

A quick review of some ideas from MCV4U
 ↖ high school calculus.

$$\frac{d}{dx}(x^n) = nx^{n-1} \quad \left(f(x) = x^n, f'(x) = nx^{n-1} \right)$$

derivative of x^n ↖ another notation for derivative

$$f'(x) = \frac{d f(x)}{dx}$$

Example

$$f(t) = 2t^3 - 3\sqrt{t} - 4t + 1$$

$$f(t) = 2t^3 - 3t^{1/2} - 4t + 1 \cdot t^0$$

$$\begin{aligned} f'(t) &= 2 \cdot (3t^2) - 3 \left(\frac{1}{2} t^{1/2-1} \right) - 4(1 \cdot t^{-1}) + 1(0 \cdot t^{-1}) \\ &= 6t^2 - \frac{3}{2} t^{-1/2} - 4 \\ &= 6t^2 - \frac{3}{2\sqrt{t}} - 4 \end{aligned}$$

$$\frac{d}{dx} e^x = e^x$$

Example $\frac{d}{dx} (5e^x + 7) = 5e^x + 0 = 5e^x$

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