



Online Courses for High School Students
1-888-972-6237

Algebra II

COURSE DESCRIPTION:

In this course students will use their prior knowledge from previous courses to learn and apply Algebra II skills. This course will include topics such as functions, radical functions, rational functions, exponential and logarithmic functions, trigonometry, geometry, conic sections, systems of equations, probability, and statistics. Students will apply the skills that they learn in this course to real world situations.

COURSE OBJECTIVES:

After completing the course, students will be able to:

- Understand the major topics in Algebra II
- Identify how the major topics in Algebra II relate to real world situations
- Apply the topics in Algebra II to various problems
- Explain how the topics in Algebra II relate to the greater context of mathematics

PREREQUISITES: Algebra I

COURSE LENGTH: Two semesters

REQUIRED TEXT: None

Note: Java is needed for the embedded graphing calculator applet (GCalc). A free download is available at:

<http://www.java.com/en/download/>

COURSE OUTLINE:

UNIT I: Linear and Quadratic Functions

Section 1 - Functions and Relations

Section 2 - Solving Linear Equations and Inequalities

Section 3 - Writing and Graphing Linear Equations and Inequalities

Section 4 - Graphing Quadratic Functions

Section 5 - Solving Quadratic Equations and Inequalities

Section 6 - Graphing Zeros and Min/Max Values

Section 7 - Determining a Quadratic Function

UNIT II: Radical Functions

Section 1 - Roots and Properties of Exponents

Section 2 - Graphing Radical Functions and Domain and Range

Section 3 - Solving Radical Equations

UNIT III: Rational Functions

Section 1 - Direct and Inverse Variation

Section 2 - Graphing Rational Functions and Domain and Range

Section 3 - Solving Rational Equations

UNIT IV: Exponential and Logarithmic Functions

Section 1 - Comparing Exponential and Logarithmic Functions

Section 2 - Graphing Exponential Functions and Domain and Range

Section 3 - Exponential Growth and Decay

Section 4 - Graphing Logarithmic Functions and Domain and Range

Section 5 - Solving Exponential and Logarithmic Equations

UNIT V: Trigonometric Functions

Section 1 - Right Triangle Trigonometry

Section 2 - Basic Angles and Radian Measure

Section 3 - Trigonometric Values in all Four Quadrants

Section 4 - Inverse Trigonometric Values

Section 5 - Graphing Trigonometric Functions

UNIT VI: Systems of Equations and Inequalities

Section 1 - Matrices and Determinants

Section 2 - Systems of Equations

Section 3 - Systems of Inequalities

Section 4 - Systems of Equations with Three Variables

UNIT VII: Geometry

Section 1 - Constructing and Transforming Geometric Shapes

Section 2 - Geometry of Quadrilaterals

Section 3 - Geometry of Triangles

Section 4 - Geometry of Circles

UNIT VIII: Conic Sections

Section 1 - Introduction to Conic Sections

Section 2 - Parabolas

Section 3 - Circles

Section 4 - Ellipses

Section 5 - Hyperbolas

UNIT IX: Probability and Statistics

Section 1 - Determining Probability

Section 2 - Permutations and Combinations

Section 3 - Binomial Theorem

Section 4 - Scatterplots and Lines of Best Fit

Section 5 - Scatterplots and Curves of Best Fit

Section 6 - Sampling Methods and Experimental Designs

Section 7 - The Normal Curve

UNIT X: Patterns and Sequences, Logic and Reasoning

Section 1 - Arithmetic Sequences and Series

Section 2 - Geometric Sequences and Series

Section 3 - Logic