THE PHILLIPS ACADEMY

P.O. Box 175
Broadway, NJ 08808
908.367.3521

TOPICAL OUTLINE FOR ALGEBRA II

A. REVIEW OF REAL NUMBERS

1. Review of Number Systems
2. Operations on Rational Numbers
3. Variable Expressions
4. Verbal Expressions and Variable Expressions

B. FIRST-DEGREE EQUATIONS AND INEQUALITIES

1. Solving First-Degree Equations
2. Coin and Integer Applied Problems
3. Mixture and Motion Problems
4. First-Degree Inequalities
5. Absolute Value Equations and Inequalities

C. LINEAR FUNCTIONS AND INEQUALITIES IN TWO VARIABLES

1. Rectangular Coordinate System
2. Identifying Functions
3. Properties of Functions
4. Linear Functions
5. Slope
6. Equations of Lines
7. Parallel and Perpendicular Lines
8. Linear Inequalities
9. Inequalities in Two Variables

D. CONIC SECTIONS

1. Introduction to Conic Sections
2. Equations of Circles
3. Graphing Circles
4. Applications of Circles

E. SYSTEMS OF EQUATIONS AND INEQUALITIES

1. Solving Systems by Graphing
2. Solving Systems by Substitution
3. Solving Systems by Elimination
4. Applications of Solving Systems
5. Systems of Linear Inequalities

F. POLYNOMIALS

1. Exponential Expressions
2. Introduction to Polynomials
3. Multiplying Polynomials
4. Dividing Polynomials
5. Graphing Polynomials
6. Translations of Polynomials and Other Functions
7. General Factoring
8. Special Factoring

G. RATIONAL EXPRESSIONS

1. Operations on Rational Expressions
2. Restrictions and Domain
3. Complex Fractions
4. Rational Equations
5. Ratio and Proportion
6. Variation

H. QUADRATIC EQUATIONS

1. Solving Quadratic Equations by Factoring
2. Solving Quadratic Equations by Taking Square Roots
3. Solving Quadratic Equations by Using the Quadratic Formula
4. Solving Quadratic Equations by Completing the Square
5. Determining the Vertex, Intercepts, and Maximum/Minimum of Parabolic Equations
6. Graphing Quadratic Equations
7. Applications Involving Quadratic Equations

I. EXPONENTS AND RADICALS

1. Rational Exponents
2. Radical Expressions
3. Conversions Between Rational Exponents and Radicals
4. Operations on Rational Expressions
5. Solving Radical Equations

J. IMAGINARY AND COMPLEX NUMBERS

1. Introduction to Imaginary Numbers
2. Operations on Imaginary Numbers
3. Introduction to Complex Numbers
4. Operations on Complex Numbers

K. EXPONENTIAL, LOGARITHMIC, AND TRIGONOMETRIC FUNCTIONS

1. Introduction to Exponential Functions
2. Graphing Exponential Functions
3. Introduction to Logarithms
4. Operations on Logarithms
5. Exponential and Logarithmic Equations
6. Introduction to Trigonometric Functions and the Unit Circle
7. Using Trigonometry to Solve Right Triangles
8. Applications Involving Basic Trigonometric Functions