



AP Calculus UNIT PLANNER



Unit title	Unit 3 – Applications of Derivatives	Unit duration	5 Weeks
Essential Questions (OR GUIDING QUESTIONS?)			
<p>How can we take the derivative of a function that is not explicitly solved for a single variable?</p> <p>How can we explore the relationship between a function and its first and second derivatives?</p> <p>How can we use derivatives to understand the behavior of the graph of a function without the use of a graphing device?</p>			
Assessments			
<p>Common Formative Assessment – Unit Quizzes</p> <p>Common Summative Assessment – Common Test Related Rates Project</p>			
Content Standards			
<p>AP Unit 4: Contextual Applications of Differentiation</p> <p>4.1 Interpreting the meaning of the derivative in context</p> <p>4.4 Introduction to related rates</p> <p>4.5 Solving related rates problems</p> <p>4.6 Approximating values of a function using local linearity and linearization</p> <p>4.7 Using L’Hospital’s rule for determining limits of indeterminate forms</p>		<p>AP Unit 5: Analytical Applications of Differentiation</p> <p>5.1 Using the mean value theorem</p> <p>5.2 Extreme value theorem, global versus local extrema, and critical points</p> <p>5.3 Determining intervals on which a function is increasing or decreasing</p> <p>5.4 Using the first derivative test to determine relative (local) extrema</p> <p>5.5 Using the candidates test to determine absolute (global) extrema</p> <p>5.6 Determining concavity of functions over their domains</p> <p>5.7 Using the second derivative test to determine extrema</p> <p>5.8 Sketching graphs of functions and their derivatives</p> <p>5.9 Connecting a function, its first derivative, and its second derivative</p>	
Learning Activities and Experiences			
Topic	Resource	Content Covered	Standards Addressed
Applications of Derivatives	Master Math Mentor – Implicit Differentiation	<ul style="list-style-type: none"> Implicit Differentiation 	MC.D.2
	Master Math Mentor – Function Analysis	<ul style="list-style-type: none"> Critical points Extrema on a Closed Interval 	MC.A.3

		<ul style="list-style-type: none"> • Use of Calculus to Analyze Functions 	
	Master Math Mentor – Related Rates	<ul style="list-style-type: none"> • Related Rates 	MC.D.1
Additional Resources: <ul style="list-style-type: none"> • 			

Personalized Learning and Differentiation

Teachers differentiate by providing examples (work samples or task-specific clarifications of assessment criteria); structuring support (advance organizers, flexible grouping, peer relationships); establishing flexible deadlines, and adjusting the pace.

- SWD/504- Accommodations provided
- ELL- Five Principle ELL Curriculum Framework and Vocabulary Supports
- Intervention Support- Re-teaching Activities in Small Groups with Progress Monitoring
- Extensions- Enrichment Tasks and Projects

Resources

Master Math Mentor
 Calculus Textbook (Ron Larson)
 College Board AP materials and questions