Math Xb Spring 2006
Final Exam Review Guide

Topics

The final exam will cover Chapter 17 to 25 (omitting §20.7), §27.1, §30.1, and Appendix F in our textbook, *Calculus: An Integrated Approach to Functions and Their Rates of Change.* See the review guides for the two midterm exams for specifics on most of this material. For the material after the second midterm, see below.

CHAPTER 25 AND §27.1: FINDING INTEGRALS AND ANTIDERIVATIVES, APPLICATION OF INTEGRATION

- To evaluate simple definite and indefinite integrals. (See the list on page 784.)

- To evaluate more complex definite and indefinite integrals using algebra and/or the substitution rule.

- Given a "real world" situation where you have a varying "density" over a region (instead of density it might be intensity, as in light, or yield per square foot, as in crops, or some other function that is like density) be able to determine the total "mass" by slicing the region or object into appropriate pieces, finding the "mass" of each piece (assuming constant density), using this to write a Riemann sum, and using the Riemann sum to get a definite integral which can then be computed exactly.

§15.2 AND §31.1: DIFFERENTIAL EQUATIONS

- To use the differential equation $\frac{dy}{dt} = ky$ and its solution $y(t) = Ce^{kt}$ to model and analyze exponential growth and decay problems.

- To solve the differential equation $\frac{dy}{dt} = ky$ either for the general solution or given an initial condition.

- To determine if a function $y = f(x)$ is a solution to a given differential equation.

- To interpret a given differential equation in the context of a particular application.

- To write a differential equation which models a given situation.

Suggested Exercises

Review the problems that were assigned as homework, making sure that you understand how to do any problems that you skipped or missed. Additional problems from are suggested below.

CHAPTER 25 & §27.1

- §25.1 #2–14 17, 18

- §25.2 #1–27

- §25.3 #1–11

- §27.1 #1–23

§15.2 AND §31.1

- §15.2 #3–12, 16, 17

- §31.1 #1–7