Marietta City Schools

2024–2025 District Unit Planner

AP Calculus BC

Unit title	**MHS Unit 4 - AP Calc BC Unit 6: Integration & Accumulation of Change**	**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

6.1 Exploring accumulations of change
6.2 Approximating areas with Reimann sums
6.3 Riemann sums, summation notation, and definite integral notation
6.4 The fundamental theorem of calculus and accumulation functions
6.5 Interpreting the behavior of accumulation functions involving area
6.6 Applying properties of definite integrals
6.7 The fundamental theorem of calculus and definite integrals
6.8 Finding antiderivatives and indefinite integrals: basic rules and notation
6.9 Integrating using substitution
6.10 Integrating functions using long division and completing the square
6.11 Integrating using integration by parts
6.12 Using linear partial fractions
6.13 Evaluating improper integrals
6.14 Selecting techniques for antidifferentiation

Concepts/Skills to support mastery of standards

- Exploring accumulations of change
- Approximating areas with Reimann sums
- Riemann sums, summation notation, and definite integral notation
- The fundamental theorem of calculus and accumulation functions
- Interpreting the behavior of accumulation functions involving area

- Applying properties of definite integrals
- The fundamental theorem of calculus and definite integrals
- Finding antiderivatives and indefinite integrals: basic rules and notation
- Integrating using substitution
- Integrating functions using long division and completing the square
- Integrating using integration by parts
- Using linear partial fractions
- Evaluating improper integrals
- Selecting techniques for antidifferentiation

Vocabulary

Riemann Sums, Trapezoidal Sums, Trapezoidal Rule, Definite integral , indefinite integral, summation notation, Fundamental Theorem of Calculus, accumulation, antidifferentiation, integration, u-substitution,

Notation

$\sum_{i=1}^{n} a_i$

$\int_{a}^{b} f(x)\,dx$

Essential Questions

How can integration be used to describe how a value changes over time?
How is integration related to finding area?
How are integration and differentiation related?

Assessment Tasks

List of common formative and summative assessments.

Formative Assessment(s):

Notebook, HW quizzes, AP Classroom Progress Checks

Summative Assessment(s):

Unit Test

Learning Experiences Add additional rows below as needed.		
Objective or Content	**Learning Experiences**	**Personalized Learning and Differentiation**
6.7 The fundamental theorem of calculus and definite integrals	Calc Medic 6.7 Go FIgure task Relating velocity to total distance traveled to exemplify the fundamental theorem of calculus.	Collaborative groups Technology: desmos, graphing calculators, if desired.
6.11 Integrating using integration by parts	Mixed Six activity for Integration by parts 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.
6.13 Evaluating improper integrals	Mixed Six activity for Improper integrals 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		
● AP Classroom (within AP Central, collegeboard.org) ● Calculus textbook: Calculus, 11e, Larson & Edwards ● Tony Record (Avon HS) created resources ● flippedmath.com ● Khan Academy ● Delta Math		

- Master Math Mentor (pdf files and videos)
- Teacher created resources