Honors Algebra 2

Course Description:

In Thinkwell Honors Algebra 2, students develop advanced algebraic skills through the extension of algebraic and geometric concepts introduced in prior courses. Topics in Honors Algebra 2 include transforming functions and solving systems of equations and inequalities. Students will learn to solve, factor, and graph quadratics and polynomials. They will learn to work with matrices, and will learn to solve and apply rational, radical, exponential, and logarithmic functions. Students will study conic sections and will learn the basics of trigonometry and special triangles.

Prof. Edward Burger presents lessons through approximately 32 hours of video lessons. The student's grade is determined by their scores on quizzes (40%), tests (40%), one midterm exam (10%), and one final exam (10%).

Honors Algebra 2 Overview

- **Foundations for Functions**
    - Relations and functions
    - Exponents and scientific notation
    - Parent functions and transformations of functions
    - Linear and absolute-value equations, inequalities, and functions
    - Operations with functions
    - Piecewise functions
    - Modeling real-world data

- **Linear Systems and Matrices**
    - Linear systems of equations and inequalities in two dimensions
    - Linear programming
    - Linear systems in three dimensions
    - Matrix operations
    - Using matrices to transform figures
    - Using matrices and determinants to solve systems

- **Quadratic and Polynomial Functions**
    - Properties and transformations of quadratic functions
    - Complex numbers and roots
    - Curve fitting with quadratic and polynomial models
    - Solving quadratic equations and inequalities
    - Operations with polynomial functions
    - Roots and graphs of polynomial functions

- **Exponential and Logarithmic Functions**
    - Exponential functions, growth, and decay
    - Inverses of relations and functions
    - Properties of logarithms
    - Exponential and logarithmic functions and inequalities
    - Curve fitting with exponential and logarithmic models

- **Rational and Radical Functions**
    - Operations with rational and radical expressions
    - Solving rational equations and inequalities
    - Radical expressions and rational exponents
    - Solving radical equations and inequalities

- **Conic Sections**
    - Circles, ellipses, hyperbolas, and parabolas
    - Identifying conic sections
    - Solving nonlinear systems

- **Probability and Statistics**
    - Permutations and combinations
    - Theoretical and experimental probability
    - Independent, dependent, and compound events
    - Measures of central tendency and variation
    - Binomial distributions

- **Sequences and Series**
    - Arithmetic sequences and series
    - Series and summation notation
    - Geometric sequences and series
    - Mathematical induction and infinite geometric series

- **Trigonometric Functions, Graphs, and Identities**
    - Right-angle trigonometry
    - The unit circle
    - Inverses and graphs of trigonometric functions
    - The laws of sines and cosines
    - Fundamental trigonometric identities
    - Solving trigonometric equations

Honors Algebra 2 Course Information:

Recommended Course Duration	36 weeks
Topics	102
Hours of Video Content	32
Practice Exercise and Worksheet Questions	2500+
Number of Graded Assessments (Quizzes, Tests, & Exams)	44

thinkwell homeschool