

MHF 2300 Review for Exam 3
April 23, 2007 from 1:00 to 3:30

The exam will cover section 7.4 and Chapter 8 plus any supplemental material given in class. Since this exam will serve as our final exam, it will incorporate material from earlier in the class as well. The format of the exam will be similar to the previous exams. There will be problems that focus on definitions, calculations, and proofs.

- I. Greatest Common Divisor (gcd)
 - A. Know the definitions of the $\gcd(a,b)$ and “relatively prime integers”.
 - B. Know how to find the $\gcd(a,b)$ using the Euclid’s Algorithm.
 - C. Be able to express the $\gcd(a,b)$ as a linear combination of a and b .
 - D. Be able to properly apply Euclid’s Lemma on bottom of page 414.
- II. Prime Numbers
 - A. Know the Fundamental Theorem of Arithmetic and how to apply it.
 - B. Find prime factorizations and use them to calculate gcd’s, divisors, ect.
- III. Linear Diophantine Equations (LDE)
 - A. Know when there are solutions to a LDE.
 - B. Be able to find all possible solutions to a LDE.
 - C. Relate solving linear congruences like $ax \equiv b \pmod{n}$. See Activity 8.28 on page 428 and Number Theory Portfolio part IV problem 3.
- IV. Modular Arithmetic (covers sections 7.4 and 8.3)
 - A. Be able to do calculations in Z_n .
 - B. Be able to describe $[a]$ as a set of integers.
 - C. Be able to use and prove various divisibility rules.
 - D. Be able to solve equations in Z_n (see exercise 2 in section 7.4)

Review the homework problems from the sections being tested and don’t forget the additional problems given on the website.