Practice for Test 1

1. Evaluate the following limits.

a) $\lim_{x\to 4}(\sqrt{x}+\frac{3x}{x+2}+x^2+\log_4 x)$

b) $\lim_{x\to 3}\frac{2x^2-6x}{x^2+3x-18}$

c) $\lim_{x\to 4}\frac{\sqrt{x}-2}{x-4}$

d) $\lim_{x\to -2^-}\frac{x+1}{(x+2)^2}$

2. Given $f(x) = 5x^2 - 8x + 1$,

a) Calculate $f'(x)$ using the definition of derivative (the lim DQ h --> 0).

b) Write the equation of the line tangent to f at the point where $x = 1$.

3. Suppose the value of a certain stock is given by $V(t) = 4\sqrt{t}$ where V represents the value of the stock, in dollars, after t months have elapsed. (Stock value is a function of time.)

a) Find the *average* rate of change of the stock's value from time t = 1 month to time t = 9 months.

b) Find the *instantaneous* rate of change of the stock's value exactly at time t = 4 months.

4. True or false:

a) Polynomials functions are continuous everywhere on their entire domain. _____

b) A result of 0/0 when a limit is taken indicates the limit does not exist. _____

c)