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- 4 full-length practice tests (2 each for AB and BC Calculus)
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- Answer explanations for each practice question

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CALCULUS AB & BC Practice Questions

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Part I

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PREVIEW: YOUR KNOWLEDGE, YOUR EXPECTATIONS

Your route to a high score on the AP Calculus Exam depends a lo
on how you plan to use this book. Start thinking about your pla
by responding to the following questions.

1. Rate your level of confidence about your knowledge of th
   content tested by the AP Calculus Exam:

   A. Very confident—I know it all
   B. I'm pretty confident, but there are topics for which I coul
      use help
   C. Not confident—I need quite a bit of support
   D. I'm not sure

2. If you have a goal score in mind, circle your goal score for th
   AP Calculus Exam:

   5 4 3 2 1 I'm not sure yet

3. What do you expect to learn from this book? Circle all tha
   apply to you.

   A. A general overview of the test and what to expect
   B. Strategies for how to approach the test
   C. The content tested by this exam
   D. I'm not sure yet

YOUR GUIDE TO USING THIS BOOK

This book is organized to provide as much—or as little—support a
you need, so you can use this book in whatever way will be mos
helpful for improving your score on the AP Calculus Exam.

- The remainder of **Part One** will provide guidance on how to use this book and help you determine your strengths and weaknesses.

- **Part Two** of this book will
  - provide information about the struxcture, scoring, and content of the AP Calculus Exam.
  - help you to make a study plan.
  - point you towards additional resources.

- **Part Three** of this book will explore various strategies:
  - how to attack multiple choice questions
  - how to write a high-scoring free response answer
  - how to manage your time to maximize the number of points available to you

- **Part Four** of this book contains practice drills covering all of the AB Calculus and BC Calculus concepts you will find on the exams.

- **Part Five** of this book contains practice tests.

You may choose to use some parts of this book over others, or yo
may work through the entire book. This will depend on your need
and how much time you have. Let's now look how to make thi
determination.

HOW TO BEGIN

1. **Take a Test**

Before you can decide how to use this book, you need to take practice test. Doing so will give you insight into your strength and weaknesses, and the test will also help you make a effective study plan. If you're feeling test-phobic, remin yourself that a practice test is a tool for diagnosing yourself– it's not how well you do that matters but how you us information gleaned from your performance to guide you preparation.

So, before you read further, take the AP Calculus AB Diagnosti Test starting at this page of this book or take the AP Calculu BC Diagnostic Test starting on this page. Be sure to do so in on sitting, following the instructions that appear before the test.

2. **Check Your Answers**

Using the answer key on this page (for Calculus AB) or th page (for Calculus BC), count how many multiple choic questions you got right and how many you missed. Don't worr about the explanations for now, and don't worry about wh you missed questions. We'll get to that soon.

3. **Reflect on the Test**

After you take your first test, respond to the followin questions:

- How much time did you spend on the multiple choic questions?

- How much time did you spend on each free respons

question?

- How many multiple choice questions did you miss?
- Do you feel you had the knowledge to address the subjec matter of the essays?
- Do you feel you wrote well organized, thoughtful essays?
- Circle the content areas that were most challenging for yo and draw a line through the ones in which you fe confident/did well.
  - Functions, Graphs, and Limits
  - Differential Calculus
  - Integral Calculus
  - Polynomial Approximations and Series (for BC Calculu Students)
  - Applications of Derivatives
  - Applications of Integrals

4. **Read Part Two and Complete the Self-Evaluation**

   As discussed in the Goals section above, Part Two will provid information on how the test is structured and scored. It wi also set out areas of content that are tested.

   As you read Part Two, re-evaluate your answers to th questions above. At the end of Part Two, you will revisit an

refine the questions you answered above. You will then be abl to make a study plan, based on your needs and time available that will allow you to use this book most effectively.

5. **Engage with the Drills as Needed**

   Notice the word *engage*. You'll get more out of this book if yo use it intentionally than if you read it passively, hoping for a improved score through osmosis.

   The drills are designed to give you the opportunity to asses your mastery of calculus concepts through test-appropriat questions.

6. **Take Test 2 and Assess Your Performance**

   Once you feel you have developed the strategies you need an gained the knowledge you lacked, you should take one of th practice exams at the end of this book. You should do so in on sitting, following the instructions at the beginning of the tes When you are done, check your answers to the multiple choic sections.
   Once you have taken the test, reflect on what areas you sti need to work on, and revisit the drills in this book that addres those topics. Through this type of reflection and engagemen you will continue to improve.

7. **Keep Working**

   As you work through the drills, consider what additional wor you need to do and how you will change your strategi approach to different parts of the test.

If you do need more guidance, there are plenty of resource available to you. Our *Cracking the AP Calculus AB & BC Exam* guide gives you a comprehensive review of all the calculu topics you need to know for the exam and offers 5 practice test (3 for AB and 2 for BC). In addition, you can go to the A Central website for more information about exam schedule and calculus concepts.

AB Calculus Diagnostic Test

(*Click here to download a PDF of Diagnostic Test*)

AP® Calculus AB Exam

SECTION I: Multiple-Choice Questions

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

At a Glance

Total Time
1 hour and 45 minutes
Number of Questions
45
Percent of Total Grade
50%
Writing Instrument
Pencil required

Instructions

Section I of this examination contains 45 multiple-choice questions. Fill in only the ovals fo numbers 1 through 45 on your answer sheet.

CALCULATORS MAY NOT BE USED IN THIS PART OF THE EXAMINATION.

Indicate all of your answers to the multiple-choice questions on the answer sheet. No cred will be given for anything written in this exam booklet, but you may use the booklet fo notes or scratch work. After you have decided which of the suggested answers is bes completely fill in the corresponding oval on the answer sheet. Give only one answer to eac question. If you change an answer, be sure that the previous mark is erased completely. Her is a sample question and answer.

Sample Question

Chicago is a _____

(A) state
(B) city
(C) country
(D) continent
(E) village

Sample Answer

Use your time effectively, working as quickly as you can without losing accuracy. Do n spend too much time on any one question. Go on to other questions and come back to th ones you have not answered if you have time. It is not expected that everyone will know th answers to all the multiple-choice questions.

About Guessing

Many candidates wonder whether or not to guess the answers to questions about which the are not certain. Multiple choice scores are based on the number of questions answere correctly. Points are not deducted for incorrect answers, and no points are awarded fo unanswered questions. Because points are not deducted for incorrect answers, you ar encouraged to answer all multiple-choice questions. On any questions you do not know th answer to, you should eliminate as many choices as you can, and then select the best answ among the remaining choices.

CALCULUS AB

SECTION I, Part A

Time—55 Minutes

Number of questions—28

A CALCULATOR MAY NOT BE USED ON THIS PART OF THE EXAMINATION

Directions: Solve each of the following problems, using the available space for scratchwor
After examining the form of the choices, decide which is the best of the choices given and f
in the corresponding oval on the answer sheet. No credit will be given for anything written
the test book. Do not spend too much time on any one problem.

In this test: Unless otherwise specified, the domain of a function f is assumed to be the set
all real numbers x for which $f(x)$ is a real number.

l

2

)

nonexistent

2π

)

∞

3

The limit does not exist.

At what point does the following function have a removable discontinuity?

$f(x) = f(x) = \dfrac{x^2 + x - 2}{x^2 + 7x + 10}$

–5,–1)

–2,–1)

–2,1)

1,1)

1,–1)

Which of the following functions is NOT continuous at $x = -3$?

$$f(x) = \begin{cases} \dfrac{x^3 + x - 2}{x^2 - 6x + 9}, & x < -3 \\ 3x^3 + 2x, & x \geq -3 \end{cases}$$

$$g(x) = \begin{cases} x^2, & x < -3 \\ 9, & x = -3 \\ |3x|, & x > -3 \end{cases}$$

$$h(x) = \frac{2x^2 - 8x + 6}{x^2 + x - 2}$$

$$j(x) = \sqrt{x - 2}$$

$$k(x) = (x + 3)^2$$

Which of the following functions is continuous at $x = -3$?

$$f(x) = \begin{cases} \dfrac{x^3 + x - 2}{x^2 - 6x + 9}, & x < 0 \\ 3x^3 + 2x, & x \geq 0 \end{cases}$$

$$g(x) = \begin{cases} x^2 + 1, & x < -3 \\ 9, & x = -3 \\ |3x|, & x > -3 \end{cases}$$

$$h(x) = \frac{x^2 + x - 2}{2x^2 + 4x - 6}$$

$$j(x) = (x - 2)^{\frac{3}{2}}$$

$$k(x) = (\sqrt[3]{x + 2})^2$$

What is $\lim_{h \to 0} \dfrac{\sec\left(\dfrac{\pi}{2} + h\right) - \sec\left(\dfrac{\pi}{2}\right)}{h}$?

)

l

The limit does not exist.

If $f(x) = (2x^3 + 33)(\sqrt[5]{x} - 2x)$, then $f'(x) =$

$(2x^3 + 33)\left(\frac{1}{5\sqrt[5]{x^4}} - 2\right) + 6x^2(\sqrt[5]{x} - 2x)$

$(2x^3 + 33)\left(\frac{1}{5\sqrt[5]{x^4}} - 2\right) + 6x^3(\sqrt[5]{x} - 2x)$

$(2x^3 + 33)\left(\frac{1}{5}\sqrt[5]{x^4} - 2\right) + 6x^2(\sqrt[5]{x} - 2x)$

$(2x^3 + 33)\left(\frac{1}{5\sqrt[5]{x^4}} - 2\right) + 6x^2(\sqrt[5]{x} - 2x)$

$(2x^3 + 33)\left(5\sqrt[5]{x^4} - 2\right) + 6x^3(\sqrt[5]{x} - 2x)$

If $y = \left(\frac{x^3 - 1}{x^2 + x}\right)^4$, then $\frac{dy}{dx} =$

Find the second derivative of $x^2y^2 = 2$ at (2,1).

1

–2

$\frac{1}{2}$

2

$-\frac{1}{2}$

If the line $y = ax^2 + bx + c$ goes through the point (2,1) and is normal to $y = \frac{1}{3}x + 2$ at th
point (0,2), then a = ?

$-\frac{5}{4}$

$\frac{5}{4}$

$\frac{4}{5}$

$-\frac{4}{5}$

2

If $\frac{d}{dx}f(x) = 2g(x)$ and if $h(x) = x^3$, then $\frac{d}{dx}f(h(x))$ =

$6x^2g(x^3)$

$2g(x^3)$

$2x^2g(x^3)$

$6g(x^3)$

$2x^3g(x^3)$

Which of the following statements about the function given by $f(x) = \frac{6}{5}x^5 - 2x^3$ is true?

The function has no relative extrema.

The graph has one point of inflection and two relative extrema.

The graph has three points of inflection and one relative extremum.

The graph has three points of inflection and two relative extrema.

The graph has two points of inflection and two relative extrema.

$\int (2x - 5)^3\,dx =$

$+ C$

sample content of 550 AP Calculus AB & BC Practice Questions (College Test Preparation)

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