

AP Calculus (AB)

Know	Understand	Do (AP Calculus (AB))
The analysis of curves can be used to describe key features which are determinable through algebra and include the use of algebraic properties of limits, continuity, and the Mean Value Theorem(s). The Fundamental Theorem of Calculus connects the processes of differentiation and integration. Differentiation using power, product, quotient, chain, logarithmic, trigonometric, exponential, and implicit rules. The derivative has multiple interpretations and applications such as instantaneous rate of change, optimization, and related rates. Integration using the power rule, substitution of variables, separation of variables, and integration by parts. The integral has multiple interpretations and applications such as accumulation, area, and volume.	Mathematical relationships can be represented in multiple (interdependent) ways (graph, table, equation, words). These models are directly connected. The concept of a limit can be used to understand the behavior of relations and to develop the ideas of differentiation and integration. Integration and differentiation are inverse processes. The derivative is interpreted as an instantaneous rate of change. The integral is interpreted as an accumulation.	I use the analysis of curves and limit properties to algebraically describe the continuity of a relation. (IITa) I can reason with algebraic structures to differentiate composite relations. (IITa) I can reason with related functions and parameters to differentiate composite transcendental and special relations. (IITa) I can represent relationships using algebraic structures, interpreting and applying meaning to problems. (CPPSd) I can reason with algebraic structures to integrate using substitution of variables. (IITa) I can reason with related functions and parameters to integrate transcendental and special relations using substitution of variables. (IITa) I can represent relationships using algebraic structures, interpreting and applying meaning to problems. (CPPSd)