

# LIST OF TOPICS FOR MATH 10B: MIDTERM 1

- Exam Date: 19 Oct 2012, usual lecture time.
- You must bring a Blue Book in which to write your exam.
- Please bring your UCSD student ID to the exam and expect it will be checked.
- You may bring one 8.5"  $\times$  11" sheet of *handwritten* notes (front and back) to the exam.
- No calculators (or other electronic devices)!!

The exam will be based on the homework questions (in the book) and lecture material, including all examples presented in class. To help guide your studying, make sure you are familiar with the following topics:

## TOPICS

1. Approximating definite integrals using:
  - (a) Left-hand and right-hand sums.
  - (b) upper estimates and lower estimates.
  - (c) data provided from both graphs and tables.
2. The definition of the definite integral.
3. The definite integral and the area under the curve.
4. The definite integral and the average value of a function.
5. The First Fundamental Theorem of Calculus and its applications.
6. Manipulating and evaluating definite integrals, including the use of symmetry (even, odd functions).
7. Relating functions and their antiderivatives (i.e., evaluating antiderivatives based on graphs and given functions).
8. The area between curves.
9. General antiderivatives, indefinite integrals and applying initial conditions (IC).
10. Differential equations and initial value problems (IVP).
11. The equations of motion.