

Chapter 3.4: More Practicing the Chain Rule

Calculus I

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1. Take the derivative of the following functions:

(a) $f(x) = 4x$

(b) $f(x) = \sqrt{4+x}$

(c) $f(x) = e^4 e^x$

(d) $f(x) = e^{4+x}$

2. A spherical balloon is inflated so that its radius is increasing at a constant rate of 1 cm/s. At what rate is air being blown into the balloon when its radius is 5 cm? Be sure to give your answer with proper units.

3. Find the derivative of the following functions

(a) $f(x) = \frac{4x^2}{\sqrt{4+x}}$

(b) $f(x) = (1 + \sqrt{x^2 - 4})^{\frac{4}{3}}$

(c) $f(x) = \frac{7x}{4}$

(d) $f(x) = \frac{e^x + 7}{x}$

(e) $f(x) = \frac{x}{e^x + 7}$