

Exercise 4

Find the numerical value of each expression.

(a) $\sinh 4$ (b) $\sinh(\ln 4)$

Solution**Part (a)**

Use the definition of hyperbolic sine listed on page 259.

$$\sinh 4 = \frac{e^4 - e^{-4}}{2} \approx 27.2899$$

Part (b)

Use the definition of hyperbolic sine listed on page 259.

$$\sinh(\ln 4) = \frac{e^{\ln 4} - e^{-\ln 4}}{2} = \frac{e^{\ln 4} - e^{\ln 4^{-1}}}{2} = \frac{4 - 4^{-1}}{2} \times \frac{4}{4} = \frac{4^2 - 4^0}{8} = \frac{16 - 1}{8} = 1.875$$