2.2-2.3 Review WS #2 (Asynchronous Wednesday)

No negative exponents in answer.

1. Find $\frac{dy}{dx}$ if $y = 7x^3(x-1) - \frac{3x^2}{11} + 4\pi x - 5\pi^4 + \sqrt[5]{x^4} + \frac{5}{\sqrt{x^7}}$

2. If $f(x) = \frac{x+4}{x^2-2}$ find $f'(x)$ (simplify fully). Then write the equation of the line tangent to $f(x)$ at $x = 1$ in point-slope form.

3) Find the derivative of f(x) and then evaluate the slope of the graph at x = 1

$f(x) = (3x^5 - 4\sqrt{x})(2x - 5\pi + 9)$

4. Particle moves along the x-axis so that its position at time t is given $x(t) = t^3 - 9t^2 + 15t - 7$ where $x(t)$ is in feet per second and $t \geq 0$. Use this to answer the questions below. **Include units with your answers**

a) Find the velocity and acceleration function

b) What is its velocity at t = 2 seconds?

c) What is its acceleration at t = 4 seconds?

d) Find the average velocity of particle in [3, 8]

e) When is the particle at rest?

f) When is the particle moving right? When does particle change directions? (Create Sign Line) Give justification.

g) What is displacement of particle from t = 2 to t = 6? Show work.

h) What is the total distance of particle from t = 2 to t = 6? Show work.

i) Is the speed increasing or decreasing at t = 4? Justify.

j) Is velocity increasing or decreasing at t = 2? Justify.