Math 125 End of Week 3 Newsletter

UPCOMING SCHEDULE:

Friday: Section 6.2 (Volumes of Revolution: Cross-sectional slicing (Disc and Washer))
Monday: Section 6.3 (Volumes of Revolution: Cylindrical Shells)
Tuesday: Homework discussion and test prep (bring lots of homework and exam questions!)
Wednesday: Exam 1 Review (bring questions, you are welcome to attend both my lectures)
Thursday: **Midterm 1!**
Friday: Section 6.4 (Work: Springs, Cables, Pumping)

Remember:

Worksheet 2 solutions are here: https://www.math.washington.edu/~m125/outline2.php
Worksheet 3 solutions will be here: https://www.math.washington.edu/~m125/outline3.php
Worksheet 4 solutions will be here: https://www.math.washington.edu/~m125/outline4.php

HOMEWORK:

Closing Wednesday: HW_3A, 3B, 3C (these cover 6.1, 6.2, and 6.3)

Important Note: You need to finish 3A, 3B, 3C well before the closing date (I suggest by Monday night). You are definitely expected to know this material for the exam.

HW Stats:

HW_2A: median score = 100%, median time students had browser open to assignment = 100 minutes
HW_2B: median score = 100%, median time students had browser open to assignment = 90 minutes
HW_2C: median score = 100%, median time students had browser open to assignment = 189 minutes

HOMEWORK COMMENTS AND HINTS (based on common questions from last year):

On HW_3A: Problem 8: In part (b), start by drawing an accurate picture of $y = 1/x^2$ on the interval x = 1 to x = 4. Then draw a horizontal line that appears to cut the region in half (note that it will be above y = 1/16) and label it y = b. Now set up an integral and find when the area you get is half, then solve for *b*.

On HW_3B: On 9 and 10, start by drawing a 2D region that would give the solid in question by rotating.
In 9, you will draw a circle and give the equation for a circle. In 10, you will draw two circles and you'll start by finding an intersection. You'll have to think about these a bit, so make sure to attempt them early and ask about them in quiz section, in the MSC, in CLUE, or in office hours.

On HW_3C: On 10, you'll have to do quite a bit of set up, but once you have it set up you will end up with an integral that you can split up. One of the integrals you will get after you split up the problem is: $\int_{-r}^{r} \sqrt{r^2 - x^2}\,dx$
We currently do not have any algebraic methods for finding this integral (we will in section 7.3). BUT you don't need algebraic methods, if you draw the picture that goes with this integral you realize it is exactly half the region bounded by a circle with radius *r* which you should know has area $\frac{1}{2}\pi r^2$. So use

$$\int_{-r}^{r} \sqrt{r^2 - x^2}\,dx = \frac{1}{2}\pi r^2.$$

That will save you a lot of headache.

NEW POSTINGS

Here, again, is the course website: https://sites.math.washington.edu/~aloveles/Math125Fall2017/index.html
There are several new postings:

1. **Overview of 6.1/2/3** : https://sites.math.washington.edu/~aloveles/Math125Fall2017/Chapter6.pdf
2. **Quick Overview for Exam 1**: https://sites.math.washington.edu/~aloveles/Math125Fall2017/Exam1Review.pdf
3. Remember that **lecture materials are posted here**: https://sites.math.washington.edu/~aloveles/Math125Fall2017/lecture.html

In particular, **check out the lecture materials for sections 6.1, 6.2 and 6.3 which contain full step-by-step guides for how to do any volume problem** (it also compares shells and disc/washer and tells you how to see when to use which one). Please check out the last two pages of the 6.3 lecture notes for a full summary of all of 6.2 and 6.3:

OLD EXAMS:
The math departmental exam archive is here: https://www.math.washington.edu/~m125/Quizzes/Q4.php
My personal exam archive is here:
https://sites.math.washington.edu/~aloveles/Math125Fall2017/LovelessExamArchive.html
Here are some targeted practice problems from old exams on the current material:

for practice using Section 6.1 material:
Area between curves
Problem 5a: https://www.math.washington.edu/~aloveles/Math125Winter2017/sp16m125e1.pdf
Problem 5: https://www.math.washington.edu/~aloveles/Math125Spring2016/w11m125e1.pdf
Problem 5a: https://www.math.washington.edu/~aloveles/Math125Spring2016/w15m125e1.pdf
Problem 4: https://www.math.washington.edu/~aloveles/Math125Spring2016/m125sp06e1.pdf
Problem 5: https://www.math.washington.edu/~aloveles/Math125Spring2016/w11m125e1h.pdf
for practice using Section 6.2 material:
Problem 6ab: https://www.math.washington.edu/~aloveles/Math125Spring2016/w11m125e1.pdf
Problem 5: https://www.math.washington.edu/~m125/Quizzes/week4/win13_mid1.pdf
Problem 6(a)ii: https://www.math.washington.edu/~aloveles/Math125Spring2016/w11m125e1h.pdf
Problem 5b: https://www.math.washington.edu/~aloveles/Math125Spring2016/w15m125e1.pdf
Problem 4b: https://www.math.washington.edu/~aloveles/Math125Spring2016/w13m125he1.pdf
for practice using Section 6.3 material:
Problem 6c: https://www.math.washington.edu/~aloveles/Math125Spring2016/w11m125e1.pdf
Problem 5c: https://www.math.washington.edu/~aloveles/Math125Spring2016/w15m125e1.pdf
Problem 4a: https://www.math.washington.edu/~aloveles/Math125Spring2016/w13m125he1.pdf
Problem 4cd: https://www.math.washington.edu/~m125/Quizzes/week4/win16_bekyel_1.pdf

ADVICE:
MY EXAM STUDYING STRATEGY WHEN I WAS A STUDENT: I always like to share how I studied when I was in graduate school. I was an okay student as an undergraduate, but I was an excellent student in graduate school (I got perfect scores on every exam in graduate school in my first year). Here was my studying strategy that seemed to work so well for me:

1. **At least 1 week before an exam**, spend an intense night of studying.
   Try to trick yourself into thinking the exam is the next day. Work through several old exams. This studying should consist of 2 elements:
   A. *Problem recognition*: Flip through lots and lots and lots of exams quickly and see if you can figure out how to quickly start each problem. Try to look through 5 exams in 15 minutes and make notes of things that confuse you to come back to later.
   B. *Working out the details*: Carefully work through a few exams in details to practice finishing problems and to practice being careful with your work.
2. After this intense studying session, talk to me or your TA or someone in the MSC to clear up any confusion you have. (Or, like I did, just keep thinking about it on your own, reading and trying examples until you figure it out yourself).
3. **Then at least 2 days before the exam**, put in another night of intense studying. Then when the instructor reviews in class, all the concepts will be fresh in your mind and you will be able to ask good questions.

More days of studying is better. I often started two-three weeks in advance, this is the condensed version. But, if you only could devote two nights to studying, then this is an efficient and effective use of your time and it gives your mind more time to process the information. I hope some of this helps. Now you have to put in the time and effort to really get to know these concepts well. If you find something helpful in these newsletters, please share it with your classmates.

Dr. Andy Loveless