

Algebra II

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
A.A.1	Analyze functions and relations (e.g. polynomial, absolute value, rational, radical, logarithmic, exponential, algebraic, piece-wise, and step functions).	Throughout Course	Throughout Course
A.A.1.1	Demonstrate an understanding of the concept of a function, use function notation, evaluate a function, determine whether or not a given relation is a function and determine whether or not a given function is one-to-one.	Linear and Quadratic Functions	Functions and Relations
A.A.1.2	Determine the domain and range of a relation including those with restricted domains.	Linear and Quadratic Functions	Functions and Relations
A.A.1.3	Represent a given relation in multiple ways and convert between each representation.		
A.A.1.4	Determine whether a given relation is even, odd or neither and what this means in predicting behaviors.		
A.A.1.5	Analyze the effect on the graph of a relation by changing its parameters and perform a given transformation.	Exponential and Logarithmic Functions	Graphing Logarithmic Functions and Domain and Range
A.A.1.6	Determine, verify, and graph the inverse of a function or relation (if it exists) and understand the reversing roles of domain and range.	Linear and Quadratic Functions	Functions and Relations
A.A.1.7	Determine the composition of inverse functions and whether or not it is one-to-one.		
A.A.1.8	Perform arithmetic operations on functions and determine the composition of functions.	Linear and Quadratic Functions	Functions and Relations

Algebra II

A.A.1.9	Analyze the reciprocal of a function or relation.		
A.A.1.10	Collect and analyze data to make predictions and to investigate scatterplots and to determine the equation for a curve of best fit including linear, power, exponential, and logarithmic functions.		
A.A.1.11	Connect the relationships among the solution of an equation, zero of a function, x-intercept of a graph and the factors of a polynomial expression.	Throughout Semester A	Throughout Semester A
A.A.1.12	Find the x and y-intercepts of a function if they exist.	Linear and Quadratic Functions	Writing and Graphing Linear Functions
A.A.1.13	Identify, distinguish between, and describe the characteristics of the following functions in tabular, verbal, graphical or symbolic form: polynomial, power, absolute value, rational, radical, logarithmic, exponential, algebraic, piecewise, and step.	Throughout Course	Throughout Course
A.A.2	Model and analyze piece-wise and absolute value functions. Solve inequalities and absolute value equations.	Systems of Equations and Inequalities	System of Linear Inequalities
A.A.2.1	Graph, solve, and analyze inequalities in two variables.	Systems of Equations and Inequalities	System of Linear Inequalities

Algebra II

A.A.2.2	Graph and analyze piece-wise functions.		
A.A.2.3	Graph, solve, and analyze absolute value equations and inequalities.	Systems of Equations and Inequalities	System of Linear Inequalities
A.A.3	Model and analyze quadratic functions. Solve quadratic equations and problems involving conics.	Linear and Quadratic Functions Conic Sections	Throughout Units
A.A.3.1	Perform operations on complex numbers and represent, apply and discuss the properties of complex numbers.		
A.A.3.2	Derive the quadratic formula.	Linear and Quadratic Functions	Solving Quadratic Functions
A.A.3.3	Solve quadratic equations using the zero product property, completing the square, the quadratic formula, and graphing.	Linear and Quadratic Functions	Solving Quadratic Functions
A.A.3.4	Graph and analyze quadratic functions and relate the zeros to the discriminant.	Linear and Quadratic Functions	Solving Quadratic Functions

Algebra II

A.A.3.5	Construct and solve quadratic inequalities in one and two variables.		
A.A.3.6	Solve problems relating to conic sections including systems of equations and inequalities involving conics.	Conic Sections	Throughout Unit
A.A.3.7	Graph and analyze equations of conic sections.	Conic Sections	Introduction to Conic Sections
A.A.3.8	Determine conic equations from graphs or data.	Conic Sections	Throughout Unit
A.A.4	Model and analyze polynomial functions. Solve polynomial equations.	Linear and Quadratic Functions	Solving Quadratic Functions
A.A.4.1	Perform operations on polynomial expressions.		
A.A.4.2	Analyze and calculate permutations, combinations, and other systematic counting methods.	Probability and Statistics	Permutations and Combinations

Algebra II

A.A.4.3	Understand and apply the binomial theorem and/or Pascal's triangle to expand binomial expressions.	Probability and Statistics	Binomial Theorem
A.A.4.4	Apply long (or synthetic) division, the Fundamental Theorem of Algebra, Descartes Rule of Signs, the Intermediate Value Theorem and the Rational Root Theorem to analyze and/or determine the roots of a polynomial.		
A.A.4.5	Find approximate solutions for polynomial equations using graphing technology.		
A.A.4.6	Write a polynomial equation given its real and/or complex solutions.		
A.A.4.7	Graph and analyze polynomial functions.	Linear and Quadratic Functions	Solving Quadratic Functions
A.A.5	Model and analyze radical functions. Solve radical equations.	Radical Functions	Throughout Unit
A.A.5.1	Find equivalent expressions using the properties of rational exponents.	Radical Functions	Roots and Properties of Exponents

Algebra II

A.A.5.2	Perform arithmetic operations to simplify radical expressions.	Radical Functions	Roots and Properties of Exponents
A.A.5.3	Solve radical equations.	Radical Functions	Solving Radical Equations and Inequalities
A.A.5.4	Graph and analyze radical functions.	Radical Functions	Throughout Unit
A.A.6	Model and analyze rational functions. Solve rational equations.	Rational Functions	Throughout Unit
A.A.6.1	Find equivalent representations for rational expressions and identify restrictions.		
A.A.6.2	Perform operations on rational expressions.	Rational Functions	Throughout Unit
A.A.6.3	Solve algebraic proportions and rational equations.	Rational Functions	Solving Rational Equations and Inequalities

Algebra II

A.A.6.4	Graph and analyze rational functions.	Rational Functions	Graphing Rational Functions and Domain and Range
A.A.7	Model and analyze logarithmic and exponential functions. Solve logarithmic and exponential equations.	Exponential and Logarithmic Functions	Throughout Unit
A.A.7.1	Establish the inverse relationship between exponential and logarithmic functions.	Exponential and Logarithmic Functions	Comparing Logarithmic and Exponential Functions
A.A.7.2	Prove and apply the basic properties of logarithms.	Exponential and Logarithmic Functions	Comparing Logarithmic and Exponential Functions
A.A.7.3	Solve exponential and logarithmic equations.	Exponential and Logarithmic Functions	Solving Exponential and Logarithmic Functions
A.A.7.4	Graph and analyze exponential and logarithmic functions.	Exponential and Logarithmic Functions	Graphing Exponential and Logarithmic Functions
A.A.8	Analyze and apply various methods to graph and solve systems of equations and inequalities.	Systems of Equations and Inequalities	Throughout Unit

Algebra II

A.A.8.1	Use matrix operations and properties of matrices to solve problems.	Systems of Equations and Inequalities	Matrices and Determinants
A.A.8.2	Solve systems of linear equations in two or three variables algebraically, graphically, and/or with matrix algebra.	Systems of Equations and Inequalities	Throughout Unit
A.A.8.3	Analyze an inconsistent system of equations.	Systems of Equations and Inequalities	Systems of Equations
A.A.8.4	Solve systems of linear inequalities by graphing.	Systems of Equations and Inequalities	Systems of Linear Inequalities
A.A.8.5	Interpret, analyze, and solve linear programming problems.		
A.A.8.6	Solve nonlinear systems of equations algebraically and graphically, including linear-quadratic and quadratic-quadratic.		
A.A.9	Analyze and evaluate sequences and series.	Discrete Mathematics: Sequences and Series	Arithmetic Sequences and Series

Algebra II

A.A.9.1	Define, recognize, and discriminate among arithmetic, geometric and other sequences and series.	Discrete Mathematics: Sequences and Series	Throughout Unit
A.A.9.2	Find the explicit and recursive formulas for arithmetic and geometric sequences and use these formulas to determine a specific term or term number.		
A.A.9.3	Convert between a series and its sigma notation representation.		
A.A.9.4	Find partial sums of arithmetic and geometric series and find sums of convergent infinite series.	Discrete Mathematics: Sequences and Series	Throughout Unit
A.A.9.5	Generate and describe other recursive sequences such as factorials and the Fibonacci sequence.		
A.A.10	Model and analyze parametric equations.		
A.A.10.1	Write and evaluate parametric equations.		



Algebra II

A.A.10.2	Relate parametric equations to equivalent rectangular equations.		
A.A.10.3	Analyze and describe graphs of parametric equations.		