

Math 130 Quiz. Lab 6 Name: Answers

Determine the derivatives of the following functions using the derivative rules that we have developed. Make sure to **use appropriate notation**. Because this is a quick quiz, you do not have to simplify your answers.

$$1. \frac{d}{dx} \left[\frac{8}{\sqrt[3]{x^5}} \right] = \frac{d}{dx} \left(8 x^{-5/3} \right) = -\frac{40}{3} x^{-8/3}$$

$$2. \frac{d}{dx} [3x^4 e^{6x}] = 12x^3 e^{6x} + 18x^4 e^{6x} = 6x^3 e^{6x} (2 + 3x)$$

$$\begin{aligned} 3. \frac{d}{dx} \left[\frac{x^2 - 1}{2x + 1} \right] &= \frac{2x(2x + 1) - (x^2 - 1)2}{(2x + 1)^2} = \frac{4x^2 + 2x - 2x^2 + 2}{(2x + 1)^2} \\ &= \frac{2x^2 + 2x + 2}{(2x + 1)^2} \end{aligned}$$