

Exercise 3

Differentiate the function.

$$f(x) = \sin(\ln x)$$

Solution

Take the derivative of the function using the chain rule.

$$\begin{aligned} f'(x) &= \frac{d}{dx}[\sin(\ln x)] \\ &= \cos(\ln x) \cdot \frac{d}{dx}(\ln x) \\ &= \cos(\ln x) \cdot \left(\frac{1}{x}\right) \\ &= \frac{\cos(\ln x)}{x} \end{aligned}$$