Math 124 End of Week 3 Newsletter

UPCOMING SCHEDULE:

Friday:	Section 2.8 (The Derivative Function)
Monday:	Section 3.1/3.2 (Intro to derivative rules)
Tuesday:	Velocity and Parametric Equations worksheet: http://www.math.washington.edu/~m124/source/worksheets/aut_ws4.pdf (This will give you practice with derivative rules and you will start to see how they appear in applied motion problems)
Wednesday:	Section 3.2/3.3 (Basic Derivative Rules, start trig)
Thursday:	Homework discussion and test prep (bring homework questions!)
Next Friday:	Section 3.3 /3.4 (Trig Derivative Rules, start chain rule)

NOTE: Exam 1 is Tuesday, February 2nd, it covers 10.1, 2.1-2.3, 2.5-2.8, 3.1-3.3, 3.4(part 1).

WORKSHEET 3 (from last Tuesday's quiz section) has solutions posted here:
http://www.math.washington.edu/~m124/source/worksheets/aut_ws3sol.pdf
(Review this worksheet solution for practice with the connections between the graphs of functions and their derivatives).

HOMEWORK:

Closing Friday (Today) at 11:59pm:	hw06S2.7
Closing Monday at 11:59pm:	hw07S2.7-8
Closing Wednesday at 11:59pm:	hw08S2.8
Closing Next Friday at 11:59pm:	hw09S3.1-2

PREVIOUS HOMEWORK STATS:

hw04S2.3:	median score = 95%,	median time browser open to assignment = 119 minutes
hw05S2.5-6:	median score = 97%,	median time browser open to assignment = 253 minutes

HW Notes:
I notice that only about half the class has started the 2.7 homework.
Make some progress through that assignment today!
Here are some hints to get you going:
hw06S2.7 notes: The first question is the squeeze theorem (should be very fast to do).
We did two full examples in class that are like problems 2-4. Problems 5 and 6 are applied problems, but ultimately you use the same techniques as you used in problems 2-4. Visit the MSC if you are having trouble getting 5 and 6 started (or ask in quiz section).
hw07S2.7-8 notes: You do more examples like those in 2.7, but this time it is with a variable instead of a number (we now are talking about the derivative function). We will see more examples on Friday. You also start to see examples with units and interpretation (which we'll do more of on Friday).
Here is a quick example: If x = time (in seconds) and y = distance (in feet), then the derivative (the slope of the tangent) is in units of distance/time (feet/second). So in this example, the derivative is velocity.
Another example: If x = quantity (in pounds) and y = price (in dollars), then the derivative would give the price per pound (dollars/pound).
In other words, the units of the derivative are always the y-units over the x-units. Remember the derivative is a slope so it is a rate.
hw08S2.8 notes: These are questions about the connection between a functions graph and its derivative graph. You started to explore these connections in the worksheet this week. So you could start to attempt these problems now!

It would be good to look ahead at these problems. And on Friday, I will do more examples.

NEW POSTINGS
Remember the course website is here: http://www.math.washington.edu/~aloveles/Math124Winter2016/index.html
There are several new postings:

1. **Overview of 2.7, 2.8, 3.1, and 3.2**:
http://www.math.washington.edu/~aloveles/Math124Winter2016/m124week3review.pdf
2. **Connections between functions and derivatives (handed out last Tuesday):**
http://www.math.washington.edu/~aloveles/Math124Winter2016/m124%20Intro%20To%20Derivatives.pdf
3. **Several Postings to Review and Practice Limits**:
a) **A basic graphical review of some limits we should know**:
http://www.math.washington.edu/~aloveles/Math124Winter2016/m124%20Functions%20And%20Limits.pdf
b) **Brief Summary of Limit Strategies (this was posted last week)**:
http://www.math.washington.edu/~aloveles/Math124Winter2016/Limit%20Strategies.pdf
c) **30 Randomly Selected Limit Problems from Old Exams**:
http://www.math.washington.edu/~aloveles/Math124Winter2016/m124LimitsPractice.pdf
Solutions are posted here:
http://www.math.washington.edu/~aloveles/Math124Winter2016/m124LimitsPracticeSolutions.pdf

SUPPLEMENTAL POSTING
1. **Proof of a limit for sin(x)/x**: Next week we will need the limit for sin(x)/x as x goes to 0. It takes some work to prove the value of this limit (and the value we get is only true if we are in radians). The book gives a brief proof of this fact. In the following postings, I give the proof with some additional details that you might find interesting (a review of some trig and arc length). This is for your own interest, you do not need to know this proof:
http://www.math.washington.edu/~aloveles/Math124Winter2016/m124%20Trig%20Limit.pdf

OLD EXAMS:
Remember, the departmental exam archive is here:
http://www.math.washington.edu/~m126/midterms/midterm1.php
and my additional exam archive here:
http://www.math.washington.edu/~aloveles/Math126Winter2015/examarchive.html
NOTE: In the last week, I have been searching for more old exams to post and I found a lot more. These have been added to my personal exam archive. Check it out (see link above) to see more exams.

Here are infinite limit problems (2.6) from old midterms:
Problem 1a from: http://www.math.washington.edu/~aloveles/Math124Winter2016/nichifor2011.pdf
Problem 1a from: http://www.math.washington.edu/~m124/source/Exams/Midterm1/2015aut/pezzoli.pdf
Problem 1c from: http://www.math.washington.edu/~aloveles/Math124Winter2016/m124w13e1.pdf
Problem 1b from: http://www.math.washington.edu/~aloveles/Math124Winter2016/conroy2010.pdf
Problem 2a from: http://www.math.washington.edu/~m124/source/Exams/Midterm1/2013spr/pezzoli.pdf
Problem 2b from: http://www.math.washington.edu/~aloveles/Math124Winter2016/exam1v1.pdf

Here are some general derivative problems (2.7-2.8) from old midterms:
Problem 3 from: http://www.math.washington.edu/~aloveles/Math124Winter2016/m124w13e1.pdf
Problem 4 from: http://www.math.washington.edu/~aloveles/Math124Winter2016/exam1v1.pdf
Problem 6 from: http://www.math.washington.edu/~aloveles/Math124Winter2016/exam1v1.pdf
Problem 3 from: http://www.math.washington.edu/~aloveles/Math124Winter2016/nichifor2011.pdf
Problem 5 from: http://www.math.washington.edu/~aloveles/Math124Winter2016/m124w13e1.pdf
Problem 4 from: http://www.math.washington.edu/~m124/source/Exams/Midterm1/mid1w11/midterm1v1.pdf
Problem 2c from: http://www.math.washington.edu/~m124/source/Exams/Midterm1/2015aut/pezzoli.pdf

I hope some of this helps.

Dr. Andy Loveless