Mathematica 11.3 Integration Test Results

Test results for the 294 problems in "4.2.0 (a cos)^m (b trg)^n.m"

Problem 1: Result more than twice size of optimal antiderivative.

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

Optimal (type 3, 10 leaves, 1 step):

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

Result (type 3, 21 leaves):

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

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

$$\int \frac{1}{\sqrt{a\,\text{Cos}[x]^2}}\,dx$$

Optimal (type 3, 16 leaves, 2 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[x]]\,\text{Cos}[x]}{\sqrt{a\,\text{Cos}[x]^2}}$$

Result (type 3, 46 leaves):

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

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

$$\int \frac{1}{\left(a\,\text{Cos}[x]^2\right)^{3/2}}\,dx$$

Optimal (type 3, 42 leaves, 3 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[x]]\,\text{Cos}[x]}{2\,a\,\sqrt{a\,\text{Cos}[x]^2}} + \frac{\text{Tan}[x]}{2\,a\,\sqrt{a\,\text{Cos}[x]^2}}$$

Result (type 3, 91 leaves):

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

Problem 145: Result more than twice size of optimal antiderivative.

$$\int\frac{\sqrt{b\,\text{Cos}[c+dx]}}{\text{Cos}[c+dx]^{3/2}}\,dx$$

Optimal (type 3, 33 leaves, 2 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[c+dx]]\,\sqrt{b\,\text{Cos}[c+dx]}}{d\,\sqrt{\text{Cos}[c+dx]}}$$

Result (type 3, 75 leaves):

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

Problem 155: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(b\,\text{Cos}[c+dx]\right)^{3/2}}{\text{Cos}[c+dx]^{5/2}}\,dx$$

Optimal (type 3, 34 leaves, 2 steps):

$$\frac{b\,\text{ArcTanh}[\text{Sin}[c+dx]]\,\sqrt{b\,\text{Cos}[c+dx]}}{d\,\sqrt{\text{Cos}[c+dx]}}$$

Result (type 3, 75 leaves):

$$\frac{1}{d\,\text{Cos}[c+dx]^{3/2}}\left(b\,\text{Cos}[c+dx]\right)^{3/2}\left(-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right)$$

Problem 166: Result more than twice size of optimal antiderivative.

$$\int\frac{\left(b\,\text{Cos}[c+dx]\right)^{5/2}}{\text{Cos}[c+dx]^{7/2}}\,dx$$

Optimal (type 3, 36 leaves, 2 steps):

$$\frac{b^2\,\text{ArcTanh}[\text{Sin}[c+dx]]\,\sqrt{b\,\text{Cos}[c+dx]}}{d\,\sqrt{\text{Cos}[c+dx]}}$$

Result (type 3, 75 leaves):

$$\frac{1}{d\,\text{Cos}[c+dx]^{5/2}}\left(b\,\text{Cos}[c+dx]\right)^{5/2}\left(-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right)$$

Problem 177: Result more than twice size of optimal antiderivative.

$$\int\frac{1}{\sqrt{\text{Cos}[c+dx]}\,\sqrt{b\,\text{Cos}[c+dx]}}\,dx$$

Optimal (type 3, 33 leaves, 2 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[c+dx]]\,\sqrt{\text{Cos}[c+dx]}}{d\,\sqrt{b\,\text{Cos}[c+dx]}}$$

Result (type 3, 75 leaves):

$$\left(\sqrt{\text{Cos}[c+dx]}\left(-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right)\right)\Big/\left(d\,\sqrt{b\,\text{Cos}[c+dx]}\right)$$

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

$$\int\frac{\sqrt{\text{Cos}[c+dx]}}{\left(b\,\text{Cos}[c+dx]\right)^{3/2}}\,dx$$

Optimal (type 3, 36 leaves, 2 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[c+dx]]\,\sqrt{\text{Cos}[c+dx]}}{b\,d\,\sqrt{b\,\text{Cos}[c+dx]}}$$

Result (type 3, 75 leaves):

$$\left(\text{Cos}[c+dx]^{3/2}\left(-\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]-\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]+\text{Log}\left[\text{Cos}\left[\frac{1}{2}(c+dx)\right]+\text{Sin}\left[\frac{1}{2}(c+dx)\right]\right]\right)\right)\Big/\left(d\left(b\,\text{Cos}[c+dx]\right)^{3/2}\right)$$

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

$$\int\frac{\text{Cos}[c+dx]^{3/2}}{\left(b\,\text{Cos}[c+dx]\right)^{5/2}}\,dx$$

Optimal (type 3, 36 leaves, 2 steps):

$$\frac{\text{ArcTanh}[\text{Sin}[c+d\,x]]\,\sqrt{\text{Cos}[c+d\,x]}}{b^2\,d\,\sqrt{b\,\text{Cos}[c+d\,x]}}$$

Result (type 3, 78 leaves):

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

Problem 284: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int \text{Cos}[e+f\,x]^m\,\text{Csc}[e+f\,x]^n\,dx$$

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

$$\frac{1}{f\,(1-n)}\text{Cos}[e+f\,x]^{-1+m}\left(\text{Cos}[e+f\,x]^2\right)^{\frac{1-m}{2}}\,\text{Csc}[e+f\,x]^{-1+n}\,\text{Hypergeometric2F1}\left[\frac{1-m}{2},\frac{1-n}{2},\frac{3-n}{2},\text{Sin}[e+f\,x]^2\right]$$

Result (type 6, 3229 leaves):

$$-\left(\left(2\,(-3+n)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},-m,1+m-n,\frac{3}{2}-\frac{n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^{1+m}\text{Cos}[e+f\,x]^m\,\text{Csc}[e+f\,x]^{2\,n}\left(\text{Cos}[e+f\,x]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]\right)\Big/\left(f\,(-1+n)\left((-3+n)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},-m,1+m-n,\frac{3}{2}-\frac{n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+2\left(m\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},1-m,1+m-n,\frac{5}{2}-\frac{n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]+(1+m-n)\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},-m,2+m-n,\frac{5}{2}-\frac{n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)\right)\left(-\left(\left((-3+n)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},-m,1+m-n,\frac{3}{2}-\frac{n}{2},\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2,-\text{Tan}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right]\left(\text{Cos}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^{1+m}\text{Csc}[e+f\,x]^n\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\left(\text{Cos}[e+f\,x]\,\text{Sec}\left[\frac{1}{2}\,(e+f\,x)\right]^2\right)^m\right)\Big/\left((-1+n)\left((-3+n)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},\right.\right.\right.\right.\right.\right.$$

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

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

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

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

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

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

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

$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big]\,\left(\text{Cos}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right)^{1+m}$$

$$\text{Csc}\left[e+f x\right]^n\left(\text{Cos}\left[e+f x\right]\text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right)^{-1+m}\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]$$

$$\left.\left(-\text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2\text{Sin}\left[e+f x\right]+\text{Cos}\left[e+f x\right]\text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]\right)\right)\Big/$$

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

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

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

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

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

$$\left(\text{Cos}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right)^{1+m}\text{Csc}\left[e+f x\right]^n\left(\text{Cos}\left[e+f x\right]\text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]$$

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

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

$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big]\Bigg)\text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]+$$

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

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

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

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

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

$$2+m-n, \frac{7}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]$$

$$\text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right] + \frac{1}{\frac{5}{2}-\frac{n}{2}}\left(1-m\right)\left(\frac{3}{2}-\frac{n}{2}\right)$$

$$\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2}, 2-m, 1+m-n, \frac{7}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]\Bigg) + \left(1+m-n\right)$$

$$\Bigg(-\frac{1}{\frac{5}{2}-\frac{n}{2}}m\left(\frac{3}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2}, 1-m, 2+m-n, \frac{7}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right] - \frac{1}{\frac{5}{2}-\frac{n}{2}}$$

$$\left(2+m-n\right)\left(\frac{3}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2}, -m, 3+m-n, \frac{7}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,$$

$$-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]\Bigg)\Bigg)\Bigg)\Bigg)\Bigg/$$

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

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

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

$$\left.n, \frac{5}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]\Bigg)\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Bigg)\Bigg)\Bigg)\Bigg)$$

Problem 285: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\left(a\,\text{Cos}\left[e+f x\right]\right)^m\text{Csc}\left[e+f x\right]^n\,dx$$

Optimal (type 5, 88 leaves, 2 steps):

$$\frac{1}{f\,(1-n)}a\,\left(a\,\text{Cos}[e+f\,x]\right)^{-1+m}\left(\text{Cos}[e+f\,x]^2\right)^{\frac{1-m}{2}}$$
$$\text{Csc}[e+f\,x]^{-1+n}\,\text{Hypergeometric2F1}\left[\frac{1-m}{2},\,\frac{1-n}{2},\,\frac{3-n}{2},\,\text{Sin}[e+f\,x]^2\right]$$

Result (type 6, 3231 leaves):

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

$$\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big] + \left(1+m-n\right)\text{AppellF1}\Big[\frac{3}{2}-\frac{n}{2}, -m,$$
$$2+m-n, \frac{5}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big)\Big) +$$
$$\Big(2\left(-3+n\right)n\,\text{AppellF1}\Big[\frac{1}{2}-\frac{n}{2}, -m, 1+m-n, \frac{3}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big]\Big(\text{Cos}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big)^{1+m}\text{Cos}\left[e+f x\right]$$
$$\text{Csc}\left[e+f x\right]^{1+n}\Big(\text{Cos}\left[e+f x\right]\text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big)^m\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]\Big)\Big/$$
$$\Big(\left(-1+n\right)\Big(\left(-3+n\right)\text{AppellF1}\Big[\frac{1}{2}-\frac{n}{2}, -m, 1+m-n, \frac{3}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big] + 2\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-\frac{n}{2}, 1-m, 1+m-n, \frac{5}{2}-\frac{n}{2},$$
$$\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big] + \left(1+m-n\right)\text{AppellF1}\Big[\frac{3}{2}-\frac{n}{2}, -m,$$
$$2+m-n, \frac{5}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2, -\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big]\Big)\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\Big)\Big) -$$
$$\Big(2\left(-3+n\right)\Big(\text{Cos}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2\Big)^{1+m}\text{Csc}\left[e+f x\right]^n\Big(\text{Cos}\left[e+f x\right]\text{Sec}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2\Big)^m$$
$$\text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]\Big(-\frac{1}{\frac{3}{2}-\frac{n}{2}}m\left(\frac{1}{2}-\frac{n}{2}\right)\text{AppellF1}\Big[\frac{3}{2}-\frac{n}{2}, 1-m, 1+m-n, \frac{5}{2}-\frac{n}{2},$$
$$\text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2\Big]\text{Sec}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2\text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big] - \frac{1}{\frac{3}{2}-\frac{n}{2}}$$
$$\left(1+m-n\right)\left(\frac{1}{2}-\frac{n}{2}\right)\text{AppellF1}\Big[\frac{3}{2}-\frac{n}{2}, -m, 2+m-n, \frac{5}{2}-\frac{n}{2}, \text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2,$$
$$-\text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2\Big]\text{Sec}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2\text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]\Big)\Big)\Big/$$
$$\Big(\left(-1+n\right)\Big(\left(-3+n\right)\text{AppellF1}\Big[\frac{1}{2}-\frac{n}{2}, -m, 1+m-n, \frac{3}{2}-\frac{n}{2}, \text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2,$$
$$-\text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2\Big] + 2\Big(m\,\text{AppellF1}\Big[\frac{3}{2}-\frac{n}{2}, 1-m, 1+m-n, \frac{5}{2}-\frac{n}{2},$$
$$\text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2\Big] + \left(1+m-n\right)\text{AppellF1}\Big[\frac{3}{2}-\frac{n}{2}, -m,$$
$$2+m-n, \frac{5}{2}-\frac{n}{2}, \text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2, -\text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2\Big]\Big)\text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2\Big)\Big) -$$
$$\Big(2m\left(-3+n\right)\text{AppellF1}\Big[\frac{1}{2}-\frac{n}{2}, -m, 1+m-n, \frac{3}{2}-\frac{n}{2}, \text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2,$$
$$-\text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2\Big]\Big(\text{Cos}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2\Big)^{1+m}$$
$$\text{Csc}\left[e+f x\right]^n\Big(\text{Cos}\left[e+f x\right]\text{Sec}\Big[\frac{1}{2}\left(e+f x\right)\Big]^2\Big)^{-1+m}\text{Tan}\Big[\frac{1}{2}\left(e+f x\right)\Big]$$

$$\left(-\text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Sin}\left[e+f x\right]+\text{Cos}\left[e+f x\right] \text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]\right)\Bigg/$$
$$\Bigg(\left(-1+n\right)\left(\left(-3+n\right) \text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},-m,1+m-n,\frac{3}{2}-\frac{n}{2},\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]+2\left(m \text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},1-m,1+m-n,\frac{5}{2}-\frac{n}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]+\left(1+m-n\right) \text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},-m,\right.$$
$$\left.\left.\left.2+m-n,\frac{5}{2}-\frac{n}{2},\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]\right) \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right)\right)+$$
$$\Bigg(2\left(-3+n\right) \text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},-m,1+m-n,\frac{3}{2}-\frac{n}{2},\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]$$
$$\left(\text{Cos}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right)^{1+m} \text{Csc}\left[e+f x\right]^n \left(\text{Cos}\left[e+f x\right] \text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right)^m \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]$$
$$\Bigg(2\left(m \text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},1-m,1+m-n,\frac{5}{2}-\frac{n}{2},\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]+\right.$$
$$\left(1+m-n\right) \text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},-m,2+m-n,\frac{5}{2}-\frac{n}{2},\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]\right) \text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]+$$
$$\left(-3+n\right)\left(-\frac{1}{\frac{3}{2}-\frac{n}{2}} m\left(\frac{1}{2}-\frac{n}{2}\right) \text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},1-m,1+m-n,\frac{5}{2}-\frac{n}{2},\right.\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]-$$
$$\frac{1}{\frac{3}{2}-\frac{n}{2}}\left(1+m-n\right)\left(\frac{1}{2}-\frac{n}{2}\right) \text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},-m,2+m-n,\frac{5}{2}-\frac{n}{2},\right.$$
$$\left.\left.\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]\right)+$$
$$2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\left(m\left(-\frac{1}{\frac{5}{2}-\frac{n}{2}}\left(1+m-n\right)\left(\frac{3}{2}-\frac{n}{2}\right) \text{AppellF1}\left[\frac{5}{2}-\frac{n}{2},1-m,\right.\right.\right.$$
$$\left.2+m-n,\frac{7}{2}-\frac{n}{2},\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]+\frac{1}{\frac{5}{2}-\frac{n}{2}}\left(1-m\right)\left(\frac{3}{2}-\frac{n}{2}\right)$$
$$\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2},2-m,1+m-n,\frac{7}{2}-\frac{n}{2},\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]^2\right] \text{Sec}\left[\frac{1}{2}\left(e+f x\right)\right]^2 \text{Tan}\left[\frac{1}{2}\left(e+f x\right)\right]\right)+\left(1+m-n\right)$$

$$\left(-\frac{1}{\frac{5}{2}-\frac{n}{2}}m\left(\frac{3}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2},\,1-m,\,2+m-n,\,\frac{7}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+fx\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]-\frac{1}{\frac{5}{2}-\frac{n}{2}}$$
$$\left(2+m-n\right)\left(\frac{3}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2},\,-m,\,3+m-n,\,\frac{7}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2,\right.$$
$$\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+fx\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]\right)\right)\Big)\Big/$$
$$\left(\left(-1+n\right)\left(\left(-3+n\right)\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},\,-m,\,1+m-n,\,\frac{3}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2\right]+2\left(m\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,1-m,\,1+m-n,\,\frac{5}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+\right.\right.\right.$$
$$\left.\left.fx\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2\right]+\left(1+m-n\right)\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,-m,\,2+m-\right.$$
$$\left.\left.\left.n,\,\frac{5}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2\right)\right)\Big)\Big)$$

Problem 286: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int\text{Cos}\left[e+fx\right]^m\left(b\,\text{Csc}\left[e+fx\right]\right)^n\,dx$$

Optimal (type 5, 88 leaves, 2 steps):

$$\frac{1}{f\left(1-n\right)}b\,\text{Cos}\left[e+fx\right]^{-1+m}\left(\text{Cos}\left[e+fx\right]^2\right)^{\frac{1-m}{2}}$$
$$\left(b\,\text{Csc}\left[e+fx\right]\right)^{-1+n}\text{Hypergeometric2F1}\left[\frac{1-m}{2},\,\frac{1-n}{2},\,\frac{3-n}{2},\,\text{Sin}\left[e+fx\right]^2\right]$$

Result (type 6, 3237 leaves):

$$-\left(\left(2\left(-3+n\right)\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},\,-m,\,1+m-n,\,\frac{3}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2\right]\right.\right.$$
$$\left(\text{Cos}\left[\frac{1}{2}\left(e+fx\right)\right]^2\right)^{1+m}\text{Cos}\left[e+fx\right]^m\text{Csc}\left[e+fx\right]^n\left(b\,\text{Csc}\left[e+fx\right]\right)^n$$
$$\left.\left(\text{Cos}\left[e+fx\right]\text{Sec}\left[\frac{1}{2}\left(e+fx\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]\right)\Big/\left(f\left(-1+n\right)\right.$$
$$\left(\left(-3+n\right)\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},\,-m,\,1+m-n,\,\frac{3}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2\right]+\right.$$
$$\left.2\left(m\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,1-m,\,1+m-n,\,\frac{5}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+fx\right)\right]^2\right]+\right.\right.$$

$$\left(1+m-n\right)\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,-m,\,2+m-n,\,\frac{5}{2}-\frac{n}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\Bigg)$$
$$\Bigg(-\Bigg(\Bigg(\left(-3+n\right)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},\,-m,\,1+m-n,\,\frac{3}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]$$
$$\left(\text{Cos}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)^{1+m}\text{Csc}\left[e+f\,x\right]^n\,\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2$$
$$\left(\text{Cos}\left[e+f\,x\right]\,\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)^m\Bigg)\Bigg/\Bigg(\left(-1+n\right)\,\Bigg(\left(-3+n\right)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},\right.$$
$$\left.-m,\,1+m-n,\,\frac{3}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+$$
$$2\,\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,1-m,\,1+m-n,\,\frac{5}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+\left(1+m-n\right)\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,-m,\,2+m-n,\,\frac{5}{2}-\frac{n}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\Bigg)\Bigg)\Bigg)+$$
$$\Bigg(2\,\left(1+m\right)\,\left(-3+n\right)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},\,-m,\,1+m-n,\,\frac{3}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\,\left(\text{Cos}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)^m$$
$$\text{Csc}\left[e+f\,x\right]^n\,\left(\text{Cos}\left[e+f\,x\right]\,\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)^m\,\text{Sin}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\Bigg)\Bigg/$$
$$\Bigg(\left(-1+n\right)\,\Bigg(\left(-3+n\right)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},\,-m,\,1+m-n,\,\frac{3}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+2\,\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,1-m,\,1+m-n,\,\frac{5}{2}-\frac{n}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+\left(1+m-n\right)\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,-m,\right.$$
$$\left.2+m-n,\,\frac{5}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\Bigg)\Bigg)+$$
$$\Bigg(2\,\left(-3+n\right)\,n\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},\,-m,\,1+m-n,\,\frac{3}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\,\left(\text{Cos}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)^{1+m}\text{Cos}\left[e+f\,x\right]$$
$$\text{Csc}\left[e+f\,x\right]^{1+n}\,\left(\text{Cos}\left[e+f\,x\right]\,\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)^m\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]\Bigg)\Bigg/$$
$$\Bigg(\left(-1+n\right)\,\Bigg(\left(-3+n\right)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},\,-m,\,1+m-n,\,\frac{3}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+2\,\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,1-m,\,1+m-n,\,\frac{5}{2}-\frac{n}{2},\right.$$
$$\left.\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+\left(1+m-n\right)\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,-m,\right.$$

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

$$\Bigg(2\left(-3+n\right)\left(\text{Cos}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)^{1+m}\text{Csc}\left[e+f\,x\right]^n\left(\text{Cos}\left[e+f\,x\right]\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)^m$$

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

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

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

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

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

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

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

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

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

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

$$\text{Csc}\left[e+f\,x\right]^n\left(\text{Cos}\left[e+f\,x\right]\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)^{-1+m}\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]$$

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

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

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

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

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

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

$$\left(\text{Cos}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)^{1+m}\text{Csc}\left[e+f\,x\right]^n\left(\text{Cos}\left[e+f\,x\right]\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]$$

$$\Bigg(2\left(m\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,1-m,\,1+m-n,\,\frac{5}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+\left(1+m-n\right)\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,-m,\,2+m-n,\,\frac{5}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\right)\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]+\left(-3+n\right)\left(-\frac{1}{\frac{3}{2}-\frac{n}{2}}m\left(\frac{1}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,1-m,\,1+m-n,\,\frac{5}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]-\frac{1}{\frac{3}{2}-\frac{n}{2}}\left(1+m-n\right)\left(\frac{1}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,-m,\,2+m-n,\,\frac{5}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]\right)+2\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\left(m\left(-\frac{1}{\frac{5}{2}-\frac{n}{2}}\left(1+m-n\right)\left(\frac{3}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2},\,1-m,\,2+m-n,\,\frac{7}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]+\frac{1}{\frac{5}{2}-\frac{n}{2}}\left(1-m\right)\left(\frac{3}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2},\,2-m,\,1+m-n,\,\frac{7}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]\right)+\left(1+m-n\right)\left(-\frac{1}{\frac{5}{2}-\frac{n}{2}}m\left(\frac{3}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2},\,1-m,\,2+m-n,\,\frac{7}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]-\frac{1}{\frac{5}{2}-\frac{n}{2}}\left(2+m-n\right)\left(\frac{3}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2},\,-m,\,3+m-n,\,\frac{7}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]\right)\Bigg)\Bigg)\Bigg)\Bigg/\Bigg(\left(-1+n\right)\Bigg(\left(-3+n\right)\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},\,-m,\,1+m-n,\,\frac{3}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+2\left(m\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,1-m,\,1+m-n,\,\frac{5}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+\left(1+m-n\right)\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,-m,\,2+m-\right.$$

$$n, \frac{5}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Big)\Big)\Big)\Big)$$

Problem 287: Result unnecessarily involves higher level functions and more than twice size of optimal antiderivative.

$$\int (a\,\text{Cos}[e+fx])^m\,(b\,\text{Csc}[e+fx])^n\,dx$$

Optimal (type 5, 91 leaves, 2 steps):

$$\frac{1}{f(1-n)}a\,b\,(a\,\text{Cos}[e+fx])^{-1+m}\left(\text{Cos}[e+fx]^2\right)^{\frac{1-m}{2}}(b\,\text{Csc}[e+fx])^{-1+n}\,\text{Hypergeometric2F1}\left[\frac{1-m}{2}, \frac{1-n}{2}, \frac{3-n}{2}, \text{Sin}[e+fx]^2\right]$$

Result (type 6, 3239 leaves):

$$-\Bigg(\Bigg(2(-3+n)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2}, -m, 1+m-n, \frac{3}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\right)^{1+m}(a\,\text{Cos}[e+fx])^m\,\text{Csc}[e+fx]^n\,(b\,\text{Csc}[e+fx])^n$$
$$\left(\text{Cos}[e+fx]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Bigg)\Bigg/\Bigg(f(-1+n)$$
$$\Bigg((-3+n)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2}, -m, 1+m-n, \frac{3}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+$$
$$2\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2}, 1-m, 1+m-n, \frac{5}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+$$
$$(1+m-n)\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2}, -m, 2+m-n, \frac{5}{2}-\frac{n}{2},$$
$$\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\Bigg)$$
$$\Bigg(-\Bigg(\Bigg((-3+n)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2}, -m, 1+m-n, \frac{3}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]$$
$$\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\right)^{1+m}\text{Csc}[e+fx]^n\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2$$
$$\left(\text{Cos}[e+fx]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^m\Bigg)\Bigg/\Bigg((-1+n)\Bigg((-3+n)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},$$
$$-m, 1+m-n, \frac{3}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+$$
$$2\Bigg(m\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2}, 1-m, 1+m-n, \frac{5}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,$$
$$-\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]+(1+m-n)\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2}, -m, 2+m-n, \frac{5}{2}-\frac{n}{2},$$

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

$$\Big(2(1+m)(-3+n)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2}, -m, 1+m-n, \frac{3}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\right)^m$$

$$\text{Csc}[e+fx]^n\left(\text{Cos}[e+fx]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^m\text{Sin}\left[\frac{1}{2}(e+fx)\right]^2\Big)\Big/$$

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

$$\Big(2(-3+n)\,n\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2}, -m, 1+m-n, \frac{3}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\right)^{1+m}\text{Cos}[e+fx]$$

$$\text{Csc}[e+fx]^{1+n}\left(\text{Cos}[e+fx]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^m\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)\Big/$$

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

$$\Big(2(-3+n)\left(\text{Cos}\left[\frac{1}{2}(e+fx)\right]^2\right)^{1+m}\text{Csc}[e+fx]^n\left(\text{Cos}[e+fx]\,\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\right)^m$$

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

$$(1+m-n)\left(\frac{1}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2}, -m, 2+m-n, \frac{5}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2, -\text{Tan}\left[\frac{1}{2}(e+fx)\right]^2\right]\text{Sec}\left[\frac{1}{2}(e+fx)\right]^2\text{Tan}\left[\frac{1}{2}(e+fx)\right]\Big)\Big)\Big/$$

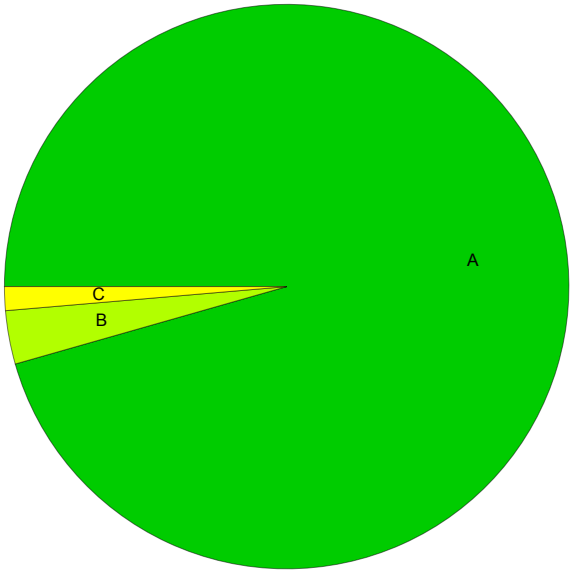
$$\Big((-1+n)\Big((-3+n)\,\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2}, -m, 1+m-n, \frac{3}{2}-\frac{n}{2}, \text{Tan}\left[\frac{1}{2}(e+fx)\right]^2,$$

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

$$2\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\left(m\left(-\frac{1}{\frac{5}{2}-\frac{n}{2}}\left(1+m-n\right)\left(\frac{3}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2},\,1-m,\right.\right.\right.$$
$$\left.2+m-n,\,\frac{7}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]$$
$$\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]+\frac{1}{\frac{5}{2}-\frac{n}{2}}\left(1-m\right)\left(\frac{3}{2}-\frac{n}{2}\right)$$
$$\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2},\,2-m,\,1+m-n,\,\frac{7}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\right.$$
$$\left.\left.-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]\right)+\left(1+m-n\right)$$
$$\left(-\frac{1}{\frac{5}{2}-\frac{n}{2}}m\left(\frac{3}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2},\,1-m,\,2+m-n,\,\frac{7}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]-\frac{1}{\frac{5}{2}-\frac{n}{2}}$$
$$\left(2+m-n\right)\left(\frac{3}{2}-\frac{n}{2}\right)\text{AppellF1}\left[\frac{5}{2}-\frac{n}{2},\,-m,\,3+m-n,\,\frac{7}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\right.$$
$$\left.\left.\left.\left.-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\text{Sec}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]\right)\right)\right)\Big/$$
$$\left(\left(-1+n\right)\left(\left(-3+n\right)\text{AppellF1}\left[\frac{1}{2}-\frac{n}{2},\,-m,\,1+m-n,\,\frac{3}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\right.\right.$$
$$\left.-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+2\left(m\,\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,1-m,\,1+m-n,\,\frac{5}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+\right.\right.\right.$$
$$\left.\left.f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]+\left(1+m-n\right)\text{AppellF1}\left[\frac{3}{2}-\frac{n}{2},\,-m,\,2+m-\right.$$
$$\left.\left.\left.n,\,\frac{5}{2}-\frac{n}{2},\,\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2,\,-\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right]\right)\text{Tan}\left[\frac{1}{2}\left(e+f\,x\right)\right]^2\right)\right)\right)$$

Summary of Integration Test Results

294 integration problems



A - 281 optimal antiderivatives

B - 9 more than twice size of optimal antiderivatives

C - 4 unnecessarily complex antiderivatives

D - 0 unable to integrate problems

E - 0 integration timeouts