MATH 112 SPRING 2019 - INFORMATION ABOUT THE FINAL EXAM

The final exam will be on Monday May 13, from 9:00 to 12:00, in Emerson 210.

The final will be an *open book* exam. The textbook Rudin "Principles of mathematical analysis" will be allowed, but other books, lecture notes or calculators will not be permitted.

The material that will be covered by the exam is most of Rudin Chapters 1 to 7, and part of Chapter 8.

- Chapter 1, excluding the appendix (construction of $\mathbb{R}$).
- Chapter 2, excluding the paragraph on perfect sets (2.43–2.44).
- Chapter 3, excluding Theorems 3.27, 3.37, 3.41-3.42, 3.44.
- Chapter 4 (everything).
- Chapter 5, excluding differentiation of vector-valued functions (5.16–5.19).
- Chapter 6, in the context of Riemann integrals only ($\int \ldots dx$), and excluding rectifiable curves (6.26–6.27).
- Chapter 7, excluding equicontinuity (7.19–7.25) and the Stone-Weierstrass theorem (7.28–7.33), but including the Weierstrass theorem (Theorem 7.26).
- from Chapter 8, only basic facts about power series (Theorem 8.1 and its corollary), exponential and logarithmic functions, and trigonometric functions (pages 178–184).

Practice materials:

- Study from the homework assignments, midterm, and practice problems for the midterm (available on the web page).
- Extra practice problems from Rudin (some of them are harder than a typical exam problem; don't spend hours on a single problem!):

  Chapter 1: 6, 11, 17.
  Chapter 2: 5, 8, 9, 13, 14, 20.
  Chapter 3: 3, 4, 10, 20, 21 (Hint: consider a sequence $\{p_n\}$ with $p_n \in E_n$).
  Chapter 4: 12, 15 (Hint: given $x < y$, consider a point of $[x, y]$ where f reaches its maximum), 16, 20 (see also # 21 and # 22 for nice applications of # 20).
  Chapter 5: 1, 3, 5, 11, 12, 22.
  Chapter 6: 5, 13 (hard; ignore (d)), 15 (use # 10 in the 2nd part), 16.
  Chapter 7: 1 ("uniformly bounded" means all f_n are bounded by the same constant M), 5, 6, 7, 9, 14 (hard).
  Chapter 8: 1, 4, 7, 9, 22 (first part only).