MIDTERM INFORMATION MATH 2231
Friday, Oct. 29, 2010 at 1:30

The midterm will cover the following sections of the text book:

Chapter 0 – (should know this, but won't be tested directly)

Chapter 1

Chapter 2

Chapter 3

Chapter 4 – pages 72-77 (skip the section on classification)

Chapter 5

Chapter 6 – pages 122-129 (skip inner and outer automorphisms)

Chapter 7 – pages 138-144 (skip stabilizer and orbits)

The mid-term will be 50 minutes. You will not be allowed to use a calculator. You will also not be allowed to bring in any notes. Below is a list of the definitions and theorems you should know.

Definitions and terms. You will need to know the definitions of the following terms and know examples of each term:

equivalence relation, partition, function, one-to-one, onto, group, dihedral group, binary operation, abelian group, group of integers modulo n, general linear group, $U(n)$ (multiplication mod n), identity, inverse, order of a group, order of an element, subgroup, trivial subgroup, cyclic group, center of a group, centralizer of an element, generator, permutation, cycle of length n, even and odd permutation, alternating group, isomorphism, cosets, index

Theorems. You will need to know the statements of the following theorems, and how to apply them:

Theorem 0.1 (The Division Algorithm), Theorem 0.2, Theorem 1.6 (The Euclidean Algorithm), Theorem 2.1, Theorem 2.2, Theorem 2.3, Theorem 2.4, Theorem 3.2, Theorem 3.4, Theorem 3.5, Theorem 3.6, Theorem 4.1, Corollary 1 and 2 of Theorem 4.1, Corollary 4 of Theorem 4.2, Theorem 5.1, Theorem 5.2, Theorem 5.3, Theorem 5.2, Theorem 5.5, Theorem 5.6, Theorem 6.1, Theorem 6.2, Theorem 6.3, Lemma on page 139, Theorem 7.1, Corollary 1, 2, 3, and 4 of Theorem 7.1.

I will also ask you to prove one of the following theorems:

Theorem 3.4, Theorem 4.1, Theorem 5.4, Theorem 6.2 [Property 4], Lemma on page 139 [Property 4]

Exam Format. The exam will be based on the above material. The questions will have the following format:

1. [**15 pts**] There will be five questions which will ask you to write a definition, give an example, or apply a theorem. Some of these questions will involve calculations.

2. [**15 pts**] There will be 7 proof questions, of which you will have to prove 3. Six of the questions will be new, unseen problems. One question will ask you to prove one of the theorems given above.