

MAT 324: Real Analysis, Fall 2017 Midterm Information

The midterm will take place on Thursday, October 19, in class. It will cover Chapters 1-4 of the book, except for Sections 2.6, 3.5, and 4.7 (probability and mathematical finance).

You will be given a problem sheet and printer paper to write your solutions on. Please start your solution to each problem on a new page. You do not need to copy the statements of the problems, but please mark clearly what problem you are solving. Please hand in your solutions in order, staple them (stapler provided), and write your name at the top of the front sheet. Please do not hand in anything you do not want to be graded.

You need to know the definitions and main statements from the textbook and be able to do the textbook and homework exercises and prove lemmas/propositions and not overly technical theorems from the textbook. You do not need to memorize the definitions and statements word for word, but you need to be able to convey their meaning precisely.

The terms and statements you should know include: symmetric difference, countable, uncountable, metric space, open, closed, continuous, Cauchy sequence, complete metric space, Riemann integral, Riemann's criterion, fundamental theorem of calculus, null set, Cantor set, Lebesgue/Cantor function, outer measure, subadditivity, additivity, Lebesgue measurable set, Lebesgue measure, sigma field, Borel set, measure space, complete measure space, completion of a measure space, (Lebesgue) measurable function, Borel function, simple/step function, Lebesgue integral, Fatou's lemma, Monotone Convergence Theorem, Integrable Function, Dominated Convergence Theorem, Beppo-Levi theorem, characterization of Riemann integrable functions, Riemann-Lebesgue lemma.