

Mathematics 221A-Graduate Algebra
Fall 2009

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appointment

Text: Basic Algebra I by N. Jacobson, Dover Publications, 2009

Course: The goal of this course is to study the basic algebraic structures: groups, rings, fields and modules. During the first semester I will discuss Chapters 1 through 3. Most of the class time will be spent covering the material from the text with further explanations as needed. Some class time may involve student presentation of homework solutions.

Each student should keep a homework notebook with solutions to assigned exercises on separate pages. Selected problems will be collected every other week for grading. Final grade will be based on homework notebook, take-home and in-class exams, and a comprehensive final exam.

Chapter 0: Review and Introduction

Chapter 1: Monoids and Groups

Assignment 1: 1.1: 5; 1.2: 1, 2, 5, 7, 8, 9, 11-14; 1.3: 5; 1.4: 2, 3; 1.5: 2-5; 1.6: 2, 4, 5;
Assignment 2: 1.7: 2-6; 1.8: 4, 5, 9-11; 1.9: 5, 7-10; 1.10: 1; 1.11: 1, 2; 1.12: 4, 5, 6, 9; 1.13: 2-5

Chapter 2: Rings

Assignment 3: 2.1: 3, 4; 2.2: 1-4, 6-10; 2.3: 6, 8; 2.4: 1-5, 9, 10; 2.5: 5, 7; 2.6: 2, 5; 2.7: 4, 6;

Assignment 4: 2.8: 11; 2.9: 3, 5, 6; 2.10: 1, 2, 8; 2.11: 1-4, 8; 2.12: 1; 2.13: 3; 2.14: 3, 6, 7; 2.15: 2, 3, 5, 11, 12; 2.16: 1-4;

Chapter 3: Modules

Assignment 5: 3.1: 2, 4; 3.2: 1, 2, 4, 8; 3.3: 1, 3-8; 3.4: 1-4, 6; 3.5: 1-4; 3.6: all;

Assignment 6: 3.7: 1-4, 6; 3.8: 1-3; 3.9: 1-3, 7-9; 3.10: 1-7; 3.11: 2-5;