

Exercise 30

Find the derivative. Simplify where possible.

$$f(x) = e^x \cosh x$$

Solution

Take the derivative using the product rule.

$$\begin{aligned} f'(x) &= \frac{d}{dx}(e^x \cosh x) \\ &= \left[\frac{d}{dx}(e^x) \right] \cosh x + e^x \left[\frac{d}{dx}(\cosh x) \right] \\ &= (e^x) \cosh x + e^x (\sinh x) \\ &= e^x (\cosh x + \sinh x) \\ &= e^x (e^x) \\ &= e^{2x} \end{aligned}$$