

AP Calculus AB Overview for Parents and Students

Prerequisite: Precalculus with a grade of B or better

**This class requires summer work: students must complete a math review packet, which is due on the first day of class. Failure to complete this work will result in removal from the class.*

Course Overview

AP Calculus AB is an introductory college-level calculus course. Students cultivate their understanding of differential and integral calculus through engaging with real-world problems represented graphically, numerically, analytically, and verbally and using definitions and theorems to build arguments and justify conclusions as they explore concepts like change, limits, and the analysis of functions.

Course Content: The course is structured into **eight units**, each addressing key mathematical topics and skills:

Unit 1: Limits and Continuity	Understanding how limits define continuity and underlie differentiation and integration
Unit 2: Differentiation: Definition & Fundamental Properties	Learning the definition and foundational properties of derivatives
Unit 3: Differentiation: Composite, Implicit, & Inverse Functions	Exploring advanced differentiation techniques
Unit 4: Contextual Applications of Differentiation	Applying derivatives to real-world problems, including rates of change and optimization
Unit 5: Analytical Applications of Differentiation	Analyzing graphs, finding extrema, and understanding concavity and inflection points
Unit 6: Integration and Accumulation of Change	Studying definite integrals, antiderivatives, and accumulation functions
Unit 7: Differential Equations	Solving differential equations and modeling real-world situations
Unit 8: Applications of Integration	Using integration to calculate areas, volumes, and other applications

Student Skill Developed

- **Implementing Mathematical Processes:** Determine expressions and values using mathematical processes.
- **Connecting Representations:** Translate mathematical information from a single representation.
- **Justification:** Justify reasoning and solutions.
- **Communication and Notation:** Use correct notation, language, and mathematical conventions.
- **Problem Solving:** Apply calculus concepts to real-world scenarios, including modeling and optimization.

Expected Student Workload

Classroom Work Requirements

Students will participate in lectures, discussions, and collaborative problem-solving. Activities include working through examples, graphing functions, and practicing AP-style multiple-choice and free-response questions.

Independent Work Requirements

Outside of class, students are expected to complete daily homework, review concepts, and prepare for tests. They will practice problem sets, review foundational skills, and complete projects.

Students should plan to spend 5-7 hours on homework and study time each week, depending on their familiarity with the material and the complexity of topics covered.

AP Exam Structure

The AP Calculus AB Exam is a comprehensive **3-hour and 15-minute assessment** consisting of two sections:

Section I

Multiple Choice (50% of score)	Part A: 30 questions (60 minutes, calculator not permitted).	Part A: Covers concepts like limits, derivatives, and integrals requiring analytical skills and reasoning without calculator support.
	Part B: 15 questions (45 minutes, calculator permitted).	Part B: Includes problems requiring the use of a graphing calculator to interpret graphs, approximate values, and analyze functions.

Section II

Free-Response (50% of score)	Part A: 2 questions (30 minutes, calculator permitted).	Part A: Focuses on problems that require detailed solutions, including modeling and interpretation using graphing calculators for computations and analysis.
	Part B: 4 questions (60 minutes, calculator not permitted).	Part B: Tests deeper understanding of calculus concepts like applications of differentiation, definite integrals, and conceptual reasoning without technology assistance.

How AP Exams are Scored

The AP Calculus AB Exam combines machine-scored multiple-choice questions and free-response problems graded by trained AP readers. The free-response section evaluates students' problem-solving skills, mathematical reasoning, and ability to explain their solutions clearly.

Multiple-Choice Section

This section assesses students' understanding of calculus concepts, including limits, derivatives, integrals, and their applications. Each correct answer earns points, with no penalty for incorrect responses, encouraging students to answer all questions.

Free-Response Section

The free-response section requires students to solve complex calculus problems and explain their solutions in detail. Responses are graded on students' ability to demonstrate clear, logical reasoning, apply appropriate calculus techniques, and present well-organized solutions.

Grading Process and Consistency

Free-response questions are scored by experienced AP readers, including high school teachers and college professors, using standardized rubrics. Scorers participate in calibration sessions to ensure fairness and consistency across all exams.

Composite Score and Scaling

Scores from each section of the AP exam are combined into a composite score, which is then converted to the AP 5-point scale. A score of 5 means "extremely well qualified," while a 3 indicates "qualified," and a 1 means "no recommendation." A score of 3 or higher is generally considered passing, but some colleges only grant credit for scores of 4 or 5. Be sure to check your colleges of interest for their AP credit policy to confirm its score requirements for credit. **All AP scores are released in July. Students can check their College-Board accounts for their scores. GCS only puts AP scores of 3 or higher on student transcripts.**

** Please note that some colleges may not accept AP Calculus AB, depending on their specific policies or the chosen major. Be sure to check the AP credit policies of the colleges you're interested in to confirm their requirements.*