

ap calculus bc 2017 exam

Ebook Description: AP Calculus BC 2017 Exam

This ebook provides a comprehensive guide to the 2017 AP Calculus BC exam. It's designed to help students thoroughly understand the concepts, master the techniques, and confidently approach the exam. The 2017 exam serves as a valuable resource for understanding the format, question types, and scoring expectations of the AP Calculus BC exam, regardless of the year. The strategies and content covered remain highly relevant for students preparing for future AP Calculus BC exams. Understanding the past exam helps students identify areas of weakness and target their studying effectively. This ebook will equip students with the knowledge and skills to achieve their best possible score.

Ebook Title: Conquering the AP Calculus BC 2017 Exam: A Complete Guide

Ebook Outline:

Introduction: Overview of the AP Calculus BC Exam, its structure, scoring, and importance. Advice on effective study strategies.

Chapter 1: Limits and Continuity: Review of limit laws, techniques for evaluating limits, continuity definitions and theorems. Practice problems covering various difficulty levels.

Chapter 2: Derivatives: Detailed explanation of derivative rules (power rule, product rule, quotient rule, chain rule, implicit differentiation), applications of derivatives (related rates, optimization problems, curve sketching). Solved examples and practice problems.

Chapter 3: Integrals: Comprehensive coverage of integration techniques (u-substitution, integration by parts, trigonometric integrals), definite and indefinite integrals, the Fundamental Theorem of Calculus.

Worked-out examples and practice problems.

Chapter 4: Applications of Integrals: Areas between curves, volumes of solids of revolution (disk, washer, shell methods), work, and other applications of integration. Detailed explanations and diverse practice problems.

Chapter 5: Sequences and Series: Understanding sequences, series convergence tests (comparison test, integral test, ratio test), Taylor and Maclaurin series. Practice problems involving convergence and series manipulation.

Chapter 6: Differential Equations: Solving separable differential equations, slope fields, Euler's method. Applications of differential equations. Practice problems involving different solution techniques.

Chapter 7: Polar, Parametric, and Vector Functions: Understanding polar coordinates, parametric equations, and vector-valued functions. Calculus concepts applied to these coordinate systems.

Chapter 8: Exam Strategies and Practice Tests: Tips for time management, strategies for tackling different question types, and complete practice exams with detailed solutions.

Conclusion: Recap of key concepts, encouragement for exam success, and resources for further learning.

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Introduction: Mastering the AP Calculus BC Exam

The AP Calculus BC exam is a challenging but rewarding assessment that tests your understanding of advanced calculus concepts. This guide will help you navigate the exam's structure, understand its scoring, and develop effective study strategies. The 2017 exam, while past, provides a valuable benchmark for understanding the exam format and question types. Success on this exam requires consistent effort, a solid grasp of fundamental principles, and the ability to apply those principles to complex problems.

This ebook provides a structured approach to mastering the material, starting with foundational concepts and progressing to more advanced topics. Each chapter includes numerous practice problems, allowing you to solidify your understanding and identify areas needing further attention. Effective time management and strategic test-taking skills are equally crucial, and we will address these in detail.

Chapter 1: Limits and Continuity: The Foundation of Calculus

Limits form the bedrock of calculus. This chapter covers the precise definition of a limit, various limit laws (sum, difference, product, quotient, constant multiple), and techniques for evaluating limits, including L'Hôpital's Rule (for indeterminate forms). We also delve into the concept of continuity, including types of discontinuities (removable, jump, infinite) and the Intermediate Value Theorem. Practice problems range from simple limit evaluations to more complex problems involving piecewise functions and the epsilon-delta definition of a limit.

Chapter 2: Derivatives: The Rate of Change

Derivatives measure the instantaneous rate of change of a function. This chapter meticulously covers the power rule, product rule, quotient rule, and chain rule. We explore implicit differentiation, a powerful technique for finding derivatives when it's difficult or impossible to solve for one variable explicitly. Furthermore, we delve into applications of derivatives, including related rates problems (finding the rate of change of one quantity with respect to another), optimization problems (finding maximum or minimum values), and curve sketching using the first and second derivative tests. Each concept is reinforced with numerous solved examples and challenging practice problems.

Chapter 3: Integrals: Accumulation and Antiderivatives

Integrals represent the inverse operation of differentiation, measuring the accumulation of a quantity over an interval. This chapter begins with the definition of the definite integral and the Fundamental Theorem of Calculus. We explore various integration techniques, such as u-substitution, integration by parts, and trigonometric integrals. We cover indefinite integrals and their relationship to antiderivatives. Numerous worked examples and practice problems are included to build proficiency in these techniques.

Chapter 4: Applications of Integrals: Beyond the Basics

This chapter applies integration to real-world problems. We will cover finding areas between curves, volumes of solids of revolution using the disk, washer, and shell methods. Additional applications, such as calculating work done by a variable force, are also explored. Each application is explained clearly, with detailed steps for solving typical problems, and accompanied by practice problems that test different aspects of the concepts.

Chapter 5: Sequences and Series: Infinite Sums

Sequences and series involve infinite sums. This chapter introduces the concepts of convergence and divergence of sequences and series. We cover various convergence tests, such as the comparison test, the integral test, and the ratio test. A significant portion of this chapter is dedicated to Taylor and

Maclaurin series, which provide polynomial approximations of functions. Practice problems focus on determining convergence, finding sums of series, and manipulating Taylor and Maclaurin series.

Chapter 6: Differential Equations: Modeling Change

Differential equations describe relationships between a function and its derivatives. This chapter covers separable differential equations and techniques for solving them. We introduce the concept of slope fields, which provide a visual representation of solutions, and Euler's method for approximating solutions numerically. Applications of differential equations to real-world scenarios, such as population growth or radioactive decay, are also explored.

Chapter 7: Polar, Parametric, and Vector Functions: Beyond Cartesian Coordinates

This chapter extends calculus concepts to coordinate systems beyond the familiar Cartesian system. We explore polar coordinates, parametric equations (describing curves using a parameter), and vector-valued functions. Calculus concepts such as derivatives and integrals are adapted to these systems. Practice problems involve finding arc length, area, and other relevant quantities in these different coordinate systems.

Chapter 8: Exam Strategies and Practice Tests:

Preparing for Success

This chapter provides invaluable strategies for success on the AP Calculus BC exam. Time management is crucial, so we offer advice on pacing and prioritizing problems. We cover different question types and provide techniques for approaching each. The chapter includes complete practice tests with detailed solutions, allowing you to simulate exam conditions and identify areas needing further review.

Conclusion: Your Journey to AP Calculus BC

Success

This ebook has provided a comprehensive guide to the 2017 AP Calculus BC exam. Remember that consistent effort, a solid understanding of the core concepts, and effective test-taking strategies are key to success. Use the resources provided, practice diligently, and approach the exam with confidence.

FAQs

1. What topics are covered in the AP Calculus BC exam? The exam covers limits, derivatives, integrals, applications of integrals, sequences and series, differential equations, and polar, parametric, and vector functions.
2. What is the format of the exam? It consists of a multiple-choice section and a free-response section.

3. How is the exam scored? The exam is scored out of 108 points, combining the multiple-choice and free-response sections.
4. What resources are available for further learning? Many textbooks, online resources, and practice exams are available.
5. How can I improve my problem-solving skills? Consistent practice and working through a wide range of problems are crucial.
6. What are some effective study strategies? Create a study schedule, focus on understanding concepts, and practice regularly.
7. How important is time management during the exam? Time management is critical; practice solving problems under time constraints.
8. What should I do if I encounter a difficult problem on the exam? Don't spend too much time on one problem; move on and return to it if time permits.
9. Are there any calculator restrictions on the exam? Graphing calculators are permitted, but not all functionalities are allowed.

Related Articles:

1. AP Calculus BC Review: Limits and Continuity: A detailed review of limits and continuity, including epsilon-delta proofs.
2. Mastering Derivatives in AP Calculus BC: A comprehensive guide to differentiation techniques and applications.

3. Conquering Integrals in AP Calculus BC: A thorough explanation of integration techniques and their applications.
4. AP Calculus BC: Applications of Integration Made Easy: Focuses on applications of integration, such as areas, volumes, and work.
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6. Differential Equations for AP Calculus BC: A Step-by-Step Guide: A step-by-step guide to solving different types of differential equations.
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9. Understanding the AP Calculus BC Scoring System: Detailed explanation of the scoring system and how scores are calculated.

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