

**Math 2513**  
**Review for Third Exam**  
June 27, 2014

The second exam will cover sections 5.4, 5.6, 6.1, 6.2, 7.1, 7.2, 7.3, 8.1, 8.2, and 8.3 of the text. The problems will be similar to those done in class and on homework assignments 12 through 16.

**5.4 Strong Mathematical Induction.** You should review what strong mathematical induction is (see the blue box on page 268), and review the examples done in class: namely, Example 5.4.1 and problem 13 at the end of the section (which was done in class). See also problem 9 at the end of the section, which was on Assignment 12. You do not need to read the remainder of the section.

**5.6 Defining Sequences Recursively.** You should review what the Fibonacci numbers are (see Example 5.6.6, problems 24 – 34 at the end of the section, and the examples done in class). You should also review the recursive definition of a sum (see the blue box on page 300). You can skip the remainder of this section.

**6.1 Set Theory: Definitions and the Element Method of Proof.** You should review the entire section, except that you can skip the discussion of the algorithm on pages 348 and 349.

**6.2 Properties of Sets.** This whole section is useful to review.

**7.1 Functions defined on general sets.** Some material in this section is repeated from chapter 1. You don't need to look at all the examples; it's enough to review from the beginning of the section through page 387, and skip from there to Examples 7.1.12, 7.1.13, and 7.1.14.

**7.2 One-to-one and Onto, Inverse Functions.** Review pages 398 through 400, 402 through 405, the definition of one-to-one correspondence (or bijection) on page 408, and pages 411 and 412.

**7.3 Composition of Functions.** We covered this entire section. All of it is worth reviewing and especially the proofs of Theorems 7.3.3 and 7.3.4.

**7.4 Cardinality.** We discussed cardinality in class, but it won't appear on the exam. You can skip this section.

**8.1 Relations on Sets.** Review the material on pages 442, 443, and 446; you can skip the rest if you like.

**8.2 Reflexivity, Symmetry, and Transitivity.** Review the entire section, except you can skip the material on the last page.

**8.3 Equivalence Relations.** Review the entire section, except you can skip Examples 8.3.3, 8.3.4, 8.3.7, and 8.3.9.

**8.4 Modular Arithmetic.** You should look at Theorem 8.4.1 and Theorem 8.4.2 and their proofs. These theorems are about concepts we've already studied in the class in earlier sections, and collect some useful facts about them. We will not cover the rest of the section.