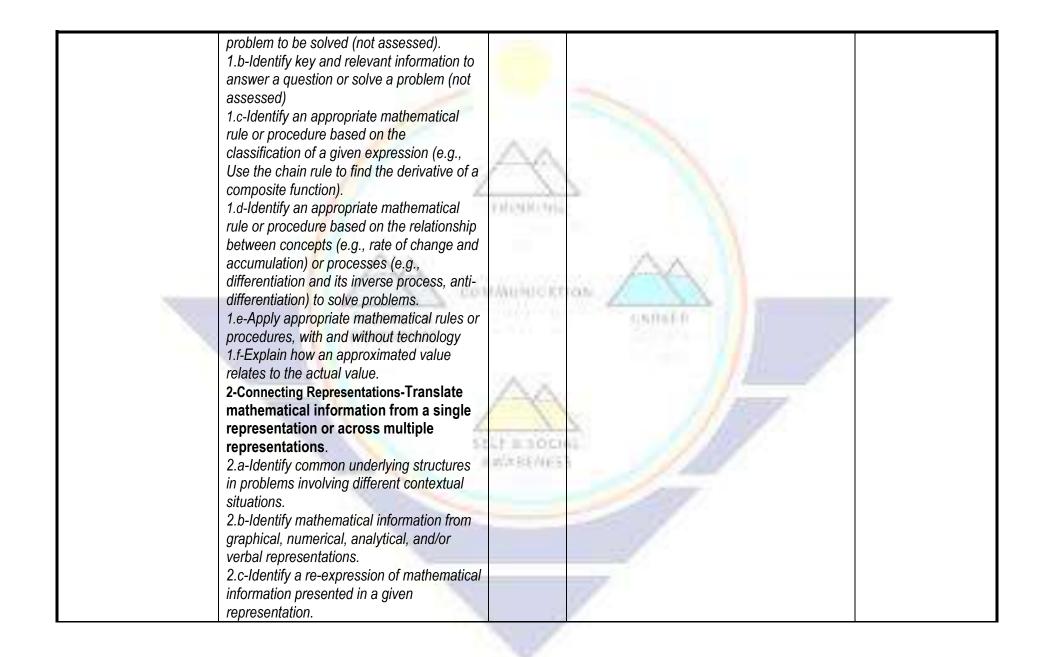
## **Ganado Unified School District AP Calculus AB**

## PACING Guide SV 2021-22

R Rerkey

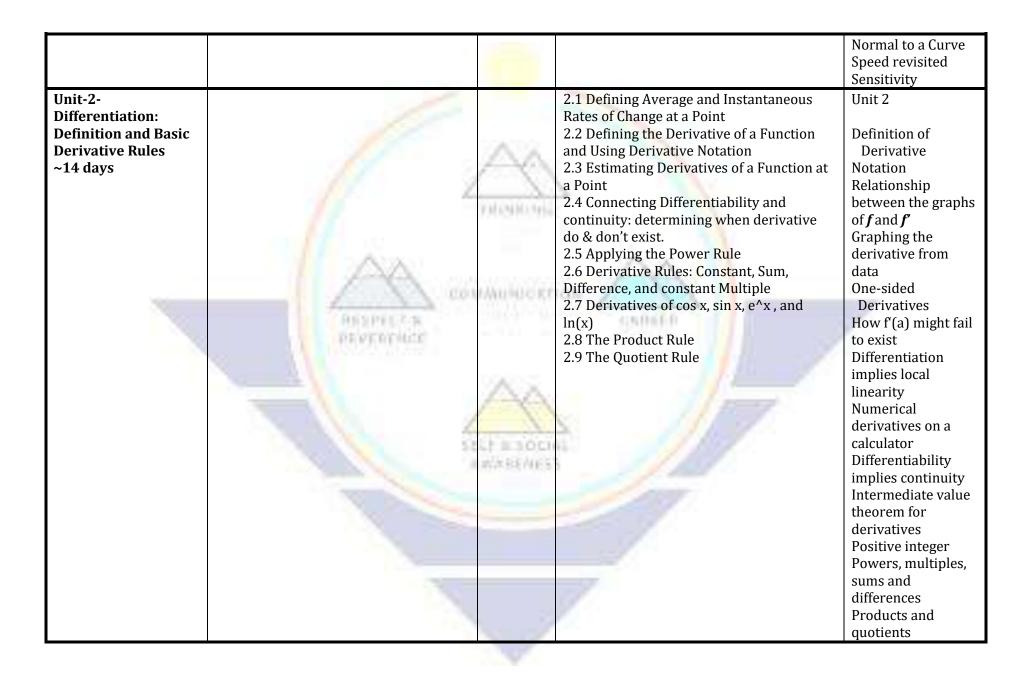
PACING Guide SY 2 Timeline & Resources	AP-Calculus-Mathematics-Standards	Essential Questions HESS Matrix	Learning Goal	R. Berkey Vocabulary Content/Academic
Textbook Finney, Demana, Waits, Kennedy, and Bressoud. Calculus—Graphical, Numerical, Algebraic. 5rd ed. Pearson Prentice Hall, Boston, MA, 2016. Based on: AP-Calculus-AB-BC- course-and-exam- description at https://bit.ly/3bHq6km Kahn Academy	<ol> <li>Standards for Mathematical Practices</li> <li>Make sense of problems and persevere in solving them.</li> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Model with mathematics.</li> <li>Use appropriate tools strategically.</li> <li>Attend to precision.</li> <li>Look for and make use of structure.</li> <li>Look for and express regularity in repeated reasoning.</li> </ol>			
Delta Math	-will be applied in all units of study 1 Implementing Mathematical Processes- Determine expressions and values using mathematical procedures and rules 1.a-Identify the question to be answered or		5	

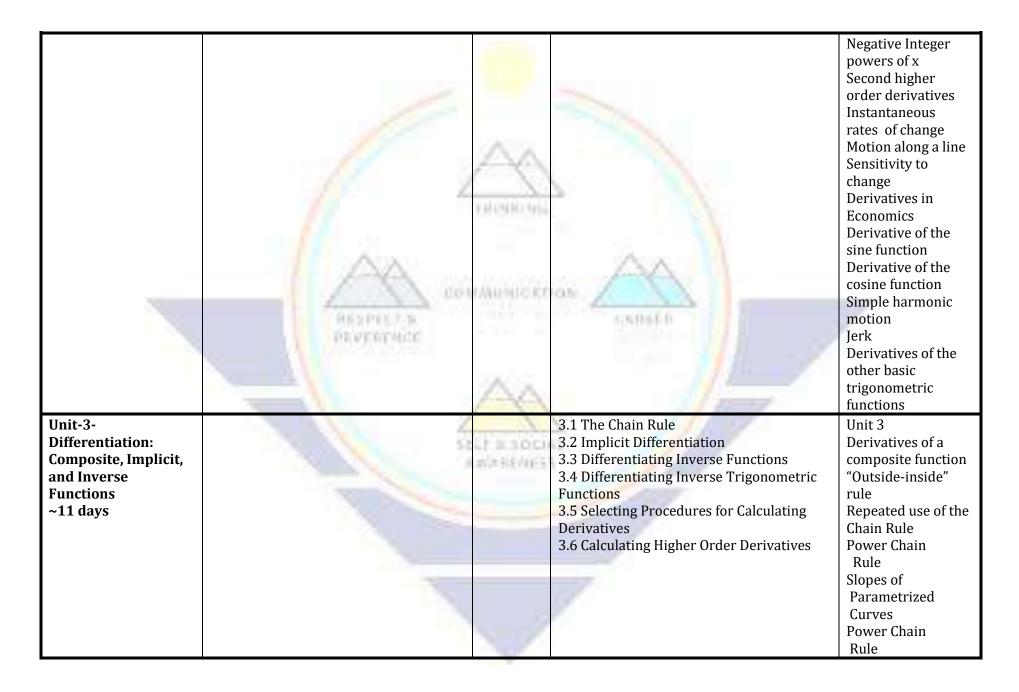




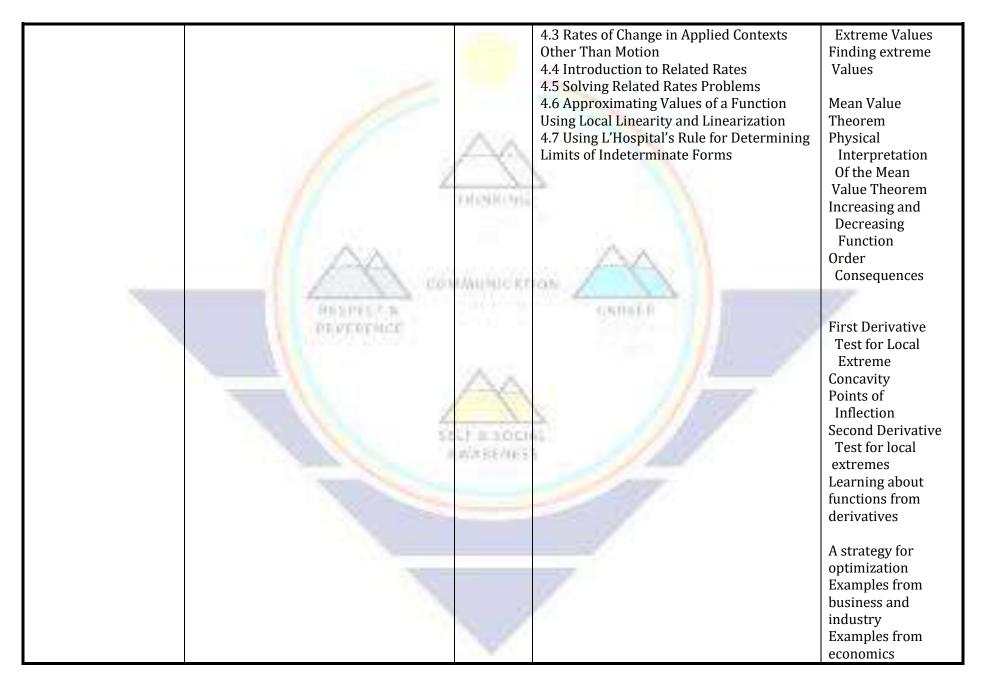
	BIG IDEA 1: CHANGE (CHA) Using derivatives to describe rates of change of one variable with respect to another or using definite integrals to describe the net change in one variable over an interval of another allows students to understand change in a variety of contexts. It is critical that students grasp the relationship between integration and differentiation as expressed in the Fundamental Theorem of Calculus—a central idea in AP Calculus. BIG IDEA 2: LIMITS (LIM) Beginning with a discrete model and then considering the consequences of a limiting case allows us to model real-world behavior and to discover and understand important ideas, definitions, formulas, and theorems in calculus: for example, continuity, differentiation, integration. BIG IDEA 3: ANALYSIS OF FUNCTIONS (FUN) Calculus allows us to analyze the behaviors of functions by relating limits to differentiation, integration, and infinite series and relating each of these concepts to the others.		
Unit 0- prerequisites for calculus ~10 days		<ul> <li>0.1 linear functions</li> <li>0.2 functions and graphs</li> <li>0.3 exponential functions</li> <li>0.4 parametric functions(Bc)</li> <li>0.5 inverse functions and logarithms</li> <li>0.6 trigonometric functions</li> <li>0.7 rational functions</li> </ul>	
Unit 1-Limits and Continuity		1.1 Introducing Calculus: Can Change Occur at an Instant?	Unit 1





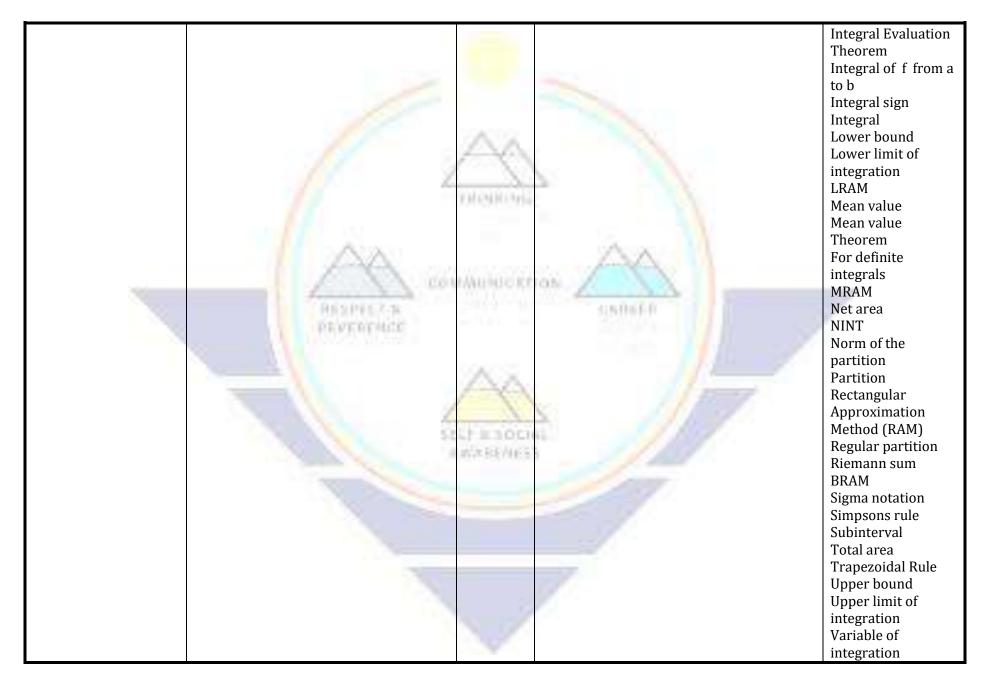


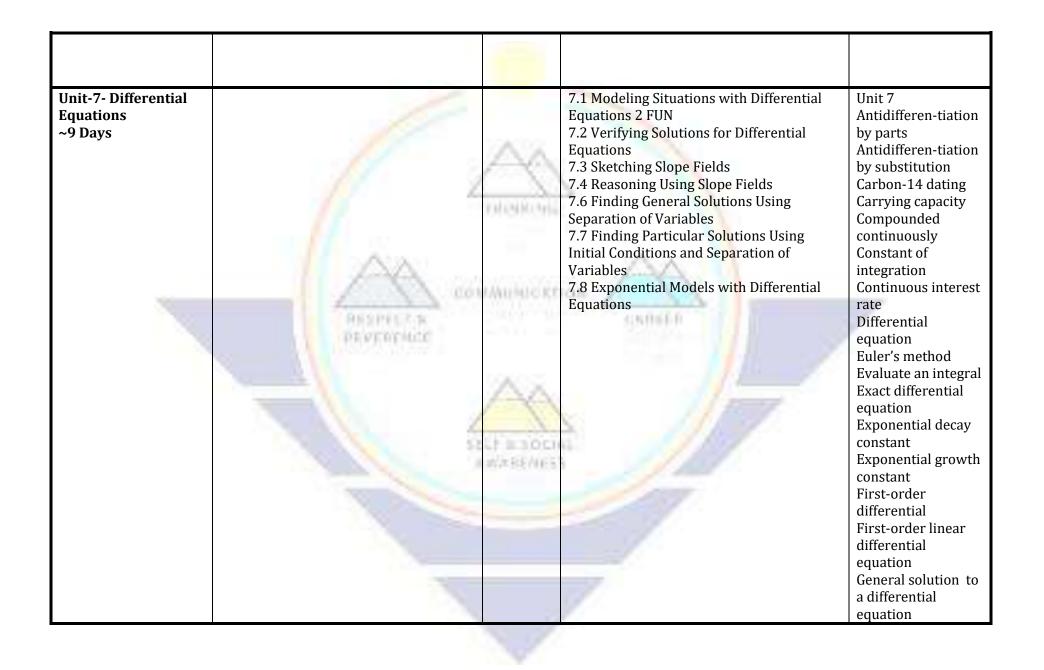
Unit-4- Contextual	PROTOTOLICE PROTOTOLICE SECTION ALL SECTION ALL MARGINES	4.1 Interpreting the Meaning of the	Derivatives of Inverse Functions Derivatives of Arcsine Derivatives of Arctangent Derivatives of Arcsecant Derivatives of The Other Three Derivative of <b>e'</b> Derivative of <b>ln x</b> Derivative of log,x Power Rule for arbitrary real powers Unit 4
Unit-4- Contextual Applications of Differentiation ~11 Days		4.1 Interpreting the Meaning of the Derivative in Context 1 CHA 4.2 Straight-Line Motion: Connecting Position, Velocity, and Acceleration 1 CHA	powers Unit 4 Absolute/Global Extreme Values Local/Relative

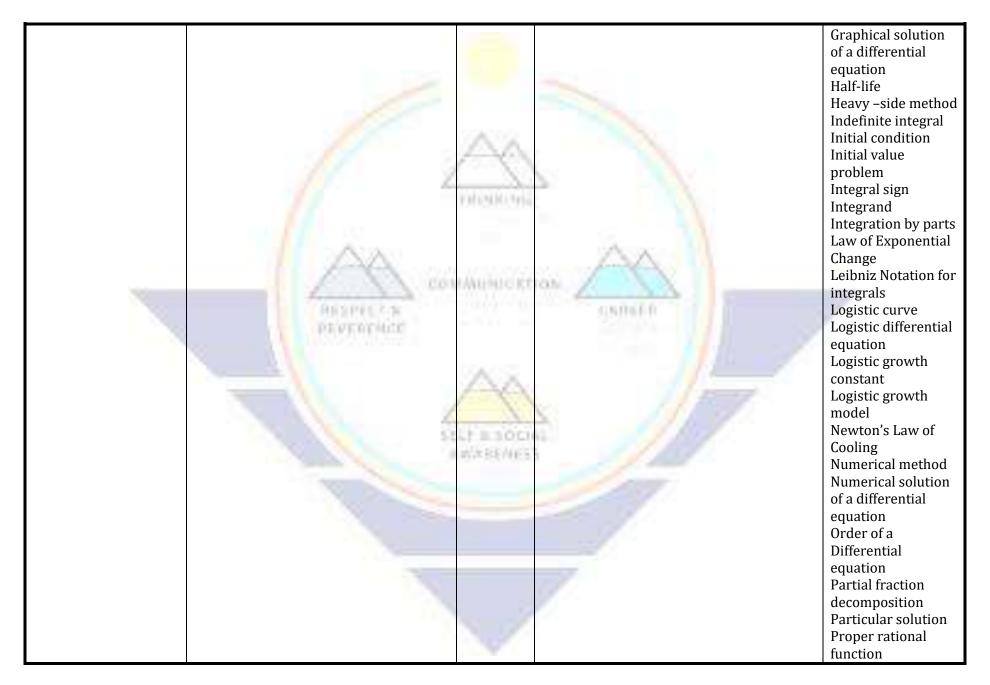


		Modeling discrete phenomena with differentiable functions
		Linear approximations Differentials Sensitivity analysis Absolute, relative, and percentage of change Newton's Method Newton's method may fail Related rate equations
		Solution strategy Simulating related motion
	SELF # SOCIES	Related rate equations Solutions strategy Stimulating related motions
Unit-5- Analytical Applications of Differentiation ~16 days	5.1 Using the Mean Value Theorem 5.2 Extreme Value Theorem, Global Versus Local Extrema, and Critical Points 5.3 Determining Intervals on Which a Function Is Increasing or Decreasing 5.4 Using the First Derivative Test to Determine Relative (Local) Extrema 5.5 Using the Candidates Test to Determine Absolute (Global) Extrema	

	THE SHE SHE	<ul> <li>5.6 Determining Concavity of Functions over Their Domains</li> <li>5.7 Using the Second Derivative Test to Determine Extrema</li> <li>5.8 Sketching Graphs of Functions and Their Derivatives</li> <li>5.9 Connecting a Function, Its First Derivative, and Its Second Derivative</li> <li>5.10 Introduction to Optimization Problems.</li> <li>5.11 Solving Optimization problems.</li> <li>5.12 Exploring Behaviors of Implicit Relations</li> </ul>	
Unit-6- Integration and Accumulation of Change ~20 Days	AB SPELT B PEOPERATE SET BASCHES	<ul> <li>6.1 Exploring Accumulations of Change</li> <li>6.2 Approximating Areas with Riemann</li> <li>Sums</li> <li>6.3 Riemann Sums, Summation Notation, and Definite Integral Notation</li> <li>6.4 The Fundamental Theorem of Calculus and Accumulation Functions</li> <li>6.5 Interpreting the Behavior of</li> <li>Accumulation Functions Involving Area</li> <li>6.6 Applying Properties of 3 Definite Integrals</li> <li>6.7 The Fundamental Theorem of Calculus and Definite Integrals</li> <li>6.8 Finding Antiderivatives and Indefinite Integrals: Basic Rules and Notation</li> <li>6.9 Integrating Using Substitution</li> <li>6.10 Integrating Functions Using Long Division and Completing the Square</li> <li>6.14 Selecting Techniques 1 for Antidifferentiation</li> </ul>	Unit 6 Accumulator function Area under a curve Average value Bounded function Cardiac output Characteristic function of the rationals Definite integral Differential calculus Dummy variables Error bounds Fundamental Theorem of Calculus Antiderivatives Fundamental Theorem of calculus Evaluation Part Integral function Integral calculus







	A A A A A A A A A A A A A A A A A A A	Properties of Indefinite Integrals Radioactive Radioactive decay Resistance proportional to velocity Second-order of a differential equation Separable differential equation Separation of variables Slope Field Solution to a differential equation Substitution in definite integrals Tabular integration Variable of integration
Unit-8- Applications of Integration ~20 days	<ul> <li>8.1 Finding the Average Value of a Function on an Interval 1 CHA</li> <li>8.2 Connecting Position, Velocity, and Acceleration of Functions Using Integrals</li> <li>8.3 Using Accumulation Functions and Definite Integrals in Applied Contexts</li> <li>8.4 Finding the Area Between Curves</li> <li>Expressed as Functions of x</li> <li>8.5 Finding the Area Between Curves</li> <li>Expressed as Functions of y</li> <li>8.6 Finding the Area Between Curves That Intersect at More Than Two Points</li> </ul>	Unit 8 Accumulation Area between curves Cavalier's Theorem Center of mass Constant force formula Cylindrical shells Displacement Fluid force Fluid pressure

Review for AP Exam	ARSPECTS PROFILE SELF	8.7 Volumes with Cross Sections: Squares and Rectangles 8.8 Volumes with Cross Sections: Triangles and Semicircles 8.9 Volume with Disc Method: Revolving Around the x- or y-Axis 8.10 Volume with disc method: revolving around other axes 8.11 Volume with Washer Method: Revolving Around the x- or y-Axis 8.12 Volume with washer method: revolving around other axes	Foot- pound Force constant Gaussian curve Hooke's Law Inflation rate Joule Mean Moment Net change Newton Normal curve Normal PDF (Probability Density Function) Solid of revolution Standard deviation Surface area Total distance travelled Universal gravitational constant Volume by cylindrical shells Volume by slicing Volume of a solid Weight density work
~24 days Test ~ on May 5 <sup>th</sup>		 Questions	

