

# Precalculus, Part 2



## How to Take This Course

Complete all the quizzes and the assignment in each unit. Once the quizzes for a unit are complete, you will have access to the unit test. We recommend you complete the unit assignment before you attempt the unit test, the assignment will help you prepare. You will have access to the final when all unit tests are complete and your assignments are graded.

Allow 2-3 days for an assignment to be graded. Read the full [course instructions](#) to understand the course grading.

[Course Instructions](#)

[How This Course Works & Suggested Timeline](#)

[Submitting Your Assignments](#)

[Ask The Teacher](#)

Meet your teacher for this course and ask a question.

**MANDATORY QUIZ - Take me before you begin this course!**



## Unit 1: Polar Coordinates and Complex Numbers

In this unit, you will be introduced to the polar coordinate system, specifically points, equations, and graphs. You will learn how to graph points using polar coordinates, graph polar equations, learn how to convert between rectangular and polar coordinates and equations. In the second part of the unit, polar coordinates will be extended to complex numbers by learning how complex numbers can be represented in polar form as well as performing operations and defining certain characteristics of complex numbers when written in polar form.

[1.1 Introduction to the Polar Coordinate System](#)

[Quiz 1.1](#)



[1.2 Polar & Rectangular Forms of Equations](#)

[Quiz 1.2](#)



[1.3 Graphs of Polar Equations](#)

[Quiz 1.3](#)



[1.4 Complex Numbers](#)

[Quiz 1.4](#)



[1.5 Complex Numbers in Polar Form](#)

[Quiz 1.5](#)



[1.6 DeMoivre's Theorem](#)

[Quiz 1.6](#)



[Unit 1 Assignment: A Complex Number Puzzle](#)



## Unit 2: Matrices

In this unit, you will learn all about matrices. Most of the focus will be on 2x2 and 3x3 matrices, but much of what you learn can also be applied to matrices of other sizes. You will find out how to perform operations with matrices, find inverses and determinants of matrices, and learn a few different methods for solving systems of linear equations using matrices.

[2.1 Characteristics of Matrices and Matrix Operations](#)

[Quiz 2.1](#)



[2.2 Matrix Multiplication](#)

[Quiz 2.2](#)



[2.3 Determinants and Inverses of Matrices](#)

[Quiz 2.3](#)



[2.4 Solving Systems of Linear Equations using Inverse Matrices and Cramer's Rule](#)

[Quiz 2.4](#)



[2.5 Gaussian Elimination and Gauss-Jordan Elimination](#)

[Quiz 2.5](#)



[Unit 2 Assignment: Matrix Word Problems](#)



## Unit 3: Vectors

In this unit, you will learn what vectors are and what defines them. You will also learn how to express vectors both algebraically and graphically and perform operations with them. You will explore two dimensional as well as three dimensional vectors, and finally apply the knowledge you have gained to solve some real-world problems.

[3.1 Introduction to Vectors](#)

[Quiz 3.1](#)



[3.2 Operations with Vectors](#)

[Quiz 3.2](#)



[3.3 Dot Products and Vector Projections](#)

[Quiz 3.3](#)



[3.4 Vectors in Three Dimensions](#)

[Quiz 3.4](#)



[3.5 Applications with Vectors](#)

[Quiz 3.5](#)



[Unit 3 Assignment: Navigating the Seas](#)



## Unit 4: Conic Sections and Parametric Equations

In this unit, you will learn about the four conic sections - circles, ellipses, parabolas, and hyperbolas. You will learn how to write equations for these different conic sections as well as how to identify important characteristics about each of them and then use those characteristics to graph them accurately. Being able to classify conic sections if they are given in general form as well as being able to write equations and graph conic sections that have been rotated from the usual x-y plane are important skills you will also learn here. The unit concludes with a discussion about parametric equations and their significance in solving real-world problems involving projectile motion.

[4.1 Circles & Ellipses](#)

[Quiz 4.1](#)



[4.2 Parabolas](#)

[Quiz 4.2](#)



[4.3 Hyperbolas](#)

[Quiz 4.3](#)



[4.4 Classifying Conic Sections, Eccentricity, and Rotations](#)

[Quiz 4.4](#)



[4.5 Parametric Equations](#)

[Quiz 4.5](#)



[Unit 4 Assignment: What are you plotting?](#)



## Unit 5: Sequences, Probability, and Introduction to Calculus

In this unit, you will learn about different kinds of ordered lists of numbers called sequences and their sums, called series. There are two types that we will focus on - arithmetic and geometric. You will also learn a valuable tool called The Binomial Theorem, which enables you to expand a binomial raised to some power much more easily than using the traditional expansion with FOIL. We will then skip over to probability and examine some counting principles for calculating probabilities of certain events occurring. Finally, you will get a preview of Calculus. If you plan to continue your math studies in a Calculus course you will get to see a brief snapshot into the three major fundamental concepts taught in a typical Calculus course.

[5.1 Arithmetic Sequences & Series](#)

[Quiz 5.1](#)



[5.2 Geometric Sequences & Series](#)

[Quiz 5.2](#)



[5.3 Binomial Theorem](#)

[Quiz 5.3](#)



[5.4 Counting Principles & Probability](#)

[Quiz 5.4](#)



[5.5 A Glimpse into Calculus](#)

[Quiz 5.5](#)



[Unit 5 Assignment: Teacher for a Day](#)



[Unit 5 Test](#)

**Restricted** Not available unless:

- The activity [Quiz 5.1](#) is marked complete
- The activity [Quiz 5.2](#) is marked complete
- The activity [Quiz 5.3](#) is marked complete
- The activity [Quiz 5.4](#) is marked complete
- The activity [Quiz 5.5](#) is marked complete

## Final Exam

Once you have completed all of the unit tests and all of your assignments have been graded, the final exam will become visible.

**Warning:** You have only ONE attempt at the final.

Are you ready to take the final? We highly recommend you take the practice final first and if you are weak in any area, review the relevant course material again. You have unlimited attempts at the practice final, it will help you to prepare.

Good Luck!

[Practice Final](#)

## Course Completion Records

The "Certificate" and "Request a Course Completion Record" links below are not active, they cannot be accessed until you have completed the final. Upon satisfying this requirement, the links will become active and you can use them.

Before you go, we would appreciate your opinion on the course, please take 1 minute to complete the feedback form. We hope you enjoyed this course!

[Course Feedback](#)

Thank you for taking this course! Let us know what you think about it.

[Request a Course Completion Record](#)

Provides confirmation that you have completed Precalculus, Part 2. It does not list any other courses you are taking with Silicon Valley High School.

**Restricted** Not available unless: The activity **Final Exam** is marked complete

[Request a Transcript](#)

A transcript will list all courses you are taking with Silicon Valley High School. It includes all courses you have completed, as well as those that are in progress.

[Certificate of Completion](#)

**Restricted** Not available unless: The activity **Final Exam** is marked complete