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## ABOUT THIS BOOK

This book provides an accurate and complete representation of the Advanced Placement Examination in Mathematics: Calculus AB. The six practice tests provided are based on the format of the most recently administered Advanced Placement Calculus AB Exams. Each test is three hours and 15 minutes in length and includes every type of question that can be expected on the actual exam. Following each test is an answer key complete with detailed explanations designed to clarify the material for the student. By completing all six tests and studying the explanations which follow, students will discover their strengths and weaknesses and become well prepared for the actual exam.

## ABOUT THE TEST

The Advanced Placement Calculus AB Examination is offered each May at participating schools and multi-school centers throughout the world.

The Advanced Placement Program is designed to allow high school students to pursue college-level studies while attending high school. The participating colleges, in turn, grant credit and/or advanced placement to students who do well on the examinations.

The Advanced Placement Calculus courses cover college-level mathematics; they are intended for students with a strong background in college-preparatory mathematics, including algebra, axiomatic geometry, trigonometry, and analytic geometry. The courses cover graphical, numerical, analytic, and verbal calculus, along with overarching concepts like derivatives, integrals, limits, applications and modeling, and approximation.

The AP Calculus AB exam has two sections:

Section I) **Multiple-choice**: composed of 45 multiple-choice questions, designed to measure the student's abilities in a wide range of mathematical topics. These questions vary in difficulty and complexity. This section is broken into two parts. Part A consists of 28 questions for which a calculator *cannot* be used. Part B contains 17 questions, some of which will *require* the use of a graphing calculator. One hour and forty-five minutes is allowed for this section of the exam.

Section II) **Free-response**: tests how well and how accurately the student is able to recall and utilize knowledge of calculus; composed of six free-response questions—three in Part A (portions of which *require* a graphing calculator) and three in Part B (in which calculator use is *not* permitted). Between 0 and 9 points are awarded for each question based on the work shown and whether or not the solution given is correct. Partial credit is given for answers that are correct in format, yet incorrect in the solution. During the timed portion of Part B, students are permitted to continue to work on questions in Part A, but may not use a calculator at this time. This section counts for 50% of the student’s total exam grade.

Approved calculators series for the test include all of those on the following list. Those denoted with an asterisk (\*), however, already have *built in* all the capabilities examinees need.

<b>Casio</b>		<b>Radio Shack</b>	<b>Hewlett- Packard</b>
fx-6000 series	fx-9700 series*	EC-4033	HP-28 series*
fx-6200 series	fx-9750 series*	EC-4034	HP-48 series*
fx-6300 series	cfx-9800 series*	EC-4037	HP-49 series*
fx-6500 series	cfx-9850 series*		HP-38G*
fx-7000 series	cfx-9950 series*	<b>Texas</b>	
fx-7300 series	cfx-9970 series*	<b>Instruments</b>	<b>Other</b>
fx-7400 series	Algebra fx 2.0	TI-73	Micronta
fx-7500 series	series*	TI-80	Smart <sup>2</sup>
fx-7700 series		TI-81	
fx-7800 series	<b>Sharp</b>	TI-82*	
fx-8000 series	EL-5200	TI-83/TI-83 Plus*	
fx-8500 series	EL-9200 series*	TI-85*	
fx-8700 series	EL-9300 series*	TI-86*	
fx-8800 series	EL-9600 series*	TI-89*	

The sample tests in this book provide calculator questions with explanations that include the steps necessary with the calculator. These steps are illustrated after the word *calculator*, listing the keystrokes that should be used.

The practice tests in this book incorporate Section II free-response solutions that approximate the content breakdown you will encounter on the AP exam. The overall timing and formatting of the practice tests in this book mirror the actual test; examinees should note, however, that this section is split into two parts on the AP exam. Furthermore, prospective examinees should pay attention to restrictions on calculator use. For details, consult current official College Board materials in print or on the web at [www.collegeboard.org/ap](http://www.collegeboard.org/ap).

## ABOUT THE REVIEW SECTION

This book contains review material that students will find useful as a study aid while preparing for the AP Calculus AB Examination. This review—in a handy outline format—provides information that will most likely appear on the actual test. Included in this section are the following topics:

**Elementary Functions** — Covers the Properties of Functions, the Properties of Particular Functions, and Limits.

**Differential Calculus** — Covers Derivatives and Application of the Derivative.

**Integral Calculus** — Covers Anti-Derivatives, Applications of Anti-Derivatives, the Law of Exponential Change, Techniques of Integration, the Definite Integral, and Applications of the Integral.

## SCORING THE TEST

### SCORING THE MULTIPLE-CHOICE SECTION

For the multiple choice section, use this formula to calculate your raw score:

$$\frac{\text{number right}}{\text{right}} - \left( \frac{\text{number wrong}^*}{\text{wrong}^*} \times 1/4 \right) = \text{raw score (round to nearest whole \#)}$$

\* DO NOT INCLUDE UNANSWERED QUESTIONS

### SCORING THE FREE-RESPONSE SECTION

For the free-response section, use this formula to calculate your raw score:

$$\text{_____} + \text{_____} + \text{_____} + \text{_____} + \text{_____} + \text{_____} = \text{raw score}$$

problems one through six

The score for each problem should reflect how completely the question was answered, that is, the solution that was produced and the steps taken. You should gauge at what point a mistake was made, and determine whether any use of calculus or mathematics was incorrect. Each problem is given a score of between 0 and 9 points. More points should be given for correct answers that include all work in the answer

explanation, and fewer points should be given for incorrect answers and necessary work that was not written down. It would be helpful to have a teacher or an impartial person knowledgeable in calculus decide on how points should be awarded.

### **THE COMPOSITE SCORE**

To obtain your composite score, use the following method:

$$1.200 \times \frac{\text{multiple-choice raw score}}{\text{raw score}} = \text{weighted multiple-choice score}$$

(weighted multiple-choice score)  
round to the nearest whole number

NOW ADD:

$$\frac{\text{weighted multiple-choice raw score}}{\text{raw score}} + \frac{\text{free-response raw score}}{\text{raw score}} = \text{composite score}$$

Compare your score with this table to approximate your grade:

<b>AP GRADE</b>	<b>COMPOSITE SCORE</b>
5	78–102
4	64–77
3	45–63
2	30–44
1	0–29

The overall scores are interpreted as follows: 5—extremely well qualified; 4—well qualified; 3—qualified; 2—possibly qualified; and 1—no recommendation. Most colleges will grant students who earn a 3 or above either college credit or advanced placement. Check with your school guidance office about specific school requirements.

## **CONTACTING THE AP PROGRAM**

For registration bulletins or more information about the Calculus AB exam, contact:

College Board Advanced Placement Program  
P.O. Box 6671  
Princeton, NJ 08541-6671  
Phone: (609) 771-7300  
Website: [www.collegeboard.com/ap](http://www.collegeboard.com/ap)

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Website: [www.collegeboard.com/ap/](http://www.collegeboard.com/ap/)

E-mail: [apexams@info.collegeboard.org](mailto:apexams@info.collegeboard.org)

Good luck on the exam!