San Ramon Valley Unified School District
Course Syllabus

Course:

Algebra II

Text(s):

McDougal Littell Algebra and Trigonometry Structure and Method Book 2

Course Description:

Algebra II is a college preparatory course which builds on the foundation of Algebra I. Topics covered include: the Real and Complex Number Systems, solving equation and inequalities, functions including linear, quadratic, exponential, logarithmic and rational. Sequences and series, determinants, conic sections, the Binomial Theorem, permutations, combinations and probability will also be covered, as will applications through practice and solving word problems.

California Standards Covered in this Course:

Algebra II follows the California Mathematics Content Standards for Algebra II . Emphasis in this course is on the skills identified in the Course outline below. A full description of the Standards can be accessed at http://www.cde.ca.gov/ta/tg/sr/documents/algebraII1105.doc

Course Outline (Skills Taught):

- **Basic Concepts of Algebra**
    - Real #'s and their graphs/Simplifying Expressions
    - Basic Properties/Sums and differences
    - Products and Quotients/ Solving in 1 variable/ Words into symbols

- **Inequalities**
    - Solving inequalities in one variable/Combined
    - Problem solving using inequalities
    - Abs. Val. in open sentences
    - Open sentences in 2 variables
    - Graphs in 2 variables/slope of a line
    - Finding the equation of a line
    - Systems of Linear equations in 2 variables
    - Problem solving using linear systems
    - Linear inequalities in 2 variables
    - Functions and Relations
    - Linear functions

- **Products and Factors of Polynomials**
    - Polynomials
    - Using laws of exponents
    - Multiplying polynomials
    - Using prime factorization
    - Factoring Polynomials
    - Factoring quadratic polynomial
    - Solving polynomial equations
    - Problem solving using polynomials
    - Solving polynomial inequalities

- **Rational Expressions**
    - Quotients of monomials
    - Zero and negative exponents
    - Scientific notation and significant digits
    - Rational algebraic expressions
    - Products and quotients of rational expressions
    - Sums and differences of rational expressions
    - Complex fractions
    - Fractional exponents
    - Fractional equations

- **Irrational and Complex Numbers**
    - Roots of real numbers
    - Properties of radicals
    - Sums of radicals
    - Binomials containing radicals
    - Equations containing radicals
    - Imaginary numbers
    - Complex numbers

- **Quadratic Equations and Functions**
    - Completing the square
    - The quadratic formula
    - The discriminant
    - Equations in quadratic form
    - Graphing parabolas
    - Quadratic functions
    - Writing quadratic equations and functions

- **Variation and Polynomial Equations**
  - Dividing Polynomials
  - Synthetic Division
  - Remainder/Factor Theorems/ Conjugate Roots and Number of Roots

- **Analytic Geometry (Conic Sections)**
  - Distance and Midpoint Formula
  - Circles
  - Parabolas
  - Ellipses
  - Hyperbolas
  - More on Conic Sections
  - Geometry of Quadratic Systems
  - Solving Quadratic Systems
  - Systems of Linear Equations in 3 Variables

- **Exponential and Logarithmic Functions**
  - Rational Exponents
  - Real Number Exponents
  - Composition and Inverses of Functions
  - Defining Logarithms
  - Laws of Exponents
  - Applications of Logarithms
  - Problem Solving with Exponential Growth/Decay

- **Statistics and Probability**
  - Presenting and analyzing statistical data
  - Fundamental counting principles
  - Permutations
  - Combinations
  - Sample space and events / Probability
  - Mutually Exclusive and independent events

- **Sequences and Series**
  - Powers of binomials
  - General Binomial expansion
  - Types of sequences
  - Arithmetic sequences
  - Geometric sequences
  - Series and sigma notation
  - Sums of arithmetic and geometric series
  - Infinite Geometric Series

ELA/History/Science Tie-In: