



## *Prep for Calculus*

This course covers the topics outlined below. You can customize the scope and sequence of this course to meet your curricular needs.

Curriculum (281 topics + 125 additional topics)

- Real Numbers (27 topics)
  - ◆ Fractions (5 topics)
    - ◇ Simplifying a fraction
    - ◇ Using a common denominator to order fractions
    - ◇ Addition or subtraction of fractions with different denominators
    - ◇ Fraction multiplication
    - ◇ Fraction division
  - ◆ Percents and Proportions (7 topics)
    - ◇ Converting between percentages and decimals
    - ◇ Applying the percent equation
    - ◇ Finding the sale price without a calculator given the original price and percent discount
    - ◇ Finding the original price given the sale price and percent discount
    - ◇ Solving a proportion of the form  $x/a = b/c$
    - ◇ Word problem on proportions: Problem type 1
    - ◇ Word problem on proportions: Problem type 2
  - ◆ Signed Numbers (15 topics)
    - ◇ Integer addition: Problem type 2
    - ◇ Integer subtraction: Problem type 3
    - ◇ Signed fraction addition or subtraction: Basic
    - ◇ Signed fraction addition or subtraction: Advanced
    - ◇ Signed decimal addition and subtraction with 3 numbers
    - ◇ Integer multiplication and division
    - ◇ Signed fraction multiplication: Basic
    - ◇ Signed fraction multiplication: Advanced
    - ◇ Exponents and integers: Problem type 1
    - ◇ Exponents and signed fractions
    - ◇ Order of operations with integers and exponents
    - ◇ Evaluating a linear expression: Integer multiplication with addition or subtraction
    - ◇ Evaluating a quadratic expression: Integers
    - ◇ Absolute value of a number
    - ◇ Operations with absolute value: Problem type 2
- Equations and Inequalities (24 topics)
  - ◆ Linear Equations (15 topics)
    - ◇ Additive property of equality with integers
    - ◇ Multiplicative property of equality with signed fractions
    - ◇ Solving a two–step equation with integers
    - ◇ Solving a two–step equation with signed fractions
    - ◇ Solving a linear equation with several occurrences of the variable: Variables on the same side and distribution
    - ◇ Solving a linear equation with several occurrences of the variable: Variables on both sides and

- fractional coefficients
- ◊ Solving a linear equation with several occurrences of the variable: Variables on both sides and distribution
- ◊ Solving a linear equation with several occurrences of the variable: Variables on both sides and two distributions
- ◊ Solving a linear equation with several occurrences of the variable: Fractional forms with binomial numerators
- ◊ Solving equations with zero, one, or infinitely many solutions
- ◊ Algebraic symbol manipulation: Problem type 1
- ◊ Algebraic symbol manipulation: Problem type 2
- ◊ Solving a word problem with two unknowns using a linear equation
- ◊ Solving a decimal word problem using a linear equation of the form  $Ax + B = C$
- ◊ Solving a value mixture problem using a linear equation
- ◆ Linear Inequalities (6 topics)
  - ◊ Solving a linear inequality: Problem type 2
  - ◊ Solving a linear inequality: Problem type 3
  - ◊ Solving a linear inequality: Problem type 4
  - ◊ Graphing a compound inequality on the number line
  - ◊ Solving a compound linear inequality: Graph solution, basic
  - ◊ Solving a compound linear inequality: Interval notation
- ◆ Absolute Value Equations and Inequalities (3 topics)
  - ◊ Solving an absolute value equation of the form  $a|x| = b$  or  $|x|+a = b$
  - ◊ Solving an absolute value equation of the form  $|ax+b| = c$
  - ◊ Solving an absolute value inequality: Basic
- Exponents and Polynomials (43 topics)
  - ◆ Properties of Exponents (13 topics)
    - ◊ Evaluating an expression with a negative exponent: Positive fraction base
    - ◊ Evaluating an expression with a negative exponent: Negative integer base
    - ◊ Introduction to the product rule of exponents
    - ◊ Product rule with positive exponents: Multivariate
    - ◊ Product rule with negative exponents
    - ◊ Quotient of expressions involving exponents
    - ◊ Quotient rule with negative exponents: Problem type 1
    - ◊ Introduction to the power rules of exponents
    - ◊ Power rules with positive exponents
    - ◊ Power of a power rule with negative exponents
    - ◊ Power rules with negative exponents
    - ◊ Power and product rules with positive exponents
    - ◊ Power, product, and quotient rules with negative exponents
  - ◆ Scientific Notation (2 topics)
    - ◊ Scientific notation with positive exponent
    - ◊ Scientific notation with negative exponent
  - ◆ Polynomial Expressions (9 topics)
    - ◊ Degree and leading coefficient of a univariate polynomial
    - ◊ Combining like terms: Advanced
    - ◊ Simplifying a sum or difference of two univariate polynomials
    - ◊ Multiplying a univariate polynomial by a monomial with a positive coefficient
    - ◊ Multiplying a multivariate polynomial by a monomial
    - ◊ Multiplying binomials with leading coefficients of 1
    - ◊ Multiplying conjugate binomials: Univariate
    - ◊ Squaring a binomial: Univariate
    - ◊ Multiplication involving binomials and trinomials in two variables
  - ◆ Factoring (9 topics)

- ◇ Introduction to the GCF of two monomials
- ◇ Greatest common factor of two multivariate monomials
- ◇ Factoring out a monomial from a polynomial: Univariate
- ◇ Factoring out a monomial from a polynomial: Multivariate
- ◇ Factoring a quadratic with leading coefficient 1
- ◇ Factoring a quadratic with leading coefficient greater than 1
- ◇ Factoring a product of a quadratic trinomial and a monomial
- ◇ Factoring a difference of squares
- ◇ Factoring a polynomial by grouping: Problem type 1
- ◆ Quadratic Equations (10 topics)
  - ◇ Solving an equation written in factored form
  - ◇ Finding the roots of a quadratic equation with leading coefficient 1
  - ◇ Finding the roots of a quadratic equation with leading coefficient greater than 1
  - ◇ Solving a quadratic equation needing simplification
  - ◇ Solving a quadratic equation using the square root property: Exact answers, basic
  - ◇ Completing the square
  - ◇ Applying the quadratic formula: Exact answers
  - ◇ Solving a word problem using a quadratic equation with rational roots
  - ◇ Solving a word problem using a quadratic equation with irrational roots
  - ◇ Solving a quadratic inequality written in factored form
- Lines and Systems (30 topics)
  - ◆ Ordered Pairs (2 topics)
    - ◇ Plotting a point in the coordinate plane
    - ◇ Finding a solution to a linear equation in two variables
  - ◆ Graphing Lines (5 topics)
    - ◇ Graphing a line given its x- and y-intercepts
    - ◇ Graphing a line given its equation in slope-intercept form
    - ◇ Graphing a line given its equation in standard form
    - ◇ Graphing a line through a given point with a given slope
    - ◇ Graphing a vertical or horizontal line
  - ◆ Equations of Lines (13 topics)
    - ◇ Finding the y-intercept of a line given its equation
    - ◇ Finding x- and y-intercepts of a line given the equation: Advanced
    - ◇ Finding slope given the graph of a line on a grid
    - ◇ Finding slope given two points on the line
    - ◇ Finding the slope of a line given its equation
    - ◇ Writing an equation of a line given the y-intercept and another point
    - ◇ Writing the equation of a line given the slope and a point on the line
    - ◇ Writing the equation of the line through two given points
    - ◇ Finding slopes of lines parallel and perpendicular to a line given in the form  $Ax + By = C$
    - ◇ Writing equations of lines parallel and perpendicular to a given line through a point
    - ◇ Writing an equation and drawing its graph to model a real-world situation: Advanced
    - ◇ Application problem with a linear function: Finding a coordinate given the slope and a point
    - ◇ Application problem with a linear function: Finding a coordinate given two points
  - ◆ Graphing Linear Inequalities (2 topics)
    - ◇ Graphing a linear inequality in the plane: Standard form
    - ◇ Graphing a linear inequality in the plane: Vertical or horizontal line
  - ◆ Systems of Linear Equations (8 topics)
    - ◇ Graphically solving a system of linear equations
    - ◇ Solving a system of linear equations using substitution
    - ◇ Solving a system of linear equations using elimination with multiplication and addition
    - ◇ Solving a word problem involving a sum and another basic relationship using a system of linear equations

- ◇ Solving a value mixture problem using a system of linear equations
- ◇ Solving a distance, rate, time problem using a system of linear equations
- ◇ Solving a percent mixture problem using a system of linear equations
- ◇ Interpreting the graphs of two functions
- Functions and Graphs (34 topics)
  - ◆ Sets, Relations, and Functions (10 topics)
    - ◇ Union and intersection of finite sets
    - ◇ Set-builder and interval notation
    - ◇ Union and intersection of intervals
    - ◇ Identifying functions from relations
    - ◇ Vertical line test
    - ◇ Evaluating functions: Linear and quadratic or cubic
    - ◇ Evaluating functions: Absolute value, rational, radical
    - ◇ Evaluating a piecewise-defined function
    - ◇ Variable expressions as inputs of functions: Problem type 1
    - ◇ Domain and range from ordered pairs
  - ◆ Graphs and Transformations (16 topics)
    - ◇ Finding intercepts of a nonlinear function given its graph
    - ◇ Finding local maxima and minima of a function given the graph
    - ◇ Domain and range from the graph of a continuous function
    - ◇ Writing an equation for a function after a vertical translation
    - ◇ Writing an equation for a function after a vertical and horizontal translation
    - ◇ Translating the graph of a function: One step
    - ◇ Translating the graph of a function: Two steps
    - ◇ Transforming the graph of a function by reflecting over an axis
    - ◇ Transforming the graph of a function by shrinking or stretching
    - ◇ Finding the x-intercept(s) and the vertex of a parabola
    - ◇ Graphing a parabola of the form  $y = ax^2$
    - ◇ Graphing a parabola of the form  $y = (x-h)^2 + k$
    - ◇ Graphing a parabola of the form  $y = ax^2 + bx + c$ : Integer coefficients
    - ◇ Rewriting a quadratic function to find the vertex of its graph
    - ◇ Graphing a cubic function of the form  $y = ax^3$
    - ◇ Graphing an absolute value equation in the plane: Advanced
  - ◆ Polynomial Functions (2 topics)
    - ◇ Finding zeros of a polynomial function written in factored form
    - ◇ Finding x- and y-intercepts given a polynomial function
  - ◆ Combining Functions; Composite Functions; Inverse Functions (6 topics)
    - ◇ Sum, difference, and product of two functions
    - ◇ Quotient of two functions: Basic
    - ◇ Composition of two functions: Basic
    - ◇ Composition of two functions: Advanced
    - ◇ Inverse functions: Linear, discrete
    - ◇ Inverse functions: Rational
- Rational Expressions (30 topics)
  - ◆ Rational Expressions (20 topics)
    - ◇ Domain of a rational function: Excluded values
    - ◇ Simplifying a ratio of polynomials: Problem type 1
    - ◇ Simplifying a ratio of polynomials: Problem type 2
    - ◇ Simplifying a ratio of multivariate polynomials
    - ◇ Multiplying rational expressions involving multivariate monomials
    - ◇ Multiplying rational expressions involving quadratics with leading coefficients of 1
    - ◇ Dividing rational expressions involving multivariate monomials
    - ◇ Introduction to the LCM of two monomials

- ◇ Least common multiple of two monomials
- ◇ Adding rational expressions with common denominators and binomial numerators
- ◇ Adding rational expressions with different denominators:  $ax$ ,  $bx$
- ◇ Adding rational expressions with multivariate monomial denominators: Advanced
- ◇ Adding rational expressions with different denominators:  $x+a$ ,  $x+b$
- ◇ Complex fraction without variables: Problem type 1
- ◇ Complex fraction without variables: Problem type 2
- ◇ Complex fraction involving multivariate monomials
- ◇ Complex fraction: GCF and quadratic factoring
- ◇ Dividing a polynomial by a monomial: Univariate
- ◇ Polynomial long division: Problem type 1
- ◇ Polynomial long division: Problem type 2
- ◆ Rational Equations (6 topics)
  - ◇ Solving a rational equation that simplifies to linear: Denominator  $x$
  - ◇ Solving a rational equation that simplifies to linear: Denominator  $x+a$
  - ◇ Solving a rational equation that simplifies to linear: Unlike binomial denominators
  - ◇ Solving a rational equation that simplifies to linear: Denominators  $a$ ,  $x$ , or  $ax$
  - ◇ Solving a rational equation that simplifies to quadratic: Binomial denominators, constant numerators
  - ◇ Solving a rational equation that simplifies to quadratic: Binomial denominators and numerators
- ◆ Applications of Rational Expressions (2 topics)
  - ◇ Word problem on direct variation
  - ◇ Word problem on inverse variation
- ◆ Rational Functions (2 topics)
  - ◇ Sketching the graph of a rational function: Constant over linear
  - ◇ Sketching the graph of a rational function: Linear over linear
- Radical Expressions (26 topics)
  - ◆ Radical Functions (2 topics)
    - ◇ Domain of a square root function: Advanced
    - ◇ Graphing a square root function
  - ◆ Radical Expressions (15 topics)
    - ◇ Square root of a rational perfect square
    - ◇ Cube root of an integer
    - ◇ Simplifying the square root of a whole number less than 100
    - ◇ Square root of a perfect square monomial
    - ◇ Simplifying a radical expression with an even exponent
    - ◇ Simplifying a radical expression with two variables
    - ◇ Simplifying a higher root of a whole number
    - ◇ Simplifying a higher radical expression: Multivariate
    - ◇ Square root addition or subtraction
    - ◇ Simplifying a sum or difference of radical expressions: Multivariate
    - ◇ Square root multiplication: Advanced
    - ◇ Simplifying a product of radical expressions: Multivariate
    - ◇ Simplifying a product involving square roots using the distributive property: Advanced
    - ◇ Rationalizing the denominator of a radical expression
    - ◇ Rationalizing the denominator of a radical expression using conjugates
  - ◆ Higher Roots and Rational Exponents (5 topics)
    - ◇ Converting between radical form and exponent form
    - ◇ Rational exponents: Non-unit fraction exponent with a whole number base
    - ◇ Rational exponents: Negative exponents and fractional bases
    - ◇ Rational exponents: Products and quotients with negative exponents
    - ◇ Rational exponents: Powers of powers with negative exponents
  - ◆ Radical Equations (4 topics)
    - ◇ Solving a radical equation that simplifies to a linear equation: One radical, basic

- ◇ Solving a radical equation that simplifies to a linear equation: Two radicals
- ◇ Solving a radical equation that simplifies to a quadratic equation: One radical
- ◇ Solving an equation using the odd–root property: Problem type 1
- Exponentials and Logarithms (20 topics)
  - ◆ Properties of Logarithms (7 topics)
    - ◇ Converting between logarithmic and exponential equations
    - ◇ Converting between natural logarithmic and exponential equations
    - ◇ Evaluating a logarithmic expression
    - ◇ Basic properties of logarithms
    - ◇ Expanding a logarithmic expression: Problem type 1
    - ◇ Writing an expression as a single logarithm
    - ◇ Change of base for logarithms: Problem type 1
  - ◆ Logarithmic and Exponential Equations (6 topics)
    - ◇ Solving an equation of the form  $\log_b a = c$
    - ◇ Solving a multi–step equation involving a single logarithm
    - ◇ Solving a multi–step equation involving natural logarithms
    - ◇ Solving an equation involving logarithms on both sides: Problem type 2
    - ◇ Solving an exponential equation by using logarithms: Exact answers in logarithmic form
    - ◇ Solving exponential equations by using logarithms and natural logarithms: Decimal answers
  - ◆ Applications with Exponential Equations (3 topics)
    - ◇ Evaluating an exponential function that models a real–world situation
    - ◇ Finding a final amount in a word problem on exponential growth or decay
    - ◇ Finding the time to reach a limit in a word problem on exponential growth or decay
  - ◆ Exponential and Logarithmic Functions (4 topics)
    - ◇ Graphing an exponential function and its asymptote:  $f(x) = a(b)^x$
    - ◇ The graph, domain, and range of an exponential function
    - ◇ The graph, domain, and range of a logarithmic function
    - ◇ Translating the graph of a logarithmic or exponential function
- Geometry (20 topics)
  - ◆ Perimeter, Area, and Volume (16 topics)
    - ◇ Perimeter of a square or a rectangle
    - ◇ Area of a square or a rectangle
    - ◇ Area of a piecewise rectangular figure
    - ◇ Finding the side length of a rectangle given its perimeter or area
    - ◇ Finding the perimeter or area of a rectangle given one of these values
    - ◇ Area of a parallelogram
    - ◇ Area of a triangle
    - ◇ Circumference and area of a circle
    - ◇ Perimeter involving rectangles and circles
    - ◇ Area involving inscribed figures
    - ◇ Volume of a rectangular prism
    - ◇ Volume of a cylinder
    - ◇ Surface area of a cube or a rectangular prism
    - ◇ Surface area of a cylinder: Exact answers in terms of pi
    - ◇ Similar polygons
    - ◇ Indirect measurement
  - ◆ Coordinate Geometry (4 topics)
    - ◇ Pythagorean Theorem
    - ◇ Distance between two points in the plane: Exact answers
    - ◇ Graphing a circle given its equation in standard form
    - ◇ Graphing a circle given its equation in general form
- Trigonometry (27 topics)
  - ◆ Angles on the Unit Circle (5 topics)

- ◇ Converting between degree and radian measure: Problem type 1
- ◇ Sketching an angle in standard position
- ◇ Reference angles: Problem type 1
- ◇ Coterminal angles
- ◇ Arc length and central angle measure
- ◆ Right Triangle Trigonometry (7 topics)
  - ◇ Sine, cosine, and tangent ratios: Variables for side lengths
  - ◇ Using a trigonometric ratio to find a side length in a right triangle
  - ◇ Using a trigonometric ratio to find an angle measure in a right triangle
  - ◇ Finding trigonometric ratios given a right triangle
  - ◇ Solving a right triangle
  - ◇ Solving a triangle with the law of sines: Problem type 1
  - ◇ Solving a triangle with the law of cosines
- ◆ Unit Circle Trigonometry (7 topics)
  - ◇ Finding coordinates on the unit circle for special angles
  - ◇ Trigonometric functions and special angles: Problem type 1
  - ◇ Trigonometric functions and special angles: Problem type 2
  - ◇ Trigonometric functions and special angles: Problem type 3
  - ◇ Finding values of trigonometric functions given information about an angle: Problem type 1
  - ◇ Finding values of trigonometric functions given information about an angle: Problem type 2
  - ◇ Finding values of trigonometric functions given information about an angle: Problem type 3
- ◆ Graphing Trigonometric Functions (2 topics)
  - ◇ Sketching the graph of  $y = a \sin(x+c)$  or  $y = a \cos(x+c)$
  - ◇ Sketching the graph of  $y = a \sin(bx)$  or  $y = a \cos(bx)$
- ◆ Inverse Trigonometric Functions (1 topics)
  - ◇ Values of inverse trigonometric functions
- ◆ Trigonometric Identities (1 topics)
  - ◇ Simplifying trigonometric expressions
- ◆ Trigonometric Equations (4 topics)
  - ◇ Finding solutions in an interval for a basic equation involving sine or cosine
  - ◇ Finding solutions in an interval for a basic tangent, cotangent, secant, or cosecant equation
  - ◇ Finding solutions in an interval for a trigonometric equation using Pythagorean identities: Problem type 1
  - ◇ Solving a basic trigonometric equation involving sine or cosine
- Other Topics Available(\*) (125 additional topics)
  - ◆ Real Numbers (8 topics)
    - ◇ Fractional part of a circle
    - ◇ Finding the percentage increase or decrease: Advanced
    - ◇ Word problem on unit rates associated with ratios of whole numbers: Decimal answers
    - ◇ Exponents and integers: Problem type 2
    - ◇ Identifying numbers as integers or non-integers
    - ◇ Identifying numbers as rational or irrational
    - ◇ Properties of addition
    - ◇ Properties of real numbers
  - ◆ Equations and Inequalities (7 topics)
    - ◇ Solving an equation to find the value of an expression
    - ◇ Solving a decimal word problem using a linear equation with the variable on both sides
    - ◇ Solving a fraction word problem using a linear equation with the variable on both sides
    - ◇ Writing a multi-step inequality for a real-world situation
    - ◇ Solving a decimal word problem using a two-step linear inequality
    - ◇ Solving a decimal word problem using a linear inequality with the variable on both sides

- ◇ Solving an absolute value equation of the form  $|ax+b| = |cx+d|$
- ◆ Exponents and Polynomials (14 topics)
  - ◇ Evaluating expressions with exponents of zero
  - ◇ Ordering numbers with positive exponents
  - ◇ Ordering numbers with negative exponents
  - ◇ Multiplying and dividing numbers written in scientific notation
  - ◇ Degree of a multivariate polynomial
  - ◇ Simplifying a sum or difference of three univariate polynomials
  - ◇ Factoring with repeated use of the difference of squares formula
  - ◇ Factoring a sum or difference of two cubes
  - ◇ Solving an equation that can be written in quadratic form: Problem type 1
  - ◇ Solving a quadratic equation using the square root property: Exact answers, advanced
  - ◇ Solving a quadratic equation by completing the square: Exact answers
  - ◇ Discriminant of a quadratic equation
  - ◇ Writing a quadratic equation given the roots and the leading coefficient
  - ◇ Solving a quadratic inequality
- ◆ Lines and Systems (7 topics)
  - ◇ Determining whether given points lie on one, both, or neither of 2 lines given equations
  - ◇ Writing the equations of vertical and horizontal lines through a given point
  - ◇ Solving a 3x3 system of linear equations: Problem type 1
  - ◇ Solving a 2x2 system of linear equations that is inconsistent or consistent dependent
  - ◇ Solving a tax rate or interest rate problem using a system of linear equations
  - ◇ Solving a word problem using a 3x3 system of linear equations: Problem type 1
  - ◇ Graphing a system of two linear inequalities: Basic
- ◆ Functions and Graphs (12 topics)
  - ◇ Set-builder notation
  - ◇ Finding inputs and outputs of a function from its graph
  - ◇ Finding where a function is increasing, decreasing, or constant given the graph: Interval notation
  - ◇ Domain and range from the graph of a piecewise function
  - ◇ Graphing a parabola of the form  $y = ax^2 + bx + c$ : Rational coefficients
  - ◇ Range of a quadratic function
  - ◇ Classifying the graph of a function
  - ◇ Graphing a piecewise-defined function: Problem type 1
  - ◇ Determining the end behavior of the graph of a polynomial function
  - ◇ Inferring properties of a polynomial function from its graph
  - ◇ Horizontal line test
  - ◇ Determining whether two functions are inverses of each other
- ◆ Rational Expressions (13 topics)
  - ◇ Ordering fractions with variables
  - ◇ Dividing rational expressions involving quadratics with leading coefficients of 1
  - ◇ Complex fraction made of sums involving rational expressions
  - ◇ Solving a rational equation that simplifies to quadratic: Proportional form, advanced
  - ◇ Partial fraction decomposition with distinct linear factors
  - ◇ Partial fraction decomposition with repeated linear factors
  - ◇ Partial fraction decomposition with an irreducible quadratic factor
  - ◇ Writing an equation that models variation
  - ◇ Word problem on combined variation
  - ◇ Word problem on inverse proportions
  - ◇ Word problem involving multiple rates
  - ◇ Sketching the graph of a rational function: Quadratic over linear
  - ◇ Graphing rational functions with holes
- ◆ Radical Expressions (9 topics)
  - ◇ Special products of radical expressions: Conjugates and squaring



- ◇ Rationalizing a denominator: Quotient involving higher radicals and monomials
- ◇ Using  $i$  to rewrite square roots of negative numbers
- ◇ Simplifying a product and quotient involving square roots of negative numbers
- ◇ Adding or subtracting complex numbers
- ◇ Multiplying complex numbers
- ◇ Dividing complex numbers
- ◇ Simplifying a power of  $i$
- ◇ Solving a quadratic equation with complex roots
- ◆ Exponentials and Logarithms (7 topics)
  - ◇ Change of base for logarithms: Problem type 2
  - ◇ Solving an equation involving logarithms on both sides: Problem type 1
  - ◇ Solving an exponential equation by finding common bases: Linear and quadratic exponents
  - ◇ Finding the initial or final amount in a word problem on exponential growth or decay
  - ◇ Finding the rate or time in a word problem on continuous exponential growth or decay
  - ◇ Graphing an exponential function and its asymptote:  $f(x) = a(e)^{x-b} + c$
  - ◇ Graphing a logarithmic function: Advanced
- ◆ Geometry (13 topics)
  - ◇ Areas of rectangles with the same perimeter
  - ◇ Finding a side length given the perimeter and side lengths with variables
  - ◇ Finding the radius or the diameter of a circle given its circumference
  - ◇ Circumference ratios
  - ◇ Area involving rectangles and circles
  - ◇ Word problem involving the area between two concentric circles
  - ◇ Volume of a cone: Exact answers in terms of pi
  - ◇ Volume of a sphere
  - ◇ Word problem involving the rate of filling or emptying a cylinder
  - ◇ Ratio of volumes
  - ◇ Midpoint of a line segment in the plane
  - ◇ Writing an equation of a circle given its center and a point on the circle
  - ◇ Writing an equation of a circle given the endpoints of a diameter
- ◆ Trigonometry (20 topics)
  - ◇ Area of a sector of a circle
  - ◇ Using trigonometry to find a length in a word problem with one right triangle
  - ◇ Using trigonometry to find angles of elevation or depression in a word problem
  - ◇ Amplitude and period of sine and cosine functions
  - ◇ Amplitude, period, and phase shift of sine and cosine functions
  - ◇ Composition of a trigonometric function with its inverse trigonometric function: Problem type 1
  - ◇ Composition of a trigonometric function with the inverse of another trigonometric function: Problem type 2
  - ◇ Composition of a trigonometric function with the inverse of another trigonometric function: Problem type 3
  - ◇ Using cofunction identities
  - ◇ Sum and difference identities: Problem type 1
  - ◇ Sum and difference identities: Problem type 2
  - ◇ Double-angle identities: Problem type 1
  - ◇ Double-angle identities: Problem type 2
  - ◇ Product-to-sum and sum-to-product identities: Problem type 1
  - ◇ Solving a basic trigonometric equation involving tangent, cotangent, secant, or cosecant
  - ◇ Plotting a point in polar coordinates
  - ◇ Converting rectangular coordinates to polar coordinates: Special angles
  - ◇ Converting polar coordinates to rectangular coordinates
  - ◇ Converting an equation written in rectangular form to one written in polar form
  - ◇ Converting an equation written in polar form to one written in rectangular coordinates

- ◆ Limits and Continuity (15 topics)
  - ◇ Estimating a limit numerically
  - ◇ Finding limits from a graph
  - ◇ Finding limits for a piecewise-defined function
  - ◇ Finding a limit by using the limit laws: Problem type 1
  - ◇ Finding a limit by using the limit laws: Problem type 2
  - ◇ Finding a limit by using the limit laws: Problem type 3
  - ◇ Squeeze Theorem
  - ◇ Determining points of discontinuity from a graph
  - ◇ Determining a parameter to make a function continuous
  - ◇ Limits at infinity and graphs
  - ◇ Limits at infinity and rational functions
  - ◇ Infinite limits and graphs
  - ◇ Infinite limits and rational functions
  - ◇ Finding a limit of a trigonometric function by using continuity
  - ◇ Finding a limit by using special trigonometric limits

**\*Other Topics Available** *By default, these topics are NOT included in the course, but can be added using the content editor in the Teacher Module.*