

ap calculus bc 2017

Book Concept: "Decoding the 2017 AP Calculus BC Exam: A Survivor's Guide"

Ebook Description:

Conquer the beast that is the 2017 AP Calculus BC exam! Are you staring down the barrel of the notoriously challenging AP Calculus BC exam, feeling overwhelmed by the sheer volume of material and the pressure to succeed? Are late nights fueled by caffeine and panic becoming your new normal? Do you dream in integrals and derivatives? You're not alone. Thousands of students grapple with the complexities of this exam each year. But what if there was a way to navigate the chaos and emerge victorious?

This book, "Decoding the 2017 AP Calculus BC Exam: A Survivor's Guide," provides a structured, accessible, and engaging approach to mastering the 2017 AP Calculus BC exam. It's not just another textbook; it's your personal roadmap to success.

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Decoding the 2017 AP Calculus BC Exam: A Survivor's Guide - Full Article

Introduction: Understanding the Exam & Setting Yourself Up for Success

The AP Calculus BC exam is a significant hurdle for high school students aiming for college credit in calculus. This introduction lays the groundwork for success by providing a comprehensive overview of the exam format, scoring, and crucial preparation strategies. It will dispel common myths, highlight common pitfalls, and empower students with a realistic understanding of what to expect. We'll discuss time management, effective study habits, and the importance of seeking help when needed. A key component will be analyzing the weighting of different topics on the exam, allowing for strategic allocation of study time. We'll discuss resources like past exams, practice problems, and online forums to enhance the learning experience.

Finally, we'll equip students with a mindset of confidence and resilience, emphasizing that success is achievable through dedicated effort and the right approach.

Chapter 1: Functions, Limits, and Continuity - A Solid Foundation

This chapter focuses on the fundamental building blocks of calculus. We begin by reviewing essential function types (polynomial, rational, trigonometric, exponential, logarithmic), emphasizing their properties and graphical representations. A thorough exploration of limits, including one-sided limits, infinite limits, and indeterminate forms, will be crucial. We will delve into the precise epsilon-delta definition of a limit (though primarily focusing on intuitive understanding and application). The concept of continuity will be explained meticulously, along with the Intermediate Value Theorem and its applications. Numerous solved examples and practice problems will illustrate the application of these concepts in various problem-solving scenarios, gradually increasing in complexity. This lays the groundwork for the more advanced calculus concepts that follow. The use of graphing calculators and appropriate technology will also be examined, showing how technology can aid in understanding and problem-solving, while also outlining where it's inappropriate to rely exclusively on technology.

Chapter 2: Derivatives: Techniques, Applications, and Problem-Solving Strategies

This chapter dives deep into the heart of differential calculus. We'll cover the definition of the derivative as a limit, then progress to various differentiation techniques, including power rule, product rule, quotient rule, chain rule, implicit differentiation, and logarithmic differentiation. Emphasis will be placed on applying these techniques to solve a wide range of problems, including finding tangent lines, determining concavity and inflection points, optimization problems, related rates problems, and analyzing the behavior of functions. This chapter will also involve a thorough exploration of the Mean Value Theorem and its implications. The chapter will conclude with strategies for tackling challenging derivative-based word problems, which often prove to be stumbling blocks for many students. Clear, step-by-step solutions to diverse example problems will be provided.

Chapter 3: Integrals: Mastering the Fundamental Theorem and its Applications

This chapter introduces the concept of integration, focusing on both definite and indefinite integrals. We start with the definition of the definite integral as a limit of Riemann sums, providing both visual and intuitive explanations. The Fundamental Theorem of Calculus will be examined thoroughly, highlighting its importance in connecting differentiation and integration. We'll cover various integration techniques, including substitution, integration by parts, and partial fraction decomposition. Applications of integration, such as finding areas between curves, volumes of solids of revolution (disk, washer, shell methods), and solving differential equations, will be explored in detail. This section will also incorporate challenging problems requiring a combination of integration techniques and problem-solving skills. The importance of understanding the relationship between differentiation and integration will be repeatedly emphasized.

Chapter 4: Series and Sequences: Understanding Convergence and Divergence

This chapter tackles the more advanced topic of infinite series and sequences. We begin with a clear explanation of sequences and their convergence/divergence. Various tests for convergence and divergence of series (integral test, comparison test, limit comparison test, ratio test, root test, alternating series test) will be covered with numerous examples. We will then move on to power series, Taylor series, and Maclaurin series, including techniques for finding the radius and interval of convergence. The chapter will conclude with applications of series to approximate functions and solve certain types of differential equations. The emphasis will be on understanding the underlying principles and applying the appropriate tests strategically.

Chapter 5: Polar, Parametric, and Vector Functions: Navigating the Geometric Landscape

This chapter explores calculus in different coordinate systems. We'll start with parametric equations, covering concepts like tangent lines, arc length, and areas. Then we move onto polar coordinates, including graphing polar curves, finding areas in polar coordinates, and calculating arc lengths in polar coordinates. Finally, we'll examine vector-valued functions, covering concepts such as velocity, acceleration, and curvature. The chapter will conclude with examples combining these concepts to solve complex geometric problems. This section requires a strong visualization capacity and a firm grasp of geometric concepts.

Chapter 6: Exam Strategies and Time Management Techniques

This chapter is crucial for exam success. We'll cover effective strategies for tackling the multiple-choice and free-response sections of the exam. Time management techniques will be discussed in detail, emphasizing the importance of pacing oneself and prioritizing questions. We'll provide tips for identifying easy and hard problems, and strategies for approaching difficult questions strategically. Effective problem-solving approaches, including working backward from the answer choices and using estimation, will be covered. This chapter emphasizes the importance of a well-structured exam approach to optimize performance under pressure.

Chapter 7: Practice Exams and Solutions: Sharpening Your Skills

This chapter provides several practice exams that mimic the format and difficulty of the actual 2017 AP Calculus BC exam. Detailed solutions will be provided for each problem, explaining the thought processes and strategies involved. This section allows students to test their knowledge and identify areas where they need further improvement. The feedback provided will be invaluable in fine-tuning their exam-taking skills and building confidence.

Conclusion: Beyond the Exam: Your Calculus Journey Continues

This concluding chapter reflects on the learning journey, emphasizing the broader applications of calculus in various fields. It offers advice for future studies and career paths, connecting the knowledge gained to its real-world relevance. It's a message of encouragement, highlighting the significant accomplishment of mastering AP Calculus BC and the opportunities

that lie ahead.

9 Unique FAQs:

1. What resources beyond this book are recommended for AP Calculus BC preparation? (Answer: Khan Academy, textbooks, practice problem sets, online forums, tutoring.)
2. How much time should I dedicate to studying for the AP Calculus BC exam? (Answer: Depends on current knowledge; a range should be provided with guidance.)
3. What are the most commonly missed topics on the AP Calculus BC exam? (Answer: Series and Sequences, Polar/Parametric/Vector functions, word problems.)
4. How important is the use of a graphing calculator on the exam? (Answer: Very important, but understanding concepts is paramount; examples will be provided.)
5. What is the best way to manage stress during exam preparation? (Answer: Time management, breaks, healthy habits, seeking support.)
6. What if I'm struggling with a particular concept? (Answer: Seek help from teachers, tutors, or online resources; be specific examples.)
7. What type of questions should I expect on the free-response section? (Answer: Describe the style and focus.)
8. How is the AP Calculus BC exam scored? (Answer: Explain the scoring rubric, multiple choice, and free response weighting.)
9. What colleges accept AP Calculus BC credit? (Answer: Refer students to college websites; not an exhaustive list.)

9 Related Articles:

1. Mastering the Art of Integration: Techniques and Applications: This article will delve deeper into advanced integration techniques beyond what's in the main book.
2. Conquering the Challenges of Infinite Series: A detailed exploration of various convergence tests and applications.
3. A Visual Guide to Polar and Parametric Equations: Using visual aids to explain difficult concepts.
4. The Power of the Mean Value Theorem: Exploring deeper implications and applications.
5. Differential Equations in AP Calculus BC: An introduction to differential equations.

6. Unlocking the Secrets of the AP Calculus BC Multiple Choice Section: Strategies for effective multiple-choice problem-solving.
7. Strategies for Tackling AP Calculus BC Free-Response Questions: A step-by-step approach to answering free-response questions.
8. Building a Strong Foundation in Precalculus for AP Calculus BC Success: Preparing students for the rigors of calculus.
9. Top 10 Mistakes to Avoid on the AP Calculus BC Exam: Common errors students make, and how to avoid them.

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