

Math 221 Section CL1

Midterm Exam I Study Guide

0.1 General information

- **Exam date and time:** The exam will be given during the recitation class time **Thursday, 9/25/2008, 3:00 pm - 3:50 pm** or **4:00 pm - 4:50 pm**. Please attend your regular recitation class period; the TA will have only enough exams for registered students in each recitation class.
- **Exam rules:** No books, notes, calculators, iPods, blackberries, etc. will be allowed. You should be prepared to show your student ID to the TA if requested when turning in your exam. Cheating is a violation of the Student Honor Code and any instances of cheating will be reported to the University Academic Affairs Committee. A copy of the Student Honor Code pertaining to Academic Integrity can be found at:

[www.admin.uiuc.edu/policy/code/ §1-402](http://www.admin.uiuc.edu/policy/code/§1-402)

- **Review sessions:** Part of the recitation class on **Tuesday, 9/23/2008** will be used as a review session for the exam. Please be prepared with questions for the TA about material in the book, material from the lectures, or homework or quiz problems.

0.2 Exam content

The exam will cover sections 8.1 – 8.4, chapter 0 and section 1.2 in the book by Smith and Minton, with the exception of the following topics:

- the Integral Test for convergence of a series (pages 637–638)
- the Error Estimate for the Integral Test (Theorem 3.2, page 640)

The exam will have 5 or 6 questions, some of which may have multiple parts. Some questions may be aimed at conceptual knowledge: statements of definitions, convergence tests, or formulas. *You should be able to reproduce in exact form the definition of the limit of a sequence!* Limits are the key topic in all of calculus. Other questions will be more computational, similar to homework problems. At least one of the problems will have an “applied” component, and will be related to the previous labs.

0.2.1 What you should be able to do

- Tell if a sequence has a limit and (if possible) what the value of the limit is. Give some type of justification for your answer. (Unless otherwise specified, this justification does **not** need to be in the form of a formal $\epsilon - N$ proof. Appeal to a stated theorem or result from the book or from lecture is OK provided you explicitly state the theorem or result which you are citing.)
- Tell if a series is convergent or divergent and (if possible) the value of the sum. Recognize a series as a member of one of the standard classes: geometric, harmonic, alternating, p -series, etc.
- Solve basic high school level algebra or trigonometry problems.
- Understand the concept of the limit of a function at a point, and be able to answer questions about limits, given a function in various forms (as a formula, as a graph, as a table, etc.). Understand the difference between a one-sided limit and a two-sided limit.