

Prep for College Algebra with Trigonometry

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

Curriculum (246 topics + 58 additional topics)

- Real Numbers (30 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 (8 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
 - ◇ Finding simple interest without a calculator
 - ◇ 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
 - ◆ Properties of Real Numbers (2 topics)
 - ◇ Identifying numbers as integers or non-integers
 - ◇ Identifying numbers as rational or irrational
- Equations and Inequalities (32 topics)
 - ◆ Linear Equations (20 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
- ◇ Writing a one–step expression for a real–world situation
- ◇ Translating a phrase into a two–step expression
- ◇ Translating a sentence into a one–step equation
- ◇ 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
- ◇ Solving a percent mixture problem using a linear equation
- ◇ Solving a distance, rate, time problem using a linear equation
- ◆ Linear Inequalities (9 topics)
 - ◇ Graphing a linear inequality on the number line
 - ◇ Graphing a compound inequality on the number line
 - ◇ Solving a linear inequality: Problem type 1
 - ◇ Solving a linear inequality: Problem type 2
 - ◇ Solving a linear inequality: Problem type 3
 - ◇ Solving a linear inequality: Problem type 4
 - ◇ Solving a compound linear inequality: Graph solution, basic
 - ◇ Solving a compound linear inequality: Interval notation
 - ◇ Solving a decimal word problem using a two–step linear inequality
- ◆ 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 (44 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
 - ◇ Rewriting an algebraic expression without a negative exponent
 - ◇ 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
 - ◆ 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 (11 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
 - ◇ Discriminant of a quadratic equation
 - ◇ 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 (33 topics)
 - ◆ Ordered Pairs (3 topics)
 - ◇ Plotting a point in the coordinate plane
 - ◇ Finding a solution to a linear equation in two variables
 - ◇ Determining whether given points lie on one, both, or neither of 2 lines given equations
 - ◆ 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 (3 topics)
 - ◇ Graphing a linear inequality in the plane: Standard form
 - ◇ Graphing a linear inequality in the plane: Vertical or horizontal line
 - ◇ Graphing a linear inequality in the plane: Slope–intercept form
- ◆ Systems of Linear Equations (9 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
 - ◇ Graphing a system of two linear inequalities: Basic
- Functions and Graphs (29 topics)
 - ◆ Sets, Relations, and Functions (9 topics)
 - ◇ Union and intersection of finite sets
 - ◇ Set–builder and interval notation
 - ◇ 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
 - ◇ Finding zeros of a polynomial function written in factored form
 - ◇ 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
 - ◇ Graphing a cubic function of the form $y = ax^3$
 - ◇ Graphing an absolute value equation in the plane: Advanced
 - ◆ Combining Functions; Composite Functions; Inverse Functions (4 topics)
 - ◇ Sum, difference, and product of two functions
 - ◇ Quotient of two functions: Basic
 - ◇ Composition of two functions: Basic
 - ◇ Inverse functions: Linear, discrete

- Rational Expressions (27 topics)
 - ◆ Rational Expressions (19 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
 - ◇ Adding rational expressions with common denominators and binomial numerators
 - ◇ Adding rational expressions with different denominators: ax , bx
 - ◇ 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
 - ◇ Complex fraction made of sums involving rational expressions
 - ◇ 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
 - ◆ Variation (2 topics)
 - ◇ Word problem on direct variation
 - ◇ Word problem on inverse variation
- Radical Expressions (26 topics)
 - ◆ Radical Functions (2 topics)
 - ◇ Domain of a square root function: Advanced
 - ◇ Graphing a square root function
 - ◆ Radical Expressions (16 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
 - ◇ Special products of radical expressions: Conjugates and squaring
 - ◇ Rationalizing the denominator of a radical expression
 - ◇ Rationalizing the denominator of a radical expression using conjugates
 - ◆ 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 (3 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
- Geometry (25 topics)
 - ◆ Perimeter, Area, and Volume (17 topics)
 - ◇ Perimeter of a square or a rectangle
 - ◇ Area of a square or a rectangle
 - ◇ Area of a piecewise rectangular figure
 - ◇ Finding a side length given the perimeter and side lengths with variables
 - ◇ 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
 - ◆ Angles (3 topics)
 - ◇ Solving equations involving vertical angles
 - ◇ Finding an angle measure of a triangle given two angles
 - ◇ Finding an angle measure for a triangle with an extended side
 - ◆ Coordinate Geometry (5 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
 - ◇ Writing an equation of a circle given its center and a point on the circle
- Other Topics Available(*) (58 additional topics)
 - ◆ Real Numbers (6 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
 - ◇ Properties of addition
 - ◇ Properties of real numbers
 - ◆ Equations and Inequalities (6 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
 - ◇ Solving a word problem with three unknowns using a linear equation

- ◇ Writing a multi–step inequality for a real–world situation
- ◇ Solving a decimal word problem using a linear inequality with the variable on both sides
- ◆ Exponents and Polynomials (13 topics)
 - ◇ Evaluating expressions with exponents of zero
 - ◇ Ordering numbers with positive exponents
 - ◇ Ordering numbers with negative exponents
 - ◇ Power, product, and quotient rules 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
 - ◇ Solving a quadratic inequality
- ◆ Lines and Systems (5 topics)
 - ◇ 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
- ◆ Functions and Graphs (6 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
 - ◇ Classifying the graph of a function
 - ◇ Horizontal line test
 - ◇ Determining whether two functions are inverses of each other
- ◆ Rational Expressions (6 topics)
 - ◇ Ordering fractions with variables
 - ◇ Dividing rational expressions involving quadratics with leading coefficients of 1
 - ◇ Least common multiple of two monomials
 - ◇ Adding rational expressions with multivariate monomial denominators: Advanced
 - ◇ Writing an equation that models variation
 - ◇ Word problem on combined variation
- ◆ Radical Expressions (8 topics)
 - ◇ 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
- ◆ Geometry (8 topics)
 - ◇ Areas of rectangles with the same perimeter
 - ◇ 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
 - ◇ Word problem involving the rate of filling or emptying a cylinder
 - ◇ Midpoint of a line segment in the plane

◇ Writing an equation of a circle given the endpoints of a diameter

***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.*