Time and Location

The exam will be given at the date and time scheduled by the registrar.

- Section 02 (2:00-2:50): Saturday, December 18, 8:30AM to 11:30AM.
- Section 04 (3:00-3:50): Saturday, December 11, 2:30PM to 5:30PM.

The exam for both sections will be in our regular classroom, Swords 359.

Format of the Exam

The style of the exam will be similar to the midterms. It will be closed book, closed notes, and no cell-phones, computers or electronic devices may be used during the exam. You will be provided with a non-graphing calculator. The exam will be designed so that you should be able to finish in about 2 hours, assuming you are well-prepared and work efficiently. You will however be allowed to use the full 3 hours.

Topics

The exam will cover everything we have done this semester. This includes Chapters 1 through 5 in the text, with the exception of the sections that we skipped – 4.6 and 4.7. See the midterm exam review sheets for the list of topics from Chapters 1 through 4. Below is a summary of the topics from Chapter 5.

- Riemann Sums (left-hand and right-hand sums). You should be able to compute them, and how to represent them on a graph as sums of areas of rectangles.
- The definition of the definite integral
  \[ \int_a^b f(x) \, dx \]
  as a limit of Riemann sums.
- Interpretations of the definite integral.
  1. The relationship between the definite integral and area.
  2. The integral of a rate of change is the total change:
    \[ \int_a^b F'(t) \, dt = F(b) - F(a) \]
    (the Fundamental Theorem of Calculus).
3. The average value of a function:

\[
\text{average of } f \text{ from } a \text{ to } b = \frac{1}{b-a} \int_{a}^{b} f(x) \, dx
\]

- Using the Fundamental Theorem of Calculus to evaluate definite integrals.
- Properties of Integrals. Integrals of sums and constant multiples, breaking up the interval of integration, using symmetry, comparing integrals.

**Advice for Preparation**

- The best way to prepare for any math exam is to work through a large number of problems. So begin studying now, and do a little each day until the day of the exam. Don’t stay up all night the day before the exam! (unless you want to do poorly)

- Do enough problems from each section so that you are familiar with how to solve those type of problems. Then move on to another section. After you have mastered every type of problem, make sure that you recognize how to identify the techniques required to solve each type of problem. On the exam, we are not going to tell you “You need to use implicit differentiation here.” We expect you to know what to do.

- As you go along, keep track of the problems that you don’t understand how to solve. Make a list of these problems and stop by my office to go over them. I will also be happy to let you look through the solution key in my office if you just want to check your answers to some of the even numbered exercises.

**Suggested Review Problems**

In addition to the review problems suggested in preparation for the midterms, take a look at the following exercises from Chapter 5:

- Section 5.1: #4,5,7,9,11
- Section 5.2: #8, a few of 15-21 (use a left hand sum with n=4 subintervals in each case),31
- Section 5.3: #3,11,13,27
- Section 5.4: #2,4-8,11,12,21
- Chapter 5 Review: #1,3,5,6,19,22,28,31

It is also a good idea to look at the Check Your Understanding questions at the end of each chapter.