Mathematica 11.3 Integration Test Results

Test results for the 254 problems in "4.7.1 (c trig)^m (d trig)^n.m"

Problem 8: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Csc}[2 a + 2 b x]\, \mathrm{Sin}[a + b x]\, dx$$

Optimal (type 3, 14 leaves, 2 steps):

$$\frac{\mathrm{ArcTanh}[\mathrm{Sin}[a + b x]]}{2 b}$$

Result (type 3, 72 leaves):

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

Problem 10: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Csc}[2 a + 2 b x]^3\, \mathrm{Sin}[a + b x]\, dx$$

Optimal (type 3, 49 leaves, 5 steps):

$$\frac{3\,\mathrm{ArcTanh}[\mathrm{Sin}[a + b x]]}{16 b} - \frac{3\,\mathrm{Csc}[a + b x]}{16 b} + \frac{\mathrm{Csc}[a + b x]\,\mathrm{Sec}[a + b x]^2}{16 b}$$

Result (type 3, 132 leaves):

$$-\frac{1}{32 b}\left(2\,\mathrm{Cot}\left[\frac{1}{2}(a+b x)\right]+6\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(a+b x)\right]-\mathrm{Sin}\left[\frac{1}{2}(a+b x)\right]\right]-6\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(a+b x)\right]+\mathrm{Sin}\left[\frac{1}{2}(a+b x)\right]\right]-\frac{1}{\left(\mathrm{Cos}\left[\frac{1}{2}(a+b x)\right]-\mathrm{Sin}\left[\frac{1}{2}(a+b x)\right]\right)^2}+\frac{1}{\left(\mathrm{Cos}\left[\frac{1}{2}(a+b x)\right]+\mathrm{Sin}\left[\frac{1}{2}(a+b x)\right]\right)^2}+2\,\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]\right)$$

Problem 11: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Csc}[2 a + 2 b x]^4\, \mathrm{Sin}[a + b x]\, dx$$

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

$$-\frac{5\,\text{ArcTanh}[\text{Cos}[a+b\,x]]}{32\,b}+\frac{5\,\text{Sec}[a+b\,x]}{32\,b}+\frac{5\,\text{Sec}[a+b\,x]^3}{96\,b}-\frac{\text{Csc}[a+b\,x]^2\,\text{Sec}[a+b\,x]^3}{32\,b}$$

Result (type 3, 205 leaves):

$$\frac{1}{24\,b\left(\text{Csc}\left[\frac{1}{2}(a+b\,x)\right]^2-\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\right)^3}\text{Csc}[a+b\,x]^8$$
$$\Big(22-40\,\text{Cos}[2\,(a+b\,x)]+13\,\text{Cos}[3\,(a+b\,x)]-30\,\text{Cos}[4\,(a+b\,x)]+13\,\text{Cos}[5\,(a+b\,x)]+$$
$$15\,\text{Cos}[3\,(a+b\,x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]\right]+15\,\text{Cos}[5\,(a+b\,x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]\right]-$$
$$15\,\text{Cos}[3\,(a+b\,x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]-15\,\text{Cos}[5\,(a+b\,x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]+$$
$$\text{Cos}[a+b\,x]\left(-26-30\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]\right]+30\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]\right)\Big)$$

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

$$\int \text{Csc}[2\,a+2\,b\,x]^5\,\text{Sin}[a+b\,x]\,dx$$

Optimal (type 3, 89 leaves, 7 steps):

$$\frac{35\,\text{ArcTanh}[\text{Sin}[a+b\,x]]}{256\,b}-\frac{35\,\text{Csc}[a+b\,x]}{256\,b}-\frac{35\,\text{Csc}[a+b\,x]^3}{768\,b}+\frac{7\,\text{Csc}[a+b\,x]^3\,\text{Sec}[a+b\,x]^2}{256\,b}+\frac{\text{Csc}[a+b\,x]^3\,\text{Sec}[a+b\,x]^4}{128\,b}$$

Result (type 3, 277 leaves):

$$-\frac{19\,\text{Cot}\left[\frac{1}{2}(a+b\,x)\right]}{384\,b}-\frac{\text{Cot}\left[\frac{1}{2}(a+b\,x)\right]\text{Csc}\left[\frac{1}{2}(a+b\,x)\right]^2}{768\,b}-$$
$$\frac{35\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]}{256\,b}+\frac{35\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]}{256\,b}+$$
$$\frac{1}{512\,b\left(\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right)^4}+\frac{11}{512\,b\left(\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right)^2}-$$
$$\frac{1}{512\,b\left(\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right)^4}-\frac{11}{512\,b\left(\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right)^2}-$$
$$\frac{19\,\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]}{384\,b}-\frac{\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]}{768\,b}$$

Problem 28: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 28 leaves, 4 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[a+b x]]}{2 b}-\frac{\text{Sin}[a+b x]}{2 b}$$

Result (type 3, 71 leaves) :

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

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

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

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

$$\frac{\text{ArcTanh}[\text{Sin}[a+b x]]}{16 b}+\frac{\text{Sec}[a+b x] \text{Tan}[a+b x]}{16 b}$$

Result (type 3, 69 leaves) :

$$\frac{1}{16 b}\left(-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]-\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]+\text{Sec}[a+b x] \text{Tan}[a+b x]\right)$$

Problem 32: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[2 a+2 b x]^5 \text{Sin}[a+b x]^3 \, dx$$

Optimal (type 3, 70 leaves, 6 steps) :

$$\frac{15 \text{ArcTanh}[\text{Sin}[a+b x]]}{256 b}-\frac{15 \text{Csc}[a+b x]}{256 b}+\frac{5 \text{Csc}[a+b x] \text{Sec}[a+b x]^2}{256 b}+\frac{\text{Csc}[a+b x] \text{Sec}[a+b x]^4}{128 b}$$

Result (type 3, 219 leaves) :

$$-\frac{\text{Cot}\left[\frac{1}{2}(a+b x)\right]}{64 b}-\frac{15 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]-\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{256 b}+\frac{15 \text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{256 b}+\frac{1}{512 b \left(\text{Cos}\left[\frac{1}{2}(a+b x)\right]-\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right)^4}+\frac{7}{512 b \left(\text{Cos}\left[\frac{1}{2}(a+b x)\right]-\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right)^2}-\frac{1}{512 b \left(\text{Cos}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right)^4}-\frac{7}{512 b \left(\text{Cos}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right)^2}-\frac{\text{Tan}\left[\frac{1}{2}(a+b x)\right]}{64 b}$$

Problem 40: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[a+b x] \, \text{Sin}[2 a+2 b x] \, dx$$

Optimal (type 3, 11 leaves, 2 steps):

$$\frac{2 \,\text{Sin}[a+b x]}{b}$$

Result (type 3, 23 leaves):

$$2 \left(\frac{\text{Cos}[b x] \,\text{Sin}[a]}{b}+\frac{\text{Cos}[a] \,\text{Sin}[b x]}{b}\right)$$

Problem 41: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[a+b x] \, \text{Csc}[2 a+2 b x] \, dx$$

Optimal (type 3, 28 leaves, 4 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[a+b x]]}{2 b}-\frac{\text{Csc}[a+b x]}{2 b}$$

Result (type 3, 95 leaves):

$$-\frac{\text{Cot}\left[\frac{1}{2} (a+b x)\right]}{4 b}-\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2} (a+b x)\right]-\text{Sin}\left[\frac{1}{2} (a+b x)\right]\right]}{2 b}+\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2} (a+b x)\right]+\text{Sin}\left[\frac{1}{2} (a+b x)\right]\right]}{2 b}-\frac{\text{Tan}\left[\frac{1}{2} (a+b x)\right]}{4 b}$$

Problem 42: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 49 leaves, 5 steps):

$$-\frac{3 \,\text{ArcTanh}[\text{Cos}[a+b x]]}{8 b}+\frac{3 \,\text{Sec}[a+b x]}{8 b}-\frac{\text{Csc}[a+b x]^2 \,\text{Sec}[a+b x]}{8 b}$$

Result (type 3, 143 leaves):

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

Problem 43: Result more than twice size of optimal antiderivative.

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

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

$$\frac{5\,\text{ArcTanh}[\text{Sin}[a+b\,x]]}{16\,b}-\frac{5\,\text{Csc}[a+b\,x]}{16\,b}-\frac{5\,\text{Csc}[a+b\,x]^3}{48\,b}+\frac{\text{Csc}[a+b\,x]^3\,\text{Sec}[a+b\,x]^2}{16\,b}$$

Result (type 3, 215 leaves):

$$-\frac{13\,\text{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]}{96\,b}-\frac{\text{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]\,\text{Csc}\left[\frac{1}{2}\,(a+b\,x)\right]^2}{192\,b}-\frac{5\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]}{16\,b}+\frac{5\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]}{16\,b}+\frac{1}{32\,b\,\left(\text{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right)^2}-\frac{1}{32\,b\,\left(\text{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right)^2}-\frac{13\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{96\,b}-\frac{\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{192\,b}$$

Problem 44: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[a+b\,x]\,\text{Csc}[2\,a+2\,b\,x]^4\,dx$$

Optimal (type 3, 89 leaves, 7 steps):

$$-\frac{35\,\text{ArcTanh}[\text{Cos}[a+b\,x]]}{128\,b}+\frac{35\,\text{Sec}[a+b\,x]}{128\,b}+\frac{35\,\text{Sec}[a+b\,x]^3}{384\,b}-\frac{7\,\text{Csc}[a+b\,x]^2\,\text{Sec}[a+b\,x]^3}{128\,b}-\frac{\text{Csc}[a+b\,x]^4\,\text{Sec}[a+b\,x]^3}{64\,b}$$

Result (type 3, 268 leaves):

$$-\frac{1}{384\,b\,\left(\mathrm{Csc}\left[\frac{1}{2}\,(a+b\,x)\right]^2-\mathrm{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right)^3}\mathrm{Csc}[a+b\,x]^{10}$$
$$\Big(-204+658\,\mathrm{Cos}[2\,(a+b\,x)]-228\,\mathrm{Cos}[3\,(a+b\,x)]+140\,\mathrm{Cos}[4\,(a+b\,x)]-76\,\mathrm{Cos}[5\,(a+b\,x)]-$$
$$210\,\mathrm{Cos}[6\,(a+b\,x)]+76\,\mathrm{Cos}[7\,(a+b\,x)]-315\,\mathrm{Cos}[3\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]\right]-$$
$$105\,\mathrm{Cos}[5\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]\right]+105\,\mathrm{Cos}[7\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]\right]+$$
$$3\,\mathrm{Cos}[a+b\,x]\,\left(76+105\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]\right]-105\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]\right)+$$
$$315\,\mathrm{Cos}[3\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]+$$
$$105\,\mathrm{Cos}[5\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]-105\,\mathrm{Cos}[7\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]\Big)$$

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

$$\int \mathrm{Csc}[a+b\,x]^2\,\mathrm{Sin}[2\,a+2\,b\,x]^7\,dx$$

Optimal (type 3, 44 leaves, 5 steps):

$$-\frac{16\,\mathrm{Cos}[a+b\,x]^8}{b}+\frac{128\,\mathrm{Cos}[a+b\,x]^{10}}{5\,b}-\frac{32\,\mathrm{Cos}[a+b\,x]^{12}}{3\,b}$$

Result (type 3, 91 leaves):

$$-\frac{5\,\mathrm{Cos}[2\,(a+b\,x)]}{8\,b}-\frac{5\,\mathrm{Cos}[4\,(a+b\,x)]}{64\,b}+\frac{5\,\mathrm{Cos}[6\,(a+b\,x)]}{48\,b}+\frac{\mathrm{Cos}[8\,(a+b\,x)]}{32\,b}-\frac{\mathrm{Cos}[10\,(a+b\,x)]}{80\,b}-\frac{\mathrm{Cos}[12\,(a+b\,x)]}{192\,b}$$

Problem 61: Result more than twice size of optimal antiderivative.

$$\int \mathrm{Csc}[a+b\,x]^3\,\mathrm{Sin}[2\,a+2\,b\,x]^8\,dx$$

Optimal (type 3, 46 leaves, 4 steps):

$$-\frac{256\,\mathrm{Cos}[a+b\,x]^9}{9\,b}+\frac{512\,\mathrm{Cos}[a+b\,x]^{11}}{11\,b}-\frac{256\,\mathrm{Cos}[a+b\,x]^{13}}{13\,b}$$

Result (type 3, 104 leaves):

$$-\frac{5\,\mathrm{Cos}[a+b\,x]}{4\,b}-\frac{25\,\mathrm{Cos}[3\,(a+b\,x)]}{48\,b}+\frac{\mathrm{Cos}[5\,(a+b\,x)]}{16\,b}+\frac{\mathrm{Cos}[7\,(a+b\,x)]}{8\,b}+\frac{\mathrm{Cos}[9\,(a+b\,x)]}{72\,b}-\frac{3\,\mathrm{Cos}[11\,(a+b\,x)]}{176\,b}-\frac{\mathrm{Cos}[13\,(a+b\,x)]}{208\,b}$$

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

$$\int \operatorname{Csc}[a+b x]^3 \operatorname{Csc}[2 a+2 b x] \, dx$$

Optimal (type 3, 43 leaves, 5 steps):

$$\frac{\operatorname{ArcTanh}[\operatorname{Sin}[a+b x]]}{2 b}-\frac{\operatorname{Csc}[a+b x]}{2 b}-\frac{\operatorname{Csc}[a+b x]^3}{6 b}$$

Result (type 3, 153 leaves):

$$-\frac{7 \operatorname{Cot}\left[\frac{1}{2}(a+b x)\right]}{24 b}-\frac{\operatorname{Cot}\left[\frac{1}{2}(a+b x)\right] \operatorname{Csc}\left[\frac{1}{2}(a+b x)\right]^2}{48 b}-\frac{\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(a+b x)\right]-\operatorname{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{2 b}+\frac{\operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(a+b x)\right]+\operatorname{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{2 b}-\frac{7 \operatorname{Tan}\left[\frac{1}{2}(a+b x)\right]}{24 b}-\frac{\operatorname{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \operatorname{Tan}\left[\frac{1}{2}(a+b x)\right]}{48 b}$$

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

$$\int \operatorname{Csc}[a+b x]^3 \operatorname{Csc}[2 a+2 b x]^2 \, dx$$

Optimal (type 3, 70 leaves, 6 steps):

$$-\frac{15 \operatorname{ArcTanh}[\operatorname{Cos}[a+b x]]}{32 b}+\frac{15 \operatorname{Sec}[a+b x]}{32 b}-\frac{5 \operatorname{Csc}[a+b x]^2 \operatorname{Sec}[a+b x]}{32 b}-\frac{\operatorname{Csc}[a+b x]^4 \operatorname{Sec}[a+b x]}{16 b}$$

Result (type 3, 195 leaves):

$$-\frac{7 \operatorname{Csc}\left[\frac{1}{2}(a+b x)\right]^2}{128 b}-\frac{\operatorname{Csc}\left[\frac{1}{2}(a+b x)\right]^4}{256 b}-\frac{15 \operatorname{Log}\left[\operatorname{Cos}\left[\frac{1}{2}(a+b x)\right]\right]}{32 b}+\frac{15 \operatorname{Log}\left[\operatorname{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{32 b}+\frac{7 \operatorname{Sec}\left[\frac{1}{2}(a+b x)\right]^2}{128 b}+\frac{\operatorname{Sec}\left[\frac{1}{2}(a+b x)\right]^4}{256 b}+\frac{\operatorname{Sin}\left[\frac{1}{2}(a+b x)\right]}{4 b\left(\operatorname{Cos}\left[\frac{1}{2}(a+b x)\right]-\operatorname{Sin}\left[\frac{1}{2}(a+b x)\right]\right)}-\frac{\operatorname{Sin}\left[\frac{1}{2}(a+b x)\right]}{4 b\left(\operatorname{Cos}\left[\frac{1}{2}(a+b x)\right]+\operatorname{Sin}\left[\frac{1}{2}(a+b x)\right]\right)}$$

Problem 71: Result more than twice size of optimal antiderivative.

$$\int \operatorname{Csc}[a+b x]^3 \operatorname{Csc}[2 a+2 b x]^3 \, dx$$

Optimal (type 3, 81 leaves, 6 steps):

$$\frac{7\,\text{ArcTanh}[\text{Sin}[a+b\,x]]}{16\,b}-\frac{7\,\text{Csc}[a+b\,x]}{16\,b}-\frac{7\,\text{Csc}[a+b\,x]^3}{48\,b}-\frac{7\,\text{Csc}[a+b\,x]^5}{80\,b}+\frac{\text{Csc}[a+b\,x]^5\,\text{Sec}[a+b\,x]^2}{16\,b}$$

Result (type 3, 222 leaves):

$$-\frac{1}{3840\,b}\left(818\,\text{Cot}\left[\frac{1}{2}(a+b\,x)\right]+1680\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]-1680\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]-\frac{120}{\left(\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right)^2}+392\,\text{Csc}[a+b\,x]^3\,\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]^4+96\,\text{Csc}[a+b\,x]^5\,\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]^6+\frac{120}{\left(\text{Cos}\left[\frac{1}{2}(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right)^2}+\frac{49}{2}\,\text{Csc}\left[\frac{1}{2}(a+b\,x)\right]^4\,\text{Sin}[a+b\,x]+\frac{3}{2}\,\text{Csc}\left[\frac{1}{2}(a+b\,x)\right]^6\,\text{Sin}[a+b\,x]+818\,\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]\right)$$

Problem 72: Result more than twice size of optimal antiderivative.

$$\int \text{Csc}[a+b\,x]^3\,\text{Csc}[2\,a+2\,b\,x]^4\,dx$$

Optimal (type 3, 112 leaves, 8 steps):

$$-\frac{105\,\text{ArcTanh}[\text{Cos}[a+b\,x]]}{256\,b}+\frac{105\,\text{Sec}[a+b\,x]}{256\,b}+\frac{35\,\text{Sec}[a+b\,x]^3}{256\,b}-\frac{21\,\text{Csc}[a+b\,x]^2\,\text{Sec}[a+b\,x]^3}{256\,b}-\frac{3\,\text{Csc}[a+b\,x]^4\,\text{Sec}[a+b\,x]^3}{128\,b}-\frac{\text{Csc}[a+b\,x]^6\,\text{Sec}[a+b\,x]^3}{96\,b}$$

Result (type 3, 278 leaves):

$$\frac{1}{3072\,b\left(\mathrm{Csc}\left[\frac{1}{2}(a+b\,x)\right]^2-\mathrm{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\right)^3}$$
$$\mathrm{Csc}[a+b\,x]^{12}\left(1150-4752\,\mathrm{Cos}[2\,(a+b\,x)]+1600\,\mathrm{Cos}[3\,(a+b\,x)]+\right.$$
$$504\,\mathrm{Cos}[4\,(a+b\,x)]+1680\,\mathrm{Cos}[6\,(a+b\,x)]-600\,\mathrm{Cos}[7\,(a+b\,x)]-630\,\mathrm{Cos}[8\,(a+b\,x)]+$$
$$200\,\mathrm{Cos}[9\,(a+b\,x)]+2520\,\mathrm{Cos}[3\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(a+b\,x)\right]\right]-$$
$$945\,\mathrm{Cos}[7\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(a+b\,x)\right]\right]+315\,\mathrm{Cos}[9\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(a+b\,x)\right]\right]-$$
$$30\,\mathrm{Cos}[a+b\,x]\left(40+63\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}(a+b\,x)\right]\right]-63\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]\right)-$$
$$2520\,\mathrm{Cos}[3\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]+$$
$$\left.945\,\mathrm{Cos}[7\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]-315\,\mathrm{Cos}[9\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}(a+b\,x)\right]\right]\right)$$

Problem 123: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Sin}[a+b\,x]^3\,\mathrm{Sin}[2\,a+2\,b\,x]^m\,dx$$

Optimal (type 5, 84 leaves, 2 steps):

$$\frac{1}{b\,(4+m)}\left(\mathrm{Cos}[a+b\,x]^2\right)^{\frac{1-m}{2}}\,\mathrm{Hypergeometric2F1}\left[\frac{1-m}{2},\frac{4+m}{2},\frac{6+m}{2},\mathrm{Sin}[a+b\,x]^2\right]$$
$$\mathrm{Sin}[a+b\,x]^3\,\mathrm{Sin}[2\,a+2\,b\,x]^m\,\mathrm{Tan}[a+b\,x]$$

Result (type 6, 5212 leaves):

$$\left(2^{4+m}\,(4+m)\,\mathrm{Cos}\left[\frac{1}{2}(a+b\,x)\right]^6\,\mathrm{Sin}\left[\frac{1}{2}(a+b\,x)\right]^2\right.$$
$$\mathrm{Sin}[a+b\,x]^3\left(\mathrm{Cos}\left[\frac{1}{2}(a+b\,x)\right]\left(-\mathrm{Sin}\left[\frac{1}{2}(a+b\,x)\right]+\mathrm{Sin}\left[\frac{3}{2}(a+b\,x)\right]\right)\right)^m$$
$$\mathrm{Sin}[2\,(a+b\,x)]^m\left(\left(\mathrm{AppellF1}\left[\frac{2+m}{2},-m,3+2\,m,\frac{4+m}{2},\right.\right.\right.$$
$$\left.\left.\mathrm{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\right)\Big/$$
$$\left((4+m)\,\mathrm{AppellF1}\left[\frac{2+m}{2},-m,3+2\,m,\frac{4+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]-\right.$$
$$2\left(m\,\mathrm{AppellF1}\left[\frac{4+m}{2},1-m,3+2\,m,\frac{6+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]+\right.$$
$$(3+2\,m)\,\mathrm{AppellF1}\left[\frac{4+m}{2},-m,2\,(2+m),\frac{6+m}{2},\right.$$
$$\left.\left.\left.\mathrm{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\right)\mathrm{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right)-$$
$$\mathrm{AppellF1}\left[\frac{2+m}{2},-m,2\,(2+m),\frac{4+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\Big/$$

$$\Big((4+m)\,\text{AppellF1}\Big[\frac{2+m}{2},-m,2\,(2+m),\frac{4+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big]-$$

$$2\,\Big(m\,\text{AppellF1}\Big[\frac{4+m}{2},1-m,2\,(2+m),\frac{6+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big]+$$

$$2\,(2+m)\,\text{AppellF1}\Big[\frac{4+m}{2},-m,5+2\,m,\frac{6+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,$$

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

$$\Big(b\,(2+m)\,\Big(\frac{1}{2+m}\,2^{4+m}\,(4+m)\,\text{Cos}\Big[\frac{1}{2}(a+b\,x)\Big]^7\,\text{Sin}\Big[\frac{1}{2}(a+b\,x)\Big]$$

$$\Big(\text{Cos}\Big[\frac{1}{2}(a+b\,x)\Big]\,\Big(-\text{Sin}\Big[\frac{1}{2}(a+b\,x)\Big]+\text{Sin}\Big[\frac{3}{2}(a+b\,x)\Big]\Big)\Big)^m$$

$$\Big(\Big(\text{AppellF1}\Big[\frac{2+m}{2},-m,3+2\,m,\frac{4+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big)\Big/\Big((4+m)\,\text{AppellF1}\Big[\frac{2+m}{2},-m,3+2\,m,\frac{4+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big]-2\,\Big(m\,\text{AppellF1}\Big[\frac{4+m}{2},1-m,3+2\,m,\frac{6+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big]+(3+2\,m)\,\text{AppellF1}\Big[\frac{4+m}{2},-m,2\,(2+m),$$

$$\frac{6+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big)-$$

$$\text{AppellF1}\Big[\frac{2+m}{2},-m,2\,(2+m),\frac{4+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big]\Big/$$

$$\Big((4+m)\,\text{AppellF1}\Big[\frac{2+m}{2},-m,2\,(2+m),\frac{4+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big]-$$

$$2\,\Big(m\,\text{AppellF1}\Big[\frac{4+m}{2},1-m,2\,(2+m),\frac{6+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big]+2\,(2+m)\,\text{AppellF1}\Big[\frac{4+m}{2},-m,5+2\,m,\frac{6+m}{2},$$

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

$$\frac{1}{2+m}\,3\times 2^{4+m}\,(4+m)\,\text{Cos}\Big[\frac{1}{2}(a+b\,x)\Big]^5\,\text{Sin}\Big[\frac{1}{2}(a+b\,x)\Big]^3$$

$$\Big(\text{Cos}\Big[\frac{1}{2}(a+b\,x)\Big]\,\Big(-\text{Sin}\Big[\frac{1}{2}(a+b\,x)\Big]+\text{Sin}\Big[\frac{3}{2}(a+b\,x)\Big]\Big)\Big)^m$$

$$\Big(\Big(\text{AppellF1}\Big[\frac{2+m}{2},-m,3+2\,m,\frac{4+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big]$$

$$\text{Sec}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big)\Big/\Big((4+m)\,\text{AppellF1}\Big[\frac{2+m}{2},-m,3+2\,m,\frac{4+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big]-2\,\Big(m\,\text{AppellF1}\Big[\frac{4+m}{2},1-m,3+2\,m,\frac{6+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,$$

$$-\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big]+(3+2\,m)\,\text{AppellF1}\Big[\frac{4+m}{2},-m,2\,(2+m),$$

$$\frac{6+m}{2},\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2,-\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(a+b\,x)\Big]^2\Big)-$$

$$\text{AppellF1}\left[\frac{2+m}{2},-m,2\left(2+m\right),\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]\Big/$$
$$\left(\left(4+m\right)\text{AppellF1}\left[\frac{2+m}{2},-m,2\left(2+m\right),\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]-\right.$$
$$2\left(m\,\text{AppellF1}\left[\frac{4+m}{2},1-m,2\left(2+m\right),\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]+2\left(2+m\right)\text{AppellF1}\left[\frac{4+m}{2},-m,5+2\,m,\frac{6+m}{2},$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right)\right)+$$
$$\frac{1}{2+m}2^{4+m}\,m\,(4+m)\,\text{Cos}\left[\frac{1}{2}\left(a+b\,x\right)\right]^6\text{Sin}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2$$
$$\left(\text{Cos}\left[\frac{1}{2}\left(a+b\,x\right)\right]\left(-\text{Sin}\left[\frac{1}{2}\left(a+b\,x\right)\right]+\text{Sin}\left[\frac{3}{2}\left(a+b\,x\right)\right]\right)\right)^{-1+m}$$
$$\left(\text{Cos}\left[\frac{1}{2}\left(a+b\,x\right)\right]\left(-\frac{1}{2}\text{Cos}\left[\frac{1}{2}\left(a+b\,x\right)\right]+\frac{3}{2}\text{Cos}\left[\frac{3}{2}\left(a+b\,x\right)\right]\right)-\right.$$
$$\left.\frac{1}{2}\text{Sin}\left[\frac{1}{2}\left(a+b\,x\right)\right]\left(-\text{Sin}\left[\frac{1}{2}\left(a+b\,x\right)\right]+\text{Sin}\left[\frac{3}{2}\left(a+b\,x\right)\right]\right)\right)$$
$$\left(\left(\text{AppellF1}\left[\frac{2+m}{2},-m,3+2\,m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]\right.\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right)\Big/\left(\left(4+m\right)\text{AppellF1}\left[\frac{2+m}{2},-m,3+2\,m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{4+m}{2},1-m,3+2\,m,\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\right.$$
$$-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]+\left(3+2\,m\right)\text{AppellF1}\left[\frac{4+m}{2},-m,2\left(2+m\right),$$
$$\left.\left.\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right)-$$
$$\text{AppellF1}\left[\frac{2+m}{2},-m,2\left(2+m\right),\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]\Big/$$
$$\left(\left(4+m\right)\text{AppellF1}\left[\frac{2+m}{2},-m,2\left(2+m\right),\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]-\right.$$
$$2\left(m\,\text{AppellF1}\left[\frac{4+m}{2},1-m,2\left(2+m\right),\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]+\right.$$
$$2\left(2+m\right)\text{AppellF1}\left[\frac{4+m}{2},-m,5+2\,m,\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right)\right)+\frac{1}{2+m}2^{4+m}\left(4+m\right)\text{Cos}\left[\frac{1}{2}\left(a+b\,x\right)\right]^6$$
$$\text{Sin}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\left(\text{Cos}\left[\frac{1}{2}\left(a+b\,x\right)\right]\left(-\text{Sin}\left[\frac{1}{2}\left(a+b\,x\right)\right]+\text{Sin}\left[\frac{3}{2}\left(a+b\,x\right)\right]\right)\right)^m$$
$$\left(\left(\text{AppellF1}\left[\frac{2+m}{2},-m,3+2\,m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]\right.\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]\right)\Big/$$
$$\left(\left(4+m\right)\text{AppellF1}\left[\frac{2+m}{2},-m,3+2\,m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]-\right.$$

$$2\left(m\,\text{AppellF1}\left[\frac{4+m}{2},1-m,3+2m,\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+\right.$$

$$(3+2m)\,\text{AppellF1}\left[\frac{4+m}{2},-m,2(2+m),\frac{6+m}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\Big)+$$

$$\left(\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\left(-\frac{1}{4+m}m\,(2+m)\,\text{AppellF1}\left[1+\frac{2+m}{2},1-m,3+2m,1+\frac{4+m}{2},\right.\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]-$$

$$\frac{1}{4+m}(2+m)\,(3+2m)\,\text{AppellF1}\left[1+\frac{2+m}{2},-m,4+2m,1+\frac{4+m}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\right)\right)\Big/$$

$$\left((4+m)\,\text{AppellF1}\left[\frac{2+m}{2},-m,3+2m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-\right.$$

$$2\left(m\,\text{AppellF1}\left[\frac{4+m}{2},1-m,3+2m,\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+\right.$$

$$(3+2m)\,\text{AppellF1}\left[\frac{4+m}{2},-m,2(2+m),\frac{6+m}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)-$$

$$\left(-\frac{1}{4+m}m\,(2+m)\,\text{AppellF1}\left[1+\frac{2+m}{2},1-m,2(2+m),1+\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]-\frac{1}{4+m}$$

$$2\,(2+m)^2\,\text{AppellF1}\left[1+\frac{2+m}{2},-m,1+2(2+m),1+\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.$$

$$\left.\left.-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\right)\Big/$$

$$\left((4+m)\,\text{AppellF1}\left[\frac{2+m}{2},-m,2(2+m),\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-\right.$$

$$2\left(m\,\text{AppellF1}\left[\frac{4+m}{2},1-m,2(2+m),\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2(2+m)\,\text{AppellF1}\left[\frac{4+m}{2},-m,5+2m,\frac{6+m}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)+$$

$$\left(\text{AppellF1}\left[\frac{2+m}{2},-m,2(2+m),\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right.$$

$$\left(-2\left(m\,\text{AppellF1}\left[\frac{4+m}{2},1-m,2(2+m),\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.\right.\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2(2+m)\,\text{AppellF1}\left[\frac{4+m}{2},-m,5+2m,\frac{6+m}{2},\right.$$

$$\left.\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]+$$

$$(4+m)\left(-\frac{1}{4+m}m(2+m)\,\text{AppellF1}\left[1+\frac{2+m}{2},1-m,2(2+m),1+\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]-\frac{1}{4+m}2(2+m)^2\,\text{AppellF1}\left[1+\frac{2+m}{2},-m,1+2(2+m),1+\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\right)-$$

$$2\,\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\left(m\left(-\frac{1}{6+m}2(2+m)(4+m)\,\text{AppellF1}\left[1+\frac{4+m}{2},1-m,1+2(2+m),1+\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]+\frac{1}{6+m}(1-m)(4+m)\,\text{AppellF1}\left[1+\frac{4+m}{2},2-m,2(2+m),1+\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\right)+2(2+m)\left(-\frac{1}{6+m}m(4+m)\,\text{AppellF1}\left[1+\frac{4+m}{2},1-m,5+2m,1+\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]-\frac{1}{6+m}(4+m)(5+2m)\,\text{AppellF1}\left[1+\frac{4+m}{2},-m,6+2m,1+\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\right)\right)\Bigg)\Bigg)\Bigg/$$

$$\Bigg(\Bigg((4+m)\,\text{AppellF1}\left[\frac{2+m}{2},-m,2(2+m),\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{4+m}{2},1-m,2(2+m),\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2(2+m)\,\text{AppellF1}\left[\frac{4+m}{2},-m,5+2m,\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\Bigg)^2-$$

$$\Bigg(\text{AppellF1}\left[\frac{2+m}{2},-m,3+2m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\Bigg(-2\left(m\,\text{AppellF1}\left[\frac{4+m}{2},1-m,3+2m,\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+(3+2m)\,\text{AppellF1}\left[\frac{4+m}{2},-m,2(2+m),\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]+$$

$$(4+m)\left(-\frac{1}{4+m}m(2+m)\,\text{AppellF1}\left[1+\frac{2+m}{2},1-m,3+2m,1+\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]-\right.$$

$$\frac{1}{4+m}(2+m)(3+2m)\,\text{AppellF1}\left[1+\frac{2+m}{2},-m,4+2m,1+\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]\Bigg)-$$

$$2\,\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Bigg(m\Bigg(-\frac{1}{6+m}(4+m)(3+2m)\,\text{AppellF1}\left[1+\frac{4+m}{2},1-m,4+2m,1+\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]+\frac{1}{6+m}(1-m)(4+m)\,\text{AppellF1}\left[1+\frac{4+m}{2},2-m,3+2m,1+\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]\Bigg)+(3+2m)\Bigg(-\frac{1}{6+m}$$

$$m(4+m)\,\text{AppellF1}\left[1+\frac{4+m}{2},1-m,2(2+m),1+\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]-\frac{1}{6+m}2(2+m)$$

$$(4+m)\,\text{AppellF1}\left[1+\frac{4+m}{2},-m,1+2(2+m),1+\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

$$\Bigg((4+m)\,\text{AppellF1}\left[\frac{2+m}{2},-m,3+2m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]-$$

$$2\Bigg(m\,\text{AppellF1}\left[\frac{4+m}{2},1-m,3+2m,\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]+$$

$$(3+2m)\,\text{AppellF1}\left[\frac{4+m}{2},-m,2(2+m),\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Bigg)^2\Bigg)\Bigg)$$

Problem 124: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

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

Optimal (type 5, 84 leaves, 2 steps):

$$\frac{1}{b(3+m)}\left(\text{Cos}[a+b x]^2\right)^{\frac{1-m}{2}}\text{Hypergeometric2F1}\left[\frac{1-m}{2},\frac{3+m}{2},\frac{5+m}{2},\text{Sin}[a+b x]^2\right]\text{Sin}[a+b x]^2\,\text{Sin}[2a+2b x]^m\,\text{Tan}[a+b x]$$

Result (type 6, 5195 leaves):

$$\Bigg(2^{3+m}(3+m)\,\text{Cos}\left[\frac{1}{2}(a+b x)\right]^5\text{Sin}\left[\frac{1}{2}(a+b x)\right]\text{Sin}[a+b x]^2$$

$$\left(\text{Cos}\left[\frac{1}{2}(a+b x)\right]\left(-\text{Sin}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{3}{2}(a+b x)\right]\right)\right)^m\text{Sin}[2(a+b x)]^m$$

$$\left(-\left(\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right/\right.$$

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-\right.$$

$$2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+\right.$$

$$(3+2m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,2(2+m),\frac{5+m}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)\right)+$$

$$\left(\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\right)\Big/$$

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-\right.$$

$$2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,2(1+m),\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+\right.$$

$$\left.2(1+m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)\right)\right)\Big/\Big(b(1+m)$$

$$\left(\frac{1}{1+m}2^{2+m}(3+m)\,\text{Cos}\left[\frac{1}{2}(a+bx)\right]^6\left(\text{Cos}\left[\frac{1}{2}(a+bx)\right]\left(-\text{Sin}\left[\frac{1}{2}(a+bx)\right]+\text{Sin}\left[\frac{3}{2}(a+bx)\right]\right)\right)^m\right.$$

$$\left(-\left(\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right/\right.$$

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-\right.$$

$$2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+\right.$$

$$(3+2m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,2(2+m),\frac{5+m}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)\right)+$$

$$\left(\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\right)\Big/\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,2(1+m),\right.\right.$$

$$\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2(1+m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,\right.$$

$$\left.\left.\left.3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)\right)-$$

$$\frac{1}{1+m}5\times2^{2+m}(3+m)\,\text{Cos}\left[\frac{1}{2}(a+bx)\right]^4\text{Sin}\left[\frac{1}{2}(a+bx)\right]^2$$

$$\left(\text{Cos}\left[\frac{1}{2}(a+bx)\right]\left(-\text{Sin}\left[\frac{1}{2}(a+bx)\right]+\text{Sin}\left[\frac{3}{2}(a+bx)\right]\right)\right)^m$$
$$\left(-\left(\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right/\right.$$
$$\left(\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-\right.$$
$$2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+\right.$$
$$\left(3+2m\right)\text{AppellF1}\left[\frac{3+m}{2},-m,2(2+m),\frac{5+m}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)\right)+$$
$$\left(\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\right)\Big/\left(\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,2(1+m),\right.\right.$$
$$\left.\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2(1+m)\text{AppellF1}\left[\frac{3+m}{2},-m,\right.$$
$$\left.\left.\left.\left.3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)\right)+$$
$$\frac{1}{1+m}2^{3+m}m(3+m)\text{Cos}\left[\frac{1}{2}(a+bx)\right]^5\text{Sin}\left[\frac{1}{2}(a+bx)\right]$$
$$\left(\text{Cos}\left[\frac{1}{2}(a+bx)\right]\left(-\text{Sin}\left[\frac{1}{2}(a+bx)\right]+\text{Sin}\left[\frac{3}{2}(a+bx)\right]\right)\right)^{-1+m}$$
$$\left(\text{Cos}\left[\frac{1}{2}(a+bx)\right]\left(-\frac{1}{2}\text{Cos}\left[\frac{1}{2}(a+bx)\right]+\frac{3}{2}\text{Cos}\left[\frac{3}{2}(a+bx)\right]\right)-\right.$$
$$\left.\frac{1}{2}\text{Sin}\left[\frac{1}{2}(a+bx)\right]\left(-\text{Sin}\left[\frac{1}{2}(a+bx)\right]+\text{Sin}\left[\frac{3}{2}(a+bx)\right]\right)\right)$$
$$\left(-\left(\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right/\right.$$
$$\left(\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-\right.$$
$$2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+\right.$$
$$\left(3+2m\right)\text{AppellF1}\left[\frac{3+m}{2},-m,2(2+m),\frac{5+m}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)\right)+$$
$$\left(\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right.$$
$$\left.\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\right)\Big/\left(\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,2(1+m),\right.$$

$$\frac{5+m}{2},\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]+2(1+m)\ \mathrm{AppellF1}\left[\frac{3+m}{2},\ -m,$$

$$3+2m,\ \frac{5+m}{2},\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\Big)\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big)\Big)+$$

$$\frac{1}{1+m}\ 2^{3+m}(3+m)\ \mathrm{Cos}\left[\frac{1}{2}(a+b x)\right]^5\ \mathrm{Sin}\left[\frac{1}{2}(a+b x)\right]\ \Big(\mathrm{Cos}\left[\frac{1}{2}(a+b x)\right]$$

$$\Big(-\mathrm{Sin}\left[\frac{1}{2}(a+b x)\right]+\mathrm{Sin}\left[\frac{3}{2}(a+b x)\right]\Big)\Big)^m$$

$$\Big(-\Big(\Big(-\frac{1}{3+m}m(1+m)\ \mathrm{AppellF1}\left[1+\frac{1+m}{2},\ 1-m,\ 3+2m,\ 1+\frac{3+m}{2},\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$

$$-\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}(a+b x)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]-$$

$$\frac{1}{3+m}(1+m)\ (3+2m)\ \mathrm{AppellF1}\left[1+\frac{1+m}{2},\ -m,\ 4+2m,\ 1+\frac{3+m}{2},\right.$$

$$\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}(a+b x)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]\Big)\Big/$$

$$\Big((3+m)\ \mathrm{AppellF1}\left[\frac{1+m}{2},\ -m,\ 3+2m,\ \frac{3+m}{2},\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]-$$

$$2\Big(m\ \mathrm{AppellF1}\left[\frac{3+m}{2},\ 1-m,\ 3+2m,\ \frac{5+m}{2},\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]+$$

$$(3+2m)\ \mathrm{AppellF1}\left[\frac{3+m}{2},\ -m,\ 2(2+m),\ \frac{5+m}{2},\right.$$

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

$$\Big(\mathrm{AppellF1}\left[\frac{1+m}{2},\ -m,\ 2(1+m),\ \frac{3+m}{2},\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}(a+b x)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]\Big)\Big/$$

$$\Big((3+m)\ \mathrm{AppellF1}\left[\frac{1+m}{2},\ -m,\ 2(1+m),\ \frac{3+m}{2},\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]-$$

$$2\Big(m\ \mathrm{AppellF1}\left[\frac{3+m}{2},\ 1-m,\ 2(1+m),\ \frac{5+m}{2},\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$

$$-\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]+2(1+m)\ \mathrm{AppellF1}\left[\frac{3+m}{2},\ -m,\ 3+2m,\ \frac{5+m}{2},\right.$$

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

$$\Big(\mathrm{Sec}\left[\frac{1}{2}(a+b x)\right]^2\ \Big(-\frac{1}{3+m}m(1+m)\ \mathrm{AppellF1}\left[1+\frac{1+m}{2},\ 1-m,\ 2(1+m),\ 1+\frac{3+m}{2},\right.$$

$$\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}(a+b x)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]-$$

$$\frac{1}{3+m}2(1+m)^2\ \mathrm{AppellF1}\left[1+\frac{1+m}{2},\ -m,\ 1+2(1+m),\ 1+\frac{3+m}{2},\right.$$

$$\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\ \mathrm{Sec}\left[\frac{1}{2}(a+b x)\right]^2\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]\Big)\Big)\Big/$$

$$\Big((3+m)\ \mathrm{AppellF1}\left[\frac{1+m}{2},\ -m,\ 2(1+m),\ \frac{3+m}{2},\ \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]-$$

$$2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,2(1+m),\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2(1+m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)-$$

$$\left(\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right.$$

$$\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\left(-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,2(1+m),\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2(1+m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]+\right.$$

$$(3+m)\left(-\frac{1}{3+m}m(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},1-m,2(1+m),1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]-\right.$$

$$\left.\frac{1}{3+m}2(1+m)^2\,\text{AppellF1}\left[1+\frac{1+m}{2},-m,1+2(1+m),1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\right)-$$

$$2\,\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\left(m\left(-\frac{1}{5+m}2(1+m)(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},1-m,1+2(1+m),1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]+\frac{1}{5+m}(1-m)(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},2-m,2(1+m),1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\right)+2(1+m)\left(-\frac{1}{5+m}m(3+m)\right.\right.$$

$$\text{AppellF1}\left[1+\frac{3+m}{2},1-m,3+2m,1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]-\frac{1}{5+m}(3+m)$$

$$\left.\left.\left.\left.(3+2m)\,\text{AppellF1}\left[1+\frac{3+m}{2},-m,4+2m,1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\right)\right)\right)\right)\Big/$$

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,2(1+m),\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2(1+m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,\right.\right.\right.$$

$$3+2m,\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\Big]\Big)\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\Big)^2+$$

$$\Big(\mathrm{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]$$

$$\Big(-2\Big(m\,\mathrm{AppellF1}\left[\frac{3+m}{2},1-m,3+2m,\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+$$

$$(3+2m)\,\mathrm{AppellF1}\left[\frac{3+m}{2},-m,2(2+m),\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\Big)\mathrm{Sec}\left[\frac{1}{2}(a+bx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]+$$

$$(3+m)\Big(-\frac{1}{3+m}m(1+m)\,\mathrm{AppellF1}\left[1+\frac{1+m}{2},1-m,3+2m,1+\frac{3+m}{2},\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(a+bx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]-$$

$$\frac{1}{3+m}(1+m)(3+2m)\,\mathrm{AppellF1}\left[1+\frac{1+m}{2},-m,4+2m,1+\frac{3+m}{2},\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(a+bx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]\Big)-$$

$$2\,\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\Big(m\Big(-\frac{1}{5+m}(3+m)(3+2m)\,\mathrm{AppellF1}\left[1+\frac{3+m}{2},1-m,\right.$$

$$\left.4+2m,1+\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]$$

$$\mathrm{Sec}\left[\frac{1}{2}(a+bx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]+\frac{1}{5+m}(1-m)(3+m)\,\mathrm{AppellF1}\Big[$$

$$1+\frac{3+m}{2},2-m,3+2m,1+\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\Big]$$

$$\mathrm{Sec}\left[\frac{1}{2}(a+bx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]\Big)+(3+2m)\Big(-\frac{1}{5+m}$$

$$m(3+m)\,\mathrm{AppellF1}\left[1+\frac{3+m}{2},1-m,2(2+m),1+\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(a+bx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]-\frac{1}{5+m}2(2+m)$$

$$(3+m)\,\mathrm{AppellF1}\left[1+\frac{3+m}{2},-m,1+2(2+m),1+\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(a+bx)\right]^2\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]\Big)\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\Big((3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-$$

$$2\Big(m\,\mathrm{AppellF1}\left[\frac{3+m}{2},1-m,3+2m,\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+$$

$$(3+2m)\,\mathrm{AppellF1}\left[\frac{3+m}{2},-m,2(2+m),\frac{5+m}{2},\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\Big)\mathrm{Tan}\left[\frac{1}{2}(a+bx)\right]^2\Big)^2\Big)\Big)\Big)$$

Problem 125: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

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

Optimal (type 5, 82 leaves, 2 steps):

$$\frac{1}{b (2+m)} \left(\text{Cos}[a+b x]^2\right)^{\frac{1-m}{2}} \text{Hypergeometric2F1}\left[\frac{1-m}{2}, \frac{2+m}{2}, \frac{4+m}{2}, \text{Sin}[a+b x]^2\right] \text{Sin}[a+b x]\, \text{Sin}[2 a+2 b x]^m\, \text{Tan}[a+b x]$$

Result (type 5, 170 leaves):

$$\frac{1}{b \left(-1+4 m^2\right)} 2^{-1-m} e^{-i (a+b x)} \left(1-e^{4 i (a+b x)}\right)^{-m} \left(-i e^{-2 i (a+b x)} \left(-1+e^{4 i (a+b x)}\right)\right)^m \left(\left(1-2 m\right) \text{Hypergeometric2F1}\left[\frac{1}{4} \left(-1-2 m\right), -m, \frac{1}{4} \left(3-2 m\right), e^{4 i (a+b x)}\right] + e^{2 i (a+b x)} \left(1+2 m\right) \text{Hypergeometric2F1}\left[\frac{1}{4} \left(1-2 m\right), -m, \frac{1}{4} \left(5-2 m\right), e^{4 i (a+b x)}\right]\right)$$

Problem 126: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Csc}[a+b x]\, \text{Sin}[2 a+2 b x]^m \, dx$$

Optimal (type 5, 72 leaves, 2 steps):

$$\frac{1}{b m} \left(\text{Cos}[a+b x]^2\right)^{\frac{1-m}{2}} \text{Hypergeometric2F1}\left[\frac{1-m}{2}, \frac{m}{2}, \frac{2+m}{2}, \text{Sin}[a+b x]^2\right] \text{Sec}[a+b x]\, \text{Sin}[2 a+2 b x]^m$$

Result (type 6, 1737 leaves):

$$\left(\left(2+m\right) \text{AppellF1}\left[\frac{m}{2}, -m, 2 m, \frac{2+m}{2}, \text{Tan}\left[\frac{1}{2} \left(a+b x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(a+b x\right)\right]^2\right] \text{Csc}[a+b x]\, \text{Sin}\left[2 \left(a+b x\right)\right]^{2 m}\right) \Big/$$
$$\left(b m \left(\left(2+m\right) \text{AppellF1}\left[\frac{m}{2}, -m, 2 m, \frac{2+m}{2}, \text{Tan}\left[\frac{1}{2} \left(a+b x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(a+b x\right)\right]^2\right] - 2 m \left(\text{AppellF1}\left[\frac{2+m}{2}, 1-m, 2 m, \frac{4+m}{2}, \text{Tan}\left[\frac{1}{2} \left(a+b x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(a+b x\right)\right]^2\right] + 2\, \text{AppellF1}\left[\frac{2+m}{2}, -m, 1+2 m, \frac{4+m}{2}, \text{Tan}\left[\frac{1}{2} \left(a+b x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(a+b x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2} \left(a+b x\right)\right]^2\right)\right.$$
$$\left(\left(2 \left(2+m\right) \text{AppellF1}\left[\frac{m}{2}, -m, 2 m, \frac{2+m}{2}, \text{Tan}\left[\frac{1}{2} \left(a+b x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(a+b x\right)\right]^2\right] \text{Cos}\left[2 \left(a+b x\right)\right] \text{Sin}\left[2 \left(a+b x\right)\right]^{-1+m}\right) \Big/\right.$$
$$\left(\left(2+m\right) \text{AppellF1}\left[\frac{m}{2}, -m, 2 m, \frac{2+m}{2}, \text{Tan}\left[\frac{1}{2} \left(a+b x\right)\right]^2, -\text{Tan}\left[\frac{1}{2} \left(a+b x\right)\right]^2\right] -\right.$$

$$2\,m\left(\text{AppellF1}\left[\frac{2+m}{2},1-m,2\,m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]+\right.$$
$$\left.2\,\text{AppellF1}\left[\frac{2+m}{2},-m,1+2\,m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\right)$$
$$\left.\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right)+\left((2+m)\,\text{Sin}[2\,(a+b\,x)]^m\right.$$
$$\left(-\frac{1}{2+m}m^2\,\text{AppellF1}\left[1+\frac{m}{2},1-m,2\,m,1+\frac{2+m}{2},\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\right.$$
$$\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]-\frac{1}{2+m}2\,m^2\,\text{AppellF1}\left[1+\frac{m}{2},-m,1+2\,m,1+\frac{2+m}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]\right)\right)\Big/$$
$$\left(m\left((2+m)\,\text{AppellF1}\left[\frac{m}{2},-m,2\,m,\frac{2+m}{2},\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]-\right.\right.$$
$$2\,m\left(\text{AppellF1}\left[\frac{2+m}{2},1-m,2\,m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]+\right.$$
$$\left.2\,\text{AppellF1}\left[\frac{2+m}{2},-m,1+2\,m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\right)$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right)\right)-\left((2+m)\,\text{AppellF1}\left[\frac{m}{2},-m,2\,m,\frac{2+m}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\text{Sin}[2\,(a+b\,x)]^m$$
$$\left(-2\,m\left(\text{AppellF1}\left[\frac{2+m}{2},1-m,2\,m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]+\right.\right.$$
$$\left.2\,\text{AppellF1}\left[\frac{2+m}{2},-m,1+2\,m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]+(2+m)\left(-\frac{1}{2+m}m^2\,\text{AppellF1}\left[1+\frac{m}{2},1-m,\right.\right.$$
$$\left.2\,m,1+\frac{2+m}{2},\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]-\frac{1}{2+m}2\,m^2\,\text{AppellF1}\left[1+\frac{m}{2},-m,1+2\,m,1+\frac{2+m}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]\right)-$$
$$2\,m\,\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\left(-\frac{1}{4+m}2\,m\,(2+m)\,\text{AppellF1}\left[1+\frac{2+m}{2},1-m,1+2\,m,1+\frac{4+m}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]+$$
$$\frac{1}{4+m}(1-m)\,(2+m)\,\text{AppellF1}\left[1+\frac{2+m}{2},2-m,2\,m,1+\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]+$$
$$2\left(-\frac{1}{4+m}m\,(2+m)\,\text{AppellF1}\left[1+\frac{2+m}{2},1-m,1+2\,m,1+\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b\,x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]-\frac{1}{4+m}$$

$$(2+m)\,(1+2m)\,\text{AppellF1}\Big[1+\frac{2+m}{2},\,-m,\,2+2m,\,1+\frac{4+m}{2},\,\text{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]\,\text{Sec}\Big[\frac{1}{2}(a+b x)\Big]^2\,\text{Tan}\Big[\frac{1}{2}(a+b x)\Big]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(m\,\Big((2+m)\,\text{AppellF1}\Big[\frac{m}{2},\,-m,\,2m,\,\frac{2+m}{2},\,\text{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]-2m\,\Big(\text{AppellF1}\Big[\frac{2+m}{2},\,1-m,\,2m,\,\frac{4+m}{2},\,\text{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]+2\,\text{AppellF1}\Big[\frac{2+m}{2},\,-m,\,1+2m,\,\frac{4+m}{2},\,\text{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]\Big)\,\text{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big)^2\Big)\Big)\Big)$$

Problem 127: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Csc}[a+b x]^2\,\text{Sin}[2a+2b x]^m\,dx$$

Optimal (type 5, 85 leaves, 2 steps):

$$-\frac{1}{b\,(1-m)}\left(\text{Cos}[a+b x]^2\right)^{\frac{1-m}{2}}\text{Csc}[a+b x]\,\text{Hypergeometric2F1}\Big[\frac{1-m}{2},\,\frac{1}{2}(-1+m),\,\frac{1+m}{2},\,\text{Sin}[a+b x]^2\Big]\,\text{Sec}[a+b x]\,\text{Sin}[2a+2b x]^m$$

Result (type 6, 4498 leaves):

$$\Big(2^{-1+m}\,\text{Cot}\Big[\frac{1}{2}(a+b x)\Big]\,\text{Csc}[a+b x]^2\,\Big(\text{Cos}\Big[\frac{1}{2}(a+b x)\Big]\,\Big(-\text{Sin}\Big[\frac{1}{2}(a+b x)\Big]+\text{Sin}\Big[\frac{3}{2}(a+b x)\Big]\Big)\Big)^m\,\text{Sin}[2(a+b x)]^m$$

$$\Big(\Big((1+m)^2\,\text{AppellF1}\Big[\frac{1}{2}(-1+m),\,-m,\,2m,\,\frac{1+m}{2},\,\text{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\,-\text{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]\Big)\Big/$$

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

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

$$2\,m\left(\text{AppellF1}\left[\frac{3+m}{2},1-m,2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2\,\text{AppellF1}\left[\frac{3+m}{2},-m,1+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\Bigg)\Bigg)\Bigg)\Big/\Bigg(b\,(1+m)$$

$$\left(-\frac{1}{1+m}2^{-2+m}\,\text{Csc}\left[\frac{1}{2}(a+bx)\right]^2\left(\text{Cos}\left[\frac{1}{2}(a+bx)\right]\left(-\text{Sin}\left[\frac{1}{2}(a+bx)\right]+\text{Sin}\left[\frac{3}{2}(a+bx)\right]\right)\right)^m\right.$$

$$\left(\left((1+m)^2\,\text{AppellF1}\left[\frac{1}{2}(-1+m),-m,2m,\frac{1+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\Big/\left((-1+m)\left((1+m)\,\text{AppellF1}\left[\frac{1}{2}(-1+m),-m,2m,\frac{1+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2m\left(\text{AppellF1}\left[\frac{1+m}{2},1-m,2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2\,\text{AppellF1}\left[\frac{1+m}{2},-m,1+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)\right)+\right.$$

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

$$\frac{1}{1+m}2^{-1+m}\,m\,\text{Cot}\left[\frac{1}{2}(a+bx)\right]\left(\text{Cos}\left[\frac{1}{2}(a+bx)\right]\left(-\text{Sin}\left[\frac{1}{2}(a+bx)\right]+\text{Sin}\left[\frac{3}{2}(a+bx)\right]\right)\right)^{-1+m}$$

$$\left(\text{Cos}\left[\frac{1}{2}(a+bx)\right]\left(-\frac{1}{2}\text{Cos}\left[\frac{1}{2}(a+bx)\right]+\frac{3}{2}\text{Cos}\left[\frac{3}{2}(a+bx)\right]\right)-\frac{1}{2}\text{Sin}\left[\frac{1}{2}(a+bx)\right]\left(-\text{Sin}\left[\frac{1}{2}(a+bx)\right]+\text{Sin}\left[\frac{3}{2}(a+bx)\right]\right)\right)$$

$$\left(\left((1+m)^2\,\text{AppellF1}\left[\frac{1}{2}(-1+m),-m,2m,\frac{1+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\Big/\left((-1+m)\left((1+m)\,\text{AppellF1}\left[\frac{1}{2}(-1+m),-m,2m,\frac{1+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2m\left(\text{AppellF1}\left[\frac{1+m}{2},1-m,2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2\,\text{AppellF1}\left[\frac{1+m}{2},-m,1+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)\right)+\right.$$

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-m,2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right.$$

$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big) \Big/ \Big((3+m)\,\text{AppellF1}\left[\frac{1+m}{2}, -m, 2m, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] - 2m\Big(\text{AppellF1}\left[\frac{3+m}{2}, 1-m, 2m, \frac{5+m}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] + 2\,\text{AppellF1}\left[\frac{3+m}{2}, -m, 1+2m,\right.$$
$$\left.\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big)\Big) +$$
$$\frac{1}{1+m}\,2^{-1+m}\,\text{Cot}\left[\frac{1}{2}(a+b x)\right]\left(\text{Cos}\left[\frac{1}{2}(a+b x)\right]\left(-\text{Sin}\left[\frac{1}{2}(a+b x)\right] + \text{Sin}\left[\frac{3}{2}(a+b x)\right]\right)\right)^m$$
$$\Big(\Big((1+m)^2\Big(-\frac{1}{1+m}(-1+m)\,m\,\text{AppellF1}\left[1+\frac{1}{2}(-1+m), 1-m, 2m, 1+\frac{1+m}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right] -$$
$$\frac{1}{1+m}2(-1+m)\,m\,\text{AppellF1}\left[1+\frac{1}{2}(-1+m), -m, 1+2m, 1+\frac{1+m}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]\Big)\Big) \Big/$$
$$\Big((-1+m)\Big((1+m)\,\text{AppellF1}\left[\frac{1}{2}(-1+m), -m, 2m, \frac{1+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] - 2m\Big(\text{AppellF1}\left[\frac{1+m}{2}, 1-m, 2m, \frac{3+m}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] + 2\,\text{AppellF1}\left[\frac{1+m}{2}, -m, 1+2m,\right.$$
$$\left.\frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big)\Big) +$$
$$\Big((3+m)\,\text{AppellF1}\left[\frac{1+m}{2}, -m, 2m, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]\Big) \Big/$$
$$\Big((3+m)\,\text{AppellF1}\left[\frac{1+m}{2}, -m, 2m, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] -$$
$$2m\Big(\text{AppellF1}\left[\frac{3+m}{2}, 1-m, 2m, \frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] + 2\,\text{AppellF1}\left[\frac{3+m}{2}, -m, 1+2m, \frac{5+m}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\Big)\,\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big) +$$
$$\Big((3+m)\,\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big(-\frac{1}{3+m}m(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2}, 1-m, 2m, 1+\frac{3+m}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right] -$$
$$\frac{1}{3+m}2m(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2}, -m, 1+2m, 1+\frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]\Big)\Big) \Big/$$

$$\left(\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-m,2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2m\left(\text{AppellF1}\left[\frac{3+m}{2},1-m,2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2\,\text{AppellF1}\left[\frac{3+m}{2},-m,1+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)-$$

$$\left(\left(1+m\right)^2\text{AppellF1}\left[\frac{1}{2}(-1+m),-m,2m,\frac{1+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right.$$

$$\left(-2m\left(\text{AppellF1}\left[\frac{1+m}{2},1-m,2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2\,\text{AppellF1}\left[\frac{1+m}{2},-m,1+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]+\right.$$

$$(1+m)\left(-\frac{1}{1+m}(-1+m)\,m\,\text{AppellF1}\left[1+\frac{1}{2}(-1+m),1-m,2m,1+\frac{1+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]-\frac{1}{1+m}2(-1+m)\,m\,\text{AppellF1}\left[1+\frac{1}{2}(-1+m),-m,1+2m,1+\frac{1+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\right)-$$

$$2m\,\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\left(-\frac{1}{3+m}2m(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},1-m,1+2m,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]+\right.$$

$$\frac{1}{3+m}(1-m)(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},2-m,2m,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]+2\left(-\frac{1}{3+m}\right.$$

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

$$\left.\left.\left.\left.(1+2m)\,\text{AppellF1}\left[1+\frac{1+m}{2},-m,2+2m,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\right)\right)\right)\right)\Big/$$

$$\left(\left(-1+m\right)\left(\left(1+m\right)\text{AppellF1}\left[\frac{1}{2}(-1+m),-m,2m,\frac{1+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2m\left(\text{AppellF1}\left[\frac{1+m}{2},1-m,2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2\,\text{AppellF1}\left[\frac{1+m}{2},-m,1+2m,\right.\right.\right.\right.$$

$$\frac{3+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\,\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big)^2\Big) -$$

$$\Big(\Big((3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2}, -m, 2m, \frac{3+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]$$

$$\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big(-2m\Big(\mathrm{AppellF1}\left[\frac{3+m}{2}, 1-m, 2m, \frac{5+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] + 2\,\mathrm{AppellF1}\left[\frac{3+m}{2}, -m, 1+2m, \frac{5+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\Big)\,\mathrm{Sec}\left[\frac{1}{2}(a+b x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right] +$$

$$(3+m)\Big(-\frac{1}{3+m}m(1+m)\,\mathrm{AppellF1}\left[1+\frac{1+m}{2}, 1-m, 2m, 1+\frac{3+m}{2},\right.$$

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

$$\frac{1}{3+m}2m(1+m)\,\mathrm{AppellF1}\left[1+\frac{1+m}{2}, -m, 1+2m, 1+\frac{3+m}{2},\right.$$

$$\left.\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(a+b x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]\Big) -$$

$$2m\,\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big(-\frac{1}{5+m}2m(3+m)\,\mathrm{AppellF1}\left[1+\frac{3+m}{2}, 1-m, 1+2m, 1+\frac{5+m}{2},\right.$$

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

$$\frac{1}{5+m}(1-m)(3+m)\,\mathrm{AppellF1}\left[1+\frac{3+m}{2}, 2-m, 2m, 1+\frac{5+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(a+b x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right] + 2\Big(-\frac{1}{5+m}$$

$$m(3+m)\,\mathrm{AppellF1}\left[1+\frac{3+m}{2}, 1-m, 1+2m, 1+\frac{5+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(a+b x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right] - \frac{1}{5+m}(3+m)$$

$$(1+2m)\,\mathrm{AppellF1}\left[1+\frac{3+m}{2}, -m, 2+2m, 1+\frac{5+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$

$$\left.-\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\mathrm{Sec}\left[\frac{1}{2}(a+b x)\right]^2\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]\Big)\Big)\Big)\Big)\Big/$$

$$\Big(\Big((3+m)\,\mathrm{AppellF1}\left[\frac{1+m}{2}, -m, 2m, \frac{3+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] -$$

$$2m\Big(\mathrm{AppellF1}\left[\frac{3+m}{2}, 1-m, 2m, \frac{5+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] +$$

$$2\,\mathrm{AppellF1}\left[\frac{3+m}{2}, -m, 1+2m, \frac{5+m}{2}, \mathrm{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$

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

Problem 128: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Csc}[a+b\,x]^3\,\text{Sin}[2\,a+2\,b\,x]^m\,dx$$

Optimal (type 5, 85 leaves, 2 steps):

$$-\frac{1}{b\,(2-m)}\left(\text{Cos}[a+b\,x]^2\right)^{\frac{1-m}{2}}\text{Csc}[a+b\,x]^2$$
$$\text{Hypergeometric2F1}\left[\frac{1-m}{2},\,\frac{1}{2}\,(-2+m),\,\frac{m}{2},\,\text{Sin}[a+b\,x]^2\right]\text{Sec}[a+b\,x]\,\text{Sin}[2\,a+2\,b\,x]^m$$

Result (type 6, 5872 leaves):

$$\Bigg(4^{-1+m}\,\text{Csc}[a+b\,x]^3\,\text{Sin}\left[2\,(a+b\,x)\right]^m$$
$$\left(\frac{\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right)^2}\right)^m\Bigg(-\Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2}\,(-2+m),\,-m,\right.$$
$$\left.2\,m,\,\frac{m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\text{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]^2\Bigg)\Big/$$
$$\Bigg((-2+m)\,\Bigg(-\text{AppellF1}\left[\frac{1}{2}\,(-2+m),\,-m,\,2\,m,\,\frac{m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]+$$
$$2\,\Bigg(\text{AppellF1}\left[\frac{m}{2},\,1-m,\,2\,m,\,\frac{2+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]+2$$
$$\text{AppellF1}\left[\frac{m}{2},\,-m,\,1+2\,m,\,\frac{2+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\Bigg)\Bigg)\Bigg)+$$
$$\Bigg(2\,(2+m)\,\text{AppellF1}\left[\frac{m}{2},\,-m,\,2\,m,\,\frac{2+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\Bigg)\Big/$$
$$\Bigg(m\,\Bigg((2+m)\,\text{AppellF1}\left[\frac{m}{2},\,-m,\,2\,m,\,\frac{2+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]-$$
$$2\,m\,\Bigg(\text{AppellF1}\left[\frac{2+m}{2},\,1-m,\,2\,m,\,\frac{4+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]+$$
$$2\,\text{AppellF1}\left[\frac{2+m}{2},\,-m,\,1+2\,m,\,\frac{4+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\Bigg)\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\Bigg)\Bigg)+$$
$$\Bigg((4+m)\,\text{AppellF1}\left[\frac{2+m}{2},\,-m,\,2\,m,\,\frac{4+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]$$
$$\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\Bigg)\Big/$$
$$\Bigg((2+m)\,\Bigg((4+m)\,\text{AppellF1}\left[\frac{2+m}{2},\,-m,\,2\,m,\,\frac{4+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]-$$
$$2\,m\,\Bigg(\text{AppellF1}\left[\frac{4+m}{2},\,1-m,\,2\,m,\,\frac{6+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]+$$
$$2\,\text{AppellF1}\left[\frac{4+m}{2},\,-m,\,1+2\,m,\,\frac{6+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\Bigg)$$

$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/\left(b\left(4^{-1+m} m\left(\frac{\text{Tan}\left[\frac{1}{2}(a+b x)\right]-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^2}\right)^{-1+m}\right.\right.$$

$$\left(-\left(\left(\text{AppellF1}\left[\frac{1}{2}(-2+m),-m,2m,\frac{m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right.\right.\right.$$

$$\left.\text{Cot}\left[\frac{1}{2}(a+b x)\right]^2\right)\Big/\left(\left((-2+m)\left(-\text{AppellF1}\left[\frac{1}{2}(-2+m),-m,2m,\frac{m}{2},\right.\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]+2\left(\text{AppellF1}\left[\frac{m}{2},1-m,2m,\frac{2+m}{2},\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]+2\,\text{AppellF1}\left[\frac{m}{2},-m,1+2m,\right.$$

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

$$\left(2(2+m)\,\text{AppellF1}\left[\frac{m}{2},-m,2m,\frac{2+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right)\Big/$$

$$\left(m\left((2+m)\,\text{AppellF1}\left[\frac{m}{2},-m,2m,\frac{2+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]-\right.\right.$$

$$2m\left(\text{AppellF1}\left[\frac{2+m}{2},1-m,2m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]+\right.$$

$$2\,\text{AppellF1}\left[\frac{2+m}{2},-m,1+2m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$

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

$$\left((4+m)\,\text{AppellF1}\left[\frac{2+m}{2},-m,2m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)\Big/\left((2+m)\left((4+m)\,\text{AppellF1}\left[\frac{2+m}{2},-m,2m,\frac{4+m}{2},\right.\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]-2m\left(\text{AppellF1}\left[\frac{4+m}{2},1-m,2m,\frac{6+m}{2},\right.\right.$$

$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]+2\,\text{AppellF1}\left[\frac{4+m}{2},-m,1+2m,\right.$$

$$\left.\left.\left.\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)\right)\right)$$

$$\left(\frac{\frac{1}{2}\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2-\frac{3}{2}\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^2}-\right.$$

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

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^3\right)+$$

$$4^{-1+m}\left(\frac{\text{Tan}\left[\frac{1}{2}(a+b x)\right]-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^2}\right)^m$$

$$\Bigg(\Bigg(\text{AppellF1}\left[\frac{1}{2}(-2+m),-m,2m,\frac{m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]$$

$$\text{Cot}\left[\frac{1}{2}(a+bx)\right]\text{Csc}\left[\frac{1}{2}(a+bx)\right]^2\Bigg)\Big/$$

$$\Bigg((-2+m)\Bigg(-\text{AppellF1}\left[\frac{1}{2}(-2+m),-m,2m,\frac{m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+$$

$$2\Bigg(\text{AppellF1}\left[\frac{m}{2},1-m,2m,\frac{2+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+$$

$$2\,\text{AppellF1}\left[\frac{m}{2},-m,1+2m,\frac{2+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\Bigg)\Bigg)-$$

$$\Bigg(\text{Cot}\left[\frac{1}{2}(a+bx)\right]^2\Bigg(-(-2+m)\,\text{AppellF1}\left[1+\frac{1}{2}(-2+m),1-m,2m,1+\frac{m}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]-$$

$$2(-2+m)\,\text{AppellF1}\left[1+\frac{1}{2}(-2+m),-m,1+2m,1+\frac{m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\Bigg)\Bigg)\Big/$$

$$\Bigg((-2+m)\Bigg(-\text{AppellF1}\left[\frac{1}{2}(-2+m),-m,2m,\frac{m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+$$

$$2\Bigg(\text{AppellF1}\left[\frac{m}{2},1-m,2m,\frac{2+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+$$

$$2\,\text{AppellF1}\left[\frac{m}{2},-m,1+2m,\frac{2+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\Bigg)\Bigg)+$$

$$\Bigg(2(2+m)\Bigg(-\frac{1}{2+m}m^2\,\text{AppellF1}\left[1+\frac{m}{2},1-m,2m,1+\frac{2+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]-$$

$$\frac{1}{2+m}2m^2\,\text{AppellF1}\left[1+\frac{m}{2},-m,1+2m,1+\frac{2+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\Bigg)\Bigg)\Big/$$

$$\Bigg(m\Bigg((2+m)\,\text{AppellF1}\left[\frac{m}{2},-m,2m,\frac{2+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-$$

$$2m\Bigg(\text{AppellF1}\left[\frac{2+m}{2},1-m,2m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+$$

$$2\,\text{AppellF1}\left[\frac{2+m}{2},-m,1+2m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\Bigg)+$$

$$\Bigg((4+m)\,\text{AppellF1}\left[\frac{2+m}{2},-m,2m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]$$

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

$$\Bigg((4+m)\,\text{AppellF1}\left[\frac{2+m}{2},-m,2\,m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]-$$

$$2\,m\,\Bigg(\text{AppellF1}\left[\frac{4+m}{2},1-m,2\,m,\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]+$$

$$2\,\text{AppellF1}\left[\frac{4+m}{2},-m,1+2\,m,\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\right.$$

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

$$\Bigg((4+m)\,\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\Bigg(-\frac{1}{4+m}m\left(2+m\right)\text{AppellF1}\left[1+\frac{2+m}{2},1-m,2\,m,1+\frac{4+m}{2},\right.$$

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

$$\frac{1}{4+m}2\,m\left(2+m\right)\text{AppellF1}\left[1+\frac{2+m}{2},-m,1+2\,m,1+\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\right.$$

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

$$\Bigg(\left(2+m\right)\Bigg((4+m)\,\text{AppellF1}\left[\frac{2+m}{2},-m,2\,m,\frac{4+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]-2\,m\,\Bigg(\text{AppellF1}\left[\frac{4+m}{2},1-m,2\,m,\frac{6+m}{2},\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]+2\,\text{AppellF1}\left[\frac{4+m}{2},-m,1+2\,m,\right.$$

$$\left.\frac{6+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\Bigg)\Bigg)+$$

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

$$\text{Cot}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\Bigg(\left(-2+m\right)\text{AppellF1}\left[1+\frac{1}{2}\left(-2+m\right),1-m,2\,m,1+\frac{m}{2},\right.$$

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

$$2\left(-2+m\right)\text{AppellF1}\left[1+\frac{1}{2}\left(-2+m\right),-m,1+2\,m,1+\frac{m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\right.$$

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

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

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

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

$$\Bigg(-\frac{1}{2+m}2\,m^2\,\text{AppellF1}\left[1+\frac{m}{2},1-m,1+2\,m,1+\frac{2+m}{2},\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\right.$$

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

$$(1-m)\, m\, \text{AppellF1}\left[1+\frac{m}{2}, 2-m, 2m, 1+\frac{2+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]+$$
$$2\left(-\frac{1}{2+m} m^2 \text{AppellF1}\left[1+\frac{m}{2}, 1-m, 1+2m, 1+\frac{2+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]-\frac{1}{2+m}$$
$$m(1+2m)\, \text{AppellF1}\left[1+\frac{m}{2}, -m, 2+2m, 1+\frac{2+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]\right)\right)\right)\right)\Big/$$
$$\left(\left(-2+m\right)\left(-\text{AppellF1}\left[\frac{1}{2}(-2+m), -m, 2m, \frac{m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]+2\left(\text{AppellF1}\left[\frac{m}{2}, 1-m, 2m, \frac{2+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]+2\, \text{AppellF1}\left[\frac{m}{2}, -m, 1+2m, \frac{2+m}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^2\right)-$$
$$\left(2(2+m)\, \text{AppellF1}\left[\frac{m}{2}, -m, 2m, \frac{2+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right.$$
$$\left(-2m\left(\text{AppellF1}\left[\frac{2+m}{2}, 1-m, 2m, \frac{4+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]+\right.\right.$$
$$\left.2\, \text{AppellF1}\left[\frac{2+m}{2}, -m, 1+2m, \frac{4+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right)$$
$$\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]+(2+m)\left(-\frac{1}{2+m} m^2 \text{AppellF1}\left[1+\frac{m}{2}, 1-m,\right.\right.$$
$$\left.2m, 1+\frac{2+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(a+b x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]-\frac{1}{2+m} 2 m^2 \text{AppellF1}\left[1+\frac{m}{2}, -m, 1+2m, 1+\frac{2+m}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]\right)-$$
$$2m\, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\left(-\frac{1}{4+m} 2m(2+m)\, \text{AppellF1}\left[1+\frac{2+m}{2}, 1-m, 1+2m, 1+\frac{4+m}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]+$$
$$\frac{1}{4+m}(1-m)(2+m)\, \text{AppellF1}\left[1+\frac{2+m}{2}, 2-m, 2m, 1+\frac{4+m}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]+$$
$$2\left(-\frac{1}{4+m} m(2+m)\, \text{AppellF1}\left[1+\frac{2+m}{2}, 1-m, 1+2m, 1+\frac{4+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] \text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]-\frac{1}{4+m}(2+m)$$

$$\left(1+2\,m\right)\,\text{AppellF1}\left[1+\frac{2+m}{2},\,-m,\,2+2\,m,\,1+\frac{4+m}{2},\,\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2,\right.$$

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

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

$$2\,m\,\Bigg(\text{AppellF1}\left[\frac{2+m}{2},\,1-m,\,2\,m,\,\frac{4+m}{2},\,\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2\right]+$$

$$2\,\text{AppellF1}\left[\frac{2+m}{2},\,-m,\,1+2\,m,\,\frac{4+m}{2},\,\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2,\right.$$

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

$$\Bigg(\left(4+m\right)\,\text{AppellF1}\left[\frac{2+m}{2},\,-m,\,2\,m,\,\frac{4+m}{2},\,\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2\right]$$

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

$$\Bigg(-2\,m\,\Bigg(\text{AppellF1}\left[\frac{4+m}{2},\,1-m,\,2\,m,\,\frac{6+m}{2},\,\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2\right]+$$

$$2\,\text{AppellF1}\left[\frac{4+m}{2},\,-m,\,1+2\,m,\,\frac{6+m}{2},\,\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2\right]\Bigg)$$

$$\text{Sec}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]+\left(4+m\right)\,\Bigg(-\frac{1}{4+m}m\,\left(2+m\right)\,\text{AppellF1}\left[1+\frac{2+m}{2},\,1-\right.$$

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

$$\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]-\frac{1}{4+m}2\,m\,\left(2+m\right)\,\text{AppellF1}\left[1+\frac{2+m}{2},\,-m,\,1+2\,m,\,1+\frac{4+m}{2},\right.$$

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

$$2\,m\,\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2\,\Bigg(-\frac{1}{6+m}2\,m\,\left(4+m\right)\,\text{AppellF1}\left[1+\frac{4+m}{2},\,1-m,\,1+2\,m,\,1+\frac{6+m}{2},\right.$$

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

$$\frac{1}{6+m}\left(1-m\right)\,\left(4+m\right)\,\text{AppellF1}\left[1+\frac{4+m}{2},\,2-m,\,2\,m,\,1+\frac{6+m}{2},\right.$$

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

$$2\,\Bigg(-\frac{1}{6+m}m\,\left(4+m\right)\,\text{AppellF1}\left[1+\frac{4+m}{2},\,1-m,\,1+2\,m,\,1+\frac{6+m}{2},\,\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2,\right.$$

$$\left.-\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]-\frac{1}{6+m}\left(4+m\right)$$

$$\left(1+2\,m\right)\,\text{AppellF1}\left[1+\frac{4+m}{2},\,-m,\,2+2\,m,\,1+\frac{6+m}{2},\,\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2,\right.$$

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

$$\Bigg(\left(2+m\right)\,\Bigg(\left(4+m\right)\,\text{AppellF1}\left[\frac{2+m}{2},\,-m,\,2\,m,\,\frac{4+m}{2},\,\text{Tan}\left[\frac{1}{2}\,\left(a+b\,x\right)\right]^2,\right.$$

$$-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big] - 2 m \Bigg(\text{AppellF1}\left[\frac{4+m}{2}, 1-m, 2 m, \frac{6+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right] + 2\,\text{AppellF1}\left[\frac{4+m}{2}, -m, 1+2 m, \frac{6+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\Bigg) \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big)^2\Big)\Big)\Bigg)\Bigg)$$

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

$$\int \text{Cos}[a+b x]\, \text{Csc}[2 a+2 b x]\, dx$$

Optimal (type 3, 14 leaves, 2 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[a+b x]]}{2 b}$$

Result (type 3, 42 leaves):

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

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

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

Optimal (type 3, 28 leaves, 4 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[a+b x]]}{4 b}-\frac{\text{Csc}[a+b x]}{4 b}$$

Result (type 3, 94 leaves):

$$\frac{1}{4}\left(-\frac{\text{Cot}\left[\frac{1}{2}(a+b x)\right]}{2 b}-\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]-\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{b}+\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]+\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]}{b}-\frac{\text{Tan}\left[\frac{1}{2}(a+b x)\right]}{2 b}\right)$$

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

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

Optimal (type 3, 49 leaves, 5 steps):

$$-\frac{3\,\text{ArcTanh}[\text{Cos}[a+b x]]}{16 b}+\frac{3\,\text{Sec}[a+b x]}{16 b}-\frac{\text{Csc}[a+b x]^2\, \text{Sec}[a+b x]}{16 b}$$

Result (type 3, 143 leaves):

$$\left(\mathrm{Csc}[a+b\,x]^4\left(2-6\,\mathrm{Cos}[2\,(a+b\,x)]+2\,\mathrm{Cos}[3\,(a+b\,x)]+3\,\mathrm{Cos}[3\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]\right]-3\,\mathrm{Cos}[3\,(a+b\,x)]\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]+\mathrm{Cos}[a+b\,x]\left(-2-3\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]\right]+3\,\mathrm{Log}\left[\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]\right)\right)\right)\Big/\left(16\,b\left(\mathrm{Csc}\left[\frac{1}{2}\,(a+b\,x)\right]^2-\mathrm{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right)\right)$$

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

$$\int \mathrm{Cos}[a+b\,x]\,\mathrm{Csc}[2\,a+2\,b\,x]^4\,dx$$

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

$$\frac{5\,\mathrm{ArcTanh}[\mathrm{Sin}[a+b\,x]]}{32\,b}-\frac{5\,\mathrm{Csc}[a+b\,x]}{32\,b}-\frac{5\,\mathrm{Csc}[a+b\,x]^3}{96\,b}+\frac{\mathrm{Csc}[a+b\,x]^3\,\mathrm{Sec}[a+b\,x]^2}{32\,b}$$

Result (type 3, 215 leaves):

$$-\frac{13\,\mathrm{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]}{192\,b}-\frac{\mathrm{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]\,\mathrm{Csc}\left[\frac{1}{2}\,(a+b\,x)\right]^2}{384\,b}-\frac{5\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]}{32\,b}+\frac{5\,\mathrm{Log}\left[\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]}{32\,b}+\frac{1}{64\,b\left(\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]-\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right)^2}-\frac{1}{64\,b\left(\mathrm{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]+\mathrm{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right)^2}-\frac{13\,\mathrm{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{192\,b}-\frac{\mathrm{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\mathrm{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{384\,b}$$

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

$$\int \mathrm{Cos}[a+b\,x]\,\mathrm{Csc}[2\,a+2\,b\,x]^5\,dx$$

Optimal (type 3, 89 leaves, 7 steps):

$$-\frac{35\,\mathrm{ArcTanh}[\mathrm{Cos}[a+b\,x]]}{256\,b}+\frac{35\,\mathrm{Sec}[a+b\,x]}{256\,b}+\frac{35\,\mathrm{Sec}[a+b\,x]^3}{768\,b}-\frac{7\,\mathrm{Csc}[a+b\,x]^2\,\mathrm{Sec}[a+b\,x]^3}{256\,b}-\frac{\mathrm{Csc}[a+b\,x]^4\,\mathrm{Sec}[a+b\,x]^3}{128\,b}$$

Result (type 3, 268 leaves):

$$-\frac{1}{768\, b \left(\text{Csc}\left[\frac{1}{2}(a+b x)\right]^2-\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\right)^3}\text{Csc}[a+b x]^{10}$$
$$\left(-204+658\,\text{Cos}[2(a+b x)]-228\,\text{Cos}[3(a+b x)]+140\,\text{Cos}[4(a+b x)]-76\,\text{Cos}[5(a+b x)]-\right.$$
$$210\,\text{Cos}[6(a+b x)]+76\,\text{Cos}[7(a+b x)]-315\,\text{Cos}[3(a+b x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]\right]-$$
$$105\,\text{Cos}[5(a+b x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]\right]+105\,\text{Cos}[7(a+b x)]\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]\right]+$$
$$3\,\text{Cos}[a+b x]\left(76+105\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}(a+b x)\right]\right]-105\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]\right)+$$
$$315\,\text{Cos}[3(a+b x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]+$$
$$\left.105\,\text{Cos}[5(a+b x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]-105\,\text{Cos}[7(a+b x)]\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}(a+b x)\right]\right]\right)$$

Problem 158: Result more than twice size of optimal antiderivative.

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

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

$$-\frac{\text{ArcTanh}[\text{Cos}[a+b x]]}{16 b}-\frac{\text{Cot}[a+b x]\,\text{Csc}[a+b x]}{16 b}$$

Result (type 3, 79 leaves):

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

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

$$\int \text{Cos}[a+b x]^3\,\text{Csc}[2 a+2 b x]^4\,dx$$

Optimal (type 3, 43 leaves, 5 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[a+b x]]}{16 b}-\frac{\text{Csc}[a+b x]}{16 b}-\frac{\text{Csc}[a+b x]^3}{48 b}$$

Result (type 3, 152 leaves):

$$\frac{1}{16}\left(-\frac{7\,\text{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]}{12\,b}-\frac{\text{Cot}\left[\frac{1}{2}\,(a+b\,x)\right]\,\text{Csc}\left[\frac{1}{2}\,(a+b\,x)\right]^2}{24\,b}-\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]}{b}+\frac{\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]}{b}-\frac{7\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{12\,b}-\frac{\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]}{24\,b}\right)$$

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

$$\int \text{Cos}[a+b\,x]^3\,\text{Csc}[2\,a+2\,b\,x]^5\,dx$$

Optimal (type 3, 70 leaves, 6 steps):

$$-\frac{15\,\text{ArcTanh}[\text{Cos}[a+b\,x]]}{256\,b}+\frac{15\,\text{Sec}[a+b\,x]}{256\,b}-\frac{5\,\text{Csc}[a+b\,x]^2\,\text{Sec}[a+b\,x]}{256\,b}-\frac{\text{Csc}[a+b\,x]^4\,\text{Sec}[a+b\,x]}{128\,b}$$

Result (type 3, 195 leaves):

$$-\frac{7\,\text{Csc}\left[\frac{1}{2}\,(a+b\,x)\right]^2}{1024\,b}-\frac{\text{Csc}\left[\frac{1}{2}\,(a+b\,x)\right]^4}{2048\,b}-\frac{15\,\text{Log}\left[\text{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]\right]}{256\,b}+\frac{15\,\text{Log}\left[\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right]}{256\,b}+\frac{7\,\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2}{1024\,b}+\frac{\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^4}{2048\,b}+\frac{\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]}{32\,b\,\left(\text{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]-\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right)}-\frac{\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]}{32\,b\,\left(\text{Cos}\left[\frac{1}{2}\,(a+b\,x)\right]+\text{Sin}\left[\frac{1}{2}\,(a+b\,x)\right]\right)}$$

Problem 187: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[a+b\,x]^3\,\text{Sin}[2\,a+2\,b\,x]^m\,dx$$

Optimal (type 5, 85 leaves, 2 steps):

$$-\frac{1}{b\,(4+m)}\text{Cos}[a+b\,x]^3\,\text{Cot}[a+b\,x]\,\text{Hypergeometric2F1}\left[\frac{1-m}{2},\frac{4+m}{2},\frac{6+m}{2},\text{Cos}[a+b\,x]^2\right]\left(\text{Sin}[a+b\,x]^2\right)^{\frac{1-m}{2}}\,\text{Sin}[2\,a+2\,b\,x]^m$$

Result (type 6, 10 498 leaves):

$$-\left(\left(2^{1+2\,m}\,(3+m)\,\text{Cos}[a+b\,x]^3\right.\right.$$

$$\text{Sin}\left[2\,(a+b\,x)\right]^m\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]\,\left(\frac{\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right)^2}\right)^m$$

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

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

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

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

$$(1+2\,m)\,\text{AppellF1}\left[\frac{3+m}{2},\,-m,\,2\,(1+m),\,\frac{5+m}{2},\right.$$

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

$$\Bigg(12\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,3+2\,m,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right)\Bigg)\Bigg/$$

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

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

$$(3+2\,m)\,\text{AppellF1}\left[\frac{3+m}{2},\,-m,\,2\,(2+m),\,\frac{5+m}{2},\right.$$

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

$$\Bigg(6\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,2\,(1+m),\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right)^2\Bigg)\Bigg/$$

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

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

$$2\,(1+m)\,\text{AppellF1}\left[\frac{3+m}{2},\,-m,\,3+2\,m,\,\frac{5+m}{2},\right.$$

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

$$\Bigg(8\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,2\,(2+m),\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\Bigg)\Bigg/$$

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

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

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

$$\Bigg(b\,(1+m)\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^4\Bigg(\frac{1}{(1+m)\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^5}$$

$$2^{3+2m}\,(3+m)\,\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2$$

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

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

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

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

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

$$\left.-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Bigg)+\Bigg(12\,\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\right.$$

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

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

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

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

$$\left.-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Bigg)-\Bigg(6\,\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\right.$$

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

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

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

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

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

$$\Bigg(8\,\text{AppellF1}\left[\frac{1+m}{2},-m,2(2+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\Bigg)\Big/$$

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

$$\frac{1}{(1+m)\left(1+\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)^4}\,2^{2m}(3+m)\,\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\left(\frac{\text{Tan}\left[\frac{1}{2}(a+bx)\right]-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)^2}\right)^m$$

$$\Bigg(\Bigg(\text{AppellF1}\left[\frac{1+m}{2},-m,1+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)^3\Bigg)\Big/$$

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-m,1+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,1+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+(1+2m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,2(1+m),\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)+$$

$$\Bigg(12\,\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)\Bigg)\Big/$$

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+(3+2m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,2(2+m),\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)-$$

$$\Bigg(6\,\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)^2\Bigg)\Big/$$

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,2(1+m),\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2(1+m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)-$$

$$\left(8\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,2\,(2+m),\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\right)\Big/$$

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,2\,(2+m),\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\right.$$

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

$$\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\Big]+2\,(2+m)\,\text{AppellF1}\left[\frac{3+m}{2},\,-m,\right.$$

$$\left.\left.5+2\,m,\,\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\Bigg)\Bigg)-$$

$$\frac{1}{(1+m)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right)^4}\,2^{1+2\,m}\,m\,(3+m)\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]$$

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

$$\left(\left(\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,1+2\,m,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\right.\right.\right.$$

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

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,1+2\,m,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]-\right.$$

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

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

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\Bigg)+\left(12\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,3+2\,m,\right.\right.$$

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

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,3+2\,m,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]-\right.$$

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

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

$$\left.\left.-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\Bigg)-\left(6\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,2\,(1+m),\right.\right.$$

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

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,2\,(1+m),\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\right.\right.$$

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

$$\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\Big]+2\,(1+m)\,\text{AppellF1}\left[\frac{3+m}{2},\,-m,\right.$$

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

$$\Big(8\ \text{AppellF1}\Big[\frac{1+m}{2},\ -m,\ 2\,(2+m),\ \frac{3+m}{2},\ \text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\Big]\Big)\Big/$$

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

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

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

$$5+2\,m,\ \frac{5+m}{2},\ \text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\Big]\Big)\ \text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\Big)\Big)$$

$$\left(\frac{\frac{1}{2}\,\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2-\frac{3}{2}\,\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right)^2}-\right.$$

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

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

$$\frac{1}{(1+m)\,\left(1+\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right)^4}\,2^{1+2\,m}\,(3+m)\ \text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]$$

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

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

$$\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]\ \left(1+\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right)^2\Big)\Big/$$

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

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

$$(1+2\,m)\ \text{AppellF1}\Big[\frac{3+m}{2},\ -m,\ 2\,(1+m),\ \frac{5+m}{2},$$

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

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

$$-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]-$$

$$\frac{1}{3+m}(1+m)\ (1+2\,m)\ \text{AppellF1}\Big[1+\frac{1+m}{2},\ -m,\ 2+2\,m,\ 1+\frac{3+m}{2},$$

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

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

$$\left(\left(3+m\right)\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,1+2\,m,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]-\right.$$

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

$$\left(1+2\,m\right)\,\text{AppellF1}\left[\frac{3+m}{2},\,-m,\,2\,\left(1+m\right),\,\frac{5+m}{2},\right.$$

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

$$\left(12\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,3+2\,m,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]\right)\Big/$$

$$\left(\left(3+m\right)\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,3+2\,m,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]-\right.$$

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

$$\left(3+2\,m\right)\,\text{AppellF1}\left[\frac{3+m}{2},\,-m,\,2\,\left(2+m\right),\,\frac{5+m}{2},\right.$$

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

$$\left(12\,\left(-\frac{1}{3+m}m\,\left(1+m\right)\,\text{AppellF1}\left[1+\frac{1+m}{2},\,1-m,\,3+2\,m,\,1+\frac{3+m}{2},\right.\right.\right.$$

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

$$\frac{1}{3+m}\left(1+m\right)\,\left(3+2\,m\right)\,\text{AppellF1}\left[1+\frac{1+m}{2},\,-m,\,4+2\,m,\,1+\frac{3+m}{2},\right.$$

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

$$\text{Sec}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]\right)\,\left(1+\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right)\right)\Big/$$

$$\left(\left(3+m\right)\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,3+2\,m,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]-\right.$$

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

$$\left(3+2\,m\right)\,\text{AppellF1}\left[\frac{3+m}{2},\,-m,\,2\,\left(2+m\right),\,\frac{5+m}{2},\right.$$

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

$$\left(12\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,2\,\left(1+m\right),\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right]\right.$$

$$\left.\text{Sec}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\,\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]\,\left(1+\text{Tan}\left[\frac{1}{2}\left(a+b\,x\right)\right]^2\right)\right)\Big/$$

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

$$\left(6\left(-\frac{1}{3+m}m(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},1-m,2(1+m),1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]-\frac{1}{3+m}2(1+m)^2\,\text{AppellF1}\left[1+\frac{1+m}{2},-m,1+2(1+m),1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]\right)\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^2\right)\Big/$$

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

$$\left(8\left(-\frac{1}{3+m}m(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},1-m,2(2+m),1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]-\frac{1}{3+m}2(1+m)(2+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},-m,1+2(2+m),1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]\right)\right)\Big/$$

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

$$\left(6\,\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^2\left(-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,2(1+m),\frac{5+m}{2},\right.\right.\right.\right.$$

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

$$\Bigg(m\left(-\frac{1}{5+m}2(1+m)(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2}, 1-m, 1+2(1+m), 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(a+bx)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right] \text{Sec}\left[\frac{1}{2}(a+bx)\right]^2 \text{Tan}\left[\frac{1}{2}(a+bx)\right] + \frac{1}{5+m}(1-m)(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2}, 2-m, 2(1+m), 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(a+bx)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right] \text{Sec}\left[\frac{1}{2}(a+bx)\right]^2 \text{Tan}\left[\frac{1}{2}(a+bx)\right]\right) + 2(1+m)\left(-\frac{1}{5+m} m(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2}, 1-m, 3+2m, 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(a+bx)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right] \text{Sec}\left[\frac{1}{2}(a+bx)\right]^2 \text{Tan}\left[\frac{1}{2}(a+bx)\right] - \frac{1}{5+m}(3+m)(3+2m)\,\text{AppellF1}\left[1+\frac{3+m}{2}, -m, 4+2m, 1+\frac{5+m}{2}, \text{Tan}\left[\frac{1}{2}(a+bx)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right] \text{Sec}\left[\frac{1}{2}(a+bx)\right]^2 \text{Tan}\left[\frac{1}{2}(a+bx)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg) \Big/$$

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

$$\Bigg(8\,\text{AppellF1}\left[\frac{1+m}{2}, -m, 2(2+m), \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(a+bx)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]$$

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

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

$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]+(3+m)\left(-\frac{1}{3+m}m(1+m)\ \text{AppellF1}\left[1+\frac{1+m}{2},\ 1-m,\ 2(2+m),\right.\right.$$

$$1+\frac{3+m}{2},\ \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(a+b x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]-\frac{1}{3+m}2(1+m)(2+m)\ \text{AppellF1}\left[1+\frac{1+m}{2},\ -m,\right.$$

$$1+2(2+m),\ 1+\frac{3+m}{2},\ \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]$$

$$\left.\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\ \text{Tan}\left[\frac{1}{2}(a+b x)\right]\right)-2\ \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2$$

$$\Bigg(m\left(-\frac{1}{5+m}2(2+m)(3+m)\ \text{AppellF1}\left[1+\frac{3+m}{2},\ 1-m,\ 1+2(2+m),\right.\right.$$

$$1+\frac{5+m}{2},\ \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(a+b x)\right]^2$$

$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]+\frac{1}{5+m}(1-m)(3+m)\ \text{AppellF1}\left[1+\frac{3+m}{2},\right.$$

$$2-m,\ 2(2+m),\ 1+\frac{5+m}{2},\ \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]$$

$$\left.\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\ \text{Tan}\left[\frac{1}{2}(a+b x)\right]\right)+2(2+m)\left(-\frac{1}{5+m}\right.$$

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

$$-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\ \text{Tan}\left[\frac{1}{2}(a+b x)\right]-\frac{1}{5+m}(3+m)$$

$$(5+2m)\ \text{AppellF1}\left[1+\frac{3+m}{2},\ -m,\ 6+2m,\ 1+\frac{5+m}{2},\ \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$

$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\ \text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\ \text{Tan}\left[\frac{1}{2}(a+b x)\right]\right)\right)\right)\right)\Big/$$

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

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

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

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

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

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

$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]+(1+2m)\ \text{AppellF1}\left[\frac{3+m}{2},\right.$$

$$\left.-m,\ 2(1+m),\ \frac{5+m}{2},\ \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\ -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\right)$$

$$\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]+(3+m)\left(-\frac{1}{3+m}m(1+m)\,\text{AppellF1}\left[\right.\right.$$
$$1+\frac{1+m}{2},1-m,1+2m,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]$$
$$\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]-\frac{1}{3+m}(1+m)(1+2m)\,\text{AppellF1}\Big[$$
$$1+\frac{1+m}{2},-m,2+2m,1+\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]$$
$$\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]\Big)-2\,\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2$$
$$\left(m\left(-\frac{1}{5+m}(3+m)(1+2m)\,\text{AppellF1}\left[1+\frac{3+m}{2},1-m,2+2m,1+\frac{5+m}{2},\right.\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\Big[$$
$$\frac{1}{2}(a+b x)\Big]+\frac{1}{5+m}(1-m)(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},2-m,1+2m,\right.$$
$$1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2$$
$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]\Big)+(1+2m)\left(-\frac{1}{5+m}m(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},\right.\right.$$
$$1-m,2(1+m),1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]$$
$$\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]-\frac{1}{5+m}2(1+m)(3+m)$$
$$\text{AppellF1}\left[1+\frac{3+m}{2},-m,1+2(1+m),1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.$$
$$-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]\Big)\Big)\Big)\Big)\Big/$$
$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-m,1+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]-\right.$$
$$2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,1+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,\right.\right.$$
$$-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]+(1+2m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,2(1+m),\frac{5+m}{2},\right.$$
$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\Big)\,\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big)^2-$$
$$\left(12\,\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right.$$
$$\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)\left(-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,3+2m,\frac{5+m}{2},\right.\right.\right.$$
$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]+(3+2m)\,\text{AppellF1}\left[\frac{3+m}{2},\right.$$
$$-m,2(2+m),\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\Big)$$
$$\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]+(3+m)\left(-\frac{1}{3+m}m(1+m)\,\text{AppellF1}\Big[\right.$$

$$
\begin{aligned}
&1+\frac{1+m}{2},\ 1-m,\ 3+2m,\ 1+\frac{3+m}{2},\ \mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\ -\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]\\
&\mathrm{Sec}\Big[\frac{1}{2}(a+b x)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]-\frac{1}{3+m}(1+m)\ (3+2m)\ \mathrm{AppellF1}\Big[\\
&1+\frac{1+m}{2},\ -m,\ 4+2m,\ 1+\frac{3+m}{2},\ \mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\ -\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]\\
&\mathrm{Sec}\Big[\frac{1}{2}(a+b x)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]\Big)-2\,\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\\
&\Big(m\ \Big(-\frac{1}{5+m}(3+m)\ (3+2m)\ \mathrm{AppellF1}\Big[1+\frac{3+m}{2},\ 1-m,\ 4+2m,\ 1+\frac{5+m}{2},\\
&\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\ -\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]\ \mathrm{Sec}\Big[\frac{1}{2}(a+b x)\Big]^2\,\mathrm{Tan}\Big[\\
&\frac{1}{2}(a+b x)\Big]+\frac{1}{5+m}(1-m)\ (3+m)\ \mathrm{AppellF1}\Big[1+\frac{3+m}{2},\ 2-m,\ 3+2m,\\
&1+\frac{5+m}{2},\ \mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\ -\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]\ \mathrm{Sec}\Big[\frac{1}{2}(a+b x)\Big]^2\\
&\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]\Big)+(3+2m)\ \Big(-\frac{1}{5+m}m\ (3+m)\ \mathrm{AppellF1}\Big[1+\frac{3+m}{2},\\
&1-m,\ 2\ (2+m),\ 1+\frac{5+m}{2},\ \mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\ -\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]\\
&\mathrm{Sec}\Big[\frac{1}{2}(a+b x)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]-\frac{1}{5+m}2\ (2+m)\ (3+m)\\
&\mathrm{AppellF1}\Big[1+\frac{3+m}{2},\ -m,\ 1+2\ (2+m),\ 1+\frac{5+m}{2},\ \mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\\
&-\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]\ \mathrm{Sec}\Big[\frac{1}{2}(a+b x)\Big]^2\,\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]\Big)\Big)\Big)\Big)\Big/\\
&\Big((3+m)\ \mathrm{AppellF1}\Big[\frac{1+m}{2},\ -m,\ 3+2m,\ \frac{3+m}{2},\ \mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\ -\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]-\\
&2\ \Big(m\,\mathrm{AppellF1}\Big[\frac{3+m}{2},\ 1-m,\ 3+2m,\ \frac{5+m}{2},\ \mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\\
&-\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]+(3+2m)\ \mathrm{AppellF1}\Big[\frac{3+m}{2},\ -m,\ 2\ (2+m),\ \frac{5+m}{2},\\
&\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2,\ -\mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big]\Big)\ \mathrm{Tan}\Big[\frac{1}{2}(a+b x)\Big]^2\Big)^2\Big)\Big)\Big)\Big)
\end{aligned}
$$

Problem 188: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \mathrm{Cos}[a+b x]^2\ \mathrm{Sin}[2a+2b x]^m\, dx$$

Optimal (type 5, 85 leaves, 2 steps):

$$-\frac{1}{b\,(3+m)}\text{Cos}[a+b\,x]^2\,\text{Cot}[a+b\,x]\;\text{Hypergeometric2F1}\left[\frac{1-m}{2},\frac{3+m}{2},\frac{5+m}{2},\text{Cos}[a+b\,x]^2\right]\left(\text{Sin}[a+b\,x]^2\right)^{\frac{1-m}{2}}\text{Sin}[2\,a+2\,b\,x]^m$$

Result (type 6, 7926 leaves):

$$\Bigg(2^{1+2m}\,(3+m)\,\text{Cos}[a+b\,x]^2\,\text{Sin}[2\,(a+b\,x)]^m\,\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]\left(\frac{\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right)^2}\right)^m$$

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

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

$$\Bigg(4\,\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\Bigg)\Big/$$

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

$$\Bigg(4\,\text{AppellF1}\left[\frac{1+m}{2},-m,2\,(1+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right]\left(1+\text{Tan}\left[\frac{1}{2}(a+b\,x)\right]^2\right)\Bigg)\Big/$$

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

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)\right)\right) \Big/ \left(b\,(1+m)\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^3\right.$$

$$\left(-\frac{1}{(1+m)\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^4} 3\times 2^{1+2m}(3+m)\,\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\right.$$

$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\left(\frac{\text{Tan}\left[\frac{1}{2}(a+b x)\right]-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^2}\right)^m$$

$$\left(\left(\text{AppellF1}\left[\frac{1+m}{2},-m,1+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right.\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^2\right)\Big/\left(\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-m,1+2m,\frac{3+m}{2},\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,1+2m,\right.\right.$$

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

$$\left.\left.\left.2(1+m),\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)+$$

$$\left(4\,\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right)\Big/$$

$$\left(\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]-\right.$$

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

$$(3+2m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,2(2+m),\frac{5+m}{2},\right.$$

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

$$\left(4\,\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)\right)\Big/\left(\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,2(1+m),\right.\right.$$

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

$$\left.\left.\left.3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)\right)+$$

$$\frac{1}{(1+m)\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^3}2^{2m}(3+m)\,\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2$$

$$\left(\frac{\text{Tan}\left[\frac{1}{2}(a+b x)\right]-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^2}\right)^m$$

$$\left(\left(\text{AppellF1}\left[\frac{1+m}{2},-m,1+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right.\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)^2\right)\Big/\left(\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-m,1+2m,\frac{3+m}{2},\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,1+2m,\right.\right.$$

$$\left.\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+(1+2m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,\right.$$

$$\left.\left.\left.2(1+m),\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)+$$

$$\left(4\,\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\Big/$$

$$\left(\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-\right.$$

$$2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+\right.$$

$$(3+2m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,2(2+m),\frac{5+m}{2},\right.$$

$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)-$$

$$\left(4\,\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)\right)\Big/\left(\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-m,2(1+m),\frac{3+m}{2},\right.\right.$$

$$\left.\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,2(1+m),\right.\right.$$

$$\left.\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+2(1+m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,\right.$$

$$\left.\left.\left.\left.3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)\right)+$$

$$\frac{1}{(1+m)\left(1+\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)^3}2^{1+2m}m(3+m)\,\text{Tan}\left[\frac{1}{2}(a+bx)\right]$$

$$\left(\frac{\text{Tan}\left[\frac{1}{2}(a+bx)\right]-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)^2}\right)^{-1+m}$$

$$\left(\left(\text{AppellF1}\left[\frac{1+m}{2},-m,1+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right.\right.$$

$$\left.\left(1+\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)^2\right)\Big/$$

$$\left(\left(3+m\right)\text{AppellF1}\left[\frac{1+m}{2},-m,1+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-\right.$$

$$2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,1+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+\right.$$

$$(1+2m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,2(1+m),\frac{5+m}{2},\right.$$

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

$$\left(4 \,\text{AppellF1}\left[\frac{1+m}{2}, -m, 3+2 m, \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]\right) \Big/$$

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

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

$$\left(3+2 m\right) \text{AppellF1}\Big[\frac{3+m}{2}, -m, 2\left(2+m\right), \frac{5+m}{2},$$

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

$$\Bigg(4 \,\text{AppellF1}\left[\frac{1+m}{2}, -m, 2\left(1+m\right), \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right]$$

$$\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)\Bigg) \Big/$$

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

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

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

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

$$\Bigg(\frac{\frac{1}{2}\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 - \frac{3}{2}\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right]^2}{\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^2} -$$

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

$$\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^3\Bigg) +$$

$$\frac{1}{\left(1+m\right)\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^3} 2^{1+2 m} \left(3+m\right) \text{Tan}\left[\frac{1}{2}(a+b x)\right]$$

$$\left(\frac{\text{Tan}\left[\frac{1}{2}(a+b x)\right] - \text{Tan}\left[\frac{1}{2}(a+b x)\right]^3}{\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^2}\right)^m$$

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

$$\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2 \text{Tan}\left[\frac{1}{2}(a+b x)\right] \left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)\Bigg) \Big/$$

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

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

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

$$\Bigg(\Big(-\frac{1}{3+m}m(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2}, 1-m, 1+2m, 1+\frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(a+bx)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right] - \frac{1}{3+m}(1+m)(1+2m)$$

$$\text{AppellF1}\left[1+\frac{1+m}{2}, -m, 2+2m, 1+\frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(a+bx)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\Big)\left(1+\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)^2\Bigg)\Big/$$

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

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

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

$$\Bigg(4\Big(-\frac{1}{3+m}m(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2}, 1-m, 3+2m, 1+\frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(a+bx)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right] - \frac{1}{3+m}$$

$$(1+m)(3+2m)\,\text{AppellF1}\left[1+\frac{1+m}{2}, -m, 4+2m, 1+\frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(a+bx)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\Big)\Bigg)\Big/$$

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

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

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

$$\Bigg(4\,\text{AppellF1}\left[\frac{1+m}{2}, -m, 2(1+m), \frac{3+m}{2}, \text{Tan}\left[\frac{1}{2}(a+bx)\right]^2, -\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}(a+bx)\right]^2\text{Tan}\left[\frac{1}{2}(a+bx)\right]\Bigg)\Big/$$

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

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

$$-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right] + 2(1+m)\,\text{AppellF1}\left[\frac{3+m}{2}, -m, 3+2m, \frac{5+m}{2},$$

$$\text{Tan}[\tfrac{1}{2}(a+b x)]^2, -\text{Tan}[\tfrac{1}{2}(a+b x)]^2]) \, \text{Tan}[\tfrac{1}{2}(a+b x)]^2) -$$

$$(4 \, (-\frac{1}{3+m} m (1+m) \, \text{AppellF1}[1+\frac{1+m}{2}, 1-m, 2(1+m), 1+\frac{3+m}{2},$$

$$\text{Tan}[\tfrac{1}{2}(a+b x)]^2, -\text{Tan}[\tfrac{1}{2}(a+b x)]^2] \, \text{Sec}[\tfrac{1}{2}(a+b x)]^2 \, \text{Tan}[\tfrac{1}{2}(a+b x)] -$$

$$\frac{1}{3+m} 2 (1+m)^2 \, \text{AppellF1}[1+\frac{1+m}{2}, -m, 1+2(1+m), 1+\frac{3+m}{2},$$

$$\text{Tan}[\tfrac{1}{2}(a+b x)]^2, -\text{Tan}[\tfrac{1}{2}(a+b x)]^2] \, \text{Sec}[\tfrac{1}{2}(a+b x)]^2 \, \text{Tan}[\tfrac{1}{2}(a+b x)])$$

$$(1+\text{Tan}[\tfrac{1}{2}(a+b x)]^2)) \Big/ ((3+m) \, \text{AppellF1}[\frac{1+m}{2}, -m, 2(1+m), \frac{3+m}{2},$$

$$\text{Tan}[\tfrac{1}{2}(a+b x)]^2, -\text{Tan}[\tfrac{1}{2}(a+b x)]^2] - 2 \, (m \, \text{AppellF1}[\frac{3+m}{2}, 1-m, 2(1+m),$$

$$\frac{5+m}{2}, \text{Tan}[\tfrac{1}{2}(a+b x)]^2, -\text{Tan}[\tfrac{1}{2}(a+b x)]^2] + 2(1+m) \, \text{AppellF1}[\frac{3+m}{2}, -m,$$

$$3+2m, \frac{5+m}{2}, \text{Tan}[\tfrac{1}{2}(a+b x)]^2, -\text{Tan}[\tfrac{1}{2}(a+b x)]^2]) \, \text{Tan}[\tfrac{1}{2}(a+b x)]^2) +$$

$$(4 \, \text{AppellF1}[\frac{1+m}{2}, -m, 2(1+m), \frac{3+m}{2}, \text{Tan}[\tfrac{1}{2}(a+b x)]^2, -\text{Tan}[\tfrac{1}{2}(a+b x)]^2]$$

$$(1+\text{Tan}[\tfrac{1}{2}(a+b x)]^2) \, (-2 \, (m \, \text{AppellF1}[\frac{3+m}{2}, 1-m, 2(1+m), \frac{5+m}{2},$$

$$\text{Tan}[\tfrac{1}{2}(a+b x)]^2, -\text{Tan}[\tfrac{1}{2}(a+b x)]^2] + 2(1+m) \, \text{AppellF1}[\frac{3+m}{2}, -m,$$

$$3+2m, \frac{5+m}{2}, \text{Tan}[\tfrac{1}{2}(a+b x)]^2, -\text{Tan}[\tfrac{1}{2}(a+b x)]^2]) \, \text{Sec}[\tfrac{1}{2}(a+b x)]^2$$

$$\text{Tan}[\tfrac{1}{2}(a+b x)] + (3+m) \, (-\frac{1}{3+m} m (1+m) \, \text{AppellF1}[1+\frac{1+m}{2}, 1-m, 2(1+m),$$

$$1+\frac{3+m}{2}, \text{Tan}[\tfrac{1}{2}(a+b x)]^2, -\text{Tan}[\tfrac{1}{2}(a+b x)]^2] \, \text{Sec}[\tfrac{1}{2}(a+b x)]^2 \, \text{Tan}[$$

$$\tfrac{1}{2}(a+b x)] - \frac{1}{3+m} 2 (1+m)^2 \, \text{AppellF1}[1+\frac{1+m}{2}, -m, 1+2(1+m), 1+\frac{3+m}{2},$$

$$\text{Tan}[\tfrac{1}{2}(a+b x)]^2, -\text{Tan}[\tfrac{1}{2}(a+b x)]^2] \, \text{Sec}[\tfrac{1}{2}(a+b x)]^2 \, \text{Tan}[\tfrac{1}{2}(a+b x)]) -$$

$$2 \, \text{Tan}[\tfrac{1}{2}(a+b x)]^2 \, (m \, (-\frac{1}{5+m} 2 (1+m) (3+m) \, \text{AppellF1}[1+\frac{3+m}{2}, 1-m,$$

$$1+2(1+m), 1+\frac{5+m}{2}, \text{Tan}[\tfrac{1}{2}(a+b x)]^2, -\text{Tan}[\tfrac{1}{2}(a+b x)]^2] \, \text{Sec}[\tfrac{1}{2}$$

$$(a+b x)]^2 \, \text{Tan}[\tfrac{1}{2}(a+b x)] + \frac{1}{5+m}(1-m)(3+m) \, \text{AppellF1}[1+\frac{3+m}{2},$$

$$2-m, 2(1+m), 1+\frac{5+m}{2}, \text{Tan}[\tfrac{1}{2}(a+b x)]^2, -\text{Tan}[\tfrac{1}{2}(a+b x)]^2]$$

$$\text{Sec}[\tfrac{1}{2}(a+b x)]^2 \, \text{Tan}[\tfrac{1}{2}(a+b x)]) + 2(1+m) \, (-\frac{1}{5+m} m (3+m)$$

$$\text{AppellF1}[1+\frac{3+m}{2}, 1-m, 3+2m, 1+\frac{5+m}{2}, \text{Tan}[\tfrac{1}{2}(a+b x)]^2,$$

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

$$(3+2m)\,\text{AppellF1}\Big[1+\frac{3+m}{2},-m,4+2m,1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]\Big)\Big)\Big)\Big)\Big/$$

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

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

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

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

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

$$\left(1+\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\right)^2$$

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

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

$$-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\Big)\,\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]+$$

$$(3+m)\,\Big(-\frac{1}{3+m}m(1+m)\,\text{AppellF1}\Big[1+\frac{1+m}{2},1-m,1+2m,1+\frac{3+m}{2},$$

$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]-$$

$$\frac{1}{3+m}(1+m)\,(1+2m)\,\text{AppellF1}\Big[1+\frac{1+m}{2},-m,2+2m,1+\frac{3+m}{2},$$

$$\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]\Big)-$$

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

$$2+2m,1+\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]$$

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

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

$$\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]\Big)+(1+2m)\,\Big(-\frac{1}{5+m}$$

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

$$-\text{Tan}\left[\frac{1}{2}(a+b x)\right]^2\Big]\,\text{Sec}\left[\frac{1}{2}(a+b x)\right]^2\text{Tan}\left[\frac{1}{2}(a+b x)\right]-\frac{1}{5+m}2(1+m)$$

$$(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},\,-m,\,1+2\,(1+m),\,1+\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]\right)\right)\right)\right)\Bigg/$$
$$\left(\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,1+2\,m,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]-\right.\right.$$
$$2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},\,1-m,\,1+2\,m,\,\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]+\right.$$
$$(1+2\,m)\,\text{AppellF1}\left[\frac{3+m}{2},\,-m,\,2\,(1+m),\,\frac{5+m}{2},\right.$$
$$\left.\left.\left.\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\right)\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right)^2-$$
$$\left(4\,\text{AppellF1}\left[\frac{1+m}{2},\,-m,\,3+2\,m,\,\frac{3+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\right.$$
$$\left(-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},\,1-m,\,3+2\,m,\,\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]+\right.\right.$$
$$(3+2\,m)\,\text{AppellF1}\left[\frac{3+m}{2},\,-m,\,2\,(2+m),\,\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\right)\,\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]+$$
$$(3+m)\,\left(-\frac{1}{3+m}m\,(1+m)\,\text{AppellF1}\left[1+\frac{1+m}{2},\,1-m,\,3+2\,m,\,1+\frac{3+m}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]-$$
$$\frac{1}{3+m}(1+m)\,(3+2\,m)\,\text{AppellF1}\left[1+\frac{1+m}{2},\,-m,\,4+2\,m,\,1+\frac{3+m}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]\right)-$$
$$2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\left(m\left(-\frac{1}{5+m}(3+m)\,(3+2\,m)\,\text{AppellF1}\left[1+\frac{3+m}{2},\,1-m,\right.\right.\right.$$
$$\left.4+2\,m,\,1+\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]+\frac{1}{5+m}(1-m)\,(3+m)\,\text{AppellF1}\left[\right.$$
$$\left.1+\frac{3+m}{2},\,2-m,\,3+2\,m,\,1+\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]$$
$$\left.\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]\right)+(3+2\,m)\,\left(-\frac{1}{5+m}\right.$$
$$m\,(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},\,1-m,\,2\,(2+m),\,1+\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]-\frac{1}{5+m}2\,(2+m)$$
$$(3+m)\,\text{AppellF1}\left[1+\frac{3+m}{2},\,-m,\,1+2\,(2+m),\,1+\frac{5+m}{2},\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2,\right.$$
$$\left.\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]^2\right]\,\text{Sec}\left[\frac{1}{2}\,(a+b\,x)\right]^2\,\text{Tan}\left[\frac{1}{2}\,(a+b\,x)\right]\right)\right)\right)\right)\Bigg/$$

$$\left((3+m)\,\text{AppellF1}\left[\frac{1+m}{2},-m,3+2m,\frac{3+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]-2\left(m\,\text{AppellF1}\left[\frac{3+m}{2},1-m,3+2m,\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]+(3+2m)\,\text{AppellF1}\left[\frac{3+m}{2},-m,2(2+m),\frac{5+m}{2},\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2,-\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}(a+bx)\right]^2\right)\right)\right)$$

Problem 189: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cos}[a+bx]\,\text{Sin}[2a+2bx]^m\,dx$$

Optimal (type 5, 83 leaves, 2 steps):

$$-\frac{1}{b(2+m)}\text{Cos}[a+bx]\,\text{Cot}[a+bx]\,\text{Hypergeometric2F1}\left[\frac{1-m}{2},\frac{2+m}{2},\frac{4+m}{2},\text{Cos}[a+bx]^2\right]\left(\text{Sin}[a+bx]^2\right)^{\frac{1-m}{2}}\text{Sin}[2a+2bx]^m$$

Result (type 5, 173 leaves):

$$\frac{1}{b\left(-1+4m^2\right)}i\,2^{-1-m}e^{-i(a+bx)}\left(1-e^{4i(a+bx)}\right)^{-m}\left(-i\,e^{-2i(a+bx)}\left(-1+e^{4i(a+bx)}\right)\right)^m\left((-1+2m)\,\text{Hypergeometric2F1}\left[\frac{1}{4}(-1-2m),-m,\frac{1}{4}(3-2m),e^{4i(a+bx)}\right]+e^{2i(a+bx)}(1+2m)\,\text{Hypergeometric2F1}\left[\frac{1}{4}(1-2m),-m,\frac{1}{4}(5-2m),e^{4i(a+bx)}\right]\right)$$

Problem 196: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Csc}[c+bx]^2\,\text{Sin}[a+bx]\,dx$$

Optimal (type 3, 36 leaves, 4 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[c+bx]]\,\text{Cos}[a-c]}{b}-\frac{\text{Csc}[c+bx]\,\text{Sin}[a-c]}{b}$$

Result (type 3, 90 leaves):

$$-\frac{2\,i\,\text{ArcTan}\left[\frac{(\text{Cos}[c]-i\,\text{Sin}[c])\left(\text{Cos}[c]\,\text{Cos}\left[\frac{bx}{2}\right]-\text{Sin}[c]\,\text{Sin}\left[\frac{bx}{2}\right]\right)}{i\,\text{Cos}[c]\,\text{Cos}\left[\frac{bx}{2}\right]+\text{Cos}\left[\frac{bx}{2}\right]\,\text{Sin}[c]}\right]\text{Cos}[a-c]}{b}-\frac{\text{Csc}[c+bx]\,\text{Sin}[a-c]}{b}$$

Problem 201: Unable to integrate problem.

$$\int \sin[a+b x]^2 \sin[c+d x]^n \, dx$$

Optimal (type 5, 410 leaves, 15 steps):

$$-\frac{1}{2b+dn} i\, 2^{-2-n} e^{-i(2a+cn)-i(2b+dn)x+in(c+dx)} \left(1-e^{2ic+2idx}\right)^{-n} \left(i e^{-i(c+dx)}-i e^{i(c+dx)}\right)^n \text{Hypergeometric2F1}\left[\frac{1}{2}\left(-\frac{2b}{d}-n\right), -n, \frac{1}{2}\left(2-\frac{2b}{d}-n\right), e^{2i(c+dx)}\right] + \frac{1}{2b-dn} i\, 2^{-2-n} e^{i(2a-cn)+i(2b-dn)x+in(c+dx)} \left(1-e^{2ic+2idx}\right)^{-n} \left(i e^{-i(c+dx)}-i e^{i(c+dx)}\right)^n \text{Hypergeometric2F1}\left[\frac{1}{2}\left(\frac{2b}{d}-n\right), -n, \frac{1}{2}\left(2+\frac{2b}{d}-n\right), e^{2i(c+dx)}\right] + \frac{1}{dn} i\, 2^{-1-n} \left(i e^{-i(c+dx)}-i e^{i(c+dx)}\right)^n \left(1-e^{2i(c+dx)}\right)^{-n} \text{Hypergeometric2F1}\left[-n, -\frac{n}{2}, 1-\frac{n}{2}, e^{2i(c+dx)}\right]$$

Result (type 8, 19 leaves):

$$\int \sin[a+b x]^2 \sin[c+d x]^n \, dx$$

Problem 205: Unable to integrate problem.

$$\int \sin[a+b x]^3 \sin[c+d x]^n \, dx$$

Optimal (type 5, 600 leaves, 18 steps):

$$\frac{1}{3b-dn} 2^{-3-n} e^{i(3a-cn)+i(3b-dn)x+in(c+dx)} \left(1-e^{2ic+2idx}\right)^{-n} \left(i e^{-i(c+dx)}-i e^{i(c+dx)}\right)^n \text{Hypergeometric2F1}\left[\frac{1}{2}\left(\frac{3b}{d}-n\right), -n, \frac{1}{2}\left(2+\frac{3b}{d}-n\right), e^{2i(c+dx)}\right] - \frac{1}{b-dn} 3\times 2^{-3-n} e^{i(a-cn)+i(b-dn)x+in(c+dx)} \left(1-e^{2ic+2idx}\right)^{-n} \left(i e^{-i(c+dx)}-i e^{i(c+dx)}\right)^n \text{Hypergeometric2F1}\left[-n, \frac{b-dn}{2d}, \frac{1}{2}\left(2+\frac{b}{d}-n\right), e^{2i(c+dx)}\right] - \frac{1}{b+dn} 3\times 2^{-3-n} e^{-i(a+cn)-i(b+dn)x+in(c+dx)} \left(1-e^{2ic+2idx}\right)^{-n} \left(i e^{-i(c+dx)}-i e^{i(c+dx)}\right)^n \text{Hypergeometric2F1}\left[-n, -\frac{b+dn}{2d}, 1-\frac{b+dn}{2d}, e^{2i(c+dx)}\right] + \frac{1}{3b+dn} 2^{-3-n} e^{-i(3a+cn)-i(3b+dn)x+in(c+dx)} \left(1-e^{2ic+2idx}\right)^{-n} \left(i e^{-i(c+dx)}-i e^{i(c+dx)}\right)^n \text{Hypergeometric2F1}\left[-n, -\frac{3b+dn}{2d}, \frac{1}{2}\left(2-\frac{3b}{d}-n\right), e^{2i(c+dx)}\right]$$

Result (type 8, 19 leaves):

$$\int \sin[a+b x]^3 \sin[c+d x]^n \, dx$$

Problem 214: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 34 leaves, 4 steps):

$$\frac{\text{Cos}[a-c]\ \text{Sec}[c+b x]}{b}+\frac{\text{ArcTanh}[\text{Sin}[c+b x]]\ \text{Sin}[a-c]}{b}$$

Result (type 3, 88 leaves):

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

Problem 227: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cos}[a+b x]\ \text{Csc}[c+b x]\, dx$$

Optimal (type 3, 27 leaves, 3 steps):

$$\frac{\text{Cos}[a-c]\ \text{Log}[\text{Sin}[c+b x]]}{b}-x\,\text{Sin}[a-c]$$

Result (type 3, 58 leaves):

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

Problem 228: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 35 leaves, 4 steps):

$$-\frac{\text{Cos}[a-c]\ \text{Csc}[c+b x]}{b}+\frac{\text{ArcTanh}[\text{Cos}[c+b x]]\ \text{Sin}[a-c]}{b}$$

Result (type 3, 90 leaves):

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

Problem 231: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

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

Optimal (type 3, 44 leaves, 6 steps):

$$\frac{\text{Cos}[a+b\,x]}{b}+\frac{\text{Cos}[a-c]\,\text{Sec}[c+b\,x]}{b}+\frac{\text{ArcTanh}[\text{Sin}[c+b\,x]]\,\text{Sin}[a-c]}{b}$$

Result (type 3, 109 leaves):

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

Problem 232: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Sin}[a+b\,x]\,\text{Tan}[c+b\,x]\,dx$$

Optimal (type 3, 29 leaves, 3 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[c+b\,x]]\,\text{Cos}[a-c]}{b}-\frac{\text{Sin}[a+b\,x]}{b}$$

Result (type 3, 94 leaves):

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

Problem 233: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 29 leaves, 3 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[c+b\,x]]\,\text{Sin}[a-c]}{b}+\frac{\text{Sin}[a+b\,x]}{b}$$

Result (type 3, 93 leaves):

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

Problem 234: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 46 leaves, 6 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[c+b\,x]]\,\text{Cos}[a-c]}{b}+\frac{\text{Cos}[a+b\,x]}{b}-\frac{\text{Csc}[c+b\,x]\,\text{Sin}[a-c]}{b}$$

Result (type 3, 111 leaves):

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

Problem 242: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 35 leaves, 4 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[c+b\,x]]\,\text{Cos}[a-c]}{b}-\frac{\text{Sec}[c+b\,x]\,\text{Sin}[a-c]}{b}$$

Result (type 3, 89 leaves):

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

Problem 248: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 46 leaves, 6 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[c+b x]]\,\text{Cos}[a-c]}{b}-\frac{\text{Sec}[c+b x]\,\text{Sin}[a-c]}{b}-\frac{\text{Sin}[a+b x]}{b}$$

Result (type 3, 111 leaves):

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

Problem 249: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

$$\int \text{Cos}[a+b x]\,\text{Tan}[c+b x]\,dx$$

Optimal (type 3, 30 leaves, 3 steps):

$$-\frac{\text{Cos}[a+b x]}{b}-\frac{\text{ArcTanh}[\text{Sin}[c+b x]]\,\text{Sin}[a-c]}{b}$$

Result (type 3, 93 leaves):

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

Problem 250: Result unnecessarily involves complex numbers and more than twice size of optimal antiderivative.

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

Optimal (type 3, 29 leaves, 3 steps):

$$-\frac{\text{ArcTanh}[\text{Cos}[c+b x]]\,\text{Cos}[a-c]}{b}+\frac{\text{Cos}[a+b x]}{b}$$

Result (type 3, 94 leaves):

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

Problem 251: Result unnecessarily involves complex numbers and more than

twice size of optimal antiderivative.

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

Optimal (type 3, 46 leaves, 6 steps):

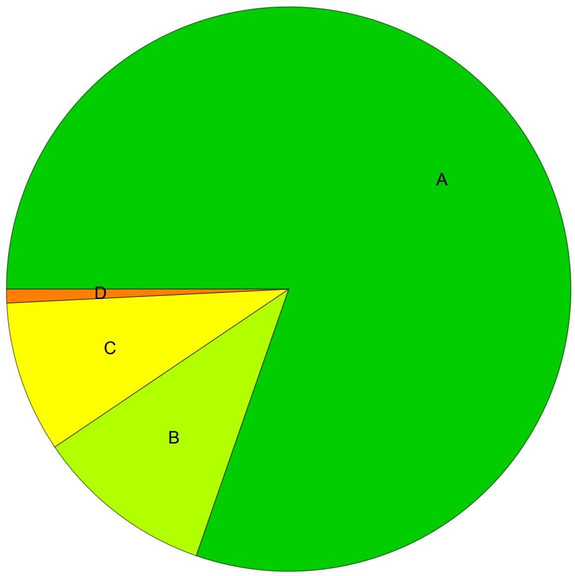
$$-\frac{\text{Cos}[a - c]\,\text{Csc}[c + b\,x]}{b} + \frac{\text{ArcTanh}[\text{Cos}[c + b\,x]]\,\text{Sin}[a - c]}{b} - \frac{\text{Sin}[a + b\,x]}{b}$$

Result (type 3, 112 leaves):

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

Summary of Integration Test Results

254 integration problems



A - 204 optimal antiderivatives

B - 26 more than twice size of optimal antiderivatives

C - 22 unnecessarily complex antiderivatives

D - 2 unable to integrate problems

E - 0 integration timeouts