

Exercise 32

Find the derivative. Simplify where possible.

$$g(x) = \sinh^2 x$$

Solution

Take the derivative using the chain rule.

$$\begin{aligned} g'(x) &= \frac{d}{dx}(\sinh^2 x) \\ &= \frac{d}{dx}[(\sinh x)^2] \\ &= 2(\sinh x) \cdot \frac{d}{dx}(\sinh x) \\ &= 2(\sinh x) \cdot (\cosh x) \\ &= 2 \sinh x \cosh x \\ &= \sinh 2x \end{aligned}$$