

**PENN STATE UNIVERSITY
MATH 21: COLLEGE ALGEBRA I**

Text: Intermediate Algebra, 4th edition, 2005
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Course Outline

Chapter 3 GRAPHS AND FUNCTIONS

- 3.1 The Rectangular Coordinate System
- 3.2 Graphs of Equations
- 3.3 Slope and Graphs of Linear Equations
- 3.4 Equations of Lines
- 3.5 Graphs of Linear Inequalities
- 3.6 Relations and Functions
- 3.7 Graphs of Functions

Chapter 5 POLYNOMIALS AND FACTORING

- 5.1 Integer Exponents and Scientific Notation
- 5.2 Adding and Subtracting Polynomials
- 5.3 Multiplying Polynomials
- 5.4 Factoring Polynomials by Grouping and Special Forms
- 5.5 Factoring Trinomials
- 5.6 Solving Polynomial Equations by Factoring

Chapter 2 LINEAR EQUATIONS AND INEQUALITIES

- 2.5 Absolute Value Equations and Inequalities

Chapter 6 RATIONAL EXPRESSIONS AND EQUATIONS

- 6.1 Rational Expressions and Functions
- 6.2 Multiplying and Dividing Rational Expressions
- 6.3 Adding and Subtracting Rational Expressions
- 6.4 Complex Fractions
- 6.5 Dividing Polynomials and Synthetic Division **
- 6.6 Solving Rational Equations
- 6.7 Applications and Variation

Chapter 7 RADICALS AND COMPLEX NUMBERS

- 7.1** Radicals and Rational Exponents
- 7.2** Simplifying Radical Expressions
- 7.3** Adding and Subtracting Rational Expressions
- 7.4** Multiplying and Dividing Radical Expressions
- 7.5** Radical Equations and Applications
- 7.6** Complex Numbers

Chapter 8 QUADRATIC EQUATIONS AND INEQUALITIES

- 8.1** Solving Quadratic Equations: Factoring and Special Forms
- 8.2** Completing the Square
- 8.3** The Quadratic Formula
- 8.4** Graphs of Quadratic Functions
- 8.5** Applications of Quadratic Equations

Chapter 11 SEQUENCES, SERIES AND THE BINOMIAL THEOREM

- 11.1** Sequences and Series
- 11.4** The Binomial Theorem

NOTES:

1. Use of calculators and calculators with Computer Algebra System are up to the discretion of each instructor.
2. Items with ** are optional.
3. Chapter 3 (Graphs and Functions) and Chapter 5 (Polynomials and Factoring) should be a review; so go over them quickly.
4. Be sure to cover 'Equations in the Quadratic Form' found in Examples 4 and 5 of Section 8.1.
5. Stress word problems.
6. Section 6.5 will be covered in Math 22.
7. The Final Exam must consist of questions that cover the following topics.

- Chapter 3** The distance formula
Graphing an equation by hand
Finding x- and y- intercepts of the graph of an equation
Finding the slope of a line
Evaluating functions
Graphing a function
Finding the domain and range of a function
- Chapter 5** Operations of polynomials
Factoring polynomials completely
Solving a polynomial equation by factoring
Solving absolute value equations and inequalities (Section 1.5)
- Chapter 6** Operations of rational expressions
Solving an equation with rational expressions
- Chapter 7** Simplifying expressions with integer and rational exponents
Operations involving radical expressions
Solving equations involving radicals
- Chapter 8** Solving quadratic equations (all techniques)
Applications involving quadratic equations
- Chapter 11** Find the nth term of a sequence
Sigma notation and series