

Algebra II

Course Outline

- I. Solving Equations and Inequalities
 - A. Expressions and Formulas
 - B. Properties of Real Numbers
 - C. Solving Equations
 - D. Solving Absolute Value Equations
 - E. Solving Inequalities
 - F. Solving Compound and Absolute Value Inequalities

- II. Linear Relations and Functions
 - A. Relations and Functions
 - B. Linear Equations
 - C. Slope
 - D. Writing Linear Equations
 - E. Using Scatter Plots
 - F. Special Functions
 - G. Graphing Inequalities

- III. Systems of Equations and Inequalities
 - A. Solving Systems of Equations by Graphing
 - B. Solving Systems of Equations Algebraically
 - C. Solving Systems of Inequalities by Graphing
 - D. Linear Programming
 - E. Solving Systems of Equations in Three Variables

- IV. Matrices
 - A. Introduction to Matrices
 - B. Operations with Matrices
 - C. Multiplying Matrices
 - D. Transformations with Matrices
 - E. Determinants
 - F. Cramer's Rule
 - G. Identity and Inverse Matrices
 - H. Using Matrices to Solve Systems of Equations

- V. Polynomials
 - A. Monomials
 - B. Polynomials
 - C. Dividing Polynomials
 - D. Factoring Polynomials
 - E. Roots of Real Numbers
 - F. Radical Expressions
 - G. Rational Exponents
 - H. Radical Equations and Inequalities
 - I. Complex Numbers

- VI. Quadratic Functions and Inequalities
 - A. Graphing Quadratic Functions
 - B. Solving Quadratic Equations by Graphing
 - C. Solving Quadratic Equations by Factoring
 - D. Completing the Square

- E. The Quadratic Formula and the Discriminant
- F. Analyzing Graphs of Quadratic Functions
- G. Graphing and Solving Quadratic Inequalities

VII. Polynomial Functions

- A. Polynomial Functions
- B. Graphing Polynomial Functions
- C. Solving Equations Using Quadratic Techniques
- D. The Remainder and Factor Theorems
- E. Roots and Zeros
- F. Rational Zero Theorem
- G. Operations on Functions
- H. Inverse Functions and Relations
- I. Square Root Functions and Inequalities

VIII. Conic Sections

- A. Midpoint and Distance Formulas
- B. Parabolas
- C. Circles
- D. Ellipses
- E. Hyperbolas
- F. Conic Sections
- G. Solving Quadratic Systems

IX. Rational Expressions and Equations

- A. Multiplying and Dividing Rational Expressions
- B. Adding and Subtracting Rational Expressions

- C. Graphing Rational Functions
 - D. Direct, Joint, and Inverse Variation
 - E. Classes of Functions
 - F. Solving Rational Equations by Graphing
- X. Exponential and Logarithmic Relations
- A. Exponential Functions
 - B. Logarithms and Logarithmic Functions
 - C. Properties of Logarithms
 - D. Common Logarithms
 - E. Base e and Natural Logarithms
 - F. Exponential Growth and Decay
- XI. Sequences and Series
- A. Arithmetic Sequences
 - B. Arithmetic Series
 - C. Geometric Sequences
 - D. Geometric Series
 - E. Infinite Geometric Series
 - F. Recursion and Special Sequences
 - G. The Binomial Theorem
 - H. Proof and Mathematical Induction