

Ring Theory.

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October 24, 2022

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Chapter 1

Rings.

1.1 Definitions and Examples.

1.2 Polynomial Rings, Matrix Rings, and Group Rings.

1.3 Ring Homomorphisms and Factor Rings.

1.4 Ideals.

1.5 Rings of Fractions.

1.6 The Chinese Remainder Theorem.

Chapter 2

Domains.

2.1 Euclidian Domains.

2.2 Principle Ideal Domains.

2.3 Unique Factorization Domains.

Chapter 3

Polynomial Rings.

3.1 Definitions.

3.2 Polynomial Rings over Fields.

3.3 Unique Factorization of Polynomials.

3.4 Irreducibility.

3.5 Multivariate Polynomial Rings.

3.6 Gröbner Bases.

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