



AP CALCULUS BC UNIT PLANNER



Unit title	Unit 5: Analytical Applications of Differentiation	Unit duration	3 weeks
Essential Questions (OR GUIDING QUESTIONS?)			
How can calculus be used to verify certain aspects about a function? How can we use derivatives to understand the behavior of the graph of a function without the use of a graphing device? How is calculus used to find an optimal solution to a problem?			
Assessments			
Homework Quizzes Formative Assessments Summative Assessment			
Content Standards			
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 5.6 Determining concavity of functions over their domains 5.7 Using the second derivative test to determine extrema 5.8 Sketching graphs of functions and their derivatives 5.9 Connecting a function, its first derivative, and its second derivative 5.10 Introduction to optimization problems 5.11 Solving optimization problems 5.12 Exploring behaviors of implicit relations			
Learning Activities and Experiences			

Topic	Resource	Content Covered	Standards Addressed
Analyzing graphs of functions	Unit 5 Guided Notes (pdf adapted from Tony Record), pages 1-4 Skill Builder WS 5.1	<ul style="list-style-type: none"> Using the mean value theorem 	5.1
	Unit 5 Guided Notes (pdf adapted from Tony Record), pages 5-7 Skill Builder WS 5.2	<ul style="list-style-type: none"> Extreme value theorem, global versus local extrema, and critical points 	5.2
	Unit 5 Guided Notes (pdf adapted from Tony Record), pages 8-9	<ul style="list-style-type: none"> Determining intervals on which a function is increasing or decreasing 	5.3
	Unit 5 Guided Notes (pdf adapted from Tony Record), pages 10-12 Skill Builder WS 5.3-5.4	<ul style="list-style-type: none"> Using the first derivative test to determine relative (local) extrema 	5.4
	Unit 5 Guided Notes (pdf adapted from Tony Record), pages 13-15 Skill Builder WS 5.5	<ul style="list-style-type: none"> Using the candidates test to determine absolute (global) extrema 	5.5
	Unit 5 Guided Notes (pdf adapted from Tony Record), pages 16-17	<ul style="list-style-type: none"> Determining concavity of functions over their domains 	5.6
	Unit 5 Guided Notes (pdf adapted from Tony Record), pages 18-19 Skill Builder WS 5.3-5.7, 5.6-5.7	<ul style="list-style-type: none"> Using the second derivative test to determine extrema 	5.7
	Unit 5 Guided Notes (pdf adapted from Tony Record), pages 20-25	<ul style="list-style-type: none"> Sketching graphs of functions and their derivatives Connecting a function, its first derivative, and its second derivative 	5.8 5.9
Optimization	Unit 5 Guided Notes (pdf adapted from Tony Record), pages 26-29 Skill Builder WS 5.10-5.11	<ul style="list-style-type: none"> Introduction to optimization problems 	5.10
		<ul style="list-style-type: none"> Solving optimization problems 	5.11
Implicit	Unit 5 Guided Notes (pdf adapted from Tony Record), pages 30-33	<ul style="list-style-type: none"> Exploring behaviors of implicit relations 	5.12
Additional Resources: <ul style="list-style-type: none"> Interactive Notebook pages Unit 5 review (adapted from Tony Record) 			

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

- AP Classroom (within AP Central, collegeboard.org)
- Calculus textbook: Calculus, 11e, Larson & Edwards
- Tony Record (Avon HS) created resources
- Khan Academy
- Delta Math
- Master Math Mentor (pdf files and videos)
- Teacher created resources