INFORMATION FOR MIDTERM EXAM
MATH 451: Spring 2024

- Time: 10:00 – 11:50am, Friday, May 31
- Location: 4096 East Hall
- Topics Covered: everything we have covered in lecture through Wednesday, May 29, up to (but not including) uniform continuity. This corresponds to Sections 1.1 through 5.2 and parts of 11.1 in the Bartle-Sherbert textbook (with the exception of 3.7, which we have skipped for now). Reading one of the recommended texts should be helpful in studying for the exam and is strongly recommended as a supplement to the lectures; however, the exam will primarily be based on the material emphasized in lecture, and there is nothing you will need to know for the exam that appeared only in the textbook.
- Resources: you are not allowed to use any notes, the textbook, or electronic devices during the exam. Bring pencils and an eraser; answers will be written on the exam itself.
- Format: the exam will be organized into five problems, with a few parts in each problem, and will be scored out of 100 points. The problems will consist of the following:
  - **Definitions:** you will be asked to recall the statements of various definitions or important facts from class.
  - **Short Answer:** these will be short, simple proofs or examples or other questions that can be answered in a couple brief sentences.
  - **Computations:** you will be asked to find limits of sequences, suprema or infima of sets, etc.
  - **Limits:** these will be short proofs involving limits; make sure you are comfortable with limits of sequences and also with limits of functions.
  - **General Proofs:** some may be standard results we did in lecture; others may be more interesting.
- On pacing: You are advised to do the problems you know how to do first, and not to spend an inordinate amount of time on any one problem. Many of the problems should be fairly routine, but you should not be surprised or discouraged if there is a problem or two that requires you to stop and think for a moment before writing.
- Suggestions for studying: read through your lecture notes and try to memorize definitions and understand proofs of theorems. Read through the textbook and do any exercises that look relevant or interesting. Read through the homework solutions on Canvas and compare with your answers. As you try to understand and write proofs, draw lots of pictures! Remember that most proofs in this subject can be understood via an appropriate picture.
- Practice Problems: there is a long list of practice problems covering the entire course that has been posted to Canvas. Note the the practice problems which are relevant to the midterm exam are 1–46 and 52–66. (Problems 47–51 cover series, or section 3.7 in the text, which we are postponing until later.) Solutions to the practice problems are now also available. Exam problems will not necessarily "be like" these practice problems, but working through some of them will nevertheless be good preparation for the exam.