Marietta City Schools

2024–2025 District Unit Planner

AP Calculus AB

Unit title	**Unit 1: Limits & Continuity**	**Unit duration (hours)**	**20 hours**

Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): ***What will students learn?***

GA DoE Standards

Standards

1.1 Introducing Calculus: Can change occur at an instant?
1.2 Defining limits and using limit notation
1.3 Estimating limit values from graphs
1.4 Estimating limit values from tables
1.5 Determining limits using algebraic properties of limits
1.6 Determining limits using algebraic manipulation
1.7 Selecting procedures for determining limits
1.8 Determining limits using the Squeeze Theorem
1.9 Connecting multiple representations of limits
1.10 Exploring types of discontinuities
1.11 Defining continuity at a point
1.12 Confirming continuity over an interval
1.13 Removing discontinuities
1.14 Connecting infinite limits and vertical asymptotes
1.15 Connecting limits at infinity and horizontal asymptotes
1.16 Working with the Intermediate Value Theorem (IVT)

Concepts/Skills to support mastery of standards

- Introducing Calculus: Can change occur at an instant?
- Defining limits and using limit notation

- Estimating limit values from graphs
- Estimating limit values from tables
- Determining limits using algebraic properties of limits
- Determining limits using algebraic manipulation
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- Determining limits using the Squeeze Theorem
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Vocabulary

Instantaneous rate of change	limit	One sided limit	Types of discontinuities
continuity	asymptotes	Intermediate value theorem	

Notation

$\frac{\Delta y}{\Delta x}$ $\lim_{x \to c} f(x) = L$ $\lim_{x \to c^-} f(x) = L$ $\lim_{x \to c^+} f(x) = L$

Essential Questions

Can change occur at an instant?
How does knowing the value of a limit, or that a limit does not exist, help you to make sense of interesting features of functions and their graphs?
How do we close loopholes so that a conclusion about a function is always true?

Assessment Tasks

List of common formative and summative assessments.
Formative Assessment(s): Homework Quizzes **Summative Assessment(s):** Unit 1 Assessment

Learning Experiences Add additional rows below as needed.		
Objective or Content	**Learning Experiences**	**Personalized Learning and Differentiation**
1.9 Connecting multiple representations of limits 1.10 Exploring types of discontinuities 1.11 Defining continuity at a point 1.12 Confirming continuity over an interval 1.13 Removing discontinuities	Desmos Limit Activity Students will use the Card Sort: Connecting multiple representations of limits to review and connect limits and continuities on a graph, equation, and verbal description.	Collaborative groups Technology: desmos, graphing calculators, if desired. Some criteria could be removed based on student needs/timing.
Content Resources		
● AP Classroom (within AP Central, collegeboard.org) ● Calculus textbook: Calculus, 11e, Larson & Edwards ● Tony Record (Avon HS) created resources ● www.flippedmath.com ● Khan Academy ● Delta Math ● Master Math Mentor (pdf files and videos) ● CalcMedic investigations ● Teacher created resources		