Exercise 3

Differentiate.

$$f(x) = (3x^2 - 5x)e^x$$

Solution

Use the product rule to differentiate $f(x)$.

$$\begin{aligned} f'(x) &= \frac{d}{dx}[(3x^2 - 5x)e^x] \\ &= \left[\frac{d}{dx}(3x^2 - 5x)\right](e^x) + (3x^2 - 5x)\left[\frac{d}{dx}(e^x)\right] \\ &= (6x - 5)(e^x) + (3x^2 - 5x)(e^x) \\ &= 6xe^x - 5e^x + 3x^2e^x - 5xe^x \\ &= xe^x - 5e^x + 3x^2e^x \\ &= (x - 5 + 3x^2)e^x \end{aligned}$$