

MATH 4400, MWF 12:30-13:30 IN LCB 215

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1. COURSE OVERVIEW

This is an introductory Number Theory course. We will follow closely the lecture notes available on my web page:

www.math.utah.edu/~savin

We expect to cover Chapters 1 - 6, 8 and 9. We will emphasize the role and importance of groups in the subject. To give you a taste of the course, here are some problems that will be studied and nicely answered.

- Show that the sequences $1, 4, 7, 10, 13 \dots$ and $2, 5, 8, 11, 14, 17 \dots$ contain infinitely many primes. (The problem of primes in a progression.)
- Develop a fast test to decide if $2^p - 1$, a Mersenne number, is a prime number or not.
- Find all integral solutions of the Pell equation $x^2 - 2y^2 = 1$. (This in turn can be used to find all square-triangular numbers.)

It is interesting to mention that the first of these problems is solved using calculus. The second makes use of a group of order 2^p , while the third is solved by combining a geometric argument with an observation that all solutions of the Pell equation form a group!

2. GRADING

Grade will be based on 6 exams: 4 half hour quizzes, a midterm, and the final exam. The quizzes and the midterm will take place every other Friday, starting with the second week, 05/25. The midterm is on 06/22. The final exam is on Thursday, 08/02 from 12:30 to 14:30 in LCB215. HW is all exercises in the notes at the end of each section. I will not collect HW. However, each quiz will be a selection of HW problems. Should you need some help with the material, stop by my office. (My office hours are MWF, 11:30 - 12:30.)

3. COURSE LOG

The first week: Sections 1-3 in Chapter 1.