Mathematica 11.3 Integration Test Results

Test results for the 17 problems in "1.2.3.5 P(x) (d x)^m (a+b x^n+c x^(2 n))^p.m"

Problem 1: Result is not expressed in closed-form.

$$\int \frac{d + e\,x + f\,x^2 + g\,x^3 + h\,x^4 + j\,x^5 + k\,x^6 + l\,x^7 + m\,x^8}{a + b\,x^3 + c\,x^6}\,dx$$

Optimal (type 3, 1668 leaves, 37 steps):

$$\frac{k\,x}{c} + \frac{l\,x^2}{2\,c} + \frac{m\,x^3}{3\,c} - \frac{\left(g - \frac{b\,k}{c} + \frac{2\,c^2\,d + b^2\,k - c\,(b\,g + 2\,a\,k)}{c\sqrt{b^2 - 4\,a\,c}}\right)\text{ArcTan}\left[\frac{1 - \frac{2\cdot 2^{1/3}\,c^{1/3}\,x}{\left(b - \sqrt{b^2 - 4\,a\,c}\right)^{1/3}}}{\sqrt{3}}\right]}{2^{1/3}\sqrt{3}\;c^{1/3}\left(b - \sqrt{b^2 - 4\,a\,c}\right)^{2/3}} -$$

$$\frac{\left(h - \frac{b\,l}{c} + \frac{2\,c^2\,e + b^2\,l - c\,(b\,h + 2\,a\,l)}{c\sqrt{b^2 - 4\,a\,c}}\right)\text{ArcTan}\left[\frac{1 - \frac{2\cdot 2^{1/3}\,c^{1/3}\,x}{\left(b - \sqrt{b^2 - 4\,a\,c}\right)^{1/3}}}{\sqrt{3}}\right]}{2^{2/3}\sqrt{3}\;c^{2/3}\left(b - \sqrt{b^2 - 4\,a\,c}\right)^{1/3}} -$$

$$\frac{\left(g - \frac{b\,k}{c} - \frac{2\,c^2\,d - b\,c\,g + b^2\,k - 2\,a\,c\,k}{c\sqrt{b^2 - 4\,a\,c}}\right)\text{ArcTan}\left[\frac{1 - \frac{2\cdot 2^{1/3}\,c^{1/3}\,x}{\left(b + \sqrt{b^2 - 4\,a\,c}\right)^{1/3}}}{\sqrt{3}}\right]}{2^{1/3}\sqrt{3}\;c^{1/3}\left(b + \sqrt{b^2 - 4\,a\,c}\right)^{2/3}} -$$

$$\frac{\left(h - \frac{b\,l}{c} - \frac{2\,c^2\,e - b\,c\,h + b^2\,l - 2\,a\,c\,l}{c\sqrt{b^2 - 4\,a\,c}}\right)\text{ArcTan}\left[\frac{1 - \frac{2\cdot 2^{1/3}\,c^{1/3}\,x}{\left(b + \sqrt{b^2 - 4\,a\,c}\right)^{1/3}}}{\sqrt{3}}\right]}{2^{2/3}\sqrt{3}\;c^{2/3}\left(b + \sqrt{b^2 - 4\,a\,c}\right)^{1/3}} -$$

$$\frac{\left(2\,c^2\,f - b\,c\,j + b^2\,m - 2\,a\,c\,m\right)\text{ArcTanh}\left[\frac{b + 2\,c\,x^3}{\sqrt{b^2 - 4\,a\,c}}\right]}{3\,c^2\sqrt{b^2 - 4\,a\,c}} +$$

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

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

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

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

$$\frac{\left(g-\frac{b\,k}{c}+\frac{2\,c^2\,d+b^2\,k-c\,(b\,g+2\,a\,k)}{c\,\sqrt{b^2-4\,a\,c}}\right)\,\text{Log}\left[\left(b-\sqrt{b^2-4\,a\,c}\right)^{2/3}-2^{1/3}\,c^{1/3}\left(b-\sqrt{b^2-4\,a\,c}\right)^{1/3}x+2^{2/3}\,c^{2/3}\,x^2\right]}{6\times 2^{1/3}\,c^{1/3}\left(b-\sqrt{b^2-4\,a\,c}\right)^{2/3}}+$$

$$\frac{\left(h-\frac{b\,l}{c}+\frac{2\,c^2\,e+b^2\,l-c\,(b\,h+2\,a\,l)}{c\,\sqrt{b^2-4\,a\,c}}\right)\,\text{Log}\left[\left(b-\sqrt{b^2-4\,a\,c}\right)^{2/3}-2^{1/3}\,c^{1/3}\left(b-\sqrt{b^2-4\,a\,c}\right)^{1/3}x+2^{2/3}\,c^{2/3}\,x^2\right]}{6\times 2^{2/3}\,c^{2/3}\left(b-\sqrt{b^2-4\,a\,c}\right)^{1/3}}-$$

$$\frac{\left(g-\frac{b\,k}{c}-\frac{2\,c^2\,d-b\,c\,g+b^2\,k-2\,a\,c\,k}{c\,\sqrt{b^2-4\,a\,c}}\right)\,\text{Log}\left[\left(b+\sqrt{b^2-4\,a\,c}\right)^{2/3}-2^{1/3}\,c^{1/3}\left(b+\sqrt{b^2-4\,a\,c}\right)^{1/3}x+2^{2/3}\,c^{2/3}\,x^2\right]}{6\times 2^{1/3}\,c^{1/3}\left(b+\sqrt{b^2-4\,a\,c}\right)^{2/3}}+$$

$$\frac{\left(h-\frac{b\,l}{c}-\frac{2\,c^2\,e-b\,c\,h+b^2\,l-2\,a\,c\,l}{c\,\sqrt{b^2-4\,a\,c}}\right)\,\text{Log}\left[\left(b+\sqrt{b^2-4\,a\,c}\right)^{2/3}-2^{1/3}\,c^{1/3}\left(b+\sqrt{b^2-4\,a\,c}\right)^{1/3}x+2^{2/3}\,c^{2/3}\,x^2\right]}{6\times 2^{2/3}\,c^{2/3}\left(b+\sqrt{b^2-4\,a\,c}\right)^{1/3}}+$$

$$\frac{(c\,j-b\,m)\,\text{Log}\left[a+b\,x^3+c\,x^6\right]}{6\,c^2}$$

Result (type 7, 223 leaves):

$$\frac{1}{6\,c}\left(6\,k\,x+3\,l\,x^2+2\,m\,x^3-2\,\text{RootSum}\left[a+b\,\#1^3+c\,\#1^6\,\&,\right.\right.$$
$$\frac{1}{b\,\#1^2+2\,c\,\#1^5}\left(-c\,d\,\text{Log}[x-\#1]+a\,k\,\text{Log}[x-\#1]-c\,e\,\text{Log}[x-\#1]\,\#1+a\,l\,\text{Log}[x-\#1]\,\#1-\right.$$
$$c\,f\,\text{Log}[x-\#1]\,\#1^2+a\,m\,\text{Log}[x-\#1]\,\#1^2-c\,g\,\text{Log}[x-\#1]\,\#1^3+b\,k\,\text{Log}[x-\#1]\,\#1^3-$$
$$\left.\left.\left.c\,h\,\text{Log}[x-\#1]\,\#1^4+b\,l\,\text{Log}[x-\#1]\,\#1^4-c\,j\,\text{Log}[x-\#1]\,\#1^5+b\,m\,\text{Log}[x-\#1]\,\#1^5\right)\,\&\right]\right)$$

Problem 2: Result more than twice size of optimal antiderivative.

$$\int\frac{1}{a+b\,x^n+c\,x^{2\,n}}\,\text{d}x$$

Optimal (type 5, 124 leaves, 3 steps):

$$-\frac{2\,c\,x\,\text{Hypergeometric2F1}\left[1,\frac{1}{n},1+\frac{1}{n},-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]}{b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}}-\frac{2\,c\,x\,\text{Hypergeometric2F1}\left[1,\frac{1}{n},1+\frac{1}{n},-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]}{b^2-4\,a\,c+b\,\sqrt{b^2-4\,a\,c}}$$

Result (type 5, 261 leaves):

$$-2\,c\,x\left(\frac{\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},\frac{b-\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]\right)}{b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}}+\right.$$

$$\left.\frac{\left(1-2^{-1/n}\left(\frac{c\,x^n}{b+\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},\frac{b+\sqrt{b^2-4\,a\,c}}{b+\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]\right)}{\sqrt{b^2-4\,a\,c}\,\left(b+\sqrt{b^2-4\,a\,c}\right)}\right)$$

Problem 4: Result more than twice size of optimal antiderivative.

$$\int\frac{d+e\,x+f\,x^2}{a+b\,x^n+c\,x^{2\,n}}\,\text{d}x$$

Optimal (type 5, 404 leaves, 11 steps):

$$-\frac{2\,c\,d\,x\,\text{Hypergeometric2F1}\left[1,\frac{1}{n},1+\frac{1}{n},-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]}{b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}}-\frac{2\,c\,d\,x\,\text{Hypergeometric2F1}\left[1,\frac{1}{n},1+\frac{1}{n},-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]}{b^2-4\,a\,c+b\,\sqrt{b^2-4\,a\,c}}-\frac{c\,e\,x^2\,\text{Hypergeometric2F1}\left[1,\frac{2}{n},\frac{2+n}{n},-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]}{b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}}-\frac{c\,e\,x^2\,\text{Hypergeometric2F1}\left[1,\frac{2}{n},\frac{2+n}{n},-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]}{b^2-4\,a\,c+b\,\sqrt{b^2-4\,a\,c}}-\frac{2\,c\,f\,x^3\,\text{Hypergeometric2F1}\left[1,\frac{3}{n},\frac{3+n}{n},-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]}{3\left(b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}\right)}-\frac{2\,c\,f\,x^3\,\text{Hypergeometric2F1}\left[1,\frac{3}{n},\frac{3+n}{n},-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]}{3\left(b^2-4\,a\,c+b\,\sqrt{b^2-4\,a\,c}\right)}$$

Result (type 5, 834 leaves) :

$$\frac{1}{12\,a\left(-b^2+4\,a\,c\right)}\,x\left(2\,f\,x^2\left(\left(-b^2+4\,a\,c-b\,\sqrt{b^2-4\,a\,c}\right)\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},\frac{b-\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]\right)+\left(-b^2+4\,a\,c+b\,\sqrt{b^2-4\,a\,c}\right)\left(1-8^{-1/n}\left(\frac{c\,x^n}{b+\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},\frac{b+\sqrt{b^2-4\,a\,c}}{b+\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]\right)\right)+3\,e\,x\left(\left(-b^2+4\,a\,c-b\,\sqrt{b^2-4\,a\,c}\right)\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\right.\right.$$

$$\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},\frac{b-\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]+$$

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

$$\left.\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},\frac{b+\sqrt{b^2-4\,a\,c}}{b+\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]\right)+$$

$$6\,d\left(\left(-b^2+4\,a\,c-b\,\sqrt{b^2-4\,a\,c}\right)\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\right.\right.$$

$$\left.-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},\frac{b-\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]-2^{-1/n}\sqrt{b^2-4\,a\,c}$$

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

$$\left.\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},\frac{b+\sqrt{b^2-4\,a\,c}}{b+\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]\right)\right)\Bigg)$$

Problem 5: Result more than twice size of optimal antiderivative.

$$\int\frac{d+e\,x+f\,x^2+g\,x^3}{a+b\,x^n+c\,x^{2\,n}}\,\mathbb{d}x$$

Optimal (type 5, 545 leaves, 13 steps):

$$-\frac{2\,c\,d\,x\,\text{Hypergeometric2F1}\left[1,\frac{1}{n},1+\frac{1}{n},-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]}{b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}}-$$

$$\frac{2\,c\,d\,x\,\text{Hypergeometric2F1}\left[1,\frac{1}{n},1+\frac{1}{n},-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]}{b^2-4\,a\,c+b\,\sqrt{b^2-4\,a\,c}}-$$

$$\frac{c\,e\,x^2\,\text{Hypergeometric2F1}\left[1,\frac{2}{n},\frac{2+n}{n},-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]}{b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}}-$$

$$\frac{c\,e\,x^2\,\text{Hypergeometric2F1}\left[1,\frac{2}{n},\frac{2+n}{n},-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]}{b^2-4\,a\,c+b\,\sqrt{b^2-4\,a\,c}}-$$

$$\frac{2\,c\,f\,x^3\,\text{Hypergeometric2F1}\left[1,\frac{3}{n},\frac{3+n}{n},-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]}{3\left(b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}\right)}-$$

$$\frac{2\,c\,f\,x^3\,\text{Hypergeometric2F1}\left[1,\frac{3}{n},\frac{3+n}{n},-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]}{3\left(b^2-4\,a\,c+b\,\sqrt{b^2-4\,a\,c}\right)}-$$

$$\frac{c\,g\,x^4\,\text{Hypergeometric2F1}\left[1,\frac{4}{n},\frac{4+n}{n},-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]}{2\left(b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}\right)}-$$

$$\frac{c\,g\,x^4\,\text{Hypergeometric2F1}\left[1,\frac{4}{n},\frac{4+n}{n},-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]}{2\left(b^2-4\,a\,c+b\,\sqrt{b^2-4\,a\,c}\right)}$$

Result (type 5, 1093 leaves):

$$\frac{1}{24\,a\left(-b^2+4\,a\,c\right)}$$

$$x\left(3\,g\,x^3\left(\left(-b^2+4\,a\,c-b\,\sqrt{b^2-4\,a\,c}\right)\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-4/n}\text{Hypergeometric2F1}\left[\right.\right.\right.\right.$$

$$\left.\left.\left.\left.-\frac{4}{n},-\frac{4}{n},\frac{-4+n}{n},\frac{b-\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]\right)+\right.$$

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

$$\left.\left.\text{Hypergeometric2F1}\left[-\frac{4}{n},-\frac{4}{n},\frac{-4+n}{n},\frac{b+\sqrt{b^2-4\,a\,c}}{b+\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]\right)\right)+$$

$$4\,f\,x^2\left(\left(-b^2+4\,a\,c-b\sqrt{b^2-4\,a\,c}\right)\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}\right.\right.$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},\frac{b-\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]\right)+$$

$$\left(-b^2+4\,a\,c+b\sqrt{b^2-4\,a\,c}\right)\left(1-8^{-1/n}\left(\frac{c\,x^n}{b+\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right)^{-3/n}\right.$$

$$\left.\left.\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},\frac{b+\sqrt{b^2-4\,a\,c}}{b+\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]\right)\right)+$$

$$6\,e\,x\left(\left(-b^2+4\,a\,c-b\sqrt{b^2-4\,a\,c}\right)\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\right.\right.$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},\frac{b-\sqrt{b^2-4\,a\,c}}{b-\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]\right)+$$

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

$$\left.\left.\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},\frac{b+\sqrt{b^2-4\,a\,c}}{b+\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]\right)\right)+$$

$$12\,d\left(\left(-b^2+4\,a\,c-b\sqrt{b^2-4\,a\,c}\right)\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\right.\right.\left[\right.$$

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

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

$$\left.\left.\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},\frac{b+\sqrt{b^2-4\,a\,c}}{b+\sqrt{b^2-4\,a\,c}+2\,c\,x^n}\right]\right)\right)\right)$$

Problem 6: Result more than twice size of optimal antiderivative.

$$\int \frac{1}{\left(a+b\,x^n+c\,x^{2n}\right)^2}\,dx$$

Optimal (type 5, 283 leaves, 4 steps):

$$\frac{x\left(b^2-2\,a\,c+b\,c\,x^n\right)}{a\left(b^2-4\,a\,c\right)n\left(a+b\,x^n+c\,x^{2n}\right)}-\left(c\left(4\,a\,c\left(1-2\,n\right)-b^2\left(1-n\right)-b\sqrt{b^2-4\,a\,c}\,\left(1-n\right)\right)x\,\text{Hypergeometric2F1}\left[1,\frac{1}{n},1+\frac{1}{n},-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]\right)\Big/\left(a\left(b^2-4\,a\,c\right)\left(b^2-4\,a\,c-b\sqrt{b^2-4\,a\,c}\right)n\right)-\left(c\left(4\,a\,c\left(1-2\,n\right)-b^2\left(1-n\right)+b\sqrt{b^2-4\,a\,c}\,\left(1-n\right)\right)x\,\text{Hypergeometric2F1}\left[1,\frac{1}{n},1+\frac{1}{n},-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/\left(a\left(b^2-4\,a\,c\right)\left(b^2-4\,a\,c+b\sqrt{b^2-4\,a\,c}\right)n\right)$$

Result (type 5, 2170 leaves):

$$\frac{\left(-b^2+2\,a\,c+b^2\,n-4\,a\,c\,n\right)x}{a^2\left(-b^2+4\,a\,c\right)n}+\frac{\left(b^2-2\,a\,c-b^2\,n+4\,a\,c\,n\right)x}{a^2\left(-b^2+4\,a\,c\right)n}+\frac{x\left(-b^2+2\,a\,c-b\,c\,x^n\right)}{a\left(-b^2+4\,a\,c\right)n\left(a+b\,x^n+c\,x^{2n}\right)}-\frac{1}{a\left(-b^2+4\,a\,c\right)}b\,c\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)+\frac{1}{a\left(-b^2+4\,a\,c\right)n}b\,c\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\right)$$

$$\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\Bigg)+\frac{1}{a\left(-b^2+4\,a\,c\right)}b^2\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/\left(\frac{b\left(-b-\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b-\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\right)-\frac{1}{-b^2+4\,a\,c}4\,c\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/\left(\frac{b\left(-b-\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b-\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\right)-\frac{1}{a\left(-b^2+4\,a\,c\right)n}b^2\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)+\frac{1}{\left(-b^2+4\,a\,c\right)\,n}2\,c\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

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

Problem 7: Result more than twice size of optimal antiderivative.

$$\int\frac{d+e\,x}{\left(a+b\,x^n+c\,x^{2\,n}\right)^2}\,dx$$

Optimal (type 5, 738 leaves, 15 steps):

$$\frac{d\,x\,\left(b^2-2\,a\,c+b\,c\,x^n\right)}{a\,\left(b^2-4\,a\,c\right)\,n\,\left(a+b\,x^n+c\,x^{2\,n}\right)}+\frac{e\,x^2\,\left(b^2-2\,a\,c+b\,c\,x^n\right)}{a\,\left(b^2-4\,a\,c\right)\,n\,\left(a+b\,x^n+c\,x^{2\,n}\right)}-$$

$$\left(c\,d\,\left(4\,a\,c\,\left(1-2\,n\right)-b^2\,\left(1-n\right)-b\,\sqrt{b^2-4\,a\,c}\,\left(1-n\right)\right)\,x\,\text{Hypergeometric2F1}\left[1,\right.\right.$$

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

$$\left(c\,d\,\left(4\,a\,c\,\left(1-2\,n\right)-b^2\,\left(1-n\right)+b\,\sqrt{b^2-4\,a\,c}\,\left(1-n\right)\right)\,x\,\text{Hypergeometric2F1}\left[1,\,\frac{1}{n},\right.\right.$$

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

$$\left(c\,e\,\left(4\,a\,c\,\left(1-n\right)-b^2\,\left(2-n\right)\right)\,x^2\,\text{Hypergeometric2F1}\left[1,\,\frac{2}{n},\,\frac{2+n}{n},\,-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]\right)\Big/$$

$$\left(a\,\left(b^2-4\,a\,c\right)\,\left(b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}\right)\,n\right)-$$

$$\left(c\,e\,\left(4\,a\,c\,\left(1-n\right)-b^2\,\left(2-n\right)\right)\,x^2\,\text{Hypergeometric2F1}\left[1,\,\frac{2}{n},\,\frac{2+n}{n},\,-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/$$

$$\left(a\,\left(b^2-4\,a\,c\right)\,\left(b^2-4\,a\,c+b\,\sqrt{b^2-4\,a\,c}\right)\,n\right)-$$

$$\left(2\,b\,c^2\,e\,\left(2-n\right)\,x^{2+n}\,\text{Hypergeometric2F1}\left[1,\,\frac{2+n}{n},\,2\,\left(1+\frac{1}{n}\right),\,-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]\right)\Big/$$

$$\left(a\,\left(b^2-4\,a\,c\right)^{3/2}\,\left(b-\sqrt{b^2-4\,a\,c}\right)\,n\,\left(2+n\right)\right)+$$

$$\left(2\,b\,c^2\,e\,\left(2-n\right)\,x^{2+n}\,\text{Hypergeometric2F1}\left[1,\,\frac{2+n}{n},\,2\,\left(1+\frac{1}{n}\right),\,-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/$$

$$\left(a\,\left(b^2-4\,a\,c\right)^{3/2}\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,n\,\left(2+n\right)\right)$$

Result (type 5, 4162 leaves) :

$$\frac{x\,\left(d+e\,x\right)\,\left(-b^2+2\,a\,c-b\,c\,x^n\right)}{a\,\left(-b^2+4\,a\,c\right)\,n\,\left(a+b\,x^n+c\,x^{2\,n}\right)}-\frac{1}{2\,a\,\left(-b^2+4\,a\,c\right)}$$

$$b\,c\,e\,x^{2+n}\,\left(x^n\right)^{\frac{2}{n}-\frac{2+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\right.$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{2}{n},\,-\frac{2}{n},\,\frac{-2+n}{n},\,-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\,\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\right.$$

$$\left.\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},\,-\frac{2}{n},\,\frac{-2+n}{n},\,-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\,\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)+$$

$$\frac{1}{a\left(-b^2+4ac\right)n}bce\,x^{2+n}\left(x^n\right)^{\frac{2}{n}-\frac{2+n}{n}}\left(-\frac{1}{\sqrt{b^2-4ac}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4ac}}\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)+\frac{1}{2a\left(-b^2+4ac\right)}b^2e\,x^2$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b-\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b-\sqrt{b^2-4ac}\right)^2}{2c}\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b+\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b+\sqrt{b^2-4ac}\right)^2}{2c}\right)\right)-\frac{1}{-b^2+4ac}2ce\,x^2$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b-\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b-\sqrt{b^2-4ac}\right)^2}{2c}\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\right.$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)-\frac{1}{a\left(-b^2+4\,a\,c\right)n}b^2\,e\,x^2$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)+\frac{1}{\left(-b^2+4\,a\,c\right)n}2\,c\,e\,x^2$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)-$$

$$\frac{1}{a\left(-b^2+4\,a\,c\right)}b\,c\,d\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\right.$$

$$\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}$$

$$\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+$$

$$\frac{1}{a\left(-b^2+4\,a\,c\right)n}b\,c\,d\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[\right.\right.$$

$$\left.-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)+\frac{1}{a\left(-b^2+4\,a\,c\right)}b^2\,d\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

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

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)-\frac{1}{a\left(-b^2+4\,a\,c\right)n}b^2\,d\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left.\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\right)+\frac{1}{\left(-b^2+4\,a\,c\right)n}2\,c\,d\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

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

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

$$\int \frac{d+e\,x+f\,x^2}{\left(a+b\,x^n+c\,x^{2\,n}\right)^2}\,dx$$

Optimal (type 5, 1194 leaves, 24 steps) :

$$\frac{d\,x\,\left(b^2-2\,a\,c+b\,c\,x^n\right)}{a\,\left(b^2-4\,a\,c\right)\,n\,\left(a+b\,x^n+c\,x^{2\,n}\right)}+\frac{e\,x^2\,\left(b^2-2\,a\,c+b\,c\,x^n\right)}{a\,\left(b^2-4\,a\,c\right)\,n\,\left(a+b\,x^n+c\,x^{2\,n}\right)}+\frac{f\,x^3\,\left(b^2-2\,a\,c+b\,c\,x^n\right)}{a\,\left(b^2-4\,a\,c\right)\,n\,\left(a+b\,x^n+c\,x^{2\,n}\right)}-$$

$$\left(c\,d\,\left(4\,a\,c\,\left(1-2\,n\right)-b^2\,\left(1-n\right)-b\,\sqrt{b^2-4\,a\,c}\,\left(1-n\right)\right)\,x\,\text{Hypergeometric2F1}\left[1,\right.\right.$$

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

$$\left(c\,d\,\left(4\,a\,c\,\left(1-2\,n\right)-b^2\,\left(1-n\right)+b\,\sqrt{b^2-4\,a\,c}\,\left(1-n\right)\right)\,x\,\text{Hypergeometric2F1}\left[1,\,\frac{1}{n},\right.\right.$$

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

$$\left(c\,e\,\left(4\,a\,c\,\left(1-n\right)-b^2\,\left(2-n\right)\right)\,x^2\,\text{Hypergeometric2F1}\left[1,\,\frac{2}{n},\,\frac{2+n}{n},\,-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]\right)\Big/$$

$$\left(a\,\left(b^2-4\,a\,c\right)\,\left(b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}\right)\,n\right)-$$

$$\left(c\,e\,\left(4\,a\,c\,\left(1-n\right)-b^2\,\left(2-n\right)\right)\,x^2\,\text{Hypergeometric2F1}\left[1,\,\frac{2}{n},\,\frac{2+n}{n},\,-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/$$

$$\left(a\,\left(b^2-4\,a\,c\right)\,\left(b^2-4\,a\,c+b\,\sqrt{b^2-4\,a\,c}\right)\,n\right)-$$

$$\left(2\,c\,f\,\left(2\,a\,c\,\left(3-2\,n\right)-b^2\,\left(3-n\right)\right)\,x^3\,\text{Hypergeometric2F1}\left[1,\,\frac{3}{n},\,\frac{3+n}{n},\,-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]\right)\Big/$$

$$\left(3\,a\,\left(b^2-4\,a\,c\right)\,\left(b^2-4\,a\,c-b\,\sqrt{b^2-4\,a\,c}\right)\,n\right)-$$

$$\left(2\,c\,f\,\left(2\,a\,c\,\left(3-2\,n\right)-b^2\,\left(3-n\right)\right)\,x^3\,\text{Hypergeometric2F1}\left[1,\,\frac{3}{n},\,\frac{3+n}{n},\,-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/$$

$$\left(3\,a\,\left(b^2-4\,a\,c\right)\,\left(b^2-4\,a\,c+b\,\sqrt{b^2-4\,a\,c}\right)\,n\right)-$$

$$\left(2\,b\,c^2\,e\,\left(2-n\right)\,x^{2+n}\,\text{Hypergeometric2F1}\left[1,\,\frac{2+n}{n},\,2\,\left(1+\frac{1}{n}\right),\,-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]\right)\Big/$$

$$\left(a\,\left(b^2-4\,a\,c\right)^{3/2}\,\left(b-\sqrt{b^2-4\,a\,c}\right)\,n\,\left(2+n\right)\right)+$$

$$\left(2\,b\,c^2\,e\,\left(2-n\right)\,x^{2+n}\,\text{Hypergeometric2F1}\left[1,\,\frac{2+n}{n},\,2\,\left(1+\frac{1}{n}\right),\,-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/$$

$$\left(a\,\left(b^2-4\,a\,c\right)^{3/2}\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,n\,\left(2+n\right)\right)-$$

$$\frac{2\,b\,c^2\,f\,\left(3-n\right)\,x^{3+n}\,\text{Hypergeometric2F1}\left[1,\,\frac{3+n}{n},\,2+\frac{3}{n},\,-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]}{a\,\left(b^2-4\,a\,c\right)^{3/2}\,\left(b-\sqrt{b^2-4\,a\,c}\right)\,n\,\left(3+n\right)}+$$

$$\frac{2\,b\,c^2\,f\,\left(3-n\right)\,x^{3+n}\,\text{Hypergeometric2F1}\left[1,\,\frac{3+n}{n},\,2+\frac{3}{n},\,-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]}{a\,\left(b^2-4\,a\,c\right)^{3/2}\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,n\,\left(3+n\right)}$$

Result (type 5, 6525 leaves) :

$$\frac{b^2 e x^2}{2 a^2 \left(-b^2+4 a c\right)}-\frac{2 c e x^2}{a \left(-b^2+4 a c\right)}-\frac{b^2 e x^2}{a^2 \left(-b^2+4 a c\right) n}+\frac{2 c e x^2}{a \left(-b^2+4 a c\right) n}+$$
$$\frac{e \left(2 b^2-4 a c-b^2 n+4 a c n\right) x^2}{2 a^2 \left(-b^2+4 a c\right) n}+\frac{b^2 f x^3}{3 a^2 \left(-b^2+4 a c\right)}-\frac{4 c f x^3}{3 a \left(-b^2+4 a c\right)}-\frac{b^2 f x^3}{a^2 \left(-b^2+4 a c\right) n}+$$
$$\frac{2 c f x^3}{a \left(-b^2+4 a c\right) n}+\frac{f \left(3 b^2-6 a c-b^2 n+4 a c n\right) x^3}{3 a^2 \left(-b^2+4 a c\right) n}+\frac{x \left(d+e x+f x^2\right) \left(-b^2+2 a c-b c x^n\right)}{a \left(-b^2+4 a c\right) n \left(a+b x^n+c x^{2 n}\right)}-$$
$$\frac{1}{3 a \left(-b^2+4 a c\right)} b c f x^{3+n} \left(x^n\right)^{\frac{3}{n}-\frac{3+n}{n}} \left(-\frac{1}{\sqrt{b^2-4 a c}} \left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4 a c}}{2 c}+x^n}\right)^{-3/n}\right.$$
$$\left.\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b-\sqrt{b^2-4 a c}}{2 c \left(-\frac{-b-\sqrt{b^2-4 a c}}{2 c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4 a c}}\right.$$
$$\left.\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4 a c}}{2 c}+x^n}\right)^{-3/n} \text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b+\sqrt{b^2-4 a c}}{2 c \left(-\frac{-b+\sqrt{b^2-4 a c}}{2 c}+x^n\right)}\right]\right)+$$
$$\frac{1}{a \left(-b^2+4 a c\right) n} b c f x^{3+n} \left(x^n\right)^{\frac{3}{n}-\frac{3+n}{n}} \left(-\frac{1}{\sqrt{b^2-4 a c}} \left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4 a c}}{2 c}+x^n}\right)^{-3/n} \text{Hypergeometric2F1}\left[\right.\right.$$
$$\left.-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b-\sqrt{b^2-4 a c}}{2 c \left(-\frac{-b-\sqrt{b^2-4 a c}}{2 c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4 a c}} \left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4 a c}}{2 c}+x^n}\right)^{-3/n}$$
$$\left.\left.\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b+\sqrt{b^2-4 a c}}{2 c \left(-\frac{-b+\sqrt{b^2-4 a c}}{2 c}+x^n\right)}\right]\right)+\frac{1}{3 a \left(-b^2+4 a c\right)} b^2 f x^3\right.$$
$$\left.\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4 a c}}{2 c}+x^n}\right)^{-3/n} \text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b-\sqrt{b^2-4 a c}}{2 c \left(-\frac{-b-\sqrt{b^2-4 a c}}{2 c}+x^n\right)}\right]\right)\right/\right.$$
$$\left.\left(\frac{b \left(-b-\sqrt{b^2-4 a c}\right)}{2 c}+\frac{\left(-b-\sqrt{b^2-4 a c}\right)^2}{2 c}\right)+\right.$$

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\Big/\left(\frac{b\left(-b+\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b+\sqrt{b^2-4ac}\right)^2}{2c}\right)\right)-\frac{1}{3\left(-b^2+4ac\right)}4cfx^3$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\Big/\left(\frac{b\left(-b-\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b-\sqrt{b^2-4ac}\right)^2}{2c}\right)\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\Big/\left(\frac{b\left(-b+\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b+\sqrt{b^2-4ac}\right)^2}{2c}\right)\right)-\frac{1}{a\left(-b^2+4ac\right)n}b^2fx^3$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\Big/\left(\frac{b\left(-b-\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b-\sqrt{b^2-4ac}\right)^2}{2c}\right)\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\Big/\left(\frac{b\left(-b+\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b+\sqrt{b^2-4ac}\right)^2}{2c}\right)\right)+\frac{1}{\left(-b^2+4ac\right)n}2cfx^3$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b-\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b-\sqrt{b^2-4ac}\right)^2}{2c}\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b+\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b+\sqrt{b^2-4ac}\right)^2}{2c}\right)\right)-\frac{1}{2a\left(-b^2+4ac\right)}bce\,x^{2+n}\left(x^n\right)^{\frac{2}{n}-\frac{2+n}{n}}\left(-\frac{1}{\sqrt{b^2-4ac}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4ac}}\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)+\frac{1}{a\left(-b^2+4ac\right)n}bce\,x^{2+n}\left(x^n\right)^{\frac{2}{n}-\frac{2+n}{n}}\left(-\frac{1}{\sqrt{b^2-4ac}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4ac}}\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)+\frac{1}{2a\left(-b^2+4ac\right)}b^2e\,x^2$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b-\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b-\sqrt{b^2-4ac}\right)^2}{2c}\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b+\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b+\sqrt{b^2-4ac}\right)^2}{2c}\right)\right)-\frac{1}{-b^2+4ac}2ce\,x^2$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b-\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b-\sqrt{b^2-4ac}\right)^2}{2c}\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b+\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b+\sqrt{b^2-4ac}\right)^2}{2c}\right)\right)-\frac{1}{a\left(-b^2+4ac\right)n}b^2e\,x^2$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b-\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b-\sqrt{b^2-4ac}\right)^2}{2c}\right)+$$

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)+\frac{1}{\left(-b^2+4\,a\,c\right)n}2\,c\,e\,x^2$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

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

$$\frac{1}{a\left(-b^2+4\,a\,c\right)}b\,c\,d\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\right.$$

$$\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}$$

$$\left.\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)+$$

$$\frac{1}{a\left(-b^2+4\,a\,c\right)n}b\,c\,d\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\right.\Big[$$

$$-\frac{1}{n},\ -\frac{1}{n},\ \frac{-1+n}{n},\ -\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\Big]+\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}$$

$$\text{Hypergeometric2F1}\Big[-\frac{1}{n},\ -\frac{1}{n},\ \frac{-1+n}{n},\ -\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\Big]\Bigg)+\frac{1}{a\left(-b^2+4\,a\,c\right)}b^2\,d\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\Big[-\frac{1}{n},\ -\frac{1}{n},\ \frac{-1+n}{n},\ -\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\Big]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\Big[-\frac{1}{n},\ -\frac{1}{n},\ \frac{-1+n}{n},\ -\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\Big]\right)\Big/$$

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

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\Big[-\frac{1}{n},\ -\frac{1}{n},\ \frac{-1+n}{n},\ -\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\Big]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\Big[-\frac{1}{n},\ -\frac{1}{n},\ \frac{-1+n}{n},\ -\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\Big]\right)\Big/$$

$$\left.\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\right)-\frac{1}{a\left(-b^2+4\,a\,c\right)n}b^2\,d\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b-\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b-\sqrt{b^2-4ac}\right)^2}{2c}\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b+\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b+\sqrt{b^2-4ac}\right)^2}{2c}\right)\right)+\frac{1}{\left(-b^2+4ac\right)n}2c\,dx$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b-\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b-\sqrt{b^2-4ac}\right)^2}{2c}\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b+\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b+\sqrt{b^2-4ac}\right)^2}{2c}\right)\right)$$

Problem 9: Result more than twice size of optimal antiderivative.

$$\int\frac{d+e\,x+f\,x^2+g\,x^3}{\left(a+b\,x^n+c\,x^{2n}\right)^2}\,dx$$

Optimal (type 5, 1654 leaves, 33 steps):

$$\frac{d\,x\left(b^2-2ac+bcx^n\right)}{a\left(b^2-4ac\right)n\left(a+bx^n+cx^{2n}\right)}+\frac{e\,x^2\left(b^2-2ac+bcx^n\right)}{a\left(b^2-4ac\right)n\left(a+bx^n+cx^{2n}\right)}+$$

$$\frac{f x^3 \left(b^2-2 a c+b c x^n\right)}{a \left(b^2-4 a c\right) n \left(a+b x^n+c x^{2 n}\right)}+\frac{g x^4 \left(b^2-2 a c+b c x^n\right)}{a \left(b^2-4 a c\right) n \left(a+b x^n+c x^{2 n}\right)}-$$

$$\left(c d \left(4 a c (1-2 n)-b^2 (1-n)-b \sqrt{b^2-4 a c}\ (1-n)\right) x \text{Hypergeometric2F1}\left[1, \frac{1}{n}, 1+\frac{1}{n}, -\frac{2 c x^n}{b-\sqrt{b^2-4 a c}}\right]\right) \Big/ \left(a \left(b^2-4 a c\right) \left(b^2-4 a c-b \sqrt{b^2-4 a c}\right) n\right)-$$

$$\left(c d \left(4 a c (1-2 n)-b^2 (1-n)+b \sqrt{b^2-4 a c}\ (1-n)\right) x \text{Hypergeometric2F1}\left[1, \frac{1}{n}, 1+\frac{1}{n}, -\frac{2 c x^n}{b+\sqrt{b^2-4 a c}}\right]\right) \Big/ \left(a \left(b^2-4 a c\right) \left(b^2-4 a c+b \sqrt{b^2-4 a c}\right) n\right)-$$

$$\left(c e \left(4 a c (1-n)-b^2 (2-n)\right) x^2 \text{Hypergeometric2F1}\left[1, \frac{2}{n}, \frac{2+n}{n}, -\frac{2 c x^n}{b-\sqrt{b^2-4 a c}}\right]\right) \Big/ \left(a \left(b^2-4 a c\right) \left(b^2-4 a c-b \sqrt{b^2-4 a c}\right) n\right)-$$

$$\left(c e \left(4 a c (1-n)-b^2 (2-n)\right) x^2 \text{Hypergeometric2F1}\left[1, \frac{2}{n}, \frac{2+n}{n}, -\frac{2 c x^n}{b+\sqrt{b^2-4 a c}}\right]\right) \Big/ \left(a \left(b^2-4 a c\right) \left(b^2-4 a c+b \sqrt{b^2-4 a c}\right) n\right)-$$

$$\left(2 c f \left(2 a c (3-2 n)-b^2 (3-n)\right) x^3 \text{Hypergeometric2F1}\left[1, \frac{3}{n}, \frac{3+n}{n}, -\frac{2 c x^n}{b-\sqrt{b^2-4 a c}}\right]\right) \Big/ \left(3 a \left(b^2-4 a c\right) \left(b^2-4 a c-b \sqrt{b^2-4 a c}\right) n\right)-$$

$$\left(2 c f \left(2 a c (3-2 n)-b^2 (3-n)\right) x^3 \text{Hypergeometric2F1}\left[1, \frac{3}{n}, \frac{3+n}{n}, -\frac{2 c x^n}{b+\sqrt{b^2-4 a c}}\right]\right) \Big/ \left(3 a \left(b^2-4 a c\right) \left(b^2-4 a c+b \sqrt{b^2-4 a c}\right) n\right)-$$

$$\left(c g \left(4 a c (2-n)-b^2 (4-n)\right) x^4 \text{Hypergeometric2F1}\left[1, \frac{4}{n}, \frac{4+n}{n}, -\frac{2 c x^n}{b-\sqrt{b^2-4 a c}}\right]\right) \Big/ \left(2 a \left(b^2-4 a c\right) \left(b^2-4 a c-b \sqrt{b^2-4 a c}\right) n\right)-$$

$$\left(c g \left(4 a c (2-n)-b^2 (4-n)\right) x^4 \text{Hypergeometric2F1}\left[1, \frac{4}{n}, \frac{4+n}{n}, -\frac{2 c x^n}{b+\sqrt{b^2-4 a c}}\right]\right) \Big/ \left(2 a \left(b^2-4 a c\right) \left(b^2-4 a c+b \sqrt{b^2-4 a c}\right) n\right)-$$

$$\left(2 b c^2 e (2-n) x^{2+n} \text{Hypergeometric2F1}\left[1, \frac{2+n}{n}, 2\left(1+\frac{1}{n}\right), -\frac{2 c x^n}{b-\sqrt{b^2-4 a c}}\right]\right) \Big/ \left(a \left(b^2-4 a c\right)^{3/2} \left(b-\sqrt{b^2-4 a c}\right) n (2+n)\right)+$$

$$\left(2 b c^2 e (2-n) x^{2+n} \text{Hypergeometric2F1}\left[1, \frac{2+n}{n}, 2\left(1+\frac{1}{n}\right), -\frac{2 c x^n}{b+\sqrt{b^2-4 a c}}\right]\right) \Big/ \left(a \left(b^2-4 a c\right)^{3/2} \left(b+\sqrt{b^2-4 a c}\right) n (2+n)\right)-$$

$$\frac{2\,b\,c^2\,f\,(3-n)\,x^{3+n}\,\text{Hypergeometric2F1}\left[1,\,\frac{3+n}{n},\,2+\frac{3}{n},\,-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]}{a\,\left(b^2-4\,a\,c\right)^{3/2}\,\left(b-\sqrt{b^2-4\,a\,c}\right)\,n\,(3+n)}+$$

$$\frac{2\,b\,c^2\,f\,(3-n)\,x^{3+n}\,\text{Hypergeometric2F1}\left[1,\,\frac{3+n}{n},\,2+\frac{3}{n},\,-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]}{a\,\left(b^2-4\,a\,c\right)^{3/2}\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,n\,(3+n)}-$$

$$\left(2\,b\,c^2\,g\,(4-n)\,x^{4+n}\,\text{Hypergeometric2F1}\left[1,\,\frac{4+n}{n},\,2\left(1+\frac{2}{n}\right),\,-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]\right)\Big/$$

$$\left(a\,\left(b^2-4\,a\,c\right)^{3/2}\,\left(b-\sqrt{b^2-4\,a\,c}\right)\,n\,(4+n)\right)+$$

$$\left(2\,b\,c^2\,g\,(4-n)\,x^{4+n}\,\text{Hypergeometric2F1}\left[1,\,\frac{4+n}{n},\,2\left(1+\frac{2}{n}\right),\,-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/$$

$$\left(a\,\left(b^2-4\,a\,c\right)^{3/2}\,\left(b+\sqrt{b^2-4\,a\,c}\right)\,n\,(4+n)\right)$$

Result (type 5, 8737 leaves):

$$\frac{b^2\,e\,x^2}{2\,a^2\,\left(-b^2+4\,a\,c\right)}-\frac{2\,c\,e\,x^2}{a\,\left(-b^2+4\,a\,c\right)}-\frac{b^2\,e\,x^2}{a^2\,\left(-b^2+4\,a\,c\right)\,n}+\frac{2\,c\,e\,x^2}{a\,\left(-b^2+4\,a\,c\right)\,n}+$$

$$\frac{e\,\left(2\,b^2-4\,a\,c-b^2\,n+4\,a\,c\,n\right)\,x^2}{2\,a^2\,\left(-b^2+4\,a\,c\right)\,n}+\frac{b^2\,f\,x^3}{3\,a^2\,\left(-b^2+4\,a\,c\right)}-\frac{4\,c\,f\,x^3}{3\,a\,\left(-b^2+4\,a\,c\right)}-$$

$$\frac{b^2\,f\,x^3}{a^2\,\left(-b^2+4\,a\,c\right)\,n}+\frac{2\,c\,f\,x^3}{a\,\left(-b^2+4\,a\,c\right)\,n}+\frac{f\,\left(3\,b^2-6\,a\,c-b^2\,n+4\,a\,c\,n\right)\,x^3}{3\,a^2\,\left(-b^2+4\,a\,c\right)\,n}+$$

$$\frac{b^2\,g\,x^4}{4\,a^2\,\left(-b^2+4\,a\,c\right)}-\frac{c\,g\,x^4}{a\,\left(-b^2+4\,a\,c\right)}-\frac{b^2\,g\,x^4}{a^2\,\left(-b^2+4\,a\,c\right)\,n}+\frac{2\,c\,g\,x^4}{a\,\left(-b^2+4\,a\,c\right)\,n}+$$

$$\frac{g\,\left(4\,b^2-8\,a\,c-b^2\,n+4\,a\,c\,n\right)\,x^4}{4\,a^2\,\left(-b^2+4\,a\,c\right)\,n}+\frac{x\,\left(d+e\,x+f\,x^2+g\,x^3\right)\,\left(-b^2+2\,a\,c-b\,c\,x^n\right)}{a\,\left(-b^2+4\,a\,c\right)\,n\,\left(a+b\,x^n+c\,x^{2\,n}\right)}-$$

$$\frac{1}{4\,a\,\left(-b^2+4\,a\,c\right)}b\,c\,g\,x^{4+n}\,\left(x^n\right)^{\frac{4}{n}-\frac{4+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-4/n}\right.$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{4}{n},\,-\frac{4}{n},\,\frac{-4+n}{n},\,-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\right.$$

$$\left.\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-4/n}\text{Hypergeometric2F1}\left[-\frac{4}{n},\,-\frac{4}{n},\,\frac{-4+n}{n},\,-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)+$$

$$\frac{1}{a\left(-b^2+4ac\right)n}bcgx^{4+n}\left(x^n\right)^{\frac{4}{n}-\frac{4+n}{n}}\left(-\frac{1}{\sqrt{b^2-4ac}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-4/n}\text{Hypergeometric2F1}\left[-\frac{4}{n},-\frac{4}{n},\frac{-4+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4ac}}\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-4/n}\text{Hypergeometric2F1}\left[-\frac{4}{n},-\frac{4}{n},\frac{-4+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)+\frac{1}{4a\left(-b^2+4ac\right)}b^2gx^4$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-4/n}\text{Hypergeometric2F1}\left[-\frac{4}{n},-\frac{4}{n},\frac{-4+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b-\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b-\sqrt{b^2-4ac}\right)^2}{2c}\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-4/n}\text{Hypergeometric2F1}\left[-\frac{4}{n},-\frac{4}{n},\frac{-4+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b+\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b+\sqrt{b^2-4ac}\right)^2}{2c}\right)\right)-\frac{1}{-b^2+4ac}cgx^4$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-4/n}\text{Hypergeometric2F1}\left[-\frac{4}{n},-\frac{4}{n},\frac{-4+n}{n},-\frac{-b-\sqrt{b^2-4ac}}{2c\left(-\frac{-b-\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b-\sqrt{b^2-4ac}\right)}{2c}+\frac{\left(-b-\sqrt{b^2-4ac}\right)^2}{2c}\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n}\right)^{-4/n}\text{Hypergeometric2F1}\left[-\frac{4}{n},-\frac{4}{n},\frac{-4+n}{n},-\frac{-b+\sqrt{b^2-4ac}}{2c\left(-\frac{-b+\sqrt{b^2-4ac}}{2c}+x^n\right)}\right]\right)\Big/\right.$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)-\frac{1}{a\left(-b^2+4\,a\,c\right)n}b^2\,g\,x^4$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-4/n}\text{Hypergeometric2F1}\left[-\frac{4}{n},-\frac{4}{n},\frac{-4+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-4/n}\text{Hypergeometric2F1}\left[-\frac{4}{n},-\frac{4}{n},\frac{-4+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)+\frac{1}{\left(-b^2+4\,a\,c\right)n}2\,c\,g\,x^4$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-4/n}\text{Hypergeometric2F1}\left[-\frac{4}{n},-\frac{4}{n},\frac{-4+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-4/n}\text{Hypergeometric2F1}\left[-\frac{4}{n},-\frac{4}{n},\frac{-4+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)-$$

$$\frac{1}{3\,a\left(-b^2+4\,a\,c\right)}b\,c\,f\,x^{3+n}\left(x^n\right)^{\frac{3}{n}-\frac{3+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}\right.$$

$$\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}$$

$$\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+$$

$$\frac{1}{a\left(-b^2+4\,a\,c\right)n}b\,c\,f\,x^{3+n}\left(x^n\right)^{\frac{3}{n}-\frac{3+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[\right.\right.$$

$$\left.-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)+\frac{1}{3\,a\left(-b^2+4\,a\,c\right)}b^2\,f\,x^3$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left.\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\right)-\frac{1}{3\left(-b^2+4\,a\,c\right)}4\,c\,f\,x^3$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)-\frac{1}{a\left(-b^2+4\,a\,c\right)n}b^2\,f\,x^3$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left.\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\right)+\frac{1}{\left(-b^2+4\,a\,c\right)n}2\,c\,f\,x^3$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-3/n}\text{Hypergeometric2F1}\left[-\frac{3}{n},-\frac{3}{n},\frac{-3+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)-$$

$$\frac{1}{2\,a\left(-b^2+4\,a\,c\right)}b\,c\,e\,x^{2+n}\left(x^n\right)^{\frac{2}{n}-\frac{2+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\right.$$

$$\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}$$

$$\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+$$

$$\frac{1}{a\left(-b^2+4\,a\,c\right)n}b\,c\,e\,x^{2+n}\left(x^n\right)^{\frac{2}{n}-\frac{2+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\right.\text{Hypergeometric2F1}\left[\right.$$

$$-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\Bigg]+\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)+\frac{1}{2\,a\left(-b^2+4\,a\,c\right)}b^2\,e\,x^2$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)-\frac{1}{-b^2+4\,a\,c}2\,c\,e\,x^2$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)-\frac{1}{a\left(-b^2+4\,a\,c\right)n}b^2\,e\,x^2$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)+\frac{1}{\left(-b^2+4\,a\,c\right)n}2\,c\,e\,x^2$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-2/n}\text{Hypergeometric2F1}\left[-\frac{2}{n},-\frac{2}{n},\frac{-2+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

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

$$\frac{1}{a\left(-b^2+4\,a\,c\right)}b\,c\,d\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\right.$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\right.$$

$$\left.\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)+$$

$$\frac{1}{a\left(-b^2+4\,a\,c\right)n}b\,c\,d\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\right.\Big[$$

$$-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\Big]+\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)+\frac{1}{a\left(-b^2+4\,a\,c\right)}b^2\,d\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)-\frac{1}{-b^2+4\,a\,c}4\,c\,d\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left.\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\right)-\frac{1}{a\left(-b^2+4\,a\,c\right)\,n}b^2\,d\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)}+\frac{1}{\left(-b^2+4\,a\,c\right)\,n}2\,c\,d\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b-\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b-\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)+\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\right)$$

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

$$\int\frac{A+B\,x^n+C\,x^{2\,n}+D\,x^{3\,n}}{\left(a+b\,x^n+c\,x^{2\,n}\right)^2}\,dx$$

Optimal (type 5, 494 leaves, 4 steps):

$$\left(x\left(A\,c\left(b^2-2\,a\,c\right)-a\left(b\,B\,c-2\,a\,c\,C+a\,b\,D\right)+\left(b\,c\left(A\,c+a\,C\right)-a\,b^2\,D-2\,a\,c\left(B\,c-a\,D\right)\right)x^n\right)\right)\Big/\left(a\,c\left(b^2-4\,a\,c\right)n\left(a+b\,x^n+c\,x^{2\,n}\right)\right)+\left(\left(\left(a\,b^2\,D-b\,c\left(A\,c+a\,C\right)\left(1-n\right)+2\,a\,c\left(B\,c\left(1-n\right)-a\,D\left(1+n\right)\right)+\frac{1}{\sqrt{b^2-4\,a\,c}}\left(A\,c^2\left(4\,a\,c\left(1-2\,n\right)-b^2\left(1-n\right)\right)-a\left(4\,a\,c^2\,C+b^3\,D-b^2\,c\,C\left(1-n\right)-2\,b\,c\left(B\,c\,n+a\,D\left(2+n\right)\right)\right)\right)\right)\right.\right.$$

$$\left.\left.x\,\text{Hypergeometric2F1}\left[1,\frac{1}{n},1+\frac{1}{n},-\frac{2\,c\,x^n}{b-\sqrt{b^2-4\,a\,c}}\right]\right)\Big/\left(a\,c\left(b^2-4\,a\,c\right)\left(b-\sqrt{b^2-4\,a\,c}\right)n\right)+\left(\left(\left(a\,b^2\,D-b\,c\left(A\,c+a\,C\right)\left(1-n\right)+2\,a\,c\left(B\,c\left(1-n\right)-a\,D\left(1+n\right)\right)-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(A\,c^2\left(4\,a\,c\left(1-2\,n\right)-b^2\left(1-n\right)\right)-a\left(4\,a\,c^2\,C+b^3\,D-b^2\,c\,C\left(1-n\right)-2\,b\,c\left(B\,c\,n+a\,D\left(2+n\right)\right)\right)\right)\right)\right.\right.$$

$$\left.\left.x\,\text{Hypergeometric2F1}\left[1,\frac{1}{n},1+\frac{1}{n},-\frac{2\,c\,x^n}{b+\sqrt{b^2-4\,a\,c}}\right]\right)\Big/\left(a\,c\left(b^2-4\,a\,c\right)\left(b+\sqrt{b^2-4\,a\,c}\right)n\right)$$

Result (type 5, 5439 leaves) :

$$\frac{\left(-A\,b^2\,c+a\,b\,B\,c+2\,a\,A\,c^2-2\,a^2\,c\,C+a^2\,b\,D+A\,b^2\,c\,n-4\,a\,A\,c^2\,n\right)x}{a^2\,c\left(-b^2+4\,a\,c\right)n}+$$

$$\frac{\left(A\,b^2\,c-a\,b\,B\,c-2\,a\,A\,c^2+2\,a^2\,c\,C-a^2\,b\,D-A\,b^2\,c\,n+4\,a\,A\,c^2\,n\right)x}{a^2\,c\left(-b^2+4\,a\,c\right)n}-$$

$$\left(x\left(A\,b^2\,c-a\,b\,B\,c-2\,a\,A\,c^2+2\,a^2\,c\,C-a^2\,b\,D+A\,b\,c^2\,x^n-2\,a\,B\,c^2\,x^n+\right.\right.$$
$$\left.\left.a\,b\,c\,C\,x^n-a\,b^2\,D\,x^n+2\,a^2\,c\,D\,x^n\right)\right)\Big/\left(a\,c\left(-b^2+4\,a\,c\right)n\left(a+b\,x^n+c\,x^{2\,n}\right)\right)-$$

$$\frac{1}{a\left(-b^2+4\,a\,c\right)}A\,b\,c\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\right.$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\right.$$

$$\left.\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)+$$

$$\frac{1}{-b^2+4\,a\,c}2\,B\,c\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\right.$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\right.$$

$$\left.\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)-$$

$$\frac{1}{-b^2+4\,a\,c}b\,C\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\right.$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\right.$$

$$\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+$$

$$\frac{1}{-b^2+4\,a\,c}2\,a\,D\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\right.$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\right)$$

$$\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+$$

$$\frac{1}{a\left(-b^2+4\,a\,c\right)n}A\,b\,c\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\right.$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\right)$$

$$\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]-$$

$$\frac{1}{\left(-b^2+4\,a\,c\right)n}2\,B\,c\,x^{1+n}\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\right.$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\right)$$

$$\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+$$

$$\frac{1}{\left(-b^2+4\,a\,c\right)\,n}b\,C\,x^{1+n}\,\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\right.$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},\,-\frac{1}{n},\,\frac{-1+n}{n},\,-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\right.$$

$$\left.\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},\,-\frac{1}{n},\,\frac{-1+n}{n},\,-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)+$$

$$\frac{1}{\left(-b^2+4\,a\,c\right)\,n}2\,a\,D\,x^{1+n}\,\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\right.$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},\,-\frac{1}{n},\,\frac{-1+n}{n},\,-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\right.$$

$$\left.\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},\,-\frac{1}{n},\,\frac{-1+n}{n},\,-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)-$$

$$\frac{1}{c\,\left(-b^2+4\,a\,c\right)\,n}b^2\,D\,x^{1+n}\,\left(x^n\right)^{\frac{1}{n}-\frac{1+n}{n}}\left(-\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\right.\Bigg[$$

$$\left.-\frac{1}{n},\,-\frac{1}{n},\,\frac{-1+n}{n},\,-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]+\frac{1}{\sqrt{b^2-4\,a\,c}}\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}$$

$$\left.\text{Hypergeometric2F1}\left[-\frac{1}{n},\,-\frac{1}{n},\,\frac{-1+n}{n},\,-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)+\frac{1}{a\,\left(-b^2+4\,a\,c\right)}A\,b^2\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},\,-\frac{1}{n},\,\frac{-1+n}{n},\,-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)-\frac{1}{-b^2+4\,a\,c}4\,A\,c\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left.\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\right)-\frac{1}{a\left(-b^2+4\,a\,c\right)n}A\,b^2\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)+\frac{1}{\left(-b^2+4\,a\,c\right)\,n}b\,B\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)+\frac{1}{\left(-b^2+4\,a\,c\right)\,n}2\,A\,c\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)-\frac{1}{\left(-b^2+4\,a\,c\right)\,n}2\,a\,C\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Bigg/$$

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

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

$$\left(\frac{b\left(-b+\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b+\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)\Bigg)+\frac{1}{c\left(-b^2+4\,a\,c\right)\,n}a\,b\,D\,x$$

$$\left(\left(1-\left(\frac{x^n}{-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b-\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/\right.$$

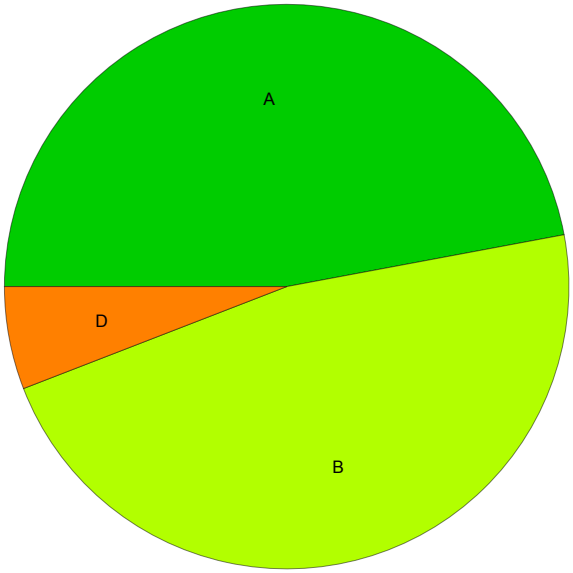
$$\left(\frac{b\left(-b-\sqrt{b^2-4\,a\,c}\right)}{2\,c}+\frac{\left(-b-\sqrt{b^2-4\,a\,c}\right)^2}{2\,c}\right)+$$

$$\left(1-\left(\frac{x^n}{-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n}\right)^{-1/n}\text{Hypergeometric2F1}\left[-\frac{1}{n},-\frac{1}{n},\frac{-1+n}{n},-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c\left(-\frac{-b+\sqrt{b^2-4\,a\,c}}{2\,c}+x^n\right)}\right]\right)\Big/$$

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

Summary of Integration Test Results

17 integration problems



A - 8 optimal antiderivatives

B - 8 more than twice size of optimal antiderivatives

C - 0 unnecessarily complex antiderivatives

D - 1 unable to integrate problems

E - 0 integration timeouts