SAT PREP

APCalculusAB&BCPlanner

S.No.	Month	Week	Unit	Topics	Remark
1	November	1	1	**Limits and Continuity** • Rates of Change • Limits at a point • Limits involving infinity	
2		2	1	• Continuity o Continuous functions o Discontinuous functions • Instantaneous Rates of Change	
3		3	2	**Definition of the derivative** • Differentiability • Derivatives of Algebraic functions • Derivative rules when combining functions • Applications to velocity and acceleration	
4		4	2	**Derivatives of trigonometric functions** • The chain rule o Leibniz notation o Function notation o Parametric notation • Implicit derivatives o Differential method o y' method • Derivatives of inverse trigonometric functions • Derivatives of logarithmic and exponential functions	
5	December	1	3	**Applications of the Derivative** • Extreme Values • Using the Derivative o Mean Value Theorem (MVT) o Rolle's Theorem o Increasing and decreasing functions • Analysis of graphs using the first and second derivatives • Optimization problems • Linearization models • Related Rates	

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6		2	3	• Euler's Method to approximate the solution to a differential equation • L'Hospital's rule for cases 0/0 and ∞/∞ • Motion on a line: moving left and right, speeding up and slowing down • Relationship of moving right and speeding up to a graph this is increasing and concave up, moving left and slowing down to decreasing and concave up.	
7		3	4	**The Definite Integral** • Approximating areas ○ Riemann sums ○ Trapezoidal rule ○ Definite integrals • The fundamental theorem of calculus (part 1)	
8		4	4	• Definite integrals and antiderivatives ○ The average value theorem • The fundamental theorem of calculus (part 2)	
9	January	1	5	**Differential Equations and Mathematical Modeling** • Antiderivatives • Integration using u-substitution	
10		2	5	• Separable differential equations	
11		3	6	From known derivatives • From a graph of a derivative • Simple substitution – form completion • Substitution – actual substitution needs to be made, including tri substitution	
12		4	6	• Parts • Improper Integrals	
13	February	All Weeks	7	**Applications of Definite Integrals and Antidifferentiation** • Determine specific antiderivatives using initial conditions • Solution to separable differential equation with and without initial conditions • Writing a differential equation to translate a verbal description • Partial fractions in the context of the logistic equation • Representation of a particular antiderivative by using the fundamental theorem of calculus	

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				• Analysis of functions defined by a definite integral
				• Area, including regions bounded by polar curves
				• Average value of a function
				• Distance as the definite integral of speed
				• Length of a curve,
				  ○ Polar
				  ○ Parametric
				• Variety of other problems using the integral of a rate of change to determine total or accumulated change
				• Variety of other problems where the emphasis is on ting up a Riemann sum and taking its limit	

14	March	All Weeks	8	**Series**
				• Infinite series defined as the limit of a sequence of partial sums
				• Series of constants
				  ○ Geometric series
				  ○ Harmonic series, p-series
				  ○ Alternating series
				• Tests for convergence
				  ○ Integral
				  ○ Comparison
				  ○ Limit comparison
				  ○ Ratio test – thought of as eventually geometric
				• Power Series
				  ○ Taylor polynomials
				  ○ Use of known Maclaurin series for e^x, sin x, $1/(x+1)$, $(1+x)^p$ to form new series
				  ○ Differentiation and antidifferentiation of series to determine new series
				  ○ Functions defined by power series
				  ○ Interval and radius of convergence
				  ○ Error bounds	

15	April	All Weeks		**Practice Test (Full length)**	