AP Calculus Learning Objectives

Students will be able to…

1.1A	Express limits symbolically using correct notation, and interpret limits expressed symbolically.
1.1B	Estimate limits of functions.
1.1C	Determine limits of functions.
1.1D	Deduce and interpret behavior of functions using limits.
1.2A	Analyze functions for intervals of continuity or points of discontinuity.
1.2B	Determine the applicability of important calculus theorems using continuity.
2.1A	Identify the derivative of a function as the limit of a difference quotient.
2.1B	Estimate derivatives.
2.1C *	Calculate derivatives.
2.1D	Determine higher order derivatives.
2.2A *	Use derivatives to analyze properties of a function.
2.2B	Recognize the connection between differentiability and continuity.
2.3A	Interpret the meaning of a derivative within a problem.
2.3B *	Solve problems involving the slope of a tangent line.
2.3C	Solve problems involving related rates, optimization, rectilinear motion, *(BC: and planar motion)*.
2.3D	Solve problems involving rates of change in applied contexts.
2.3E	Verify solutions to differential equations.
2.3F	Estimate solutions to differential equations.
2.4A	Apply the Mean Value Theorem to describe the behavior of a function over an interval.
3.1A *	Recognize antiderivatives of basic functions.
3.2A	Interpret the definite integral as the limit of a Riemann sum, and express the limit of a Riemann sum in integral notation.
3.2B	Approximate a definite integral.
3.2C	Calculate a definite integral using areas and properties of definite integrals.
3.2D	*(BC: Evaluate an improper integral or show that an improper integral diverges.)*
3.3A *	Analyze functions defined by an integral.
3.3B *	Calculate antiderivatives, and evaluate definite integrals.
3.4A	Interpret the meaning of a definite integral within a problem.
3.4B	Apply definite integrals to problems involving the average value of a function.
3.4C	Apply definite integrals to problems involving motion.
3.4D	Apply definite integrals to problems involving area, volume, *(BC: and length of a curve)*.
3.4E	Use the definite integral to solve problems in various contexts.
3.5A *	Analyze differential equations to obtain general and specific solutions.
3.5B	Interpret, create, and solve differential equations from problems in context.
4.1A	*(BC: Determine whether a series converges or diverges.)*
4.1B	*(BC: Determine or estimate the sum of a series.)*
4.2A	*(BC: Construct and use Taylor polynomials).*
4.2B	*(BC: Write a power series representing a given function.)*
4.2C	*(BC: Determine the radius and interval of convergence of a power series.)*

Note: Starred learning objectives are flagged as "priority"—that is, the content covered by those learning objectives is extremely important or foundational. Students who fail to "meet" or "exceed" all priority learning objectives by the end of the term may not receive a grade higher than a C.