Math 2513
Review for Third Exam
June 28, 2013

The third exam will be on material from sections 5.2, 6.1, 6.2, 6.3, 9.1, and 9.5 of the text. See Assignments 12 through 16 for homework problems on this material.

5.2. Strong induction and well ordering. From this section we only covered the material on strong induction, not the material on well-ordering. You can review this section from the beginning through Example 4. You need not read the subsections on "Strong induction in computational geometry" and "Proofs using the well-ordering property".

6.1. The basics of counting. This section gives a number of examples illustrating a few basic principles called the product rule, the sum rule, the subtraction rule, and the division rule. You can look at these rules, but they're really just common sense, and it's best just to go through the examples till you understand on your own how they are done, and how to do similar examples.

6.2. The pigeonhole principle. We've covered the entire section, except that we haven't done examples in class yet like Examples 11 and 12, which are fairly tricky (maybe I'll do one in class Thursday). Probably the best way to review this material is to go over the homework assignments and try a few extra problems from the end of the section. See also the supplementary exercises on page 441.

6.3. Permutations and combinations. We covered this entire section. Besides reading the examples in this section, it might help to review the problems in the handouts on counting from class. There are only two basic formulas, the formula for permutations in Theorem 1 and the formula for combinations in Theorem 2, but it takes a good deal of practice to be able to apply these formulas correctly. Each counting problem has to be approached differently; there is not a single method for doing all counting problems. Another review aid might be the handouts you got in class containing some counting problems.

9.1. Relations and their properties. You should know the definition of relation, and what the reflexive, symmetric and transitive properties are. Review from the beginning of the section through Example 14. You can skip the last subsection on "Combining relations".

9.5. Equivalence relations. You should know what equivalence relations and equivalence classes are. Read from the beginning of the section through Example 10.

We did talk about Theorem 1 on page 612 and its proof in class, but there won't be problems on the exam which specifically require you to know this theorem.