

OXBRIDGE MATH TUTORS

PARENT EDITION

VOLUME 2 · THE DEEP-DIVE COMPANION

AP Calculus

AB or BC, justification that earns marks,
an algebra readiness check,
and a routine that works.

Facts last checked: October 2026

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If You Read Only One Page

AP Calculus is not about getting derivatives right. Plenty of students can do that and still lose a lot of marks, because the exam rewards the **reason** for each step as much as the step.

The five things worth knowing

- **The exam format for May 2027:** 42 multiple-choice questions (100 minutes) and 6 free-response questions (90 minutes), each section worth 50%. Older websites still show a 45-question format.
 - **The calculator rules are split.** Some parts of the exam ban the calculator and some require a graphing one. Both skills need practice.
 - **Justification earns marks.** Free-response questions often ask students to name a theorem and check its conditions.
 - **AB and BC share a format.** BC adds extra content, including series, and BC students also receive an AB subscore.
- Algebra and trigonometry gaps can cause errors even when the calculus method is understood.

Five questions to ask your child's school

- Is the course AB, BC, or AB followed by BC, and who decides which?
- How many full free-response papers will my child do under timed conditions before May?
- Are justification questions marked in class the way the College Board scores them?
- Which graphing calculator does the school recommend, and is it practised with in lessons?
- What is the plan for students who fall behind in the first term?

One thing to do this week

Pick one derivative or integral problem your child has already solved. Ask: "What would a reader need to see in your working to believe this answer?" If the answer is "nothing, it is obvious", that is the habit to change.

SECTION 1

The Exam at a Glance

How the score is built



Section	Questions	Time	Weight	Calculator
I-A Multiple choice	29	62 min	~34.5%	Not permitted
I-B Multiple choice	13	38 min	~15.5%	Graphing calculator required
II-A Free response	2	30 min	16.7%	Graphing calculator required
II-B Free response	4	60 min	33.3%	Not permitted

A typical exam-year rhythm (your school's pacing may differ)



Score	College Board's description
5	Extremely well qualified
4	Well qualified
3	Qualified
2	Possibly qualified
1	No recommendation

SECTION 2

AB or BC? How to Decide

AB broadly corresponds to a first university calculus course. BC includes AB content plus additional parametric, polar and vector-function topics and infinite series, broadly spanning two university semesters. Schools set the actual duration, sequencing and pace. The BC exam also reports an AB subscore.

Ask this	If yes, lean toward	If no, lean toward
Does the intended degree rely heavily on mathematics (engineering, physics, mathematics, computer science)?	BC, if the school offers it at a sensible pace	Check requirements
Is algebra and trigonometry genuinely secure, including without a calculator?	BC is realistic	Strengthen foundations first, AB is safer
Does the student enjoy abstract patterns and proofs, such as infinite series?	BC	AB
Does the school offer AB then BC over two years?	This route gives time, if the student wants to go further	Choose between the two for the single year
Does a target university give credit differently for AB and BC?	Check its policy directly	Do not assume

Two warnings

Choosing BC for the look of it, when algebra is shaky, tends to cost more than it gains. A strong AB result is better than a struggling BC one.

Do not assume a university treats BC as automatically better. Credit and placement are decided by each university, and they change. Use the College Board's search tool.

A conversation to have at home

Ask your child to explain why AB or BC fits their interests, current algebra and available study time. Compare the school's course plan with each target degree's entry and credit rules. Do not choose BC only because it appears more advanced.

SECTION 3

Worked Practice Answers

These examples are original practice questions with checked answers, written to show the **shape** of a justified answer.

Example 1: Finding an absolute maximum, with justification

Question. Let $f(x) = x^3 - 6x^2 + 9x + 2$ on the closed interval $[0, 4]$. Find the absolute maximum value of f . Justify your answer.

Answer. f is a polynomial, so it is continuous on $[0, 4]$. By the Extreme Value Theorem, f has an absolute maximum on $[0, 4]$, and it occurs at an endpoint or at a critical point.

$f'(x) = 3x^2 - 12x + 9 = 3(x - 1)(x - 3)$. Critical points at $x = 1$ and $x = 3$, both in $[0, 4]$.

Candidates: $f(0) = 2$, $f(1) = 6$, $f(3) = 2$, $f(4) = 6$.

The absolute maximum value of f on $[0, 4]$ is 6, attained at $x = 1$ and at $x = 4$.

What loses marks	What earns marks
Writing only "max = 6".	Naming the theorem, stating continuity, and listing the candidates tested.
Checking critical points but forgetting the endpoints.	Testing both critical points and both endpoints.
Using the sign of f' alone to claim a global maximum.	Using the Candidates Test on a closed interval, or a clear sign argument.

Example 2: Showing a root exists (Intermediate Value Theorem)

Question. Use the same f . Show that $f(x) = 0$ has a solution in the interval $(-1, 0)$.

Answer. f is continuous on $[-1, 0]$ because it is a polynomial. $f(-1) = -14$ and $f(0) = 2$. Since $f(-1) < 0 < f(0)$, the Intermediate Value Theorem guarantees a value c in $(-1, 0)$ with $f(c) = 0$.

Example 3: Interpreting an integral in context

Question. Water flows into a tank at a rate of $R(t)$ litres per minute, where t is in minutes. A student finds that the integral of $R(t)$ from $t = 0$ to $t = 10$ equals 250. Explain what this means.

Weak answer: "It is 250."

Full answer: "250 litres of water flow into the tank during the first 10 minutes." The answer states the quantity, the units and the time interval.

SECTION 4

Is the Algebra Ready? A 10-Question Check

Calculus relies on secure algebra and trigonometry. Try these ten questions without a calculator, then discuss any gaps with the teacher.

#	Question
1	Factorise $x^3 - 4x$.
2	Solve $2^x = 16$.
3	Simplify $(x^2 - 1) / (x - 1)$, for x not equal to 1.
4	Write the exact values of $\sin(\pi/6)$ and $\cos(\pi/3)$.
5	Solve $\ln x = 3$.
6	State the domain of the square root of $(x - 2)$.
7	Solve $ x - 3 < 2$.
8	Find the equation of the line through (2, 5) with gradient -3.
9	Write $\ln a + \ln b$ as a single logarithm.
10	Solve $x^2 - 9x + 20 = 0$.

Answer key

1. $x(x - 2)(x + 2)$. 2. $x = 4$. 3. $x + 1$. 4. Both are $1/2$. 5. $x = e^3$.
 6. x is at least 2. 7. $1 < x < 5$. 8. $y = -3x + 11$. 9. $\ln(ab)$. 10. $x = 4$ or $x = 5$.

Informal check: 9 or 10 suggests secure foundations. At 7 or 8, revise the misses. Below 7, prioritise foundations; discuss course readiness with the teacher.

A practice routine

Session	What to do	Time
1. Skills	Ten minutes of no-calculator algebra, then one new technique with four questions.	35 min
2. Justify	One free-response question. Write every theorem and condition. Mark against the official scoring guideline.	40 min
3. Calculator	One calculator-section question, practising the graphing calculator functions the exam expects.	30 min

The error log

Date	Question	What I wrote	What was missing	Type of error

Date	Question	What I wrote	What was missing	Type of error

SECTION 5

What to Say, and What to Do When It Goes Wrong

When your child says	Try this	Avoid
"I know how to do it, I just made a silly mistake."	"Show me the line where it went wrong. Is it the same kind of slip as last time?"	Accepting "silly mistake" without looking at the pattern.
"I got the right answer but no marks."	"Which theorem would a reader need to see named?"	Agreeing the marking is unfair.
"The calculator part is easy."	"Show me how you would find the intersection of two graphs on it."	Assuming familiarity with the device.
"I'll do series later." (BC)	"What is the plan, with dates, for series?"	Waiting for the final weeks.

When to get extra help, and what kind

What you see	Possible explanation	What helps
Strong on routine derivatives, weak on contextual questions	Procedure without meaning	Verbal explanations of what each answer means, with units
Marks lost to algebra	Foundation gap from earlier years	Targeted algebra and trigonometry practice, no calculator
Does well on homework, poorly under time	Timing	Timed section practice, calculator and no-calculator separately
BC student behind on series	Late start	A dated plan, with short regular sessions

SECTION 6

Glossary: Plain-English Definitions

Term	In plain English
Limit	The value a function approaches as the input gets close to a point.
Derivative	The instantaneous rate of change, or the slope of the tangent line.
Integral	Accumulation, such as total distance from speed, or the area under a curve.
Continuous	No jumps or breaks: you could draw it without lifting your pen.
Extreme Value Theorem	A continuous function on a closed interval has an absolute maximum and an absolute minimum.
Intermediate Value Theorem	Continuous f on $[a,b]$ takes all values between $f(a)$ and $f(b)$.
Mean Value Theorem	If continuous on $[a,b]$ and differentiable on (a,b) , some c inside has $f'(c)$ equal to the average rate.
Critical point	A point where the derivative is zero or undefined.
Candidates Test	Compare the function's values at critical points and endpoints to find the absolute extremes.
Related rates	Finding how fast one quantity changes from how fast another changes.
AB subscore	A separate AB score reported to BC students.

Check before you rely on this volume

Confirm the current exam format on the College Board's AP Calculus pages, especially the number of multiple-choice questions.

Confirm credit and placement for each university on its own page.

Ask the school whether it follows an AB, BC, or AB-then-BC pathway.

Official Sources and Use Notes

Reviewed on 5 October 2026. This Volume 2 companion supplements the shorter parent guide. Confirm the student's exam session and specification with the school.

Worked examples and suggested mark allocations are teaching illustrations, not official scoring rubrics, promises of marks or material for assessed submissions. Readiness scores are informal discussion prompts, not validated course-placement tests.

The multiple-choice section is worth 50% overall. The approximate shares shown for its parts are 50% multiplied by $29/42$ and $13/42$. Critical points must be in the function's domain; the derivative may be zero or fail to exist there.

AP Calculus AB: May 2027 exam format

AP Calculus BC: May 2027 exam format

College Board calculator policy

Make an enquiry through the website

The diagnostic is 45 minutes: 30 minutes live plus 15 minutes independent. Launch price: AED 150. Written report within 24 hours; the full fee is credited if a programme starts within seven days.

Parent discussion tables offer possible explanations, not established causes. Work samples, observation and school context are needed before attributing a difficulty to a cause. Informal readiness bands do not validate a diagnosis or predict a grade.