AP Calculus
2.4 Worksheet

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

1. What is a difference quotient?

2. How do you find the slope of a curve (aka slope of the tangent line to a curve) when $x = a$?

3. What is a *normal line* ?

4. What is the difference between the AVERAGE RATE OF CHANGE and INSTANTANEOUS RATE OF CHANGE?

5. Let $f(x) = x^3$.

   a) Find the slope of the curve at $x = a$.

   b) When does the slope equal 12?

   c) Write the equation of the tangent line to the curve at $x = 4$.

   d) Write the equation of the normal line to the curve at $x = 4$.

6. Let $g(x)=\sqrt{x}$

a) Find the average rate of change from $x = 4$ to $x = 9$.

b) Find the instantaneous rate of change at $x = 9$.

c) Write the equation of the tangent line when $x = 9$

d) Write the equation of the normal line when $x = 9$.

7. Complete the following from the textbook: page 92 – 93 #3, 6, 7, 11, 12, 23, 25, 29, 38, and 39

8. You should also begin reviewing for your chapter 2 test: page 95 – 97 #1 – 29, 31, 33, 35, 39, 40, 43 – 49, 52. This isn't due until the day of your exam.