

Calallen ISD 2025-2026
AP Precalculus Syllabus

Campus: Calallen High School

Course and/or Grade Level: AP Precalculus

Course Description: AP Precalculus is for any student seeking a rigorous third- or fourth-year mathematics course after Algebra 2. AP Precalculus helps students interested in STEM majors develop an exceptionally strong foundation for calculus, which is the launchpad for most STEM majors. Topics covered in AP Precalculus include quadratic functions, polynomial and rational functions, exponential and logarithmic functions, trigonometric functions and identities, polar functions, vector-defined functions, conic sections, sequences and series, and limits. These topics will be experienced through multiple representations that model real-world data. Students will develop rigorous symbolic manipulation skills needed to communicate mathematical concepts clearly and accurately. The College Board AP Precalculus test is given at the end of the course.

Semester 1: August 13 – December 19, 2025

1 st Quarter Topics	2 nd Quarter Topics
Unit 1 – Polynomial and Rational Functions • Understanding how change in one variable affects change in another • Average rates of change • Rates of change in linear and quadratic functions • Polynomial functions and rates of change • Polynomial functions and complex zeros • Polynomial functions and end behavior • Rational functions and end behavior • Rational functions and zeros • Rational functions and vertical asymptotes • Rational functions and holes • Equivalent representations of polynomial and rational expressions • Transformations of functions • Function model selection and assumption articulation	Unit 2 – Exponential and Logarithmic Functions • Change in arithmetic and geometric sequences • Change in linear and exponential functions • Exponential functions • Exponential function manipulation • Exponential function context and data modeling • Competing function model validation • Composition of functions • Inverse functions • Logarithmic expressions • Inverses of exponential functions • Logarithmic functions • Logarithmic function manipulation • Exponential and Logarithmic Equations and Inequalities • Logarithmic Function Context and Data Modeling • Semi-log plots

• Function model construction and application	
---	--

Semester 2: January 5 – May 29, 2026

3rd Quarter Topics	4th Quarter Topics
Unit 3 – Trigonometric and Polar Functions • Periodic phenomena • Sine, cosine, and tangent • Sine and cosine function values • Sine and cosine function graphs • Sinusoidal functions • Sinusoidal function transformations • Sinusoidal function context and data modeling • The tangent function • Inverse trigonometric functions • Trigonometric equations and inequalities • The secant, cosecant, and cotangent functions • Equivalent representations of trigonometric functions • Trigonometry and polar coordinates • Polar function graphs • Rates of change in polar functions	Review Units 1-3 for the AP Test • Focus on the AP “task models” for each of the FRQ’s on the AP Precalculus Test • Take, score, and go over two full-length AP Precalculus practice tests Unit 4 – Functions involving parameters, vectors, and matrices • Parametric functions • Parametric functions modeling planar motion • Parametric functions and rates of change • Parametrically defined circles and lines • Implicitly defined functions • Conic sections • Parametrization of implicitly defined functions

**Minor adjustment to the schedule may be made based on campus schedules and student needs.*