

Functions of a Real Variable

MATH 70200

Spring 2012

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General Information About The Course

The course will cover the basics of Lebesgue measure and Lebesgue integration, and I will not assume students have any prior familiarity with that topic. Applications to Fourier analysis will be emphasized, and connections with probability theory will be indicated. If time permits, Haar measure and the Haar integral will be introduced.

Students are expected to be familiar with the usual topology of \mathbb{R}^n , e.g., the Heine-Borel Theorem, with metric spaces, completions thereof, and with uniform convergence. The topological basics will be reviewed, but rather quickly.

I intend to distribute course notes. These notes will include many exercises, and the course grade will be based on hand-in solutions to these problems. Students will have some choice regarding which problems to hand in, i.e., the number of exercises will considerably exceed the number required to be handed in.