Math 112 Week 4-5 Newsletter

UPCOMING ASSIGNMENTS

This week…

- *Closing Wed (Jan. 26)*:	10.1 Self-Check	**on Canvas**
- *Closing Thu (Jan 27)*:	9.8 & 9.9 HW	**on Webassign**
- *Friday (Jan 28):*	Quiz 3 on 9.8 & 9.9	

Next week…

- *Closing Mon (Jan. 31)*:	10.2 Self-Check	**on Canvas**
- *Closing Wed (Feb 2)*:	10.3 Self-Check	**on Canvas**
- *Closing Thu (Feb 3):*	10.1 & 10.2 HW	**on Webassign**
- *Friday (Feb 4):*	Quiz 4 on 10.1 & 10.2	

NEW POSTINGS: Remember that I have posted a lot of review material on my Dr. Loveless Review Page.
Relating to these next two weeks check out:

1. Overview of 9.9 (full discussion and summary of applications, check this out!)
2. Derivative Graph Summary Sheet (summary and re-explanation of the derivative graph and its features)

3. Review of 10.1-10.3 (check this out next week, has lots of examples of critical numbers, local max/min, increasing/decreasing, concave up/down, all the key facts of chapter 10)

OLD EXAMS: Remember here is my Old Exam Archive

For practice with 9.8-9.9

Problem 3 and 4 from:	Winter 2019 Exam 1 (Loveless)
Problem 2(a)(b), 3 and 4 from:	Spring 2018 Exam 1 (Taggart)
Problem 2, 3 and 5 from:	Winter 2018 Exam 1 (Loveless)

For practice with 10.1 and 10.2 (critical points, increasing/decreasing, concave up/down):

Problem 2 from:	Winter 2019 Exam 2 (Loveless)
Problem 3 and 4(a)-(f) from:	Spring 2018 Exam 2 (Taggart)
Problem 2 and 3(a)(b)(d) from:	Spring 2016 Exam 2 (Taggart)

ADVICE:

Please, please, please, please start homework at least 4-5 days before it closes. It is vital to start early so that you can find out if you have questions and have the time to ask those. If you wait until the day it closes, you will be well behind schedule and you won't have the chance to ask questions.

Try to get the majority of the homework done by Tuesday each week! That should be your goal. Use that Tuesday Lab to get most the homework for the week done. Then you can use the rest of the week to prepare for the quiz.

Hope this helps. Now check out the next page for several 9.9 HW hints….

Homework 9.9 Hints and Notes
Remember that 9.9 is a very important section, take your time! Let's talk through it…

1. 9.9 Problems 1-6:
These problems were discussed in the lecture video and in class. In fact I did several of these in class (yet these also have been popular questions in office hours, which makes you wonder if students are keeping up on lecture videos, ha). Please check out the 9.9 Lecture 1 Notes for several similar examples.

Particular comments:
Problem 4: Watch the units of your final answer!
Problem 5 and 6: We did these in lecture. You are given price and average cost (I told you the wording wasn't great, but I warned you that you "cost per item" meant average cost in those problems). Remember, step 1 is to multiply price by x to get Total Revenue and multiply average cost by x to get Total Cost. We did all of problem 5 in lecture.

The most common emails I have been getting is about problems 5 and 6 in this homework and we did these problems in lecture. I promise I will try to do a better job of emphasizing when we do a homework problem in lecture, but I also ask in return that students come to class (or watch class video) and consult lecture notes before emailing me about homework. Is that fair? Sound like plan?

2. 9.9 Problem 7-11: We also discussed these ideas on Friday and Monday (There may even be several solutions to these problems in the class notes!). The issue some students are having is reading the questions. Here are a bunch of examples:

A) "*Find the largest interval on which profit is increasing*." …translates to….
"*Find the largest interval on which the derivative of profit is positive*."
So you need to solve for when the derivative of profit is zero, then use that to find the interval (note: Only give positive quantities, your answer will be q = 0 to q = ???). You could also do this by remembering the max profit occurs when MR = MC (so find MR and MC and set them equal). Either approach gives the same answer.

B) "Find the largest value of total revenue." …translates to….
"Find when the derivative of total revenue is zero, and then compute the TR at that quantity"

C) "At what quantity goes the graph of marginal cost have a horizontal tangent line?" …translates to….
"Find the derivative of marginal cost and set it equal to 0"

D) "At what time is the speed of the A-car lowest?" …translates to….
"Find the derivative of the speed of the A-car and set it equal to 0"

E) "Name the longest interval over which g(x) is increasing and h(x) is decreasing" …translates to….
"Name the longest interval over which the derivative g'(x) is positive and the derivative h'(x) is negative."
You will need to first find when g'(x) = 0 and when h'(x) = 0, then make appropriate conclusions (like we did in lecture).

NOTE THAT ALL OF THE PROBLEMS ABOVE ARE THE SAME TYPE OF PROBLEM!!! You do the same thing in each one. You identify the function in question, take the derivative, set it equal to zero and make appropriate conclusions. You have to read carefully and use the three connections we have made between functions and their derivatives. Hope that helps.

3. On two derivative graphs together.
You should already know that when derivatives are equal that it tends to correspond to places when the original graphs are farthest apart (think about when MR = MC and how this corresponds to when TR and TC have the biggest gap). This is not a new idea. There are some problems that ask you something similar but about the speed of two balloons. I will say a couple more things about this in class, but you actually know quite a bit about this already from our time with business applications.