



Southmoreland School District

ADVANCED ALGEBRA III Curriculum Overview

ADVANCED ALGEBRA III

This course is a continuation of topics covered in Algebra II or Advanced Algebra II. The topics that will be included are algebraic equations and inequalities, absolute value, polynomial, rational, exponential, and logarithmic functions, systems of equations and inequalities, matrices and determinants, conic sections, and probability.

Module Titles:

- Module 1: Algebraic Equations and Inequalities**
- Module 2: Polynomial and Rational Functions and Graphs**
- Module 3: Exponential and Logarithmic Functions**
- Module 4: Matrices and Determinants**
- Module 5: Conic Sections**
- Module 6: Probability**

Module Overviews:

Module 1: Algebraic Equations and Inequalities

The student will be able to solve one variable linear and quadratic equations. Solve real world application problems involving linear and quadratic equations. The students will be able to solve linear, quadratic, and absolute value inequalities. Number sets, exponents, and simplifying mathematical expressions will be reviewed.

Module 2: Polynomial and Rational Functions and Graphs

The student will be able to investigate graphs of relations and functions. Transformations, symmetry, inverse functions, operations with functions, and construction of functions with variation will be explored. The student will graph polynomial and rational functions. Find the zeros of a polynomial function algebraically and graphically. The student will solve rational equations and determine any restrictions. Quadratic and rational inequalities will be solved. Complex numbers will be reviewed.

Module 3: Exponential and Logarithmic Functions

The student will be able to solve exponential and logarithmic equations by applying properties of exponents and logarithms. Determine the similarities and differences between logarithmic and exponential functions. Students will apply properties of exponents and logarithms to solve real world application problems. The students will graph exponential and logarithmic functions.



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Module 4: Matrices and Determinants

The students will be able to solve multi-variable systems of linear equations and inequalities. The student will be able to use matrix operations, properties, determinants, matrix inverses to solve systems of equations. Use matrices to solve real world application problems.

Module 5: Conic Sections

The student will be able to derive equations of the parabola, circle, ellipse, and hyperbola. The student will be able to determine the type of conic section and graph it based on the equation.

Module 6: Probability

The student will be able to use rules of probability to compute and interpret probabilities of compound events. Calculate expected values and use them to solve problems.