MA 463 Abstract Algebra

University of Saint Mary — Fall 2024

Each item below refers to a section of *Introduction to Abstract Algebra* by Dylan C. Beck.

Exam 1: Group Theory

- §1.1: Groups — Basic Definitions and Examples
- §1.2: Groups — Basic Properties and Subgroups
- §1.3: Cyclic Groups
- §1.4: Complex Numbers as a Group Under Multiplication
- §1.5: the Symmetric Group on n Letters
- §1.6: Rigid Motions and Dihedral Groups
- §1.7: Cosets and Lagrange's Theorem
- §1.8: Quotient Groups and Normal Subgroups
- §1.9: Group Homomorphisms
- §1.10: Group Isomorphism Theorems

Exam 2: Ring Theory

- §2.1: Rings and Ring Homomorphisms
- §2.2: Ideals and Quotient Rings
- §2.3: Ring Isomorphism Theorems
- §2.4: Integral Domains and Fields
- §2.5: Prime and Maximal Ideals

Exam 3: Field Theory

- §3.1: Polynomial Rings and Polynomial Long Division
- §3.2: Polynomial Irreducibility
- §3.3: Roots of Polynomials and Field Extensions
- §3.4: Simple Extensions
- §3.5: Finite Extensions