}\Big[\frac{1+n}{2}, n, 1, \frac{3+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\Big]\Bigg)\Big/$$

$$\Bigg((b+a\,\text{Cos}[e+f x])\,\Bigg((a+b)\,(3+n)\,\text{AppellF1}\Big[\frac{1+n}{2}, n, 1, \frac{3+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,$$

$$\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\Big] + 2\Bigg((a-b)\,\text{AppellF1}\Big[\frac{3+n}{2}, n, 2, \frac{5+n}{2}, \text{Tan}\Big[\frac{1}{2}(e+f$$

$$x)\Big]^2, \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\Big] + (a+b)\,n\,\text{AppellF1}\Big[\frac{3+n}{2}, 1+n, 1,$$

$$\frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\Big]\Bigg)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg)\Bigg)$$

$$\text{Tan}[e+f x]^n + \frac{1}{a\,(1+n)}\,2\,(3+n)\,\text{Cos}\left[\frac{1}{2}(e+f x)\right]\,\text{Sin}\left[\frac{1}{2}(e+f x)\right]$$

$$\Bigg(\Bigg(-\frac{1}{3+n}(1+n)\,\text{AppellF1}\Big[1+\frac{1+n}{2}, n, 2, 1+\frac{3+n}{2}, \text{Tan}\left[\frac{1}{2}(e+f x)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Big]$$

$$\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\,\text{Tan}\left[\frac{1}{2}(e+f x)\right] + \frac{1}{3+n}$$

$$n\,(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},1+n,1,1+\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg/$$
$$\Bigg((3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-$$
$$2\Bigg(\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]-n$$
$$\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,-\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\right]\Bigg)$$
$$\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)-\Bigg(a\,b\,(a+b)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\right]\text{Sin}[e+f x]\Bigg)\Bigg/$$
$$\Bigg((b+a\,\text{Cos}[e+f x])^2\Bigg((a+b)\,(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\right]+$$
$$2\Bigg((a-b)\,\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\right]+(a+b)\,n\,\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\right]\Bigg)\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2\Bigg)\Bigg)-$$
$$\Bigg(b\,(a+b)\,\Bigg(\Bigg((a-b)\,(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},n,2,1+\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg/\Big((a+b)\,(3+$$
$$n)\Big)+\frac{1}{3+n}n\,(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},1+n,1,1+\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2,\right.$$
$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+f x)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(e+f x)\right]^2\text{Tan}\left[\frac{1}{2}(e+f x)\right]\Bigg)\Bigg)\Bigg/$$
$$\Bigg((b+a\,\text{Cos}[e+f x])\Bigg((a+b)\,(3+n)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\right.$$

$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\right] +$$

$$2\left((a-b)\,\text{AppellF1}\left[\frac{3+n}{2}, n, 2, \frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\right.$$

$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\right] + (a+b)\,n\,\text{AppellF1}\left[\frac{3+n}{2}, 1+n, 1, \frac{5+n}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, \frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)\Bigg) -$$

$$\left(\text{AppellF1}\left[\frac{1+n}{2}, n, 1, \frac{3+n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right.$$

$$\left(-2\left(\text{AppellF1}\left[\frac{3+n}{2}, n, 2, \frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right] -\right.\right.$$

$$\left.n\,\text{AppellF1}\left[\frac{3+n}{2}, 1+n, 1, \frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right] + (3+n)\left(-\frac{1}{3+n}(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},\right.\right.$$

$$n, 2, 1+\frac{3+n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(e+fx)\right] + \frac{1}{3+n}n\,(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2}, 1+n, 1, 1+\frac{3+n}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right) -$$

$$2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\left(-\frac{1}{5+n}2\,(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2}, n, 3, 1+\frac{5+n}{2},\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right] +$$

$$\frac{1}{5+n}n\,(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2}, 1+n, 2, 1+\frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right] -$$

$$n\left(-\frac{1}{5+n}(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2}, 1+n, 2, 1+\frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right] + \frac{1}{5+n}$$

$$(1+n)\,(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2}, 2+n, 1, 1+\frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.$$

$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\right)\right)\right)\Big/$$

$$\left((3+n)\,\text{AppellF1}\left[\frac{1+n}{2}, n, 1, \frac{3+n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right] -\right.$$

$$2\left(\text{AppellF1}\left[\frac{3+n}{2}, n, 2, \frac{5+n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right] -\right.$$

$$n\,\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)^2+$$
$$\left(b\,(a+b)\,\text{AppellF1}\left[\frac{1+n}{2},n,1,\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\right]\right.$$
$$\left(2\left((a-b)\,\text{AppellF1}\left[\frac{3+n}{2},n,2,\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\right.\right.$$
$$\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\right]+(a+b)\,n\,\text{AppellF1}\left[\frac{3+n}{2},1+n,1,\frac{5+n}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\right]\right)\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\Big[$$
$$\frac{1}{2}(e+fx)\Big]+(a+b)\,(3+n)\left(\left((a-b)\,(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},n,2,\right.\right.\right.$$
$$\left.1+\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\Big/\left((a+b)\,(3+n)\right)+\frac{1}{3+n}n\,(1+n)\,\text{AppellF1}\left[1+\frac{1+n}{2},\right.$$
$$\left.1+n,1,1+\frac{3+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2$$
$$\left((a-b)\left(\left(2\,(a-b)\,(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2},n,3,1+\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\right.\right.\right.\right.$$
$$\left.\left.\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)\Big/$$
$$\left((a+b)\,(5+n)\right)+\frac{1}{5+n}n\,(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2},1+n,2,\right.$$
$$\left.1+\frac{5+n}{2},\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,\frac{(a-b)\,\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2}{a+b}\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2$$
$$\left.\text{Tan}\left[\frac{1}{2}(e+fx)\right]\right)+(a+b)\,n\left(\left((a-b)\,(3+n)\,\text{AppellF1}\left[1+\frac{3+n}{2},\right.\right.\right.$$

$$1+n,\ 2,\ 1+\frac{5+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ \frac{(a-b)\ \mathrm{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2}{a+b}\Bigg]$$

$$\mathrm{Sec}\left[\frac{1}{2}\ (e+f\,x)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]\Bigg)\Big/\ \big((a+b)\ (5+n)\big)+\frac{1}{5+n}$$

$$(1+n)\ (3+n)\ \mathrm{AppellF1}\left[1+\frac{3+n}{2},\ 2+n,\ 1,\ 1+\frac{5+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\right.$$

$$\left.\frac{(a-b)\ \mathrm{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2}{a+b}\right]\ \mathrm{Sec}\left[\frac{1}{2}\ (e+f\,x)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Big/$$

$$\Bigg((b+a\,\mathrm{Cos}[e+f\,x])\ \Bigg((a+b)\ (3+n)\ \mathrm{AppellF1}\left[\frac{1+n}{2},\ n,\ 1,\ \frac{3+n}{2},\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ \frac{(a-b)\ \mathrm{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2}{a+b}\right]+2\ \Bigg((a-b)\ \mathrm{AppellF1}\Bigg[$$

$$\frac{3+n}{2},\ n,\ 2,\ \frac{5+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\ \frac{(a-b)\ \mathrm{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2}{a+b}\Bigg]+$$

$$(a+b)\ n\,\mathrm{AppellF1}\left[\frac{3+n}{2},\ 1+n,\ 1,\ \frac{5+n}{2},\ \mathrm{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2,\right.$$

$$\left.\frac{(a-b)\ \mathrm{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2}{a+b}\right]\Bigg)\ \mathrm{Tan}\left[\frac{1}{2}\ (e+f\,x)\right]^2\Bigg)\Bigg)\ \mathrm{Tan}[e+f\,x]^n\Bigg)\Bigg)$$

Problem 353: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+b\,\mathrm{Sec}[c+d\,x])^n\ \mathrm{Tan}[c+d\,x]^5\,dx$$

Optimal (type 5, 177 leaves, 5 steps):

$$-\frac{a\ (a^2-2\,b^2)\ (a+b\,\mathrm{Sec}[c+d\,x])^{1+n}}{b^4\,d\ (1+n)}-\frac{1}{a\,d\ (1+n)}$$

$$\mathrm{Hypergeometric2F1}\left[1,\ 1+n,\ 2+n,\ 1+\frac{b\,\mathrm{Sec}[c+d\,x]}{a}\right]\ (a+b\,\mathrm{Sec}[c+d\,x])^{1+n}+$$

$$\frac{(3\,a^2-2\,b^2)\ (a+b\,\mathrm{Sec}[c+d\,x])^{2+n}}{b^4\,d\ (2+n)}-\frac{3\,a\ (a+b\,\mathrm{Sec}[c+d\,x])^{3+n}}{b^4\,d\ (3+n)}+\frac{(a+b\,\mathrm{Sec}[c+d\,x])^{4+n}}{b^4\,d\ (4+n)}$$

Result (type 6, 30 540 leaves): Display of huge result suppressed!

Problem 354: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+b\,\mathrm{Sec}[c+d\,x])^n\,\mathrm{Tan}[c+d\,x]^3\,dx$$

Optimal (type 5, 102 leaves, 4 steps):

$$-\frac{a\,(a+b\,\mathrm{Sec}[c+d\,x])^{1+n}}{b^2\,d\,(1+n)}+\frac{1}{a\,d\,(1+n)}\mathrm{Hypergeometric2F1}\left[1,\,1+n,\,2+n,\,1+\frac{b\,\mathrm{Sec}[c+d\,x]}{a}\right](a+b\,\mathrm{Sec}[c+d\,x])^{1+n}+\frac{(a+b\,\mathrm{Sec}[c+d\,x])^{2+n}}{b^2\,d\,(2+n)}$$

Result (type 6, 7524 leaves):

$$-\Bigg(\Bigg((a+b\,\mathrm{Sec}[c+d\,x])^n\left(\frac{1}{1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^{-3+n}\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^n\left(b+\frac{a-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^n$$

$$\Bigg(\frac{2\,b^2\left(a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{1+n}-\frac{1}{1+n}2^{-n}\,b^2\,\mathrm{Hypergeometric2F1}\Big[1+n,$$

$$1+n,\,2+n,\,\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{2\,b}\Big]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)$$

$$\left(\frac{(a-b)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{b}\right)^n\left(a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)+$$

$$\Bigg(4\,b^4\,(-2+n)\,\mathrm{AppellF1}\Big[1-n,\,-n,\,1,\,2-n,\,\frac{(a-b)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},$$

$$\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\Bigg)\Bigg/$$

$$\Bigg((-1+n)\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg(2\,b\,(-2+n)\,\mathrm{AppellF1}\Big[1-n,\,-n,\,1,\,2-n,$$

$$\frac{(a-b)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]+$$

$$\Big((a-b)\, n\, \text{AppellF1}\Big[2-n,\, 1-n,\, 1,\, 3-n,\, \frac{(a-b)\,\big(-1+\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2\big)}{2\,b},$$

$$\frac{1}{2}\,\Big(1-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big] + b\, \text{AppellF1}\Big[2-n,\, -n,\, 2,\, 3-n,$$

$$\frac{(a-b)\,\big(-1+\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2\big)}{2\,b},\, \frac{1}{2}\,\Big(1-\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big]\Big)$$

$$\Big(-1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)\Big) - \frac{1}{1+n}2^{-n}\,(a-b)\, b\, \text{Hypergeometric2F1}\Big[$$

$$1+n,\, 3+n,\, 2+n,\, \frac{a+b-a\,\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2+b\,\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2}{2\,b}\Big]$$

$$\left(\frac{(a-b)\,\big(-1+\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2\big)}{b}\right)^{1+n}$$

$$\Big(a\,\Big(-1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big) - b\,\Big(1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)\Big)$$

$$\text{Tan}[c+d\,x]^3\Big) \Big/ \Big(2\,b^3\,d\,\Big(-1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^4$$

$$\Big(-\frac{1}{2\,b^3\,\big(-1+\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2\big)^4}\, n\, \left(\frac{1}{1-\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2}\right)^{-3+n}$$

$$\Big(1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^n\, \Big(-\frac{a\,\text{Sec}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2\,\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]}{1+\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2} -$$

$$\Big(\text{Sec}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]\,\Big(a-a\,\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\Big)\Big/$$

$$\Big(1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)^2\Big)\, \left(b+\frac{a-a\,\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2}{1+\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2}\right)^{-1+n}$$

$$\Big(\frac{2\,b^2\,\big(a+b-a\,\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2+b\,\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2\big)}{1+n} - \frac{1}{1+n}2^{-n}\,b^2\,\text{Hypergeometric2F1}\Big[$$

$$1+n,\, 1+n,\, 2+n,\, \frac{a+b-a\,\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2+b\,\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2}{2\,b}\Big]$$

$$\Big(-1+\text{Tan}\Big[\frac{1}{2}\,(c+d\,x)\Big]^2\Big)\, \left(\frac{(a-b)\,\big(-1+\text{Tan}\big[\tfrac{1}{2}\,(c+d\,x)\big]^2\big)}{b}\right)^n$$

$$\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)+$$

$$\left(4\,b^4(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\Big/$$

$$\left((-1+n)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(2\,b(-2+n)\,\text{AppellF1}\left[1-n,-n,1,2-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]+\left((a-b)\,n\,\text{AppellF1}\left[2-n,1-n,1,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]+b\,\text{AppellF1}\left[2-n,-n,2,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]\right)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)-\frac{1}{1+n}2^{-n}(a-b)\,b\,\text{Hypergeometric2F1}\left[1+n,3+n,2+n,\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{2\,b}\right]$$

$$\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{b}\right)^{1+n}\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Bigg)-$$

$$\frac{1}{2\,b^3\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^4}\,n\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]$$

$$\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^{-3+n}\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{-1+n}$$

$$\left(b+\frac{a-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^n$$

$$\left(\frac{2 b^2 \left(a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)}{1+n}-\frac{1}{1+n} 2^{-n} b^2 \operatorname{Hypergeometric2F1}\left[1+n, 1+n, 2+n, \frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{2 b}\right]\right.$$

$$\left(-1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right) \left(\frac{(a-b) \left(-1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)}{b}\right)^n$$

$$\left(a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)+$$

$$\left(4 b^4 (-2+n) \operatorname{AppellF1}\left[1-n,-n,1,2-n, \frac{(a-b) \left(-1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)}{2 b}, \frac{1}{2} \left(1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\right] \left(-1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^2\right) \Big/$$

$$\left(\left(-1+n\right) \left(1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right) \left(2 b (-2+n) \operatorname{AppellF1}\left[1-n,-n,1, 2-n, \frac{(a-b) \left(-1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)}{2 b}, \frac{1}{2} \left(1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\right]+\right.\right.$$

$$\left((a-b)\, n \operatorname{AppellF1}\left[2-n,1-n,1,3-n, \frac{(a-b) \left(-1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)}{2 b}, \frac{1}{2} \left(1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\right]+b \operatorname{AppellF1}\left[2-n,-n,2,3-n, \frac{(a-b) \left(-1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)}{2 b}, \frac{1}{2} \left(1-\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\right]\right)$$

$$\left.\left.\left(-1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\right)\right)-\frac{1}{1+n} 2^{-n} (a-b)\, b \operatorname{Hypergeometric2F1}\left[1+n, 3+n, 2+n, \frac{a+b-a \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2+b \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2}{2 b}\right]$$

$$\left(\frac{(a-b) \left(-1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)}{b}\right)^{1+n}$$

$$\left.\left(a \left(-1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)-b \left(1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)\right)\right)+$$

$$\frac{1}{b^3 \left(-1+\operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]^2\right)^5} 2 \operatorname{Sec}\left[\frac{1}{2} (c+d x)\right]^2 \operatorname{Tan}\left[\frac{1}{2} (c+d x)\right]$$

$$\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^{-3+n}\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^n$$

$$\left(b+\frac{a-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}\right)^n$$

$$\left(\frac{2\,b^2\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)}{1+n}-\frac{1}{1+n}2^{-n}\,b^2\,\text{Hypergeometric2F1}\left[\right.\right.$$

$$\left.1+n,\,1+n,\,2+n,\,\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{2\,b}\right]$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\left(\frac{\left(a-b\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)}{b}\right)^n$$

$$\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)+$$

$$\left(4\,b^4\left(-2+n\right)\text{AppellF1}\left[1-n,\,-n,\,1,\,2-n,\,\frac{\left(a-b\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)}{2\,b},\right.\right.$$

$$\left.\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right]\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)\Big/$$

$$\left(\left(-1+n\right)\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\left(2\,b\left(-2+n\right)\text{AppellF1}\left[1-n,\,-n,\,1,\right.\right.\right.$$

$$\left.2-n,\,\frac{\left(a-b\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right]+$$

$$\left(\left(a-b\right)n\,\text{AppellF1}\left[2-n,\,1-n,\,1,\,3-n,\,\frac{\left(a-b\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)}{2\,b},\right.\right.$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right]+b\,\text{AppellF1}\left[2-n,\,-n,\,2,\,3-n,\right.$$

$$\left.\left.\frac{\left(a-b\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right]\right)$$

$$\left.\left.\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\right)-\frac{1}{1+n}2^{-n}\left(a-b\right)b\,\text{Hypergeometric2F1}\left[\right.$$

$$\left.1+n,\,3+n,\,2+n,\,\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{2\,b}\right]$$

$$\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{b}\right)^{1+n}$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Bigg)-$$

$$\frac{1}{2 b^3\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^4}(-3+n)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-2+n}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^n$$

$$\left(b+\frac{a-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n$$

$$\Bigg(\frac{2 b^2\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{1+n}-\frac{1}{1+n}2^{-n}b^2\,\text{Hypergeometric2F1}\Big[$$

$$1+n,1+n,2+n,\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{2 b}\Big]$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{b}\right)^n$$

$$\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)+$$

$$\Bigg(4 b^4(-2+n)\,\text{AppellF1}\Big[1-n,-n,1,2-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Bigg)\Bigg/$$

$$\Bigg((-1+n)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg(2 b(-2+n)\,\text{AppellF1}\Big[1-n,-n,1,$$

$$2-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]+$$

$$\Bigg((a-b)\,n\,\text{AppellF1}\Big[2-n,1-n,1,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]+b\,\text{AppellF1}\Big[2-n,-n,2,3-n,$$

$$\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]\Bigg)$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Bigg)-\frac{1}{1+n}2^{-n}(a-b)\, b\, \text{Hypergeometric2F1}\Big[$$

$$1+n,\ 3+n,\ 2+n,\ \frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{2 b}\Big]$$

$$\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{b}\right)^{1+n}$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Bigg)\Bigg)-$$

$$\frac{1}{2 b^3\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^4}\left(\frac{1}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-3+n}\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^n$$

$$\left(b+\frac{a-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\Bigg(\frac{1}{1+n}$$

$$2 b^2\left(-a\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+b\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)-$$

$$\frac{1}{1+n}2^{-n} b^2\,\text{Hypergeometric2F1}\Big[1+n,\ 1+n,\ 2+n,$$

$$\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{2 b}\Big]$$

$$\left(-a\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]+b\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{b}\right)^n-$$

$$\frac{1}{1+n}2^{-n}(a-b)\, b\,\text{Hypergeometric2F1}\Big[1+n,\ 3+n,\ 2+n,$$

$$\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{2 b}\Big]$$

$$\left(a\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]-b\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)$$

$$\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{b}\right)^{1+n}-\frac{1}{1+n}2^{-n}(a-b)\, b\, n\,\text{Hypergeometric2F1}\Big[1+n,$$

$$1+n,\ 2+n,\ \frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{2 b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{b}\right)^{-1+n}$$

$$\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-\frac{1}{1+n}2^{-n}b^2\,\text{Hypergeometric2F1}\Big[$$

$$1+n,\ 1+n,\ 2+n,\ \frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{2 b}\Big]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{b}\right)^n$$

$$\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)-$$

$$\Bigg(4 b^4(-2+n)\,\text{AppellF1}\Big[1-n,\ -n,\ 1,\ 2-n,\ \frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\ \frac{1}{2}$$

$$\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Bigg)\Bigg/\Bigg((-1+n)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2$$

$$\Bigg(2 b(-2+n)\,\text{AppellF1}\Big[1-n,\ -n,\ 1,\ 2-n,\ \frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]+\Bigg((a-b)\,n\,\text{AppellF1}\Big[2-n,\ 1-n,\ 1,\ 3-n,$$

$$\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]+$$

$$b\,\text{AppellF1}\Big[2-n,\ -n,\ 2,\ 3-n,\ \frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Bigg)+$$

$$\Bigg(8 b^4(-2+n)\,\text{AppellF1}\Big[1-n,\ -n,\ 1,\ 2-n,\ \frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Bigg/\Bigg((-1+n)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\left(2\,b\,(-2+n)\,\text{AppellF1}\left[1-n,\,-n,\,1,\,2-n,\,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\right.\right.$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]+\left((a-b)\,n\,\text{AppellF1}\left[2-n,\,1-n,\,1,\,3-n,\right.\right.$$

$$\left.\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]+$$

$$b\,\text{AppellF1}\left[2-n,\,-n,\,2,\,3-n,\,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\right.$$

$$\left.\left.\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]\right)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$

$$\left(4\,b^4\,(-2+n)\left(-\frac{1}{2\,b\,(2-n)}(a-b)\,(1-n)\,n\,\text{AppellF1}\left[2-n,\,1-n,\,1,\,3-n,\right.\right.\right.$$

$$\left.\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\frac{1}{2\,(2-n)}(1-n)\,\text{AppellF1}\left[2-n,\right.$$

$$\left.-n,\,2,\,3-n,\,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2\right)\Big/$$

$$\left((-1+n)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(2\,b\,(-2+n)\,\text{AppellF1}\left[1-n,\,-n,\,1,\right.\right.\right.$$

$$\left.2-n,\,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]+$$

$$\left((a-b)\,n\,\text{AppellF1}\left[2-n,\,1-n,\,1,\,3-n,\,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\right.\right.$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]+b\,\text{AppellF1}\left[2-n,\,-n,\,2,\,3-n,\right.$$

$$\left.\left.\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]\right)$$

$$\left.\left.\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)-2^{-n}\,(a-b)^2\,\text{Hypergeometric2F1}\Big[$$

$$1+n,\ 3+n,\ 2+n,\ \frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{2\,b}\Big]$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(\frac{(a-b)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{b}\right)^n$$

$$\left(a\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-$$

$$\Bigg(4\,b^4\,(-2+n)\,\mathrm{AppellF1}\Big[1-n,\ -n,\ 1,\ 2-n,\ \frac{(a-b)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},$$

$$\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^2$$

$$\Bigg(\Bigg((a-b)\,n\,\mathrm{AppellF1}\Big[2-n,\ 1-n,\ 1,\ 3-n,\ \frac{(a-b)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},$$

$$\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]+b\,\mathrm{AppellF1}\Big[2-n,\ -n,\ 2,\ 3-n,$$

$$\frac{(a-b)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\ \frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]\Bigg)$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+2\,b\,(-2+n)\Bigg(-\frac{1}{2\,b\,(2-n)}(a-b)$$

$$(1-n)\,n\,\mathrm{AppellF1}\Big[2-n,\ 1-n,\ 1,\ 3-n,\ \frac{(a-b)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},$$

$$\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\frac{1}{2\,(2-n)}$$

$$(1-n)\,\mathrm{AppellF1}\Big[2-n,\ -n,\ 2,\ 3-n,\ \frac{(a-b)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},$$

$$\frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]\,\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)+$$

$$\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg((a-b)\,n\Bigg(-\frac{1}{2\,(3-n)}(2-n)\,\mathrm{AppellF1}\Big[3-n,\ 1-n,$$

$$2,\ 4-n,\ \frac{(a-b)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\ \frac{1}{2}\left(1-\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]$$

$$\mathrm{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]+\frac{1}{2\,b\,(3-n)}(a-b)\,(1-n)\,(2-n)$$

$$\mathrm{AppellF1}\Big[3-n,\ 2-n,\ 1,\ 4-n,\ \frac{(a-b)\left(-1+\mathrm{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\Bigg)+$$

$$b\left(-\frac{1}{2\,b\,(3-n)}(a-b)\,(2-n)\,n\,\text{AppellF1}\Big[3-n,1-n,2,4-n,\right.$$

$$\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\frac{1}{3-n}(2-n)$$

$$\text{AppellF1}\Big[3-n,-n,3,4-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((-1+n)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg(2\,b\,(-2+n)\,\text{AppellF1}\Big[1-n,-n,1,$$

$$2-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]+$$

$$\Bigg((a-b)\,n\,\text{AppellF1}\Big[2-n,1-n,1,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]+b\,\text{AppellF1}\Big[2-n,-n,2,3-n,$$

$$\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]\Bigg)$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)^2\Bigg)-\frac{1}{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}$$

$$2^{-n}(a-b)\,b\left(-a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+b\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{b}\right)^{1+n}$$

$$\left(a\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)-b\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\Bigg(-\text{Hypergeometric2F1}\Big[$$

$$1+n,3+n,2+n,\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{2\,b}\Big]+$$

$$\left(1-\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{2\,b}\right)^{-3-n}\Bigg) -$$

$$2^{-n}\,b^2\left(-a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+b\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{b}\right)^n\Bigg(-\text{Hypergeometric2F1}\Big[$$

$$1+n,\,1+n,\,2+n,\,\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{2\,b}\Big]+$$

$$\left(1-\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{2\,b}\right)^{-1-n}\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 355: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a+b\,\text{Sec}[c+d\,x])^n\,\text{Tan}[c+d\,x]\,dx$$

Optimal (type 5, 48 leaves, 2 steps):

$$-\frac{1}{a\,d\,(1+n)}\text{Hypergeometric2F1}\left[1,\,1+n,\,2+n,\,1+\frac{b\,\text{Sec}[c+d\,x]}{a}\right](a+b\,\text{Sec}[c+d\,x])^{1+n}$$

Result (type 6, 5900 leaves):

$$-\Bigg(\Bigg(\Bigg((a+b\,\text{Sec}[c+d\,x])^n\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{1+n}$$

$$\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^n\left(b+\frac{a-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^n$$

$$\Bigg(\Bigg(\text{Hypergeometric2F1}\Big[1+n,\,1+n,\,2+n,\,\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{2\,b}\Big]$$

$$\left(2-2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{-n}\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{b}\right)^n$$

$$\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg/$$

$$\left((1+n)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-\Big(4\,b^2\,(-2+n)\,\text{AppellF1}\big[1-n,\,-n,\,1,$$

$$2-n,\ \frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\ \frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]$$

$$\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-n}\Bigg)\Bigg/\Bigg(\left(-1+n\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)$$

$$\Bigg(2 b(-2+n)\,\text{AppellF1}\Big[1-n,-n,1,2-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]+\Bigg((a-b)\,n\,\text{AppellF1}\Big[2-n,1-n,1,3-n,$$

$$\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]+b$$

$$\text{AppellF1}\Big[2-n,-n,2,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Bigg)\Bigg)\,\text{Tan}[c+d x]\Bigg)\Bigg/$$

$$\Bigg(2 b d\Bigg(-\frac{1}{2 b}n\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{1+n}\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n$$

$$\Bigg(-\frac{a\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}-\Bigg(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\Big[$$

$$\frac{1}{2}(c+d x)\Big]\left(a-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Bigg/\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\Bigg)$$

$$\left(b+\frac{a-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+n}\Bigg(\Bigg(\text{Hypergeometric2F1}\Big[1+n,1+n,2+n,$$

$$\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{2 b}\Big]\left(2-2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-n}$$

$$\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{b}\right)^n\Bigg(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+$$

$$b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Bigg)\Bigg)\Bigg/\left(\left(1+n\right)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)-$$

$$\Bigg(4 b^2(-2+n)\,\text{AppellF1}\Big[1-n,-n,1,2-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-n}\Bigg)\Big/$$

$$\Bigg(\left(-1+n\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg(2 b(-2+n)\,\text{AppellF1}\Big[1-n,-n,1,$$

$$2-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]+$$

$$\Bigg((a-b)\,n\,\text{AppellF1}\Big[2-n,1-n,1,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]+$$

$$b\,\text{AppellF1}\Big[2-n,-n,2,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg)\Bigg)\Bigg)+$$

$$\frac{1}{2 b}(1+n)\,\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^n$$

$$\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n\left(b+\frac{a-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n$$

$$\Bigg(\Bigg(\text{Hypergeometric2F1}\Big[1+n,1+n,2+n,\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{2 b}\Big]$$

$$\left(2-2\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-n}\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{b}\right)^n\Big(a+b-$$

$$a\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\Big)\Bigg)\Big/\left((1+n)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)-$$

$$\Bigg(4 b^2(-2+n)\,\text{AppellF1}\Big[1-n,-n,1,2-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-n}\Bigg)\Big/$$

$$\Bigg(\left(-1+n\right)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Bigg(2 b(-2+n)\,\text{AppellF1}\Big[1-n,-n,1,$$

$$2-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\Big]+$$

$$\left((a-b)\, n\, \text{AppellF1}\left[2-n,1-n,1,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right]+b\, \text{AppellF1}\left[2-n,-n,2,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right]\right)$$

$$\left.\left.\left.\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\right)\right)-\frac{1}{2 b} n\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{1+n}$$

$$\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^{-1+n}\left(\frac{\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]}{1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}+\left(\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big/\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^2\right)\left(b+\frac{a-a\, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}\right)^n$$

$$\left(\left(\text{Hypergeometric2F1}\left[1+n,1+n,2+n,\frac{a+b-a\, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2}{2 b}\right]\right.\right.$$

$$\left.\left(2-2\, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-n}\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{b}\right)^n\left(a+b-a\, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2+b\, \text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)\Big/\left((1+n)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right)-$$

$$\left(4 b^2(-2+n)\, \text{AppellF1}\left[1-n,-n,1,2-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right]\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-n}\right)\Big/$$

$$\left((-1+n)\left(1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left(2 b(-2+n)\, \text{AppellF1}\left[1-n,-n,1,2-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right]+\right.\right.$$

$$\left((a-b)\, n\, \text{AppellF1}\left[2-n,1-n,1,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\right.\right.$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]+$$

$$b\,\text{AppellF1}\Big[2-n,-n,2,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},$$

$$\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Big]\Bigg)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg)\Bigg)-$$

$$\frac{1}{2\,b}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{1+n}\left(\frac{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^n\left(b+\frac{a-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}\right)^n$$

$$\Bigg(\Bigg(\text{Hypergeometric2F1}\Big[1+n,1+n,2+n,\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{2\,b}\Big]$$

$$\left(-a\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]+b\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)$$

$$\left(2-2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{-n}\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{b}\right)^n\Bigg)\Bigg/$$

$$\left((1+n)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+\Bigg((a-b)\,n\,\text{Hypergeometric2F1}\Big[1+n,1+$$

$$n,2+n,\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{2\,b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(2-2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{-n}\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{b}\right)^{-1+n}$$

$$\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg/$$

$$\left(b\,(1+n)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)-\Bigg(\text{Hypergeometric2F1}\Big[1+n,1+n,2+$$

$$n,\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2}{2\,b}\Big]\,\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\left(2-2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{-n}\left(\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{b}\right)^n$$

$$\left(a+b-a\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2+b\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\Bigg)\Bigg/$$

$$\left(\left(1+n\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right)+\left(2\,n\,\text{Hypergeometric2F1}\left[1+n,\,1+n,\,2+n,\,\frac{a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2}{2\,b}\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(2-2\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^{-1-n}\left(\frac{\left(a-b\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)}{b}\right)^n$$

$$\left.\left(a+b-a\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2+b\,\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\Big/$$

$$\left(\left(1+n\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)+\left(4\,b^2\left(-2+n\right)\text{AppellF1}\left[1-n,\,-n,\,1,\,2-n,\right.\right.$$

$$\left.\frac{\left(a-b\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]\left(1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^{-n}\right)\Big/\left(\left(-1+n\right)\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^2\right.$$

$$\left(2\,b\left(-2+n\right)\text{AppellF1}\left[1-n,\,-n,\,1,\,2-n,\,\frac{\left(a-b\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)}{2\,b},\right.\right.$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right]+\left(\left(a-b\right)n\,\text{AppellF1}\left[2-n,\,1-n,\,1,\,3-n,\right.\right.$$

$$\left.\frac{\left(a-b\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right]+$$

$$b\,\text{AppellF1}\left[2-n,\,-n,\,2,\,3-n,\,\frac{\left(a-b\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)}{2\,b},\right.$$

$$\left.\left.\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right]\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right)\right)-$$

$$\left(4\,b^2\left(-2+n\right)n\,\text{AppellF1}\left[1-n,\,-n,\,1,\,2-n,\,\frac{\left(a-b\right)\left(-1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)}{2\,b},\right.\right.$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right]\text{Sec}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]$$

$$\left.\left(1-\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)^{-1-n}\right)\Big/\left(\left(-1+n\right)\left(1+\text{Tan}\left[\frac{1}{2}\left(c+d\,x\right)\right]^2\right)\right.$$

$$\left(2\,b\,(-2+n)\,\text{AppellF1}\left[1-n,\,-n,\,1,\,2-n,\,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\right.\right.$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]+\left((a-b)\,n\,\text{AppellF1}\left[2-n,\,1-n,\,1,\,3-n,\right.\right.$$

$$\left.\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]+$$

$$b\,\text{AppellF1}\left[2-n,\,-n,\,2,\,3-n,\,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\right.$$

$$\left.\left.\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]\right)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)\right)-$$

$$\left(4\,b^2\,(-2+n)\left(-\frac{1}{2\,b\,(2-n)}(a-b)\,(1-n)\,n\,\text{AppellF1}\left[2-n,\,1-n,\,1,\,3-n,\right.\right.\right.$$

$$\left.\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]-\frac{1}{2\,(2-n)}(1-n)\,\text{AppellF1}\left[2-n,\right.$$

$$\left.-n,\,2,\,3-n,\,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]$$

$$\left.\left.\text{Sec}\left[\frac{1}{2}(c+d\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]\right)\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)^{-n}\right)\Big/$$

$$\left((-1+n)\left(1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\left(2\,b\,(-2+n)\,\text{AppellF1}\left[1-n,\,-n,\,1,\right.\right.\right.$$

$$\left.2-n,\,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\,\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]+$$

$$\left((a-b)\,n\,\text{AppellF1}\left[2-n,\,1-n,\,1,\,3-n,\,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\right.\right.$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]+$$

$$b\,\text{AppellF1}\left[2-n,\,-n,\,2,\,3-n,\,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)}{2\,b},\right.$$

$$\left.\left.\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right]\right)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d\,x)\right]^2\right)\right)+$$

$$\left(4 b^2 (-2+n) \text{AppellF1}\left[1-n,-n,1,2-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\right.\right.$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right]\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)^{-n}$$

$$\left(\left(\left((a-b) n \text{AppellF1}\left[2-n,1-n,1,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\right.\right.\right.\right.$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right]+b \text{AppellF1}\left[2-n,-n,2,3-n,\right.$$

$$\left.\left.\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right]\right)$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+2 b (-2+n)\left(-\frac{1}{2 b (2-n)}(a-b)\right.$$

$$(1-n) n \text{AppellF1}\left[2-n,1-n,1,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\right.$$

$$\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]-\frac{1}{2(2-n)}$$

$$(1-n) \text{AppellF1}\left[2-n,-n,2,3-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\right.$$

$$\left.\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+$$

$$\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\left((a-b) n\left(-\frac{1}{2(3-n)}(2-n) \text{AppellF1}\left[3-n,1-n,\right.\right.\right.$$

$$\left.2,4-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right]$$

$$\text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]+\frac{1}{2 b (3-n)}(a-b)(1-n)(2-n)$$

$$\text{AppellF1}\left[3-n,2-n,1,4-n,\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\right.$$

$$\left.\left.\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right] \text{Sec}\left[\frac{1}{2}(c+d x)\right]^2 \text{Tan}\left[\frac{1}{2}(c+d x)\right]\right)+$$

$$b\left(-\frac{1}{2 b (3-n)}(a-b)(2-n) n \text{AppellF1}\left[3-n,1-n,2,4-n,\right.\right.$$

$$\left.\frac{(a-b)\left(-1+\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)}{2 b},\frac{1}{2}\left(1-\text{Tan}\left[\frac{1}{2}(c+d x)\right]^2\right)\right]$$

$$
\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]-\frac{1}{3-n}\,(2-n)
$$

$$
\mathrm{AppellF1}\left[3-n,\,-n,\,3,\,4-n,\,\frac{(a-b)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)}{2\,b},\right.
$$

$$
\left.\frac{1}{2}\,\left(1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right]\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/
$$

$$
\Bigg(\Bigg((-1+n)\,\left(1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\,\Bigg(2\,b\,(-2+n)\,\mathrm{AppellF1}\Big[1-n,\,-n,\,1,
$$

$$
2-n,\,\frac{(a-b)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)}{2\,b},\,\frac{1}{2}\,\left(1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big]+
$$

$$
\Bigg((a-b)\,n\,\mathrm{AppellF1}\Big[2-n,\,1-n,\,1,\,3-n,\,\frac{(a-b)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)}{2\,b},
$$

$$
\frac{1}{2}\,\left(1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big]+
$$

$$
b\,\mathrm{AppellF1}\Big[2-n,\,-n,\,2,\,3-n,\,\frac{(a-b)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)}{2\,b},
$$

$$
\frac{1}{2}\,\left(1-\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Big]\Bigg)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\Bigg)^2\Bigg)+
$$

$$
\Bigg(\left(-a\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]+b\,\mathrm{Sec}\left[\frac{1}{2}\,(c+d\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]\right)
$$

$$
\left(2-2\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)^{-n}\,\left(\frac{(a-b)\,\left(-1+\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)}{b}\right)^n
$$

$$
\Bigg(-\mathrm{Hypergeometric2F1}\Big[1+n,\,1+n,\,2+n,
$$

$$
\frac{a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2}{2\,b}\Big]+
$$

$$
\left(1-\frac{1}{2\,b}\left(a+b-a\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2+b\,\mathrm{Tan}\left[\frac{1}{2}\,(c+d\,x)\right]^2\right)\right)^{-1-n}\Bigg)\Bigg)\Bigg/\Bigg(-1+\mathrm{Tan}\Big[
$$

$$
\frac{1}{2}\,(c+d\,x)\Big]^2\Bigg)\Bigg)\Bigg)\Bigg)\Bigg)
$$

Problem 356: Unable to integrate problem.

$$\int \cot[c+d x]\,(a+b\,\mathrm{Sec}[c+d x])^n\,dx$$

Optimal (type 5, 162 leaves, 8 steps):

$$-\left(\left(\text{Hypergeometric2F1}\left[1,1+n,2+n,\frac{a+b\,\mathrm{Sec}[c+d x]}{a-b}\right](a+b\,\mathrm{Sec}[c+d x])^{1+n}\right)\Big/\left(2(a-b)\,d\,(1+n)\right)\right)-\left(\text{Hypergeometric2F1}\left[1,1+n,2+n,\frac{a+b\,\mathrm{Sec}[c+d x]}{a+b}\right](a+b\,\mathrm{Sec}[c+d x])^{1+n}\right)\Big/\left(2(a+b)\,d\,(1+n)\right)+\frac{1}{a\,d\,(1+n)}\text{Hypergeometric2F1}\left[1,1+n,2+n,1+\frac{b\,\mathrm{Sec}[c+d x]}{a}\right](a+b\,\mathrm{Sec}[c+d x])^{1+n}$$

Result (type 8, 21 leaves):

$$\int \cot[c+d x]\,(a+b\,\mathrm{Sec}[c+d x])^n\,dx$$

Problem 357: Unable to integrate problem.

$$\int \cot[c+d x]^3\,(a+b\,\mathrm{Sec}[c+d x])^n\,dx$$

Optimal (type 5, 279 leaves, 10 steps):

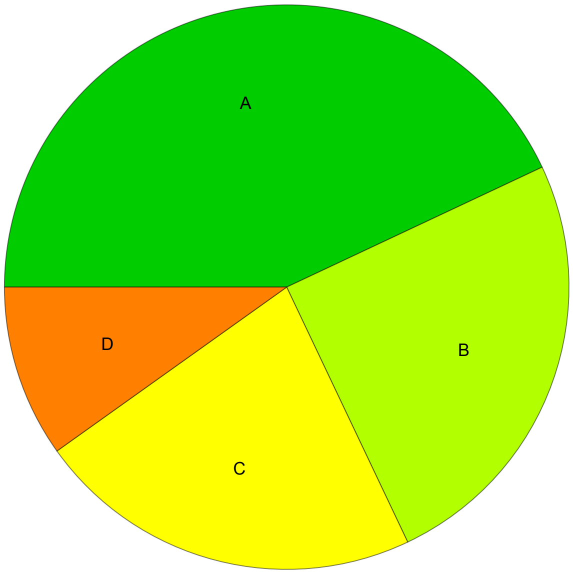
$$\left(\text{Hypergeometric2F1}\left[1,1+n,2+n,\frac{a+b\,\mathrm{Sec}[c+d x]}{a-b}\right](a+b\,\mathrm{Sec}[c+d x])^{1+n}\right)\Big/\left(2(a-b)\,d\,(1+n)\right)+\left(\text{Hypergeometric2F1}\left[1,1+n,2+n,\frac{a+b\,\mathrm{Sec}[c+d x]}{a+b}\right](a+b\,\mathrm{Sec}[c+d x])^{1+n}\right)\Big/\left(2(a+b)\,d\,(1+n)\right)-\frac{1}{a\,d\,(1+n)}\text{Hypergeometric2F1}\left[1,1+n,2+n,1+\frac{b\,\mathrm{Sec}[c+d x]}{a}\right](a+b\,\mathrm{Sec}[c+d x])^{1+n}-\left(b\,\text{Hypergeometric2F1}\left[2,1+n,2+n,\frac{a+b\,\mathrm{Sec}[c+d x]}{a-b}\right](a+b\,\mathrm{Sec}[c+d x])^{1+n}\right)\Big/\left(4(a-b)^2\,d\,(1+n)\right)+\left(b\,\text{Hypergeometric2F1}\left[2,1+n,2+n,\frac{a+b\,\mathrm{Sec}[c+d x]}{a+b}\right](a+b\,\mathrm{Sec}[c+d x])^{1+n}\right)\Big/\left(4(a+b)^2\,d\,(1+n)\right)$$

Result (type 8, 23 leaves):

$$\int \cot[c+d x]^3\,(a+b\,\mathrm{Sec}[c+d x])^n\,dx$$

Summary of Integration Test Results

365 integration problems



A - 157 optimal antiderivatives

B - 91 more than twice size of optimal antiderivatives

C - 81 unnecessarily complex antiderivatives

D - 36 unable to integrate problems

E - 0 integration timeouts