

Exercise 75

Find f' in terms of g' .

$$f(x) = g(e^x)$$

Solution

Calculate $f'(x)$ by using the chain rule.

$$\begin{aligned} f'(x) &= \frac{d}{dx}[g(e^x)] \\ &= g'(e^x) \cdot \left[\frac{d}{dx}(e^x) \right] \\ &= g'(e^x) \cdot (e^x) \\ &= g'(e^x)e^x \end{aligned}$$