



Marietta City Schools
2023–2024 District Unit Planner

AP Calculus BC

Unit title	Unit 2: Differentiation: Definition and Basic Derivative Rules	Unit duration (hours)	2 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

- 2.1 Defining average and instantaneous rates of change
- 2.2 Defining the derivative of a function and using derivative notation
- 2.3 Estimating derivatives of a function at a point
- 2.4 Connecting differentiability with continuity
- 2.5 Applying the power rule
- 2.6 Derivative rules: constant, sum, difference, and constant multiple
- 2.7 Derivative of $\cos(x)$, $\sin(x)$, e^x , and $\ln(x)$
- 2.8 The product rule
- 2.9 The quotient rule
- 2.10 Finding the derivatives of tangent, cotangent, secant, and/or cosecant functions

Concepts/Skills to support mastery of standards

- Defining average and instantaneous rates of change
- Defining the derivative of a function and using derivative notation
- Estimating derivatives of a function at a point
- Connecting differentiability with continuity
- Applying the power rule
- Derivative rules: constant, sum, difference, and constant multiple
- Derivative of $\cos(x)$, $\sin(x)$, e^x , and $\ln(x)$

Published: Month, Year

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

- The product rule
- The quotient rule
- Finding the derivatives of tangent, cotangent, secant, and/or cosecant functions

Vocabulary

Average rate of change, instantaneous rate of change, secant line, tangent line, difference quotient, derivative, differentiability, power rule, product rule, quotient rule,

Notation

$$f'(x), y', \frac{dy}{dx}, \frac{d}{dx}(f(x))$$

Essential Questions

How do derivatives allow us to find instantaneous rates of change?
 Why do mathematical properties and rules for simplifying and evaluating limits apply to differentiation?
 What does a derivative tell us about a real world scenario?

Assessment Tasks

List of common formative and summative assessments.

Formative Assessment(s):

Notebook, HW quizzes

Summative Assessment(s):

Unit test

Learning Experiences

Add additional rows below as needed.

Objective or Content	Learning Experiences	Personalized Learning and Differentiation
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2.5 Applying the power rule 2.6 Derivative rules: constant, sum, difference, and constant multiple	Mixed Six activity for power rule 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. Some criteria could be removed based on student needs/timing.
Content Resources		
<ul style="list-style-type: none"> • AP Classroom (within AP Central, collegeboard.org) • Calculus textbook: Calculus, 22e, Larson & Edwards • Tony Record (Avon HS) created resources • www.flippedmath.com • Khan Academy • Delta Math • Master Math Mentor (pdf files and videos) • CalcMedic • Teacher created resources 		

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