Exercise 6

Differentiate the function.

$$y = \frac{1}{\ln x}$$

Solution

Take the derivative of the function using the quotient rule.

$$\begin{aligned} y' &= \frac{d}{dx}\left(\frac{1}{\ln x}\right) \\ &= \frac{\left[\frac{d}{dx}(1)\right]\ln x - \left[\frac{d}{dx}(\ln x)\right](1)}{(\ln x)^2} \\ &= \frac{(0)\ln x - \left(\frac{1}{x}\right)(1)}{(\ln x)^2} \\ &= -\frac{1}{x(\ln x)^2} \end{aligned}$$