

AP Calculus BC

Course	Dates	Schedule	Instructor
AP Calculus BC	9/19/2026 - 5/8/2027 (12/26 off)	Saturday 7:00 PM – 8:30 PM	Mr. Grajeda
Assessment tests	12/6/26 2/13/26 4/17/26 5/1/26	Saturday 7:00 PM – 8:30 PM	

Course Description

A full-year pacing guide aligned to the College Board's 10-unit AP Calculus BC framework.

Week	Primary Topics	Focus and Notes
1	Functions and precalculus review	Function notation, transformations, inverse functions, logarithms, trigonometric identities, calculator expectations
2	Limits from graphs and tables	One-sided limits, infinite limits, limits at infinity, asymptotic behavior
3	Algebraic limit techniques	Factoring, rationalizing, squeeze theorem, continuity and types of discontinuity
4	Continuity theorems	Intermediate Value Theorem, continuous extension, Unit 1 assessment
5	Derivative as a limit	Average versus instantaneous rate of change, tangent lines, differentiability
6	Basic differentiation rules	Power, constant, sum, difference, exponential and logarithmic derivatives
7	Product, quotient, and chain rules	Composite functions, higher-order derivatives, mixed differentiation practice
8	Implicit and inverse differentiation	Implicit differentiation, inverse functions, inverse trigonometric derivatives, Unit 2-3 assessment
9	Contextual applications of derivatives	Position, velocity, acceleration, units, interpreting derivatives in context

10	Related rates and linearization	Related rates models, local linearity, differentials and error approximation
11	Mean Value Theorem and function behavior	Rolle's Theorem, increasing/decreasing intervals, first derivative test
12	Concavity and extrema	Second derivative, inflection points, second derivative test, curve analysis
13	Optimization and graphical analysis	Absolute extrema, optimization models, connecting f , f' , and f''
14	L'Hopital's Rule and derivative synthesis	Indeterminate forms, analytical applications of differentiation, Unit 4-5 assessment
15	Antiderivatives and accumulation	Indefinite integrals, initial-value problems, accumulation functions

16	Riemann sums and definite integrals	Left, right, midpoint, trapezoidal sums; signed area; properties of integrals
17	Fundamental Theorem of Calculus	FTC Parts I and II, net change, differentiation of accumulation functions
18	Techniques of integration	u-substitution, long division, completing the square, BC integration extensions
19	Integration by parts and partial fractions	Tabular integration by parts, linear partial fractions, improper integrals
20	Differential equations	Slope fields, Euler's method, separation of variables, exponential and logistic models
21	Applications of integration	Area between curves, average value, motion and accumulation applications
22	Volumes and arc length	Disk/washer methods, cross sections, cylindrical shells, arc length
23	Parametric equations and Vector-Valued functions	Derivatives, second derivatives, speed, acceleration, arc length for parametric curves
24	Polar coordinates and polar calculus	Polar graphs, slope, area, arc length, and interpreting polar motion
25	Sequences and infinite series foundations	Sequence convergence, geometric series, telescoping series, nth-term test

26	Convergence tests	Integral test, p-series, comparison and limit comparison tests, alternating series test
27	Absolute convergence and error bounds	Ratio and root tests, absolute versus conditional convergence, remainder estimates
28	Power series	Radius and interval of convergence, operations on power series, constructing new series
29	Taylor and Maclaurin series	Polynomial approximations, common series, Lagrange error bound, AP-style series FRQs
30	Comprehensive AP review	Timed multiple-choice and free-response practice, calculator strategy, error analysis, final review

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Teacher Profile

Mr. Grajeda

Mathematics



Mr. Grajeda is a certified mathematics teacher with 20+ years of teaching experience. He brings a deep expertise and genuine passion to students. He is a strong believer in practice, using carefully designed problem sets that reinforce conceptual understanding and build student confidence. He employs a three-step problem-solving approach: identifying given information, paraphrasing the question, and writing out a solution via theorem, formula or diagram. Mr. Grajeda holds advanced degrees in mathematics and applied statistics and specializes in Algebra I & II, Geometry, Precalculus, Calculus I–III, and AP Calculus AB and BC.

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