

University of Utah
Math 1210, Spring 2008

Name: Solutions

Quiz # 4

Time: 15 minutes

Show all work.

Find the derivatives of the functions $f_1(x) = (5x^3 + 2x^2 + 1) \cos x$ (3 points), $f_2(x) = \frac{2x+1}{x^2+2}$ (4 points), and $f_3(x) = \sin(3x^2 - 5x + 3)$ (3 points).

$$* f_1(x) = (5x^3 + 2x^2 + 1) \cos x$$

$$\text{By the Product Rule: } f_1'(x) = (15x^2 + 4x) \cos x + (5x^3 + 2x^2 + 1) \cdot (-\sin x)$$

$$* f_2(x) = \frac{2x+1}{x^2+2}$$

$$\text{By the Quotient Rule: } f_2'(x) = \frac{2(x^2+2) - 2x(2x+1)}{(x^2+2)^2} = \frac{-2x^2 - 2x + 4}{(x^2+2)^2}$$

$$* f_3(x) = \sin(3x^2 - 5x + 3)$$

$$\text{By the Chain Rule: } f_3'(x) = \cos(3x^2 - 5x + 3) \cdot (6x - 5).$$