Review, Math 30750

Exam 1 is on Friday, February 24, 11:30 a.m.–12:30 p.m. and will cover everything we have done through §3.3, so Chapter 1, the non–starred sections of Chapter 2 and sections 3.1–3. What should you expect on the exam? There will be a multipart problem asking you for examples.You will be asked to state at least one definition or theorem. There will be two or three statements for you to prove.

Major Terms

- real numbers (ordered (axioms O1-5) field (axioms P1-9) satisfying Axiom of Completeness)
- countable set
- convergence of a sequence
- divergence to ∞ or $-\infty$
- bounded sequence
- Cauchy sequence
- greatest lower bound, least upper bound
- limit point
- continuous function (and equivalent ϵ, δ criterion)
- limit of a function
- uniformly continuous function
- partition, upper and lower sums
- Riemann integrable, Riemann integral

Major Theorems

- Cauchy criterion for convergence
- Convergence of bounded monotone sequences
- Existence of sup of set bounded above
- Bolzano–Weierstrass theorem
- A continuous function on a closed bounded interval is bounded. (Theorem 3.2.1)

- A continuous function on a closed bounded interval takes its inf and sup. (Theorem 3.2.2)
- Intermediate Value Theorem
- A continuous function on a closed bounded interval is uniformly continuous. (Theorem 3.2.5)
- A continuous function on a closed bounded interval is Riemann integrable. (Theorem 3.3.1)