Math 220 - Calculus f. Business and Management - Worksheet 14

Worksheet 14 - Find the derivative of each function

Hint: Before you use the product rule for a product and the quotient rule for a quotient, think for a moment whether a simple manipulation of the function allows you to use the power rule instead and save some work.

Exercise 1: *Find the derivative of each function*

$$\textbf{1a}: f(x) = x^3 + 2x - 5, \qquad \textbf{1b}: \ f(x) = 6x^4 - 3x^2 + 2x - 7, \qquad \textbf{1c}: \ f(x) = \sqrt[4]{x}.$$

Exercise 2*:*

$$\textbf{2a}: f(x) = \frac{1}{x^3}, \qquad \textbf{2b}: \ f(x) = \sqrt{x^5}, \qquad \textbf{2c}: \ f(x) = \frac{7}{\sqrt{x}}, \qquad \textbf{2d}: \ f(x) = \sqrt[3]{\frac{5}{x^2}}.$$

Exercise 3*:*

$$\textbf{3a}: f(x) = (5x+4)(9x+2), \qquad \textbf{3b}: \ f(x) = (3x^2 - 7x + 4) \cdot \frac{1}{x}, \qquad \textbf{3c}: \ f(x) = (8x^3 + 2)\sqrt{x}.$$

Exercise 4:

$$\textbf{4a}: f(x) = \left(\frac{1}{3x^4} + x\right)(2 - \sqrt[4]{5x} + x^2), \qquad \textbf{4b}: \ f(x) = x(4x^5 + 7).$$

Exercise 5:

$$\textbf{5a}: f(x) = \frac{2x+5}{3x-7}, \qquad \textbf{5b}: \ f(x) = \frac{5x^2 - 7x + 2}{x^3 - 9}, \qquad \textbf{5c}: \ f(x) = \frac{4x^4 - 7x^2}{x}.$$

Exercise 6:

$$\textbf{6a}: f(x) = \frac{6}{-6x^2 + 8x + 12}, \qquad \textbf{6b}: \ f(x) = \frac{6x - 7}{9 + \sqrt{3x}}, \qquad \textbf{6c}: \ f(x) = \frac{\sqrt{x}}{\sqrt[3]{x}}.$$