

Course Description:

Algebra 2 Honors (1 of 2) explores complex numbers, polynomial identities, factors and complex solutions of quadratic expressions and equations, key features and graphs of polynomial, rational, radical, and trigonometric functions, solving rational and radical equations, systems of equations with nonlinear equations, the unit circle with measures of angles in radians and degrees, and verifying and using trigonometric identities.

Course Objectives:

- Identify and perform operations with complex numbers and using properties of real numbers.
- Rewrite and interpret expressions using mathematical properties, patterns, and structures.
- Identify real and complex zeros, solutions, and factors of polynomial equations or expressions.
- Perform operations on polynomials and rational expressions.
- Solve equations and systems of equations that include nonlinear functions.
- Relate the equations of polynomial, rational, radical, exponential, logarithmic and trigonometric functions to the key features and graphs of the functions.
- Define radian angle measure and calculate values using angle measures in degrees and radians.
- Prove trigonometric identities and use them to calculate values.

Required Materials:

Course Overview:

This course is made up of six units. Each unit has five lessons, which present the material in many different ways to allow for increased comprehension of information. Some activities are graded by the program software, and others are graded by the teacher. It is recommended that the course teacher be contacted for further information about course guidelines and grading policies.

Note that Lessons 19 and 20 are long, due to the number of examples they contain. Teachers can choose which examples they would like to use if they would like to reduce the length of the lessons.

A brief description of the intended learning outcomes appears at the beginning of each unit. Following this introduction are the lessons, which include the activities outlined below.

Math Muscle Exercise

These activities provide a review of the prior lesson to keep students' skills sharp and to prepare them for applying those skills in the new lesson they are starting.

Morning Introduction

These activities provide students with the opportunity to discuss mathematical concepts before the Research activity in the lesson. Students are challenged to think and reason about mathematics, to share their ideas and strategies with their classmates, and to hear, analyze, and discuss the mathematical ideas of their classmates. These activities encourage students to think about previous learning and discuss their current knowledge. They are non-graded activities; however, it is up to teachers whether they use them to evaluate students' mathematical thinking and strategies.

Research***Key Terms***

These activities provide students with the vocabulary terms and associated definitions that are emphasized in each lesson. Terms may include those that need to be retained from previous lessons.

Text and Videos

These activities introduce students to the main concepts of each lesson. The text is comprised of interactive readings, including step-by-step examples in which students are asked questions and provided with feedback based on their responses. Three instructional videos are embedded within each of the concepts that appear in the text. These instructional videos provide opportunities for deeper understanding of lesson concepts.

Workbook

These activities provide questions designed to help students practice the skills they learn in the text and video activities.

Night Discussion

These activities provide students with the ability to communicate, interact, and collaborate with fellow classmates by posting to a discussion board. They compel students to think and write critically about math concepts, as well as assertions made by their peers. These activities are graded by the teacher.

Project

These assessments are graded by the teacher and require the students' application of knowledge and writing capabilities to demonstrate mastery of the lesson/unit content.

Denouement

These activities provide questions designed to help students analyze their level of understanding of lesson content. Students are encouraged to review concepts as needed. Question responses are not submitted to the teacher for grading.

Additional Assessment***Checkpoint***

These computer-graded activities use 10 randomly selected questions from a larger pool of questions to assess students' mastery of lesson objectives.

Unit Exam

These computer-graded activities assess mastery of unit objectives.

Final Exam

This computer-graded activity assesses mastery of course objectives.