Chapter 3.4: More Practicing the Chain Rule
Calculus I
College of the Atlantic. Fall 2021

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. $f(x) = \sqrt{1 + x^3}$. Calculate $f'(3)$ and $f'(5)$. Which is bigger, and why? Is $f(x)$ concave up or concave down?

4. Find the derivative of the following functions

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

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