

AP Pre-Calculus 02114A000

Course Description

In this full year AP PreCalculus course, students explore all high school PreCalculus topics as well as advanced Algebra and Geometry concepts. This class requires students to demonstrate fluent understanding of concepts and procedures, reason abstractly and quantitatively to solve problems, communicate reasoning, model with mathematics, and evaluate conclusions. As in all advanced level courses, students are expected to complete work according to given timelines so they are prepared to move through the curriculum at the required pace. Students who successfully complete this course will be prepared for Calculus I. In addition, students in this course solve problems through innovation, imagination, and self-advocacy, and they seek personal relevance in and ownership of learning to become truly college and career ready.

AP Calculus AB 02124A000

Course Description:

students Calculus AB is a rigorous, college-level mathematics course designed for advanced high school students who have demonstrated strong proficiency in algebra, geometry, trigonometry, and precalculus concepts. This course provides a comprehensive introduction to differential and integral calculus, emphasizing both conceptual understanding and practical application.

Students will explore the behavior of functions through limits, continuity, derivatives, and integrals. They will learn to interpret and solve problems graphically, numerically, analytically, and verbally—developing flexible thinking and deep mathematical reasoning. Real-world applications, such as motion, optimization, and area/accumulation problems, reinforce the relevance of calculus in science, engineering, economics, and beyond.

Throughout the course, students will engage in:

- Limits and Continuity: Understanding instantaneous change, infinite processes, and function behavior.
- Differential Calculus: Derivative rules, implicit differentiation, related rates, and optimization.
- Integral Calculus: Antiderivatives, definite integrals, Fundamental Theorem of Calculus, and accumulation models.
- Applications of Derivatives and Integrals: Motion analysis, growth and decay models, area between curves, and volumes of solids.
- Technology Integration: Using graphing calculators and digital tools to support analysis and visualization.

Calculus AB prepares students for the AP Calculus AB exam and equips them with problem-solving skills foundational for STEM disciplines. By the end of the course, will be prepared to approach complex mathematical problems with confidence, precision, and creativity.

