

Pre-Calculus Parent Guide

Unit 1 Concepts:

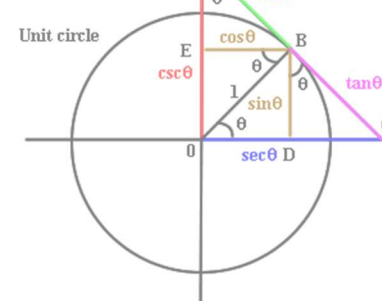
In this unit, students investigate the relationships between points along a unit circle & the six trig functions. Students will also see how trigonometry is used in the real world through right triangle trig, the Law of Sines & the Law of Cosines.

Learning Goals:

Student will build a Unit Circle to help us understand the relationship between angle measures and side measures in a triangle and describe angle measure in various ways, including negative, co-terminal, radian and degree. They will apply the sine/cosine ratios to situations using the Law of Sines and the Law of Cosines.

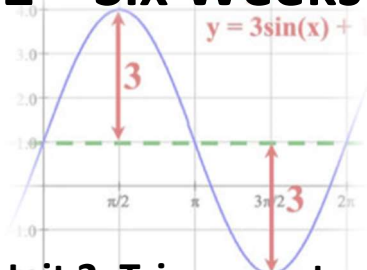
Why? – The trigonometric ratios can be used to solve for side and angle measures in situations where a triangle can model the circumstances. Using the two laws (which are also used in Physics), we can find the distance across a lake or canyon, navigational headings, and heights/lengths by triangulation.

1st Six Weeks



Unit 1: Trigonometry

2nd Six Weeks



Unit 2: Trigonometry: Graphing & Applications

Unit 2 Concepts:

In this unit, students investigate the properties & characteristics of trig graphs & their periodic natures, use trig relationships to model & solve mathematical & real-world problems & use trig identities to simplify & verify expressions & equations. Finally, they will use previously learned solution methods to solve trig equations.

Learning Goals:

Student will graph the periodic functions, as well as transformations, of sine, cosine, tangent, cotangent, secant and cosecant. They will also solve equations involving trigonometric expressions with and without a calculator

Why? – The periodic nature of the trig graphs shows us how occurrences that repeat can be displayed graphically. Trigonometric identities are used to simplify complex expressions and ultimately solve trig equations.

Unit 3 Concepts:

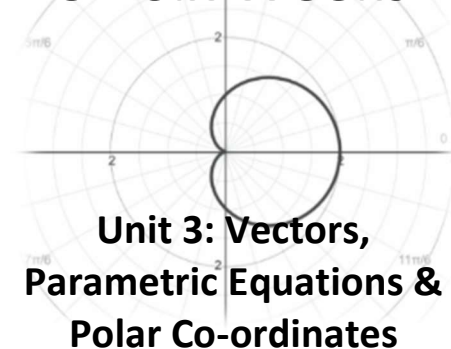
In this unit students will define & solve vectors & learn geometric & coordinate forms of which they can convert back & forth. They will be introduced to parametric equations & polar coordinates.

Learning Goals:

Students will graph sets of parametric equations and polar relations, perform substitutions to convert coordinates and equations to other forms as well as use and apply vectors to real-world problems.

Why? – Vectors help us realize that all motion is ruled by distance and direction. Adding in a time component leads us directly to sets of parametric equations. Polar equations represent a specific type of parametric equations.

3rd Six Weeks



Unit 3: Vectors, Parametric Equations & Polar Co-ordinates

Unit 4 Concepts:

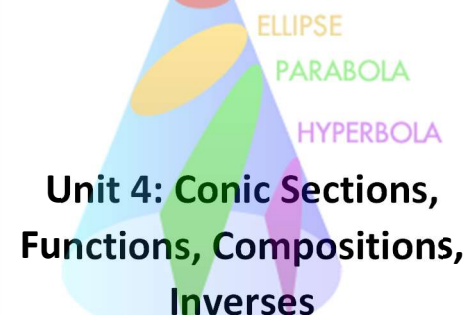
In this unit, students will discover characteristics of conics, determine whether a relation is a function, evaluate functions, & find all attributes. They will compose functions to model & solve real-life problems and find/verify inverse functions.

Learning Goals:

Students will graph conic sections & describe their characteristics. Students will graph, transform, compose, and find attributes of functions. They will also find inverses of functions as well as discover applications for functions.

Why? – Apply conic sections & functions to real-life problems as well as using functions to make predictions.

4th Six Weeks



5th Six Weeks



Unit 5: Polynomials & Rational Functions

Unit 5 Concepts:

In this unit, students will investigate polynomials of various degrees by examining their characteristics. They will also determine horizontal, vertical & slant asymptotes for rational functions, zeros & create sketches based on these.

Learning Goals:

Students will characterize key elements of functions, graph and apply transformations to functions, explore the rational function. They will discover applications for each type of function, determine and define the asymptote(s) of rational functions.

Why? – We can use part of an equation to represent a problem situation as well as predict future, long-term values based on the end behavior of the function. This helps businesses plan for the future.

Unit 6 & 7 Concepts:

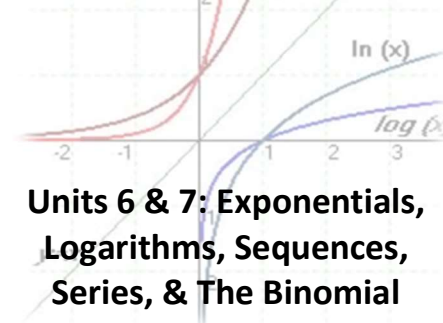
In this unit, students will explore exponential & logarithmic functions & prove they are inverses of each other. Students will then graph each type of function & transformations while discovering the characteristic-asymptotes. They will solve the equations. They will evaluate arithmetic & geometric sequences & series & summations and apply the Binomial Theorem.

Learning Goals:

Students will characterize key elements of exponential & logarithmic functions, their graphs, transformations, & inverses. They will discover & explore applications for each type of function & Laws of Logarithms. They will define, develop & apply arithmetic & geometric sequences to real-world problems, as well as the Binomial Theorem.

Why? – There are many real-life applications for exponential & log functions. Sequences, series, and the Binomial theorem are used to study patterns found in our everyday life and nature.

6th Six Weeks



Units 6 & 7: Exponentials, Logarithms, Sequences, Series, & The Binomial Theorem

Questions? Please contact your **Pre-Calculus** math teacher. **Additional Support:** We recommend Khan Academy and VarsityTutors.com and remember campus tutoring is also available.