

2017 ap calculus ab

Ebook Description: 2017 AP Calculus AB

This ebook provides a comprehensive review of the 2017 AP Calculus AB curriculum. It's designed to help students prepare for the exam, reinforce classroom learning, and achieve a high score. The content covers all key topics, including limits, derivatives, integrals, and applications of calculus. This resource offers detailed explanations, numerous practice problems with solutions, and strategies for tackling the exam's unique challenges. Understanding calculus is crucial for success in STEM fields, and this book offers the tools needed to master this fundamental subject. This guide is particularly valuable for students aiming to secure college credit or demonstrate their readiness for higher-level math courses.

Ebook Name: Conquering the 2017 AP Calculus AB Exam

Ebook Contents Outline:

Introduction: Understanding the AP Calculus AB Exam & Test-Taking Strategies

Chapter 1: Limits and Continuity: Definition of Limits, Limit Laws, Continuity, Intermediate Value Theorem

Chapter 2: Derivatives: Definition of the Derivative, Differentiation Rules, Implicit Differentiation, Related Rates

Chapter 3: Applications of Derivatives: Extrema, Concavity, Optimization Problems, Mean Value Theorem

Chapter 4: Integrals: Riemann Sums, Definite and Indefinite Integrals, Fundamental Theorem of Calculus

Chapter 5: Applications of Integrals: Area Between Curves, Volumes of Solids of Revolution

Chapter 6: Differential Equations: Basic Differential Equations and their Solutions

Chapter 7: Practice Exams and Solutions: Full-length practice exams mirroring the 2017 exam format, with detailed solutions.

Conclusion: Exam Day Preparation Tips and Resources

Conquering the 2017 AP Calculus AB Exam: A Comprehensive Guide

Introduction: Understanding the AP Calculus AB Exam & Test-Taking Strategies

The AP Calculus AB exam is a challenging but rewarding test that assesses your understanding of fundamental calculus concepts. This introduction will provide you with an overview of the exam format, scoring, and effective test-taking strategies. Understanding the structure of the exam is the first step towards success. The exam consists of two sections: a multiple-choice section and a free-response section. The multiple-choice section typically features 45 questions, while the free-

response section contains six questions – two calculator-permitted and four calculator-prohibited. Time management is crucial; allocate your time wisely during the exam to ensure you address every question. Practice exams are invaluable in familiarizing yourself with the exam's structure and pacing. Develop effective strategies for tackling challenging questions; sometimes, skipping a difficult question and returning to it later can save you valuable time and reduce stress. Learn to identify and prioritize questions based on point value and difficulty.

Chapter 1: Limits and Continuity

This chapter lays the foundation for understanding calculus. We'll explore the concept of limits – the value a function approaches as its input approaches a certain value. We'll cover various techniques for evaluating limits, including algebraic manipulation and L'Hôpital's Rule (for indeterminate forms). The concept of continuity, which is essential for understanding derivatives and integrals, is also explored. The Intermediate Value Theorem, a crucial theorem related to continuity, will be explained and illustrated with examples.

Keywords: Limits, Continuity, Limit Laws, L'Hôpital's Rule, Intermediate Value Theorem, One-sided limits, Infinite limits.

Chapter 2: Derivatives

This chapter delves into the core concept of calculus: the derivative. We will define the derivative as the instantaneous rate of change of a function. Various differentiation rules, such as the power rule, product rule, quotient rule, and chain rule, will be explained and illustrated with numerous examples. We will also cover implicit differentiation, a technique used to find derivatives of implicitly defined functions. The chapter concludes with an introduction to related rates problems, which involve finding the rate of change of one variable with respect to another.

Keywords: Derivative, Differentiation Rules (Power Rule, Product Rule, Quotient Rule, Chain Rule), Implicit Differentiation, Related Rates, Tangent Lines, Normal Lines.

Chapter 3: Applications of Derivatives

This chapter focuses on applying derivatives to solve real-world problems. We will explore how derivatives help find extrema (maximum and minimum values) of a function, determine concavity (the direction in which a curve is bending), and identify inflection points. Optimization problems, which involve finding the optimal value of a function subject to certain constraints, are thoroughly covered. The Mean Value Theorem, a fundamental theorem connecting derivatives and function values, is also discussed.

Keywords: Extrema, Concavity, Inflection Points, Optimization Problems, Mean Value Theorem, First Derivative Test, Second Derivative Test.

Chapter 4: Integrals

This chapter introduces the concept of integration, the inverse operation of differentiation. We'll start with Riemann sums, which provide an approximation of the area under a curve. Then, we will move on to definite and indefinite integrals, along with the Fundamental Theorem of Calculus, which establishes the relationship between differentiation and integration. Techniques for evaluating integrals, such as substitution, will be covered.

Keywords: Riemann Sums, Definite Integral, Indefinite Integral, Fundamental Theorem of Calculus, Antiderivatives, Integration Techniques (Substitution).

Chapter 5: Applications of Integrals

This chapter explores the applications of integrals in various contexts. We will learn how to use integrals to calculate the area between curves and the volumes of solids of revolution. This will involve understanding different methods of calculating volumes, such as the disk/washer method and the shell method.

Keywords: Area Between Curves, Volumes of Solids of Revolution, Disk Method, Washer Method, Shell Method.

Chapter 6: Differential Equations

This chapter introduces the basic concepts of differential equations, equations involving derivatives. We will explore simple differential equations and their solutions, focusing on techniques suitable for the AP Calculus AB exam. This will lay a foundation for further study in differential equations.

Keywords: Differential Equations, Separable Differential Equations, Solutions of Differential Equations.

Chapter 7: Practice Exams and Solutions

This chapter provides full-length practice exams mirroring the format and difficulty of the 2017 AP Calculus AB exam. Detailed solutions are provided for each problem, allowing students to identify areas needing further review and refine their problem-solving skills. This is crucial for exam preparation.

Conclusion: Exam Day Preparation Tips and Resources

This section offers final tips and resources to help students prepare for exam day. This includes advice on time management, stress reduction techniques, and strategies for maximizing their score. It may also include links to helpful websites and additional practice materials.

FAQs

1. What topics are covered in the 2017 AP Calculus AB exam? The exam covers limits, derivatives, integrals, and their applications. Specific topics include differentiation rules, applications of derivatives (optimization, related rates), integration techniques, and applications of integrals (area, volume).
1. How is the AP Calculus AB exam scored? The exam is scored out of 108 points (multiple choice and free-response sections combined). The score is then converted to a score of 1-5, where 5 is the highest score.

1. What resources are available to help me study for the exam? Many resources are available, including textbooks, online courses, practice exams, and study groups. This ebook provides a comprehensive review of the material.
1. How much time should I dedicate to studying for the AP Calculus AB exam? The amount of time needed depends on your prior knowledge and learning style, but a dedicated study schedule is crucial.
1. What type of calculator is allowed during the exam? Graphing calculators are permitted, but make sure your calculator is allowed per the College Board guidelines.
1. What is the difference between AP Calculus AB and AP Calculus BC? AP Calculus BC covers more advanced topics, such as sequences and series, and polar coordinates.
1. How can I improve my problem-solving skills in calculus? Practice, practice, practice! Work through many problems, focusing on understanding the concepts behind the solutions.
1. What should I do if I get stuck on a problem? Try a different approach, refer to your notes or textbook, or seek help from a teacher, tutor, or study group.
1. Are there any online resources available to help me study? Khan Academy, College Board's website, and other online platforms offer valuable resources for studying calculus.

Related Articles:

1. Mastering Limits in AP Calculus AB: This article provides a detailed explanation of limits and techniques for evaluating them.

1. Conquering Derivatives: A Step-by-Step Guide: A comprehensive guide to understanding and applying various differentiation rules.
1. Applications of Derivatives in Real-World Problems: This explores how derivatives solve real-world problems.
1. Understanding Integrals and the Fundamental Theorem of Calculus: A clear explanation of integrals and their connection to derivatives.
1. Calculating Area and Volume Using Integrals: This article covers methods for calculating areas and volumes using integration.
1. A Beginner's Guide to Differential Equations: A simplified introduction to differential equations suitable for AP Calculus AB.
1. Effective Strategies for the AP Calculus AB Exam: This article offers tips and strategies to maximize your performance on the exam.
1. Analyzing AP Calculus AB Free Response Questions: This breaks down the approach to solving free-response questions effectively.
1. Common Mistakes to Avoid on the AP Calculus AB Exam: This highlights common errors students make and strategies to avoid them.

Additional Resources

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