CP Trigonometry/Algebra 3
Program of Studies Description

*40431A COLLEGE PREP TRIGONOMETRY/ALGEBRA 3

(Grade 9,10,11,12) (1.0 Credit)

(Prerequisite: Course CP or Honors level Geometry and Algebra 2, and teacher recommendation)

Students will learn about the nature of graphs, polynomial functions, conic sections, logarithms, exponential functions, graphs and inverses of trigonometric functions, solutions to right and oblique triangles, and trigonometric identities and equations. These topics are explored by students working independently, with a partner, and in small groups. Achievement is demonstrated through tests, quizzes, activity sheets, projects, and oral demonstration of homework problems. Students will take the CP Trigonometry/Algebra 3 final exam at the end of the course.

CP Trigonometry/Algebra 3
Syllabus

DESCRIPTION OF COURSE: Students learn about the nature of graphs, polynomial functions, conic sections, logarithms, exponential functions, graphs and inverses of trigonometric functions, solutions to right and oblique triangles, and trigonometric identities and equations. Skills and knowledge of the aforementioned are acquired by students working independently, with a partner, and in small groups. Achievement is demonstrated through tests, quizzes, activity sheets, projects, and oral demonstration of homework problems. Students will take the CP Trigonometry/Algebra 3 final exam at the end of the course

REQUIRED TOPICS OF STUDY	SUGGESTED INSTRUCTIONAL TIME	STANDARDS/ ELIGIBLE CONTENT
Prerequisites	14 days	CC.2.4.HS.B.3, CC.2.2.HS.C.1, CC.2.2.HS.C.2, CC.2.2.HS.C.3, CC.2.2.HS.C.4, CC.2.2.HS.C.5, CC.2.2.HS.C.6
Functions and Graphs	26 days	CC.2.2.HS.C.1, CC.2.2.HS.C.2, CC.2.2.HS.C.3, CC.2.2.HS.C.4, CC.2.2.HS.C.5, CC.2.2.HS.C.6, CC.2.2.HS.D.1, CC.2.2.HS.D.2, CC.2.2.HS.D.7, CC.2.2.HS.F.5, CC.2.2.HS.F.6, CC.2.2.HS.F.7
Polynomial, Power, and Rational Functions	15 days	CC.2.2.HS.C.4, CC.2.2.HS.C.5, CC.2.2.HS.D.1, CC.2.2.HS.D.2, CC.2.2.HS.D.3, CC.2.2.HS.D.5, CC.2.2.HS.D.6, CC.2.2.HS.F.1, CC.2.2.HS.F.4
Exponential, Logistic, and Logarithmic Functions	10 days	CC.2.2.HS.C.1, CC.2.2.HS.C.2, CC.2.2.HS.C.3, CC.2.2.HS.C.4, CC.2.2.HS.C.5, CC.2.2.HS.D.2
Trigonometric Functions	25 days	CC.2.3.HS.A.3, CC.2.3.HS.A.7, CC.2.3.HS.A.14

RESOURCES: Precalculus Textbook(Pearson), TI-84 Graphing Calculator

June, 2026

CP Trigonometry/Algebra 3

Curriculum Map

Unit 1	***Chapter P: Prerequisites***
Big Idea	**Pre-requisite Skills**
Unit Essential Questions:	***Convert between decimals and fractions*** ***• Write inequalities*** ***• Apply basic properties of algebra*** ***• Work with exponents and scientific notation*** ***• Graph points*** ***• Find distances and midpoints on a number line and in a coordinate plane*** ***• write standard-form equations of circles*** ***• Solve linear equations and inequalities in one variable*** ***• Use the concepts of slope and y-intercept to graph and write linear equation in two variables.*** ***• Solve equations involving quadratic, absolute value, and fractional expressions by finding x-intercepts or intersections on graphs, by using algebraic techniques, or by using numerical techniques.*** ***• Add, subtract, multiply, and divide complex numbers*** ***• Find complex zeros of quadratic functions.*** ***• Solve inequalities involving absolute value, quadratic polynomials, and expressions involving fractions.***
Total Number of Days for Unit	**15**

Date/weeks	PA Standards/ Eligible Content	Vocabulary	Instructional Materials	Common Assessments	Link to Profile of a Zephyr

CP Trigonometry/Algebra 3

Curriculum Map

	M11.A.1.1 M11.D.2.1.1 M11.D M11.A.1.1.2 2.8.11.O,Q M11.C.3.1.1 2.8.11.E M11.D.2.1.3 M11.D.3.2.2 M11.D.2.1.5 2.8.11.N 2.1.11.A		Textbook: Precalculus by Demana, Waits, Foley, and Kennedy Bell Ringers Lecture Classwork/discussion Homework Boardwork/explanations Reinforcement/worksheets Structured notes Activities Graphing Calculator Computer Activities IXL Delta Math		

CP Trigonometry/Algebra 3

Curriculum Map

Unit 2	***Chapter One:*** ***Functions and Graphs***
Big Idea	**Use the numerical, graphical, and algebraic models to solve functions and graphs.**
Unit Essential Questions:	***Use numerical, algebraic, and graphical models to solve problems*** ***• translate from one model (algebraic,numerical and graphical) to another.*** ***• represent functions numerically, algebraically, and graphically*** ***• determine the domain and range for functions.*** ***• analyze function characteristics such as extreme values, symmetry, asymptotes, and end behavior.*** ***• recognize graphs of twelve basic functions.*** ***• determine the domain of functions related to the twelve basic functions.*** ***• combine the twelve basic functions in various ways to create new functions.*** ***• build new functions from basic functions by adding, subtracting, multiplying, dividing and composing functions.*** ***• define functions and relations parametrically.*** ***• find inverses of functions and relations.*** ***• algebraically and graphically represent translations, reflections stretches, and shrinks of functions and parametric relations.*** ***• identify appropriate basic functions with which to model real-world problems.*** **• produce specific functions to model data, formulas, graphs, and verbal descriptions**
Total Number of Days for Unit	**20**

Dates/weeks	PA Standards/ Eligible Content	Vocabulary	Instructional Materials	Common Assessments	Link to Profile of a Zephyr

June, 2026

CP Trigonometry/Algebra 3

Curriculum Map

	2.8.11.R *2.8.11.Q* *2.8.11.O* *2.8.11.T* *2.8.11.S*		Textbook: Precalculus by Demana, Waits, Foley, and Kennedy Bell Ringers Lecture Classwork/discussion Homework Boardwork/explanations Reinforcement/worksheets Structured notes Activities Graphing Calculator Computer Activities IXL Delta Math		

CP Trigonometry/Algebra 3

Curriculum Map

Unit 2	***Chapter Two:*** ***Polynomial, Power, and Rational Functions***
Big Idea	**Thorough study of polynomial, power, and rational equations.**
Unit Essential Questions:	***• recognize and graph linear and quadratic functions, and use these functions to model situations and solve problems.*** ***• sketch power functions in the form of $f(x) = kx^a$ (where k and a are rational numbers).*** ***• graph polynomial functions, predict their end behavior, and find their real zeros using a grapher or an algebraic method.*** ***• divide polynomials using long division or synthetic division to apply the Remainder Theorem, Factor Theorem, and Rational Zeros Theorem.*** ***• find upper and lower bounds for zeros of polynomial.*** ***• factor polynomials with real coefficients using factors with complex coefficients.*** ***• describe the graphs of rational functions, identify horizontal and vertical asymptotes.*** ***• predict the end behavior of rational functions.*** ***• solve equations involving fractions using both algebraic and graphical techniques.*** ***• identify extraneous solutions.*** ***• solve inequalities involving polynomials and rational functions by using both algebraic and graphical techniques.***
Total Number of Days for Unit	**18**

CP Trigonometry/Algebra 3

Curriculum Map

Dates/weeks	PA Standards/ Eligible Content	Vocabulary	Instructional Materials	Common Assessments	Link to Profile of a Zephyr
	M11.D.2.1.2 2.8.11.S 2.8.11.E 2.8.11 M11.D.2.1.5 2.8.11.N		Textbook: Precalculus by Demana, Waits, Foley, and Kennedy Bell Ringers Lecture Classwork/discussion Homework Boardwork/explanations Reinforcement/worksheets Structured notes Activities Graphing Calculator Computer Activities IXL Delta Math		

June, 2026

CP Trigonometry/Algebra 3

Curriculum Map

Unit 2	***Chapter Three:*** ***Exponential, Logistic, and Logarithmic Functions***
Big Idea	**Exploring exponential and logarithmic functions algebraically and graphically.**
Unit Essential Questions:	***• evaluate exponential expressions.*** ***• graph exponential and logistic functions.*** ***• use exponential growth, decay, and regression to model real-life problems.*** ***• convert equations between logarithmic form and exponential form.*** ***• evaluate common and natural logarithms.*** ***• graph common and natural logarithmic functions.*** ***• apply the properties of logarithms to evaluate expressions.*** ***• graph logarithmic functions with base b.*** ***• re-express data.*** ***• apply the properties of logarithms to solve exponential and logarithmic equations algebraically.*** ***• solve application problems using logarithm and exponential equations.*** ***• use exponential functions and equations to solve business and finance applications related to compound interest and annuities.***
Total Number of Days for Unit	**12**

Dates/weeks	PA Standards/ Eligible Content	Vocabulary	Instructional Materials	Common Assessments	Link to Profile of a Zephyr

June, 2026

CP Trigonometry/Algebra 3

Curriculum Map

	M11.A.3.1.1. 2.8.11.S 2.8.11 M11.A.3.1.1 2.8.11.R		Textbook: Precalculus by Demana, Waits, Foley, and Kennedy Bell Ringers Lecture Classwork/discussion Homework Boardwork/explanations Reinforcement/worksheets Structured notes Activities Graphing Calculator Computer Activities IXL Delta Math		

CP Trigonometry/Algebra 3

Curriculum Map

Unit 2	***Chapter Four:*** ***Trigonometric Functions***
Big Idea	**Exploring Trigonometric Functions Algebraically and Graphically.**
Unit Essential Questions:	***• convert between radians and degrees.*** ***• find arc lengths.*** ***• convert to nautical miles*** ***• solve problems involving angular speed.*** ***• define the six trigonometric functions using the lengths of the sides of right triangle.*** ***• solve problems involving the trigonometric functions of real numbers and the properties of the sine and cosine as periodic functions.*** ***• generate the graphs of the sine and cosine functions and explore various transformations of these graphs.*** ***• generate the graphs for the tangent, cotangent, secant, and cosecant functions and to explore various transformations of these graphs.*** ***• graph sums, differences, and other combinations of trigonometric and algebraic functions.*** ***• relate the concept of inverse functions to trigonometric functions.*** ***• apply the concepts of trigonometry to solve real-world problems.***
Total Number of Days for Unit	**20**

Dates/weeks	PA Standards/ Eligible Content	Vocabulary	Instructional Materials	Common Assessments	Link to Profile of a Zephyr

CP Trigonometry/Algebra 3

Curriculum Map

	2.3.11.B 2.4.11.E M11.C.1 M11.C.1.1 2.10.11.A 2.8.11.Q 2.8.11.S		Textbook: Precalculus by Demana, Waits, Foley, and Kennedy Bell Ringers Lecture Classwork/discussion Homework Boardwork/explanations Reinforcement/worksheets Structured notes Activities Graphing Calculator Computer Activities IXL Delta Math		