Exercise 8

Differentiate the function.

$$f(x) = \log_{10} \sqrt{x}$$

Solution

Take the derivative of the function using the chain rule.

$$
\begin{aligned}
f'(x) &= \frac{d}{dx}(\log_{10} \sqrt{x}) \\[2mm]
&= \frac{1}{\sqrt{x}\,\ln 10} \cdot \frac{d}{dx}(\sqrt{x}) \\[2mm]
&= \frac{1}{\sqrt{x}\,\ln 10} \cdot \left(\frac{1}{2}x^{-1/2}\right) \\[2mm]
&= \frac{1}{2x \ln 10}
\end{aligned}
$$