Math 190 – Spring 2018
Assignment G5
First submission: Today in class
Final submission: Thursday, Feb 8

Names: _____
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(1) Use the Chain Rule to compute the following derivatives.

a. $\frac{d}{dx}((-x^2+7x-5)^4) =$

b. $\frac{d}{dx}\left(\sqrt{1-2x}\right) =$

c. $\frac{d}{dx}\left(\frac{1}{3-\sqrt{x}}\right) =$

d. $\frac{d}{dx}\left(\frac{4x^3-1}{\sqrt{x^2+9}}\right) =$

e. **NEW Problem!! $\frac{d}{dx}\sqrt{\frac{4x^3-1}{x^2+9}} =$

(2) Find the equation of the line tangent to the graph of the functions below at the points indicated.

a. $f(x) = (-x^2+7x-5)^4$ where x = 1

b. $f(x) = \sqrt{1-2x}$ where x = -2.

c. $f(x) = \frac{4x^3-1}{\sqrt{x^2+9}} =$ where x = 0

d. **NEW Problem!! $f(x) = (x+1)\sqrt[3]{3x-1}$ at x = 3

e. **NEW Problem!! $f(x) = \sqrt{(x^2+x+2)(3x+1)}$ at x = 1

(3) Use Implicit Differentiation to compute $\frac{dy}{dx}$ for each of these functions.

a. $xy = 1 + \frac{x}{y^2}$

b. $\sqrt{x+3} + y = 2x^2y^2$

c. $\frac{y}{\sqrt{1+x^4}} = (1+x^3)y$

(4) Find the equation of the line tangent to the graph of the equations below at the points indicated.

a. $\sqrt{x+3} + y = 2x^2y^2 + 2$ at (1, 0)

b. $\frac{y}{\sqrt{1+x^4}} = (1+x^3)y$ at (0, 1)

a. **NEW Problem!! $\sqrt{\frac{y}{1+x^4}} = (1+x^3)y$ at (0, 1)