

Exercise 10

Differentiate the function.

$$g(t) = \sqrt{1 + \ln t}$$

Solution

Take the derivative of the function using the chain rule.

$$\begin{aligned} g'(t) &= \frac{d}{dt}(\sqrt{1 + \ln t}) \\ &= \frac{1}{2}(1 + \ln t)^{-1/2} \cdot \frac{d}{dt}(1 + \ln t) \\ &= \frac{1}{2}(1 + \ln t)^{-1/2} \cdot \left[\frac{d}{dt}(1) + \frac{d}{dt}(\ln t) \right] \\ &= \frac{1}{2}(1 + \ln t)^{-1/2} \cdot \left[(0) + \left(\frac{1}{t} \right) \right] \\ &= \frac{1}{2t\sqrt{1 + \ln t}} \end{aligned}$$