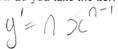
3.3 Worksheet Day 1

All work must be shown in this course for full credit. Unsupported answers may receive NO credit.

- 1. A derivative tells you the ______ of a function.
- 2. What is the power rule for derivatives? (i.e. how do you take the derivative of $y = x^n$?)



3. For each of the following functions, find $\frac{dy}{dx}$

a)
$$y = -2x^3 + x$$

$$y = -6x^2 + 1$$

b)
$$y = \frac{x^4}{3} - \frac{x^2}{7} + 5$$

c)
$$y = \frac{5}{x^2} + \frac{6}{x} - 8x^3$$

d)
$$y = \frac{x^{-3}}{2} + 5x^{-4} - 3x^{-6}$$

e)
$$y = 5x^4 + 2x^3 - 8x^2 - 7x + 11$$
 f) $y = 7x - 8$

f)
$$y = 7x - 8$$

g)
$$y = (x^2 - 3)(x + 4)$$

h)
$$y = \frac{x^5 - 2x^4 + 3x^3}{x^5}$$

i)
$$y = \sqrt{x} + \frac{3}{\sqrt{x}} - 6x^{\frac{5}{3}} + \frac{7}{x^3}$$

- 4. [Calculator Required] We want to find all points where the graph of $y = x^4 5x^3 3x^2 + 13x + 10$ has a horizontal tangent line.
 - a) First, find an equation for y'.
 - b) A horizontal tangent line will have a slope = ______. So set y' = ______, and use your calculator to solve this equation.