



Marietta City Schools
2023–2024 District Unit Planner

AP Calculus BC

Unit title	Unit 3: Differentiation: Composite, Implicit, and Inverse Function	Unit duration (hours)	3 Weeks
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Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): *What will students learn?*

GA DoE Standards

Standards

- 3.1 The chain rule
- 3.2 Implicit differentiation
- 3.3 Differentiation inverse functions
- 3.4 Differentiation inverse trigonometric functions
- 3.5 Selecting procedures for calculating derivatives
- 3.6 Calculative higher order derivatives

Concepts/Skills to support mastery of standards

- Chain rule
- Implicit Differentiation
- Differentiating Inverse Functions
- Differentiation of Inverse Trig Function
- Selecting procedures for calculating derivatives
- Calculating higher order derivatives

Vocabulary

Composite function, chain rule, implicit differentiation, inverse functions, higher order derivatives

Notation

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Resources, materials, assessments not linked to SGO or unit planner will be reviewed at the local school level.

$$y = f(u), u = g(x), f^{-1}(x), (f^{-1})'(x), \arcsin(x), \sin^{-1}(x)$$

Essential Questions

How do we find derivatives of composite and inverse functions?
 How can we take the derivative of a function that is not explicitly solved for a single variable?
 How do you decide which derivative rules to utilize?
 How can we explore the relationship between a function and its first and second derivatives?

Assessment Tasks

List of common formative and summative assessments.

Formative Assessment(s):

Notebooks, HW quizzes

Summative Assessment(s):

Unit Test

Learning Experiences

Add additional rows below as needed.

Objective or Content	Learning Experiences	Personalized Learning and Differentiation
3.1 The chain rule	Mixed Six activity for chain rule <ol style="list-style-type: none"> 1. Factual recall 2. Carry out a procedure 3. Classify a mathematical object 4. Prove, show, justify 	Collaborative groups Technology: desmos, graphing calculators, if desired.

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	5. Extend a concept 6. Critique a fallacy	
3.2 Implicit differentiation	Mixed Six activity for implicit differentiation 1. Factual recall 2. Carry out a procedure 3. Classify a mathematical object 4. Prove, show, justify 5. Extend a concept 6. Critique a fallacy	Collaborative groups Technology: desmos, graphing calculators, if desired.
Content Resources		
<ul style="list-style-type: none"> • AP Classroom (within AP Central, collegeboard.org) • Calculus textbook: Calculus, 11e, Larson & Edwards • Tony Record (Avon HS) created resources • Khan Academy • Delta Math • flippedmath.com • Master Math Mentor (pdf files and videos) • Teacher created resources 		