

Quiz 8 MTH 140 Fall 2025

Thursday, October 2, 2025

11:48 AM

Let $f(x) = (x^2 + 5x - 3)e^x$. Compute $f'(x)$.

Soln: By product rule (P.R.)

$$h'(x) = \frac{d}{dx} [(x^2 + 5x - 3)e^x]$$

$$\begin{aligned} \text{P.R.} &= \underbrace{\frac{d}{dx} [x^2 + 5x - 3]}_{= 2x + 5} e^x + (x^2 + 5x - 3) \underbrace{\frac{d}{dx} [e^x]}_{= e^x} \\ &= (2x + 5)e^x + (x^2 + 5x - 3)e^x \end{aligned}$$

$$= (x^2 + 7x + 2)e^x$$

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