



College Algebra with Corequisite Support: A Blended Approach

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Alta College Algebra with Corequisite Support: Blended Approach is a 1 semester course that interleaves developmental level course content with a regular college-level College Algebra content at the chapter level to create a blended, cohesive course experience for students consistently throughout the semester.

To develop the course, Knewton used four main sources of content: Openstax, videos created by a Math Professor we have partnered with, the Open Textbook Library, and a team of Subject Matter Experts (SMEs). The SMEs come from diverse backgrounds and are all accomplished academics in the field of Mathematics.

Alta College Algebra with Corequisite Support: Blended Approach has two instructional sequences for every learning objective, giving students multiple opportunities to learn new concepts. Alta College Algebra with Corequisite Support: Blended Approach covers the typical breadth of college algebra topics and also provides the necessary depth to ensure the course is manageable and engaging for instructors and students alike.

Knewton College Algebra with Corequisite Support: A Blended Approach | Table of Contents

Chapter 1: Foundations and the Language of Algebra

1.1 Use the Language of Algebra

- Use Variables and Algebraic Symbols
 - Translate algebraic expressions, equations, and inequalities into English and recognize expressions and equations
 - Evaluate a whole number raised to a power and understand the terminology
- Order of Operations and Simplifying Expressions
 - Simplify an expression using order of operations
 - Evaluate an expression
 - Identify coefficients and identify and combine like terms
- Rewrite English Phrases into Algebraic Expressions
 - Translate an English phrase to an algebraic expression
 - Translate English phrases from applications into algebraic expressions

1.2 Operations with Integers

- Introduction to Integers and Absolute Value
 - Order integers using inequality symbols and determine the opposite of integers or variables
 - Evaluate an absolute value expression
 - Simplify an expression involving absolute value using order of operations
- Adding and Subtracting Integers
 - Add integers
 - Subtract integers
 - Add and subtract integers using order of operations
- Multiplying and Dividing Integers
 - Multiply integers
 - Divide integers
- Simplifying Expressions with Integers
 - Simplify expressions with integers using order of operations
 - Evaluate a variable expression with integers
- Algebraic Expressions and Applications with Integers
 - Translate an English phrase to an algebraic expression with integers
 - Use integers in applications

1.3 Operations with Fractions

- Simplifying Fractions
 - Identify when fractions are equivalent
 - Simplify a fraction
 - Multiplying and Dividing Fractions
 - Multiply fractions
 - Divide fractions
 - Simplify complex fractions
-

- Understanding Expressions with Fractions
 - Simplify expressions written with a fraction bar
 - Translate an English phrase to an expression with fractions
- Adding and Subtracting Fractions
 - Add or subtract fractions with a common denominator
 - Add or subtract fractions with different denominators
- Algebraic Expressions with Fractions
 - Use the order of operations to simplify complex fractions and expressions with multiple operations
 - Evaluate variable expressions with fractions

1.4 Decimals and Percents

- Understanding and Rounding Decimals
 - Name and write decimals
 - Round decimals
- Operations with Decimals
 - Add and subtract decimals
 - Multiply decimals
 - Divide decimals
- Decimals, Fractions, and Percents
 - Convert between fractions and decimals
 - Simplify expressions with fractions and decimals
 - Convert between decimals and percents

1.5 Square Roots and the Real Number System

- Square Roots and the Real Number System
 - Evaluate a square root
 - Identify rational and irrational numbers
 - Identify real numbers
- Fractions and Decimals on the Number Line
 - Locate fractions on a number line and write inequality statements involving fractions
 - Locate decimals on a number line and write inequality statements involving decimals
- Properties of the Real Number System
 - Use the commutative and associative properties
 - Identify additive and multiplicative inverses of a number
 - Understand the multiplication and division properties of zero
 - Simplify expressions using properties of identities, inverses, and zero
- The Distributive Property
 - Simplify expressions using the distributive property
 - Simplify expressions by distributing a negative number

1.6 Systems of Measurements

- Unit Conversion in the US System
 - Make unit conversions in the US system
 - Use mixed units of measurement in the US system
-

- Unit Conversion in the Metric System
 - Make unit conversions in the metric system
 - Use mixed units of measurement in the metric system
- Unit Conversion Between Systems
 - Convert between the US and metric systems of measurement
 - Convert between Fahrenheit and Celsius temperatures

Chapter 2: Exponents and Polynomials

2.1 Add and Subtract Polynomials

- Adding and Subtracting Polynomials
 - Identify the types and degrees of polynomials
 - Add and subtract monomials
 - Perform addition and subtraction on polynomials
 - Evaluate a polynomial for a given value

2.2 Properties of Exponents

- Product Properties of Exponents
 - Simplify numerical expressions containing exponents
 - Simplify expressions using the product property for exponents
 - Simplify expressions using the power property for exponents or the product to a power property for exponents
 - Simplify expressions by applying several properties
- Quotient Properties of Exponents
 - Simplify expressions using the quotient property for exponents and the exponent of zero
 - Simplify expressions using the quotient to a power property
 - Simplify expressions by applying several quotient properties of exponents

2.3 Multiply Polynomials

- Multiplying Polynomials
 - Multiply monomials
 - Multiply a polynomial by a monomial
 - Multiply a binomial by a binomial
 - Multiply a trinomial by a binomial
- Special Products of Binomials
 - Square a binomial using the binomial squares pattern
 - Multiply conjugates using the product of conjugates pattern
 - Recognize and use the appropriate special product pattern

2.4 Divide Polynomials

- Dividing Polynomials
 - Divide monomials
 - Divide a polynomial by a monomial
 - Divide a polynomial by a binomial using polynomial long division
-

2.5 Integer Exponents and Scientific Notation

- Negative Exponents
 - Use the definition of a negative exponent
 - Simplify expressions with integer exponents
- Scientific Notation
 - Convert from decimal notation to scientific notation
 - Convert from scientific notation to decimal notation
 - Multiply and divide using scientific notation

2.6 Greatest Common Factor and Factor by Grouping

- The Greatest Common Factor and Factoring by Grouping
 - Find the greatest common factor of two or more expressions
 - Factor the greatest common factor from a polynomial
 - Factor a polynomial by grouping

2.7 Factor Quadratic Trinomials

- Factoring Trinomials with a Leading Coefficient of 1
 - Factor a trinomial of the form x^2+bx+c where c is positive
 - Factor a trinomial of the form x^2+bx+c where c is negative
 - Factor a trinomial of the form $x^2+bxy+cy^2$
- Factoring Trinomials with a Leading Coefficient Other than 1
 - Factor a trinomial of the form ax^2+bx+c with a GCF
 - Factor a trinomial using trial and error
 - Factor a trinomial using the 'ac' method

2.8 Factor Special Products and a General Strategy for Factoring

- Factoring Special Products
 - Express a perfect square trinomial in factored form
 - Express a difference of squares in factored form
 - Factor sums and differences of cubes
- Choosing a Factoring Strategy
 - Recognize and use the appropriate method to factor a polynomial completely

Chapter 3: Rational and Radical Expressions

3.1 Multiply and Divide Rational Expressions

- Domain of Rational Expressions and Simplifying Rational Expressions
 - Determine the values for which a rational expression is undefined
 - Evaluate a rational expression
 - Simplify a rational expression
 - Simplify a rational expression with opposite factors
 - Multiplying and Dividing Rational Expressions
 - Find the product of rational expressions
 - Find the quotient of rational expressions
 - Multiply or divide a rational expression more than two rational expressions
-

3.2 Add and Subtract Rational Expressions

- Adding and Subtracting Rational Expressions with a Common Denominator
 - Add rational expressions with a common denominator
 - Subtract rational expressions with a common denominator
 - Add and subtract rational expressions whose denominators are opposites
- Adding and Subtracting Rational Expressions with Unlike Denominators
 - Find the least common denominator of rational expressions
 - Find equivalent rational expressions
 - Add rational expressions with different denominators
 - Subtract rational expressions with different denominators

3.3 Simplify Complex Rational Expressions

- Simplifying Complex Fractions
 - Simplify a complex rational expression by writing it as division
 - Simplify a complex rational expression by using the LCD

3.4 Simplify Square Roots

- Understanding Square Roots
 - Simplify expressions with square roots
 - Estimate square roots and approximate square roots
 - Simplify variable expressions with square roots
- Simplifying Square Root Expressions
 - Use the product property to simplify square roots
 - Use the quotient property to simplify a perfect square fraction
 - Use the quotient property to simplify square roots

3.5 Operations on Radical Expressions

- Adding and Subtracting Square Root Expressions
 - Add and subtract like square roots
 - Add and subtract square roots that need simplification
- Multiplying Square Root Expressions
 - Multiply square roots
 - Use polynomial multiplication to multiply square roots
 - Use special product formulas to multiply square roots
- Dividing Square Root Expressions and Rationalizing Denominators
 - Divide square roots
 - Rationalize a one-term denominator
 - Rationalize a two-term denominator

3.6 Higher Roots

- Understanding Higher Roots
 - Simplify numerical expressions with higher roots
 - Simplify expressions with higher roots
 - Simplifying Higher Roots and Operations on Higher Roots
 - Use the product property to simplify expressions with higher roots
 - Use the quotient property to simplify expressions with higher roots
 - Add and subtract higher roots
-

3.7 Rational Exponents

- Simplifying Expressions with Rational Exponents
 - Simplify expressions with rational exponents and a numerator of 1
 - Simplify expressions with rational exponents and a numerator greater than 1
 - Use the laws of exponents to simplify expressions with rational exponents

3.8 Complex Numbers

- Basics of Complex Numbers
 - Express the square root of a negative number as a multiple of i
 - Simplify powers of i
- Operations on Complex Numbers
 - Add and subtract complex numbers
 - Multiply a complex number by a real number
 - Multiply two complex numbers
 - Divide two complex numbers

Chapter 4: Solving Linear Equations and Inequalities

4.1 Solve Equations Using the Properties of Equality

- Solve Equations with the Subtraction and Addition Properties of Equality
 - Verify a solution of an equation
 - Solve an equation using the subtraction and addition properties of equality
 - Solve an equation involving fractions or decimals using the subtraction and addition properties of equality
 - Solve an equation that require simplification using the subtraction and addition properties of equality
- Solve Equations with the Division and Multiplication Properties of Equality
 - Solve an equation using the division and multiplication properties of equality
 - Solve an equation involving fractions or decimals using the division and multiplication properties of equality
 - Solve an equation that require simplification using the division and multiplication properties of equality
- Application Problems and the Properties of Equality
 - Translate an English sentence to an algebraic equation and solve using the subtraction and addition properties of equality
 - Use the subtraction and addition properties of equality to solve application problems
 - Translate an English sentence to an algebraic equation and solve using the division and multiplication properties of equality
 - Use the division and multiplication properties of equality to solve application problems

4.2 Use a General Strategy to Solve Linear Equations

- Solving Linear Equations
 - Solve an equation with constants on both sides
 - Solve an equation with variables on both sides
 - Solve an equation with constants and variables on both sides
-

- General Strategies for Solving Linear Equations
 - Solve an equation using the distributive property with variables on one side
 - Solve an equation using the distributive property with variables on both sides
 - Classify equations as conditional, identity, or a contradiction
 - 4.3 Solve Equations with Fractions or Decimals
 - Solving Linear Equations with Fractions
 - Solve an equation involving fractions with variables on both sides
 - Solve an equation involving fractions by eliminating the fractions
 - Solve an equation involving fractions by eliminating the fractions and other steps
 - Solve Linear Equations with Decimals
 - Solve an equation involving decimals with variables on both sides
 - Solve an equation involving decimals by clearing the decimals
 - 4.4 Solve a Formula for a Specific Variable
 - Distance, Rate, and Time and Literal Equations
 - Use the distance, rate, and time formula
 - Solve a formula for a specific variable
 - 4.5 Use a Problem-Solving Strategy
 - An Introduction to Problem Solving
 - Use a problem-solving strategy for word problems
 - Solve a number problem
 - Solve a number problem involving consecutive integers
 - 4.6 Solve Percent Applications
 - Percent Problems and Percent Increase and Decrease
 - Translate and solve basic percent equations
 - Solve basic applications of percent
 - Find percent increase or percent decrease
 - Simple Interest and Discounts
 - Solve applications involving the simple interest formula
 - Solve applications with discount or mark-up
 - 4.7 Solve Mixture and Uniform Motion Applications
 - Solve Mixture Word Problems
 - Solve coin word problems
 - Solve ticket and stamp word problems
 - Use the mixture model to solve word problems
 - Uniform Motion
 - Solve uniform motion applications
 - 4.8 Solve Geometry Applications - Triangles, Rectangles, and the Pythagorean Theorem
 - Triangles and the Pythagorean Theorem
 - Solve problems involving the perimeter, area, and interior angles of triangles
 - Solve triangle problems where angles or sides are given in terms of other angles or sides
 - Solve triangle problems using the Pythagorean Theorem
-

- Area and Perimeter of Rectangles
 - Solve problems involving the perimeter and area of rectangles
 - Solve rectangle problems when the width is given in terms of the length

4.9 Solve Linear Inequalities and Applications

- Inequalities, the Number Line, and Interval Notation
 - Graph an inequality on the number line
 - Express an inequality using interval notation
- Solving One-Step Linear Inequalities
 - Solve an inequality using the subtraction and addition properties of inequality
 - Solve an inequality using the division and multiplication properties of inequality
- Solving Linear Inequalities
 - Solve an inequality that requires simplification
 - Classify an inequality as conditional, identity, or contradiction
 - Translate an English sentence into an inequality and solve
- Problem Solving with Linear Inequalities
 - Solve one-step applications with linear inequalities
 - Solve applications with linear inequalities
- Solve Compound Inequalities and Absolute Value Equations and Inequalities
 - Solve compound inequalities in one variable algebraically
 - Solve absolute value equations
 - Solve absolute value inequalities

Chapter 5: Graphs and Functions

5.1 Use the Rectangular Coordinate System

- Reading Graphs and the Rectangular Coordinate System
 - Plot points on a rectangular coordinate system
 - Verify the solution to an equation in two variables
 - Complete a table of solutions to a linear equation in two variables
 - Find solutions to a linear equation

5.2 Graph Linear Equations in Two Variables

- Graphing Linear Equations
 - Recognize the relationship between the solutions of an equation and its graph
 - Graph a linear equation by plotting points
 - Graph a linear equation in standard form by plotting points
 - Graph vertical and horizontal lines

5.3 Graph with Intercepts

- Intercepts on the Coordinate Plane
 - Identify the x- and y-intercepts on a graph
 - Find the x- and y-intercepts from an equation of a line
 - Graph a line using the x- and y-intercepts
-

5.4 Understand Slope of a Line

- Understanding Slope
 - Use a geoboard to model slope
 - Use the relationship between rise and run to find the slope of a line from its graph
 - Find the slope of horizontal and vertical lines
- The Slope Formula
 - Use the slope formula to find the slope of a line between two points
 - Graph a line given a point and the slope
 - Determine the slope in applications

5.5 Use the Slope-Intercept Form of an Equation of a Line

- Slope-Intercept Form
 - Identify the slope and y-intercept from an equation of a line and relate a graph to the equation
 - Graph a line given its equation using its slope and y-intercept
 - Graph lines using a variety of methods
 - Graph and interpret applications of slope-intercept
- Parallel and Perpendicular Lines
 - Use slopes to identify parallel lines
 - Use slopes to identify perpendicular lines

5.6 Find the Equation of a Line

- Equations of Lines
 - Find an equation of the line given the slope and y-intercept
 - Find an equation of the line given the slope and a point
 - Find an equation of the line given two points
- Equations of Parallel and Perpendicular Lines
 - Find an equation of a line parallel to a given line
 - Find an equation of a line perpendicular to a given line

5.7 Graphs of Linear Inequalities

- Graphing Linear Inequalities
 - Verify solutions to an inequality in two variables
 - Recognize the relationship between the solutions of an inequality and its graph
 - Graph a linear inequality

5.8 Functions and Function Notation

- Relations and Functions
 - Identify domain and range from a set of ordered pairs
 - Determine whether a relation represents a function
 - Use the vertical line test to identify functions
 - Function Notation
 - Evaluate a function using function notation
 - Solve a function using function notation
 - Evaluate or solve a function from a table
 - Evaluate or solve a function from a graph
-

5.9 Domain and Range

- Domain and Range of Functions
 - Find the domain of a function defined by an equation
 - Find the domain and range of a function defined by a graph
- Piecewise Functions
 - Graph piecewise-defined functions
 - Evaluate piecewise-defined functions

5.10 Rates of Change and Behavior of Graphs

- Graphical Properties of Functions
 - Find the average rate of change of a function
 - Use a graph to determine intervals of increase and decrease and local extrema
 - Use a graph to locate the absolute maximum and absolute minimum

5.11 Composition of Functions

- Combinations of Functions
 - Combine functions using algebraic operations
 - Create a new function by composition of functions
- Evaluate Composite Functions
 - Evaluate composite functions given a table of values
 - Evaluate composite functions given the graph of functions
 - Evaluate composite functions given explicit functions
- Properties of Composite Functions
 - Find the domain of a composite function
 - Decompose a composite function into its component functions

5.12 Function Graphs and Transformations

- Transformations of Functions
 - Graph functions using vertical and horizontal shifts
 - Graph functions using reflections about the x-axis and the y-axis
 - Graph functions using compressions and stretches
 - Combine transformations
- Graph an Absolute Value Functions
 - Graph an absolute value function

Chapter 6: Linear Functions and Modeling

6.1 Linear Functions

- Interpretations of Linear Functions
 - Represent a linear function in table form
 - Determine whether a linear function is increasing, decreasing, or constant
 - Interpret slope as a rate of change
 - Represent a real-world application as a linear function
 - Graph linear functions
-

6.2 Modeling with Linear Functions

- Application of Linear Functions
 - Build linear models from verbal descriptions, given a y-intercept
 - Build linear models from verbal descriptions, given inputs and outputs
 - Use a diagram to build a model
 - Model a set of data with a linear function

6.3 Fitting Linear Models to Data

- Scatter Diagrams and Lines of Best Fit
 - Draw and interpret scatter diagrams
 - Distinguish between linear and nonlinear relations

Chapter 7: Polynomial Equations and Functions

7.1 Quadratic Equations

- Solving Quadratic Equations by Factoring
 - Solve a factored quadratic equation using the zero product property
 - Solve a quadratic equation by factoring
 - Solve applications modeled by quadratic equations

7.2 Solve Quadratic Equations Using the Square Root Property

- Solving Quadratic Equations Using the Square Root Property
 - Solve a quadratic equation using the square root property
 - Solve a quadratic equation with a binomial as the quadratic term using the square root property
 - Solve a quadratic equation where factoring results in a perfect square binomial

7.3 Solve Quadratic Equations by Completing the Square

- Solving Quadratic Equations by Completing the Square
 - Complete the square of a binomial expression
 - Solve quadratic equations by completing the square

7.4 Solve Quadratic Equations Using the Quadratic Formula

- Solving Quadratic Equations with the Quadratic Formula
 - Use the discriminant to classify the solutions of a quadratic equation
 - Solve quadratic equations by using the quadratic formula

7.5 Quadratic Functions

- Characteristics of Parabolas
 - Determine axis of symmetry and vertex of parabolas from a graph
 - Determine x- and y-intercepts of parabolas from a graph
 - Find the direction a parabola opens and its axis of symmetry and vertex from the general form of its equation
 - Identify the axis of symmetry and vertex of a parabola from its equation in standard form
 - Graphs of Quadratic Functions
 - Write the equation of a quadratic function given vertex and a point on a graph
 - Write the equation of a quadratic function given intercepts on a graph
 - Write the equation of a quadratic function in standard form given the equation in general form
-

- Applications of Quadratic Functions
 - Find the domain and range of a quadratic function
 - Determine the maximum and minimum values of quadratic functions
 - Find the x- and y-intercepts of a quadratic function
 - Use a quadratic function to model projectile motion

7.6 Solve Applications Modeled by Quadratic Equations

- Problem Solving with Quadratic Equations
 - Solve applications modeled by quadratic equations that may require the quadratic formula
 - Solve geometric applications that may require the quadratic formula

7.7 Graphs of Polynomial and Power Functions

- End Behavior of Polynomial Functions
 - Identify power functions and polynomial functions
 - Identify if a graph is a polynomial function
 - Determine end behavior
- Local Behavior of Polynomial Functions
 - Identify intercepts of polynomial functions in factored form
 - Understand the relationship between degree, turning points, and x-intercepts
 - Understand the intermediate value theorem
 - Use factoring to find zeros of polynomial functions
 - Identify zeros and their multiplicities from an equation or a graph
- Write and Graph Polynomial Functions
 - Draw conclusions about a polynomial function from a graph
 - Graph polynomial functions
 - Write a formula for a polynomial function from a graph
 - Determine equation of a polynomial given key information

7.8 Dividing Polynomials

- Long Division of Polynomials
 - Use long division to divide polynomials
 - Use polynomial division to solve application problems
- Synthetic Division and Remainder Theorem
 - Use synthetic division to divide polynomials
 - Evaluate a polynomial using the remainder theorem

7.9 Zeros of Polynomial Functions

- Rational Zeros of Polynomial Functions
 - Use the factor theorem to solve a polynomial equation
 - Use the rational zero theorem to find rational zeros
 - Solve real-world applications of polynomial equations
 - Complex Zeros of Polynomial Functions
 - Find zeros of polynomial functions with complex zeros
 - Use the linear factorization theorem to find polynomials with given zeros
 - Use Descartes' rule of signs
-

Chapter 8: Rational Equations and Functions

8.1 Solve Rational Equations and Applications

- Solving Rational Equations
 - Solve a rational equation that results in a linear equation
 - Solve a rational equation that results in a quadratic equation
 - Solve a rational equation for a specific variable

8.2 Rational Functions

- Asymptotic Behavior of Rational Functions
 - Use arrow notation to describe local behavior and end behavior of rational functions
 - Identify vertical asymptotes and removable discontinuities of rational functions
 - Identify horizontal and slant asymptotes of rational functions
- Graphs and Applications of Rational Functions
 - Solve applied problems involving rational functions
 - Find the intercepts of a rational function
 - Graph rational functions
 - Find the equation of a rational function from a graph
- Uniform Motion, Work, and Problem Solving
 - Solve uniform motion applications involving rational equations
 - Solve problems involving rates of work using rational equations

8.3 Solve Proportion and Similar Figure Applications

- Proportions and Problem Solving with Rational Equations
 - Solve proportions
 - Solve applications with proportions
 - Solve similar figure applications

8.4 Use Direct and Inverse Variation

- Variation and Problem Solving
 - Solve problems that involve direct variation
 - Solve problems that involve inverse variation

8.5 Other Types of Equations

- Solve Higher Order Equations with Factoring
 - Solve equations by factoring out the greatest common factor
 - Solve equations by factoring with grouping
 - Solve Equations Quadratic in Form by Factoring
 - Solve fourth-degree equation in quadratic form
 - Solve quadratic with binomial
 - Solve Other Types of Equations
 - Solve equations using reciprocal exponents
 - Solve equations involving rational exponents by factoring out the greatest common factor
 - Solve rational equation which leads to a quadratic
-

8.6 Inequalities Requiring Factoring

- Rational and Quadratic Inequalities
 - Solve quadratic inequalities in one variable, graph the solution set, and express the solution set using interval notation
 - Solve inequalities that involve rational expressions, graph the solution sets, and express the solution set using interval notation

Chapter 9: Inverse Functions and Radical Equations and Functions

9.1 Inverse Functions

- One-to-One Functions
 - Determine whether a function is one-to-one
 - Use the horizontal line test to identify one-to-one functions
- Even and Odd Functions
 - Determine whether a function is even, odd, or neither from its graph
 - Determine whether a function is even, odd, or neither given algebraically
- Inverse Function Values
 - Verify inverse function ordered pairs
 - Given graph of a function, find value of inverse function
 - Given table of values of a function, find value of inverse function
- Find Inverse Functions
 - Verify inverse function pairs algebraically
 - Determine the domain and range of an inverse function, and restrict the domain of a function to make it one-to-one
 - Given function, find the inverse function
 - Use the graph of a one-to-one function to graph its inverse function on the same axes

9.2 Solve Equations with Square Roots

- Solving Radical Equations
 - Solve a square root equation with a single radical
 - Solve a square root equation with two radicals
 - Use square roots in applications

9.3 Inverses and Radical Functions

- Inverses of Polynomial Functions
 - Find the inverse of an invertible polynomial function
 - Restrict the domain to find the inverse of a polynomial function
 - Solve an application with the inverse of a function
 - Inverses of Radical and Rational Functions
 - Find the inverse of a radical function
 - Find the domain of a radical function composed with a rational function
 - Find the inverse of a rational function
-

9.4 Circles

- Graphs of Circles
 - Given the equation of a circle not in standard form, determine the standard form by completing the square
 - Determine the center and radius of a circle from the standard equation of a circle and sketch its graph

Chapter 10: Exponential and Logarithmic Functions

10.1 Exponential Functions

- Evaluate and Write Exponential Functions
 - Identify exponential functions
 - Evaluate exponential functions
 - Find the equation of an exponential function given the initial value and a point
 - Find the equation of an exponential function when the initial value is not known
- Applications of Exponential Functions and Base e
 - Find the equation of an exponential function in a word problem context
 - Calculate compound interest
 - Evaluate exponential functions with base e
 - Calculate continuous growth and decay

10.2 Graphs of Exponential Functions

- Exponential Function Graphs
 - Graph exponential functions
 - Graph exponential functions using transformations
 - Find the equation of an exponential function given a graph
 - Write an exponential function from a description

10.3 Logarithmic Functions

- Relate Logarithms and Exponents
 - Convert from logarithmic to exponential form
 - Convert from exponential to logarithmic form
- Evaluate Logarithmic Expressions
 - Evaluate logarithms with positive integer solutions
 - Evaluate logarithms with negative integer solutions
 - Use common logarithms
 - Use natural logarithms

10.4 Graphs of Logarithmic Functions

- Logarithmic Function Graphs
 - Identify the domain of a logarithmic function
 - Graph logarithmic functions
 - Graph transformations of logarithmic functions
 - Write a logarithmic function from a description
-

10.5 Logarithmic Properties

- Basic Properties of Logarithms
 - Understand the basic properties of logarithms
 - Use the product rule for logarithms
 - Use the quotient rule for logarithms
 - Use the power rule for logarithms
- Rewrite Logarithmic Expressions Using Properties
 - Expand logarithmic expressions
 - Condense logarithmic expressions
 - Use the change-of-base formula for logarithms

10.6 Exponential and Logarithmic Equations

- Solve Exponential Equations
 - Use like bases to solve exponential equations
 - Rewrite equations so all powers have the same base and solve exponential equations
 - Use logarithms to solve exponential equations
 - Solve an equation with a base e using natural logarithms
- Solve Logarithmic Equations
 - Use the definition of a logarithm to solve logarithmic equations
 - Use logarithm properties and the definition of the logarithm to solve logarithmic equations
 - Use the one-to-one property of logarithms to solve logarithmic equations

10.7 Exponential and Logarithmic Models

- Applications of Exponential and Logarithmic Functions
 - Model exponential growth
 - Model exponential decay
 - Applied logarithmic models
 - Choose an appropriate model for data
 - Express an exponential model in base e

Chapter 11: Systems of Equations and Inequalities

11.1 Systems of Linear Equations in Two Variables

- Systems of Two Linear Equations
 - Determine whether an ordered pair is a solution to a system of equations
 - Solve systems of equations in two variables by graphing
 - Solve systems of equations in two variables by substitution
 - Solve systems of equations in two variables by addition
 - Identify inconsistent and dependent systems of equations containing two variables, and express the solution of dependent equations
 - Applications of Systems of Linear Equations
 - Use systems of equations to investigate profits
 - Write and solve a system of equations in two variables from a word problem
 - Linear Inequalities in Two Variables
 - Solve a linear inequality in two variables by graphing
 - Solve a linear system of inequalities by graphing
-

11.2 Systems of Linear Equations in Three Variables

- Systems of Linear Equations in Three Variables
 - Determine whether an ordered triple is a solution to a system
 - Solve systems of three equations in three variables
 - Identify inconsistent and dependent systems of equations containing three variables, and express the solution of a system of dependent equations

11.3 Systems of Nonlinear Equations in Two Variables

- Systems of Two Nonlinear Equations
 - Solve a system of nonlinear equations representing a parabola and a line
 - Solve a system of nonlinear equations representing a circle and a line
 - Solve a system of nonlinear equations in two variables using elimination
- Graphing Nonlinear Inequalities and Systems of Inequalities
 - Graph a nonlinear inequality
 - Graph a system of nonlinear inequalities

11.4 Partial Fractions

- Partial Fraction Decomposition with Linear Factors
 - Decompose a rational expression where the denominator has only nonrepeated linear factors
 - Decompose a rational expression where the denominator has repeated linear factors
- Partial Fraction Decomposition with Quadratic Factors
 - Decompose a rational expression where the denominator has a nonrepeated irreducible quadratic factor
 - Decompose a rational expression where the denominator has a repeated irreducible quadratic factor

11.5 Matrices and Matrix Operations

- Introduction to Matrices
 - Determine the order of a matrix and describe elements within a matrix
 - Add or subtract matrices
- Matrix Multiplication
 - Multiply a matrix by a scalar
 - Find the sum or difference of scalar multiples
 - Multiply two matrices

11.6 Augmented Matrices and Gaussian Elimination

- Solving Systems with Gaussian Eliminations
 - Convert between a system of equations and its corresponding augmented matrix
 - Use row operations to solve a system of linear equations in two variables
 - Use row operations to solve a system of linear equations in three variables
 - Use matrices to solve applications of systems of linear equations

11.7 Determinants of Matrices and the Inverse Matrix

- Finding Determinants of Matrices
 - Find the determinant of a 2x2 matrix
 - Find the determinant of a 3x3 matrix
-

- Inverse and Identity Matrices
 - Understand the identity matrix and how it relates to the inverse matrix
 - Determine if a matrix is invertible using the determinant
 - Find the inverse of a 2x2 matrix
 - Find the inverse of a 3x3 matrix
- Solving Systems with Inverses
 - Solve a system of linear equations using the inverse of a 2x2 matrix
 - Solve a system of linear equations using the inverse of a 3x3 matrix

11.8 Cramer's Rule

- Solving Systems with Cramer's Rule
 - Use Cramer's rule to solve a system of two equations in two variables
 - Use Cramer's rule to solve a system of three equations in three variables
 - Use Cramer's rule to solve inconsistent or dependent systems

Chapter 12: Conic Sections

12.1 Ellipses

- Ellipses Centered at the Origin
 - Identify key points and axes of ellipses from a graph
 - Identify key points and axes of ellipses from an equation
 - Write the equation in standard form of an ellipse centered at the origin
 - Graph an ellipse centered at the origin from an equation in standard form
- Ellipses Not Centered at the Origin
 - Identify key points and axes of ellipses not centered at the origin
 - Write the equation in standard form of an ellipse not centered at the origin
 - Graph an ellipse not centered at the origin
- Ellipses Not in Standard Form and Applications of Ellipses
 - Convert an equation of an ellipse into standard form
 - Graph an ellipse where the equation is not given in standard form
 - Use ellipses in applications

12.2 Hyperbolas

- Hyperbolas Centered at the Origin
 - Locate the vertices and foci of a hyperbola from a graph
 - Identify vertices, foci, and asymptotes of a hyperbola from an equation
 - Write the equation of a hyperbola centered at the origin in standard form
 - Graph a hyperbola centered at the origin from an equation in standard form
 - Hyperbolas Not Centered at the Origin
 - Identify vertices, foci, and asymptotes of a hyperbola not centered at the origin
 - Write the equation of a hyperbola not centered at the origin
 - Graph a hyperbola not centered at the origin from an equation in standard form
 - Hyperbolas Not in Standard Form and Applications of Hyperbolas
 - Convert an equation of a hyperbola into standard form
 - Graph a hyperbola from an equation given in general form
 - Use hyperbolas in applications
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12.3 Parabolas

- Parabolas Centered at the Origin
 - Identify key components of a parabola from a graph
 - Identify key components of a parabola from an equation
 - Graph a parabola centered at the origin
 - Write the equation of a parabola centered at the origin in standard form
- Parabolas Not Centered at the Origin
 - Identify key components of a parabola not centered at the origin
 - Graph a parabola not centered at the origin
 - Write the equation of a parabola not centered at the origin in standard form
- Parabolas Not in Standard Form and Applications of Parabolas
 - Convert an equation of a parabola into standard form
 - Graph a parabola from an equation given in general form
 - Use parabolas in applications

Chapter 13: Sequences, Series, and Basic Probability

13.1 Sequences

- Introduction to Sequences
 - Write the terms of a sequence defined by an explicit formula
 - Write the terms of a sequence defined by a piecewise explicit formula
- Recursive Sequences
 - Write the terms of a sequence defined by a recursive formula
 - Write the terms of a sequence defined by a recursive formula with more than one initial term

13.2 Arithmetic Sequences

- Arithmetic Sequences
 - Find the common difference of an arithmetic sequence
 - Write terms of an arithmetic sequence
 - Write a recursive formula for an arithmetic sequence
 - Write an explicit formula for an arithmetic sequence
- Applications of Arithmetic Sequences
 - Find specific terms of an arithmetic sequence given other terms
 - Solve application problems with arithmetic sequences

13.3 Geometric Sequences

- Geometric Sequences
 - Find the common ratio of a geometric sequence
 - Write terms of a geometric sequence
 - Write a recursive formula for a geometric sequence
 - Write an explicit formula for a geometric sequence
 - Applications of Geometric Sequences
 - Write an explicit formula for the n th term of a sequence
 - Solve application problems with geometric sequences
 - Solve geometric sequence problems
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13.4 Series

- Summation Notation and Arithmetic Series
 - Evaluate expressions using summation notation
 - Find the sum of a finite arithmetic series
- Finite and Infinite Geometric Series
 - Find the sum of a finite geometric series
 - Determine if the sum of an infinite series is defined
 - Find the sum of an infinite geometric series
- Applications of Series
 - Solve application problems with arithmetic series
 - Solve application problems with geometric series
 - Find the equivalent fraction for a repeating decimal
 - Solve an annuity problem

13.5 Counting Theory

- The Addition and Multiplication Principles
 - Solve counting problems using the addition principle
 - Solve counting problems using the multiplication principle
 - Evaluate an expression with factorials
- Permutations
 - Find the number of permutations of n distinct objects using the multiplication principle
 - Find the number of permutations of n distinct objects using a formula
 - Find the number of permutations of n non-distinct objects
- Combinations
 - Find the number of combinations using the formula
 - Find the number of subsets of a set

13.6 Binomial Theorem

- Binomial Expansion
 - Find a binomial coefficient
 - Expand a binomial using the binomial theorem
 - Use the binomial theorem to find a single term

13.7 Probability

- Basic Probability
 - Compute the probability of equally likely outcomes
 - Compute the probability of the union of two events
 - Use the complement rule to compute probabilities
 - Compute probability using counting theory
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