Unit 11 Exam Preparation

Content Area: **Mathematics**
Course(s): **AP Calculus BC**
Time Period: **March**
Length: **Approximately 20 blocks**
Status: **Published**

Transfer Skills

Students who are familiar with the type of question and the scoring procedures on an AP test usually score higher grades when they take the AP exam. The purpose of this unit is to review Calculus topics and the AP test format so students will be successful on the AP Calculus BC exam. Class is focused on previous AP exam questions.

Enduring Understandings

Hard work and commitment can bring one to a new level of mathematical knowledge.

Calculus problems can be represented graphically, numerically, analytically, and verbally.

Differential calculus is the study of instantaneous rate of change.

Integral calculus is the study of areas under the curve.

Essential Questions

How do I synthesize the materials I have learned to prepare for a comprehensive exam?

Why are Algebra and Pre-Calculus essential skills in Calculus?

How are the differential and integral calculi related?

Content

Red Hot Topics:

*Limits

* Derivatives

* Integrals

*Algebra skills

Skills

Create a Study Guide.

Practice multiple-choice questions. (Released AP Exams and practice exams released by College Board)

Practice open-ended questions broken up by year. (Released AP Exams and practice exams released by College Board)

Practice open-ended questions broken up by topic. (Released AP Exams and practice exams released by College Board)

Review and apply test taking strategies and structure of the test.

Practice Test Problem Sections.

Resources

Single Variable Calculus with Vector Functions by James Stewart

AP Calculus BC AP Central at collegeboard.com

Khan Academy: www.khanacademy.org

Standards

Mathematical Practice For AP Calculus 1: Reasoning with Definitions and Threorems

- Use definitions and theorems to build arguments,
- Justify conclusions or answers, and prove results;
- Confirm that hypotheses have been satisfied in order to apply the conclusion of a theorem;
- Apply definitions and theorems in the process of solving a problem; interpret quantifiers in definitions and theorems;
- Develop conjectures based on exploration with technology;
- Produce examples and counterexamples to clarify understanding of definitions, to investigate whether converses of theorems are true or false, or to test conjectures.

Mathematical Practice For AP Calculus 2: Connecting Concepts

- Relate the concept of a limit to all aspects of calculus;
- Use the connection between concepts (e.g., rate of change and accumulation) or processes (e.g., differentiation and its inverse process antidifferentiation) to solve problems;
- Connect concepts to their visual representations with and without technology;
- Identify a common underlying structure in problems involving different contextual situations.

Mathematical Practice For AP Calculus 3: Implementing algebraic/computational processes

- Select appropriate mathematical strategies;
- Sequence algebraic/computational procedures logically;
- Complete algebraic/computational processes correctly;
- Apply technology strategically to solve problems; attend to precision graphically, numerically, analytically, and verbally and specify units of measure;
- Connect the results of algebraic/computational processes to the question asked.

Mathematical Practice For AP Calculus 4: Building notational fluency

- Know and use a variety of notations (e.g., f '(x), y', dy/dx);
- Connect notation to definitions (e.g., relating the notation for the definite integral to that of the limit of a Riemann sum);
- Connect notation to different representations (graphical, numerical, analytical, and verbal);
- Assign meaning to notation, accurately interpreting the notation in a given problem and across different contexts.

Mathematical Practice For AP Calculus 5: Connecting Multiple Representations

- Associate tables, graphs, and symbolic representations of functions;
- Develop concepts using graphical, symbolical, or numerical representations with and without technology;
- identify how mathematical characteristics of functions are related in different representations;
- Extract and interpret mathematical content from any presentation of a function (e.g., utilize information from a table of values);
- Construct one representational form from another (e.g., a table from a graph or a graph from given

information);
- Consider multiple representations of a function to select or construct a useful representation for solving a problem.

Mathematical Practice For AP Calculus 6: Communicating

- Clearly present methods, reasoning, justifications, and conclusions;
- Use accurate and precise language and notation;
- Explain the meaning of expressions, notation, and results in terms of a context (including units);
- Explain the connections among concepts;
- Critically interpret and accurately report information provided by technology;
- Analyze, evaluate, and compare the reasoning of others

MA.K-12.1	Make sense of problems and persevere in solving them.
TECH.8.1.12.C	Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
TECH.8.1.12.E.CS2	Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.