

University of Colorado  
Department of Mathematics

2022/23 Semester 1

Math 6310 Real Analysis 1

Assignment 5

**Due uploaded to Canvas Friday November 18, 2022 at 11:59 p.m.**

1. Read the remaining parts of Chapter 4.6, all of Chapter 5.1, 5.2, 5.3, 6.1, 6.2, and 6.3.
2. Please do problems #46 and #47 on p. 96 in the Royden-Fitzpatrick book. Problem #46 is known as the Riemann-Lebesgue Lemma and is used in the theory of Fourier series. A good hint for Problem #46 is to prove the result when  $f$  is a step function first, and then approximate the integrable function  $f$  by **step functions**.
3. Do the following problems in the Royden-Fitzpatrick book: p. 102 #6, #7; p. 109, #1; pp. 114–115 #15, 18, 20; pp. 118–119, #26, 29(a), (b), 31, 34.