Test 2 Practice, Math 1410

Spring 2013, Dr. Graham-Squire

•Test 2 covers material from Section 2.7 to 3.7 (minus logarithmic differentiation). There will be 8 to 10 questions on the test, and you will have the whole period to work on it.

•To study, you should read over your notes, try to re-work old HW and quiz problems, and work on practice problems out of the textbook. You can look at the questions at the end of Chapter 2 and you can also try to work the recommended practice problems listed on each section of class notes. You can also use the Test material on my website, but not all of the questions match. The questions from Test 1 on my website that fit this test are numbers 1 and 4, and from Test 2 they are #1, 3-7, 9, 10.

•A calculator might be useful for certain questions, but you will still need to show your work to get full credit. There will be at least one question where you cannot use a calculator.

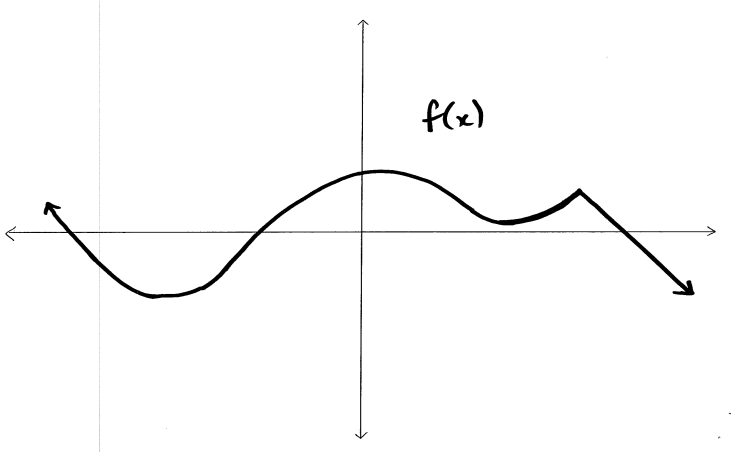
•Some problems to work on in class today:

1. A particle moves along a horizontal line so that after t seconds its position is given by

$$s(t) = \frac{5}{3}t^3 - 10t^2 + 15t$$

When is the particle moving left? Note: positive direction is to the right, so increasing = moving right. (Also, you should use the derivative rules to solve this question, you do not have to use the definition of the derivative).

2. Sketch a graph of $f'(x)$ if $f(x)$ is the graph given below:



3. Use the limit definition of the derivative to calculate $\frac{d}{dx}(\sqrt{x-7})$.

4. Find y' if $y = \dfrac{e^{-x}\cos x}{\ln x}$

5. Find the x-coordinate(s) when the given function has a horizontal tangent line

$$T(x) = x^2 e^{1-3x}$$

6. Find $\dfrac{dy}{dx}$ if $y = \sqrt[3]{x + \sqrt{2\sec x}}$

7. Find y' if $\ln(xy) = e^{2x}$

8. Calculate $\dfrac{d}{dx}\tan(\arctan x)$ two different ways- First take the derivative and then simplify your answer. Next, simplify the expression first and then take the derivative. (Hint: $\cos(\arctan x) = \dfrac{1}{\sqrt{1+x^2}}$....do you know how to prove it?)