Math 1100

Hw 1.2:

A. True or false? Curves can't have slopes, just lines.

B. Fill in the blanks: Slope represents the rate that _____ is changing with respect to _____.

pg 82-83: 1,4,6,7,9,10,13-18

C. Give the point-slope form of the equation of a line with slope m passing through the point (x_o, y_o).

D. Consider the graph of $y = x^2$. If $x = 0.3$, what is y? Give the corresponding ordered pair.

E. Is the point (-2,4) on the graph of $y = x^2$?

F. When are two lines parallel? When are they perpendicular?

G. Put $x + 2y = 4$ into slope-intercept form.

H. Give the slope of a line parallel to the line $x + 2y = 4$.

pg 83: 19,22,25,28,33

I. Given two points, how does one find the slope of the line between the two points?

J. Given two points, how does one find the distance between the two points?

pg 84: 37,38

Hw 1.3:

A. What is the slope of a horizontal line? A vertical line?

B. What is another way of writing $x^{1/2}$? x^{-2} ? $\frac{1}{x^{-4}}$? $\frac{1}{\sqrt[3]{x}}$? $x^{\frac{4}{3}}$?

C. What does the derivative of a function have to do with its graph?

D. Give two notations commonly used for the derivative.

E. Give the power rule from memory.

F. When is the derivative of a function constant?

G. Explain why the derivative of a constant is 0.

pg 91-92: 2,3,5-12,16,17,19,21,26,27,29,34,35,37,40,44,45,48,50

H. What is a secant line?

I. What is a difference quotient? What is it used for?

pg 93: 51,57

Hw 1.4:

A. Factor $x^2 - 9$.

B. Factor an x^2 out of $x^2 - 5x + 3$.

pg 102-103: 1,2,4,6-9,13,14,16-18,24-26,28

C. If the instructions are to use limits to compute derivatives, what must be done?

D. Let $f(x) = x^2 - 4$. Find $f(x + h)$.

E. Simplify $(x + h)^2 - 4 - (x^2 - 4)$.

F. Simplify $\frac{\frac{1}{x+h} - \frac{1}{x}}{h}$.

G. What is the conjugate of $\sqrt{2} + \sqrt{3}$?

H. Simplify $\frac{\sqrt{x+h} - \sqrt{x}}{h}$.

pg 103: 29,33,34,42

I. What is 5 divided by a very large positive number?

J. What is a very large positive number minus 10?

pg 103: 47-49,50,53,54

Hw 1.5:

A. What is a piecewise-defined function?

B. Give two everyday examples of piecewise-defined functions. Try to think of your own rather than using the ones given in class or the book.

C. Graph $f(x)=\begin{cases} x^2 & for -2 \le x \le 1 \\ 2x-3 & for\ x>1 \end{cases}$

D. Graph $g(x)=\begin{cases} x & for\ x \ne -2 \\ -3 & for\ x=-2 \end{cases}$

E. On pg 107, three conditions required for $f(x)$ to be continuous at a are listed.
   a. Give an example of a function that satisfies 1 & 2 but not 3.
   b. Give an example of a function that satisfies 2 but not 1.

F. True or false? If a function is differentiable, then it is continuous.

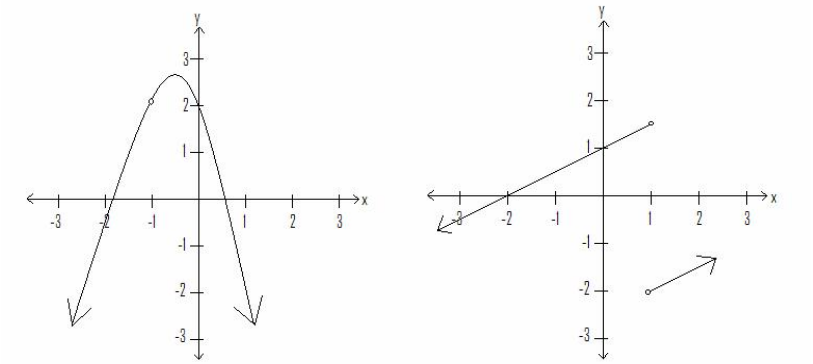
G. Draw the graph of a function that is continuous but not differentiable.

pg 108: 1-3,6-9,12,14,15,18

H. Determine whether the following function is continuous and/or differentiable at $x = 1$:

$$g(x)=\begin{cases} x^2+1 & for\ x<1 \\ 2x & for\ x \ge 1 \end{cases}$$

I. The functions shown below are defined for all x except for one value of x. If possible, define $f(x)$ at the exceptional point in a way that makes $f(x)$ continuous for all x.



pg 109: 22-24,26,27

J. What is revenue?

pg 109-110: 30,31,33