

Exercise 10

Find the derivative of the function.

$$f(x) = \frac{1}{\sqrt[3]{x^2 - 1}}$$

Solution

Take the derivative using the chain rule.

$$\begin{aligned} f'(x) &= \frac{df}{dx} = \frac{d}{dx} \left[(x^2 - 1)^{-1/3} \right] \\ &= -\frac{1}{3} (x^2 - 1)^{-4/3} \cdot \frac{d}{dx} (x^2 - 1) \\ &= -\frac{1}{3} (x^2 - 1)^{-4/3} \cdot (2x) \\ &= -\frac{2x}{3} (x^2 - 1)^{-4/3} \end{aligned}$$