Algebra 2 (1 of 2)

Course Description:

Algebra 2 (1 of 2) extends students' understanding of functions by introducing them to different types of functions, how functions are used in the real world, what their graphs look like, and how they can be transformed.

In this course, students experience different uses of functions, including quadratic, cubic, quartic, rational, and radical functions. Students learn to recognize key features of the functions from graphs, tables, and rules, and they use those key features to answer contextual questions and create graphs.

Course Objectives:

- Answer contextual questions with the use of functions.
- Factor cubic and quartic equations by identifying and using patterns.
- Graph polynomial, rational, and radical functions.
- Identify and explain the effects of translations, dilations, and reflections of functions.
- Identify and use polynomial identities.
- Identify key features of functions from graphs, tables of values, and function rules.
- Identify linear factors of polynomials by using inspection, long division, and the remainder theorem.
- Solve cubic and quartic equations.
- Solve polynomial equations that have complex solutions.
- Solve quadratic equations by factoring, taking square roots, completing the square, or using the quadratic formula.

Required Materials:

In course.

Course Overview:

Unit 1 Overview

In this unit, students will solve quadratic equations in a variety of ways. In doing so, students will also learn how to find complex solutions and perform operations on complex numbers.

Unit 2 Overview

In this unit, students will identify key features of quadratic functions from their graphs and use a table to graph/find key features of quadratic functions. Students will also use function rules to graph and find key features of quadratic functions. Understanding key features will allow students to use quadratics in real-world situations.

Unit 3 Overview

This unit covers factoring and solving cubic polynomials. Students will derive polynomial identities and identify key features of cubic functions from their graphs, rules, and tables of values. Understanding key features will allow students to use cubics in real-world situations.

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Unit 4 Overview

The purpose of this unit is to identify key features of quartic functions from graphs and function rules. Students will identify and describe transformations of polynomial functions and write function rules to model transformations.

Unit 5 Overview

The purpose of this unit is to divide polynomials by inspection and long division. Students will apply the Remainder Theorem, solve and graph rational equations, and describe transformations of rational functions.

Unit 6 Overview

The purpose of this unit is to solve radical equations and graph rational functions from key features and rules. Students will interpret and solve radical equations and inequalities representing real-world scenarios and describe transformations of radical functions.

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