R12 Model solutions

Monday, November 7, 2022 10:52 AM

Indefinite integrals:

4.9.23 $I = \int (3x^{1/3} + 4x^{-1/3} + 6)\,dx$

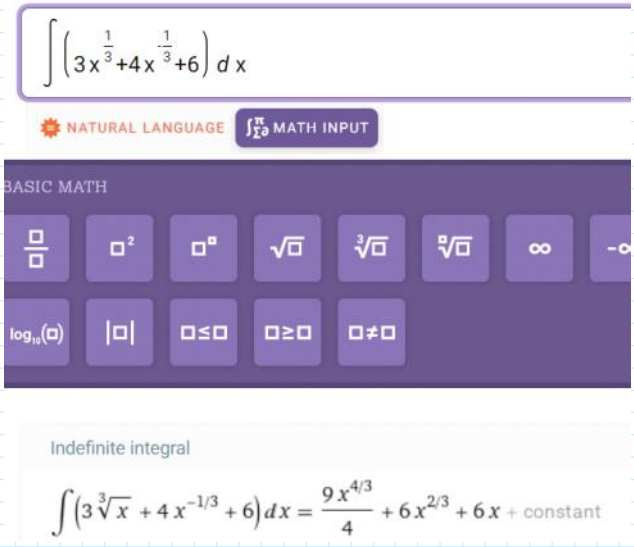
Sum rule: $\int [f(x) + g(x)]\,dx = \int f(x)\,dx + \int g(x)\,dx$; Const rule $\int c f(x)\,dx = c\int f(x)\,dx \Rightarrow$

$$I = 3\int x^{1/3}\,dx + 4\int x^{-1/3}\,dx + 6\int dx \Rightarrow$$

$$\int x^{\alpha}\,dx = \frac{1}{\alpha+1}x^{\alpha+1} \quad \text{for } \alpha \neq -1$$

$$I = 3\,\frac{x^{4/3}}{\frac{4}{3}} + 4\,\frac{x^{2/3}}{\frac{2}{3}} + 6x + C = \frac{9}{4}x^{4/3} + 6x^{2/3} + 6x + C$$

Check in Wolfram Alpha:



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