Exercise 8

Prove the identity.

$$\cosh(-x) = \cosh x$$

(This shows that cosh is an even function.)

Solution

Use the definition of hyperbolic cosine listed on page 259.

$$\cosh(-x) = \frac{e^{(-x)} + e^{-(-x)}}{2}$$

$$= \frac{e^{-x} + e^{x}}{2}$$

$$= \frac{e^{x} + e^{-x}}{2}$$

$$= \cosh x$$