

MATH 3150: Real Analysis

Fall 2022

Schedule of Topics, Problem Sets, and Midterm Test: The following is a tentative schedule. You are responsible for being aware of any changes. Changes will be announced during class and posted on Canvas.

Week of	Topics, due dates for problem sets and the midterm
September 7–9	§1: The natural numbers, \mathbb{N} , and proof by induction. §2: The rational numbers, \mathbb{Q} , and the rational zeros theorem
September 12–16	§3. The real numbers, \mathbb{R} , and the triangle Inequality §4. The Completeness Axiom for \mathbb{R} §5. The symbols $+\infty$ and $-\infty$ Problem set 1 due in class on Wednesday the 14th
September 19–23	§7. Limits of sequences §8. A discussion about proofs
September 26–30	§9. Limit theorems for sequences §10. Monotone and Cauchy sequences §11. Subsequences Problem set 2 due in class on Wednesday the 28th
October 3–7	§12. \liminf and \limsup §14. Series §15. Alternating series and integral tests
October 10–14	§17. Continuous functions §18. Properties of continuous functions §19. Uniform continuity No class meeting on Monday October 10, Indigenous Peoples Day Problem set 3 due in class on Wednesday October 12th
October 17–21	§19. Uniform continuity (continued) §20. Limits of functions §23. Power series
October 24–28	§24. Uniform convergence §25. More on uniform convergence Review for the Midterm Midterm in class on Wednesday, October 26
October 31 to November 4	§26. Differentiation and integration of power series §28. Basic properties of the derivative
November 7–11	§29. The mean value theorem §30. L'Hospital's rule Problem set 4 due on Wednesday the 9th
November 14–18	§31. Taylor's theorem (not including items 31.8 and beyond) §32. The Riemann integral
November 21–25	§33. Properties of the Riemann integral Problem set 5 due on Monday the 21st Thanksgiving recess, no class meeting on November 23–25
November 28 to December 2	§34. Fundamental theorem of calculus Begin to Review for the Final Exam
December 5–7	Review for the Final Exam