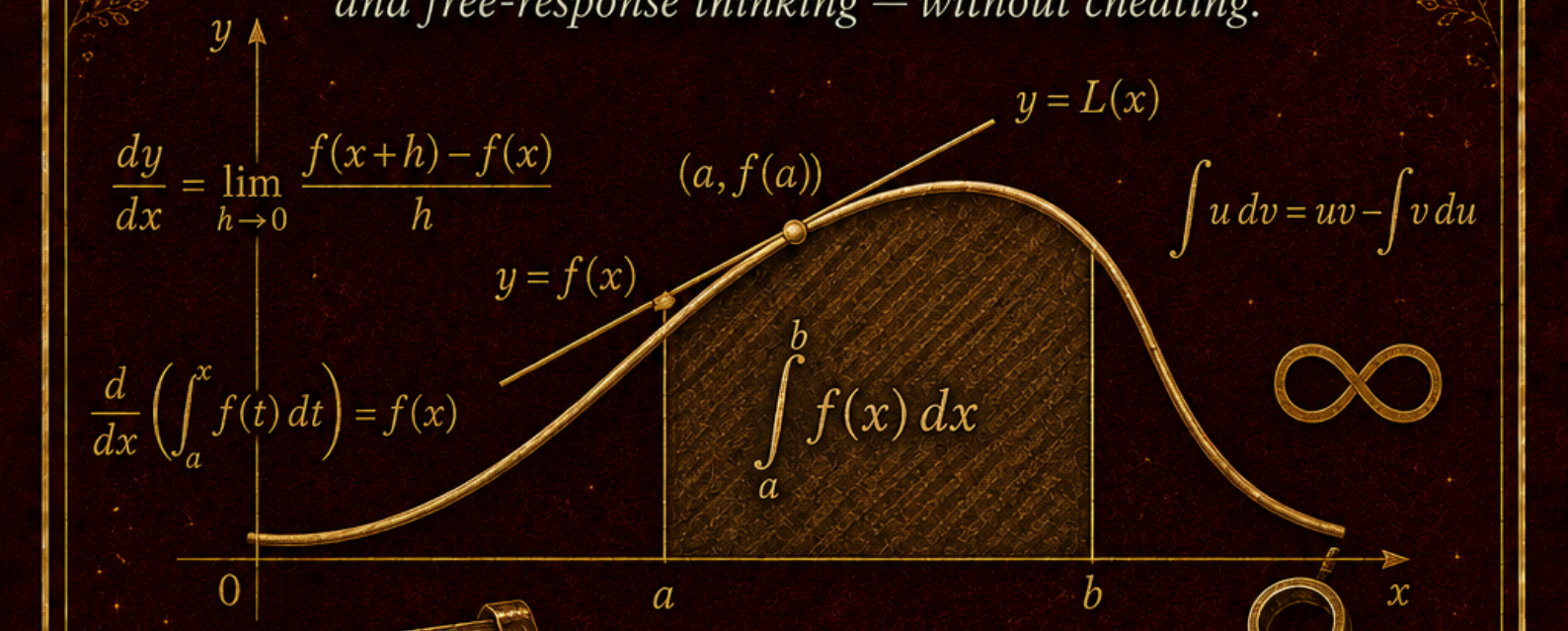
AP CALCULUS AB

100 AI PROMPTS

for Smarter Revision *and* Exam Prep

Active recall, exam technique,
and free-response thinking — without cheating.



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V AI Study Method
THE VELVET METHOD™

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A six-step AI study system

AP Calculus AB

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Active recall, exam technique, and mark-scheme thinking — without cheating.

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What Is the Velvet Method?

The Velvet Method is a six-step framework for using AI as a study partner — not a shortcut. Each letter is a stage of effective revision, and each is grounded in what cognitive science says actually works: building understanding, retrieving it under pressure, and spacing your review over time.

V — View See the whole picture of a topic before you study the detail.

E — Evaluate Run a diagnostic to find exactly where your gaps are.

L — Learn Fill those gaps in a way that genuinely sticks.

V — Verify Prove you know it with exam-style questions and examiner-style feedback.

E — Explore Push into top-grade thinking: application, analysis, and unseen problems.

T — Transform Reflect, plan your next session, and lock it in with spaced repetition.

Used in order, the six stages turn AI from a machine that hands you answers into a tutor that strengthens your own thinking — so the work stays yours, and so does the understanding you carry into the exam.

How This Book Is Organised

This book follows the Velvet Method exactly. Its six chapters are the six stages, and the prompts in each chapter do that stage's job for AP Calculus AB. View prompts help you map the course; Evaluate prompts diagnose your gaps; Learn prompts help you understand; Verify prompts test you against mark schemes; Explore prompts stretch you into top-grade thinking; and Transform prompts help you reflect and remember.

Work through the stages roughly in order when you tackle a whole topic, or dip into a single stage when you need it — a quick diagnostic before a test, or some examiner-style marking the night before.

Every prompt is a starting point, not a script. Adapt them, raise the difficulty, swap in your own topic, and ask the AI to challenge your thinking rather than do it for you. The goal is never to get answers from AI. It is to use AI to test, challenge, and sharpen what you know.

How to Run a Velvet Session

Having a hundred prompts is not the same as knowing how to use them. Here is how the six stages fit together in a real study session — and how to turn them into a habit rather than a one-off.

For a new topic, work roughly in order: View to map it, Evaluate to find your gaps, Learn to fill the most important ones, Verify to prove they're fixed, Explore to stretch, and Transform to lock it in and plan your next review. You won't always use all six — before a test you might go straight to Evaluate and Verify.

A worked example

Say you have ninety minutes on differentiation techniques (Units 2 and 3). Open with a View prompt to map the sub-topics — power, product, quotient, chain rule, implicit differentiation, inverse-function derivatives. Run the Evaluate diagnostic and find that chain rule on composite functions and implicit differentiation are shaky. Use two Learn prompts: an analogy for what the chain rule does, and a Walk-Me-Through prompt for implicitly differentiating a circle equation. Then Verify with an examiner-marked FRQ on the slope of a tangent line to an implicitly defined curve. Finally, a Transform prompt schedules a review of differentiation rules.

Spread it out

The method works partly because it spaces your learning, so resist racing through this whole book in one sitting. A realistic rhythm is one or two topics a week through the full cycle, with short Verify and Transform reviews of earlier topics layered on top. The spacing is not a delay — it is the mechanism.

Lean on the prompts less over time

At first, use the prompts word for word. As you grow more confident, strip the scaffolding away — shorten them, raise the difficulty, and eventually run a whole stage from memory. The aim is to need this book less and less.

Trust, but Verify

AI is a powerful study partner, but it is not always right — and the danger is that you are using it precisely because you don't yet know the material well enough to notice when it's wrong. Treating its output as automatically correct is the single biggest risk in studying with AI.

What to watch for in AP Calculus AB especially: AI can invent CED unit numbers and learning objectives that don't appear in the official Course and Exam Description; it can confuse free-response rubric wording (College Board rubrics are very specific about what earns a point); it can blur the line between AP content and college-level content beyond the syllabus; and it can quote scoring percentages or score distributions that are out of date. It can quote methods that are only on the BC syllabus (parametric, polar, series), drop the constant of integration, or use notation inconsistent with the College Board's expectations. Always cross-reference with the official AP CED and recent free-response scoring guidelines.

So build the habit of checking. Keep your specification and a trusted textbook to hand, and cross-reference anything that will go into your memory. Ask the AI to show its reasoning and where a mark point comes from, so you can judge it. When a marked answer surprises you, challenge it — ask why that is the model answer. And use the Verify-stage prompt that asks the AI to include a deliberate error, to keep your own eye sharp. If the AI and your specification ever disagree, the specification wins.

This is not a reason to distrust the tool. It is the skill that makes you safe to use it — and learning to check AI well is itself one of the most valuable things this method will teach you.

Quick Start: Which Prompt, When

Not sure where to begin? Match your situation to a stage:

Starting a brand-new topic: View (Prompts 1–10), then run a diagnostic.

A test tomorrow, short on time: the diagnostics (Prompts 11–25), then a few Verify prompts on your weak spots.

You've revised but it won't stick: Learn (Prompts 26–43), especially Feynman and draw-from-memory.

You know it but keep losing exam marks: Verify (Prompts 44–71), especially examiner marking and command words.

Aiming for the top grades: Explore (Prompts 72–88).

End of a session or week: Transform (Prompts 89–100).

When in doubt, run the Whole-Topic Diagnostic (Prompt 11) — it will tell you what you need.

These prompts are your toolkit.

The Velvet Method course is where you learn to wield them.

Six steps taught in full, worked examples for every stage, and a complete prompt library across your subjects.

Learn the method at aistudymethod.co.uk/courses

Contents

Note on Exam Boards and Syllabi

This book supports AP Calculus AB students preparing for the College Board's exam, scored on the 1-5 scale.

AP Calculus AB is organised by the College Board around 8 Units (Limits and Continuity; Differentiation: Definition and Fundamental Properties; Differentiation: Composite, Implicit, and Inverse Functions; Contextual Applications of Differentiation; Analytical Applications of Differentiation; Integration and Accumulation of Change; Differential Equations; Applications of Integration). Four Mathematical Practices are assessed: Implementing Mathematical Processes, Connecting Representations, Justification, Communication and Notation. The exam is 105 minutes Multiple Choice (45 questions, 50%) plus 90 minutes Free Response (6 questions, 50%); calculators allowed on Section II Part A and Section II Part B has calculator-restricted questions.

Always cross-reference with your own specification and use it as the definitive guide to what you will be examined on. This book is a powerful revision companion; your specification remains the final word on content.

V

View

Before you revise a single detail, build the big picture. The View stage uses AI to map the syllabus, find the core ideas a topic depends on, and see how everything connects — so that when you study the detail, it has somewhere to attach. Start here for any new topic.

Prompt 1: Map the Whole Specification

Copy this prompt into your AI tool:

> Act as an AP Mathematics tutor. Give me a structured overview of the entire AP Mathematics course, grouped into its three areas: pure mathematics (algebra, functions, sequences, trigonometry, exponentials and logarithms, differentiation, integration, numerical methods, vectors, proof), statistics (data, probability, distributions, hypothesis testing), and mechanics (kinematics, Newton's laws, projectile motion, moments). For each area, list the key sub-topics in a single line.

What this helps you practise: Seeing the whole course as one connected map before revising any single part.

How to use it well: Keep this overview somewhere visible and tick off each sub-topic as you secure it, so you always know where a new technique fits in the bigger picture.

Prompt 2: Build the Big Picture of a Topic

Copy this prompt into your AI tool:

> Before I study [topic, e.g. differential equations or hypothesis testing with the binomial distribution] in detail, give me a one-paragraph big-picture summary: what this topic is fundamentally about, the three or four core ideas everything else hangs on, and how it connects to the rest of AP Mathematics.

What this helps you practise: Building a mental framework that later detail can attach to.

How to use it well: Read this before your textbook, not after. The framework makes the detailed reading far easier to absorb.

Prompt 3: Create a Personalised Spec Checklist

Copy this prompt into your AI tool:

> Using the AP Mathematics Course and Exam Description (CED) for [the AP] on the topic of [topic], produce a checklist of everything I must be able to do, written as a list of 'I can…' statements (for example, 'I can use integration by parts on a product of a polynomial and an exponential function').

What this helps you practise: Turning a vague topic into a concrete, testable list of skills.

How to use it well: Tell the AI you are studying for the College Board's AP exam. Then RAG-rate each statement (red/amber/green) so your revision targets reds first.

Prompt 4: Find the Spine of a Topic

Copy this prompt into your AI tool:

> Identify the five or six absolutely central ideas in [topic, e.g. trigonometry, or vectors] that everything else in the topic depends on. Explain in one line why each is load-bearing, and what falls apart if I don't understand it.

What this helps you practise: Distinguishing the core principles from the peripheral detail.

How to use it well: Master the spine first. Once the central ideas are secure, the surrounding methods attach quickly and make sense.

Prompt 5: See How a Topic Connects to the Course

Copy this prompt into your AI tool:

> Show me how [topic] links to other areas of AP Mathematics. Give me a cross-unit map: for each connection, name the other topic and explain the link in one sentence (for example, differentiation links to mechanics via velocity and acceleration, to optimisation problems, to curve sketching, and to differential equations).

What this helps you practise: Thinking synoptically, which is what separates top grades at AP.

How to use it well: Synoptic links are heavily rewarded. Build these maps early so that by exam season the connections feel natural rather than forced.

Prompt 6: Prioritise by Exam Weighting

Copy this prompt into your AI tool:

> Based on past AP Mathematics papers for [the AP], tell me which sub-topics of [module, e.g. pure paper 2] appear most frequently and carry the most marks. Help me rank what to prioritise if my revision time is limited.

What this helps you practise: Spending limited time where it earns the most marks.

How to use it well: Treat this as guidance, not gospel — always cross-check against your Course and Exam Description (CED). But it's a sensible way to triage when time is short.

Prompt 7: Get a Five-Minute Primer Before a Lesson

Copy this prompt into your AI tool:

> I'm about to study [topic, e.g. integration by parts] for the first time. Give me a five-minute primer: the key vocabulary I'll meet, the main idea in plain English, and the three questions I should be able to answer by the end of the lesson.

What this helps you practise: Priming your brain so new teaching lands on prepared ground.

How to use it well: Previewing before a lesson dramatically improves how much you take from it. The questions also tell you what to listen for.

Prompt 8: Turn Spec Points into Exam Questions

Copy this prompt into your AI tool:

> Take these Course and Exam Description (CED) statements for [topic] and, for each one, write the kinds of exam questions an AP grader could realistically ask from it, including the likely command words (find, solve, show that, prove, hence) and mark allocations.

What this helps you practise: Seeing your syllabus through the AP grader's eyes.

How to use it well: This converts passive spec points into active targets. Keep the questions to test yourself with later in the Verify stage.

Prompt 9: Sketch a Family-of-Curves Map

Copy this prompt into your AI tool:

> Describe a family of related curves I should be able to sketch by heart for AP Mathematics — for example, the standard transformations of $y = x^2$, $y = 1/x$, $y = \sin x$, $y = \ln x$, $y = e^x$ — with the key features (asymptotes, intercepts, turning points, symmetry) for each. Present them as a set of nodes I can draw out by hand.

What this helps you practise: Organising your curve-sketching toolkit into one connected map.

How to use it well: Draw it yourself rather than copying — the act of sketching the family is where the learning happens. Add transformations as a second pass.

Prompt 10: Set a Clear Goal for a Revision Session

Copy this prompt into your AI tool:

> Help me set a specific, achievable objective for a 45-minute revision session on [topic, e.g. solving trigonometric equations]. Define exactly what I should be able to do by the end, and break it into three concrete checkpoints.

What this helps you practise: Giving each session a clear purpose instead of vague 'practice'.

How to use it well: A session with a defined endpoint is far more effective than open-ended revision. Check off the three checkpoints as you go.

E

Evaluate

You can't fix gaps you haven't found. The Evaluate stage uses AI as a diagnostic: it tests you, catches the things you only think you know, and tells you precisely where to spend your time. Honest answers here save you hours later.

Prompt 11: Whole-Topic Diagnostic with Confidence Rating

Copy this prompt into your AI tool:

> You are an AP Mathematics AP grader running a diagnostic. Write 12 short questions spanning [topic, e.g. differentiation], with a spread of difficulty and varied command words (find, solve, show that, prove). Present them and wait. I will answer each and tag my confidence as (Sure), (Unsure) or (Guess). Then mark against concise model answers, flag anything I marked (Sure) but got wrong as my most dangerous gap, flag anything I got right but marked (Guess) as not yet secure, and rank my weakest sub-topics with what to study first. Finally, give me a one-sentence summary of my top three dangerous gaps that I can paste straight into my revision tracker. Before you write the questions, ask me to predict which two or three sub-topics I expect to find hardest. At the end, compare my prediction with where I actually struggled — the gap between the two is what I most need to calibrate.

What this helps you practise: Pinpointing exactly where your understanding is weakest before you revise.

How to use it well: The confidence tags are the magic: they catch the gaps a normal quiz hides — the things you got right by luck and the things you were wrong but certain about.

Prompt 12: Rapid Recall Audit

Copy this prompt into your AI tool:

> Give me 15 quick recall questions covering the breadth of [module, e.g. pure mathematics], one at a time, no notes allowed. Mix techniques, formulae and conceptual checks. At the end, sort every topic I touched into three buckets: secure, shaky, and missing.

What this helps you practise: A fast, honest snapshot of what's actually in your memory.

How to use it well: Do this closed-book and resist the urge to look anything up — the value is in the honest result, not a good score.

Prompt 13: Find My Misconceptions

Copy this prompt into your AI tool:

> Ask me to explain [concept, e.g. why $\ln(a + b) \neq \ln a + \ln b$, or why the gradient of a chord is not generally the gradient of the curve]. As I answer, probe for the specific misconceptions AP students commonly hold, and tell me clearly which ones I'm showing.

What this helps you practise: Surfacing the subtle wrong ideas that quietly cost marks.

How to use it well: Misconceptions are dangerous because they feel like knowledge. Naming yours is the first step to fixing them.

Prompt 14: Pre-Test Triage

Copy this prompt into your AI tool:

> I have a test on [topic] tomorrow. Run a quick diagnostic to find out where my understanding is weakest, then tell me precisely which two or three areas to spend tonight on, and roughly how long on each.

What this helps you practise: Turning night-before panic into a focused, prioritised plan.

How to use it well: Be honest in your answers — a diagnosis based on bluffing sends you to revise the wrong things.

Prompt 15: Command-Word Diagnostic

Copy this prompt into your AI tool:

> Test whether I can handle different command words on the same content. Ask me a 'find', then a 'show that', then a 'prove', then a 'hence' question on [topic], and tell me which command word I struggle with most.

What this helps you practise: Diagnosing exam-technique gaps, not just knowledge gaps.

How to use it well: 'Show that' wants every step justified to that target; 'hence' demands you use the previous result. Knowing the difference is worth marks.

Prompt 16: Map the Gaps Across a Module

Copy this prompt into your AI tool:

> Sweep across the whole of [module, e.g. pure mathematics] with a broad set of questions including calculation, proof, curve sketching and problem-solving. Output a ranked gap list — my weakest area at the top — with a one-line reason for each ranking.

What this helps you practise: Getting a module-wide picture rather than topic tunnel vision.

How to use it well: Use the ranked list to plan a week of revision, working top-down from your biggest weakness.

Prompt 17: Test Depth, Not Just Surface

Copy this prompt into your AI tool:

> Ask me about [concept, e.g. why the derivative of sin x is cos x in radians but not in degrees, or what 'in equilibrium' really means in mechanics]. Whatever I answer, keep asking 'why' and 'how do you know' until either my understanding runs out or you're satisfied it's genuinely deep. Then tell me where it ran out.

What this helps you practise: Distinguishing real understanding from memorised statements.

How to use it well: The point where you can no longer answer 'why' is exactly where your real revision should begin.

Prompt 18: Diagnose My Algebraic Fluency

Copy this prompt into your AI tool:

> Test my AP algebraic fluency with a short mixed set: simplifying surds, manipulating algebraic fractions, completing the square, solving a quadratic by both factorising and the formula, partial fractions, and rearranging an exponential equation with logs. Tell me which I need to practise.

What this helps you practise: Catching the algebra weaknesses that quietly cost marks in every topic.

How to use it well: Most AP marks lost are algebraic, not conceptual. Drilling fluency here pays back across every paper.

Prompt 19: Diagnose My Mechanics Modelling

Copy this prompt into your AI tool:

> Quiz me on the modelling assumptions for [mechanics topic, e.g. projectile motion, or connected particles on an inclined plane]: how to set up a free-body diagram, sign conventions, which assumptions are being made (smooth, light, inextensible, no air resistance) and what each means. Tell me where my modelling understanding is thin.

What this helps you practise: Securing the modelling marks that examiners regularly award and students regularly miss.

How to use it well: Mechanics questions reward stating modelling assumptions explicitly. Practise listing them up front.

Prompt 20: Test a Linked Concept

Copy this prompt into your AI tool:

> Give me a diagnostic that specifically checks whether I can connect [topic A, e.g. differentiation] and [topic B, e.g. kinematics with non-uniform acceleration], not just recall each separately. Tell me whether my weakness is in the individual topics or in linking them.

What this helps you practise: Diagnosing cross-unit weakness, a common hidden gap.

How to use it well: You can know two topics well and still fail to link them. This isolates which problem you actually have.

Prompt 21: Self-Explanation Check

Copy this prompt into your AI tool:

> I'm going to explain [topic, e.g. why a vector dot product gives information about the angle between vectors] to you in my own words. Listen, then identify every gap, error, vague statement, or missing link in my explanation, in order of importance.

What this helps you practise: Forcing the gaps in your understanding to reveal themselves.

How to use it well: Explaining out loud exposes far more than re-reading ever will. The vague bits in your explanation are your real gaps.

Prompt 22: Exam-Readiness Score

Copy this prompt into your AI tool:

> Act as a tough AP Mathematics AP grader. Ask me the hardest questions you realistically could on [topic], then rate my readiness for each sub-area on a scale of 1 to 5 and justify each score.

What this helps you practise: Getting a frank, AP grader's-eye assessment of where you stand.

How to use it well: Ask it to be strict. A flattering score the week before an exam helps nobody.

Prompt 23: Confidence vs Competence Audit

Copy this prompt into your AI tool:

> For [topic, e.g. integration], first ask me how confident I feel about each sub-area (standard integrals, substitution, parts, partial fractions, definite integrals). Then test me on each. Finally, show me where my confidence and my actual performance don't match.

What this helps you practise: Exposing over-confidence, which is where careless marks are lost.

How to use it well: The mismatches matter most: areas you feel sure about but perform poorly on are where exam disasters happen.

Prompt 24: Diagnose from a Mistake

Copy this prompt into your AI tool:

> Here is a question I got wrong: [paste the question and my working]. Don't just give me the right answer — diagnose the underlying gap or misconception that caused the mistake, and tell me what else that gap probably affects.

What this helps you practise: Learning from errors at the level of the cause, not the symptom.

How to use it well: One mistake often points to a deeper gap that's costing you elsewhere too. Fix the cause, not just the instance.

Prompt 25: Weekly Diagnostic Sweep

Copy this prompt into your AI tool:

> Run my weekly diagnostic across everything I've revised this week: [list topics]. Compare my performance, tell me what has improved and what is slipping, and what needs revisiting before next week.

What this helps you practise: Tracking progress and catching topics that fade over time.

How to use it well: Knowledge decays without review. A weekly sweep catches the slipping topics before they're forgotten.

L

Learn

Now fill the gaps in a way that sticks. The Learn stage uses AI to explain, analogise, roleplay, and break concepts down — and crucially to check your understanding, not just deliver information. One rule for every prompt here: when an explanation finally clicks, close the chat and reproduce it from memory, out loud or on paper, before moving on. Understanding something as you read it is not the same as being able to recall it later — the moment of 'I get it' is the cue to test yourself, not to stop.

Prompt 26: Explain with an Analogy

Copy this prompt into your AI tool:

> Explain [difficult concept, e.g. integration as anti-differentiation, or what a hypothesis test actually does] using a clear everyday analogy. Then ask me to map each part of the analogy back onto the real mathematics to check I've understood, not just enjoyed the story.

What this helps you practise: Grasping an abstract idea by anchoring it to something familiar.

How to use it well: Always map the analogy back to the maths — an analogy you can't translate is entertainment, not understanding.

Prompt 27: Use the Feynman Technique

Copy this prompt into your AI tool:

> I'm going to explain [topic, e.g. why the chain rule works] as simply as if I were teaching a 14-year-old. Listen, then point out exactly where I used jargon to paper over a gap, where my logic broke, and where I oversimplified to the point of being wrong. When you spot a gap in my explanation, do not correct me immediately. Give me one 60-second attempt to re-explain that part from memory first; only after my retry do you give the correction. This iteration is where the encoding consolidates.

What this helps you practise: Achieving genuine understanding by teaching it plainly.

How to use it well: If you can't explain it simply, you don't fully understand it. The jargon you reach for marks the gaps.

Prompt 28: Roleplay a Function Through Differentiation

Copy this prompt into your AI tool:

> Roleplay as a composite function travelling through the chain rule. Narrate what happens at each stage — the outer function differentiating, the inner function differentiating, the product forming — and quiz me on what's happening as we go.

What this helps you practise: Making a multi-step calculus rule vivid and memorable.

How to use it well: Narrative ordering helps multi-step procedures stick. Try it for product rule, quotient rule, or integration by parts.

Prompt 29: Build a Mnemonic

Copy this prompt into your AI tool:

> Help me create a memorable mnemonic for [ordered set, e.g. the order in integration by parts ('LIATE' for choosing u), or the order of operations in differentiating implicitly]. Then test me on whether I can reconstruct the full procedure from the mnemonic.

What this helps you practise: Locking ordered procedures into long-term memory.

How to use it well: Make the mnemonic slightly absurd or personal — odd associations are easier to recall than bland ones.

Prompt 30: Walk Me Through, Then Blank It Out

Copy this prompt into your AI tool:

> Walk me through [worked example, e.g. solving a first-order separable differential equation with an initial condition] one clear step at a time. Then give the same example back to me with key steps blanked out for me to fill in.

What this helps you practise: Moving from guided understanding to independent execution.

How to use it well: The blank-it-out step is the learning. Don't skip it because the walkthrough felt clear — clear isn't the same as learned.

Prompt 31: Compare and Contrast

Copy this prompt into your AI tool:

> Build a comparison table for [X vs Y, e.g. integration by substitution vs by parts, or the binomial vs normal distribution]. Include the points AP examiners care about: when to use each, the procedure, the common pitfalls. Then quiz me specifically on the differences, since that's what questions target.

What this helps you practise: Sharpening the distinctions examiners love to test.

How to use it well: Confusable pairs are exam favourites. Knowing the differences cold is worth more than knowing each in isolation.

Prompt 32: Teach the Hard Bit Three Ways

Copy this prompt into your AI tool:

> Explain [tricky concept, e.g. why we use logs to solve $a^x = b$, or what 'integrating a differential equation' actually does] to me in three completely different ways — a definition-led way, an analogy, and a worked example with real numbers. Then ask me which made it click and test that understanding.

What this helps you practise: Finding the explanation that actually works for you.

How to use it well: Different concepts yield to different explanations. Keep the version that clicks and use it as your anchor.

Prompt 33: Ground the Abstract in the Concrete

Copy this prompt into your AI tool:

> Take this abstract idea — [e.g. the modulus function, or a definite integral] — and give me two concrete, specific examples with real numbers, then ask me to generate a third myself.

What this helps you practise: Connecting principles to the real examples exams demand.

How to use it well: Generating your own example is the test of understanding. If you can produce a new case, you've got the principle.

Prompt 34: Sketch It from Memory

Copy this prompt into your AI tool:

> Guide me to sketch [graph or diagram, e.g. $y = \ln x$ for $x > 0$, a free-body diagram for a particle on an inclined plane in equilibrium, or a normal distribution with a shaded region] from memory. Ask me what goes where, then tell me what I missed or mislabelled.

What this helps you practise: Building the precise, labelled recall that sketches require.

How to use it well: Sketching from memory is retrieval, not copying. Redraw until you can produce the full labelled version unaided.

Prompt 35: Why Does It Work That Way?

Copy this prompt into your AI tool:

> Don't just tell me what happens in [process, e.g. integration by parts] — explain why it works that way. Derive the formula from the product rule, so I understand the logic rather than memorising a sequence.

What this helps you practise: Replacing rote memory with causal understanding.

How to use it well: Understanding the 'why' means you can reconstruct the 'what' even if you forget it, and handle unfamiliar twists.

Prompt 36: Unpack a Definition Word by Word

Copy this prompt into your AI tool:

> Take this precise AP definition — [e.g. of continuity, of the derivative as a limit, or of statistical independence] — and unpack it word by word, explaining why each term is in there and what would be wrong if it were left out.

What this helps you practise: Mastering the exact wording examiners require.

How to use it well: AP definitions are precise for a reason. Knowing why each word matters helps you reproduce them exactly.

Prompt 37: Link Method to Problem Type

Copy this prompt into your AI tool:

> For [method, e.g. integration by parts], give me five distinct problem types where this is the right method. For each, state the feature of the problem that tells me 'use this method here'. Then quiz me on identifying the method from a list of unsorted problems.

What this helps you practise: Building the recognition skill that turns method knowledge into method choice.

How to use it well: Most lost marks in maths are not 'I can't do the method' — they are 'I didn't see this was the method to use'. Drill recognition.

Prompt 38: Interleave Two Confusable Topics

Copy this prompt into your AI tool:

> Alternate between explaining and quizzing me on [topic A, e.g. permutations] and [topic B, e.g. combinations], which I keep mixing up. Deliberately switch between them so I have to tell them apart each time.

What this helps you practise: Building the discrimination to keep similar topics separate.

How to use it well: Interleaving feels harder than studying one topic at a time, but it's exactly that difficulty that stops you confusing them.

Prompt 39: Turn My Notes into Understanding

Copy this prompt into your AI tool:

> Here are my notes on [topic, e.g. hypothesis testing]: [paste]. Turn them into a clear, causal explanation of what the test does and why, and point out anything I've written down as a procedure without actually understanding why it works.

What this helps you practise: Converting copied notes into genuine comprehension.

How to use it well: Notes can hide a lack of understanding. This step exposes the lines you've memorised but couldn't explain.

Prompt 40: Explore What Happens at a Limit

Copy this prompt into your AI tool:

> For [function or model, e.g. y = e^(-kx), or a SUVAT projectile equation], walk through what would happen at a limiting case ($k \to 0$, $k \to \infty$, $t \to \infty$). Use the limit to test whether I really understand the mathematical structure.

What this helps you practise: Deepening understanding by examining behaviour in extreme cases.

How to use it well: Limits reveal what an equation really represents. They also catch errors — if the limit is nonsense, the equation is wrong.

Prompt 41: Build Precise Vocabulary

Copy this prompt into your AI tool:

> Generate the key technical terms for [topic, e.g. statistics — population, sample, statistic, parameter, null hypothesis, p-value], each with a precise AP definition and a sentence showing correct use. Then test me by giving definitions and asking for the term, and vice versa.

What this helps you practise: Building the exact vocabulary that earns marks.

How to use it well: Imprecise vocabulary loses marks even when the idea is right. Drill the exact terms until they're automatic.

Prompt 42: Explain the Shape of a Graph

Copy this prompt into your AI tool:

> Talk me through interpreting the [named curve, e.g. $y = x^4 - 4x^2 + 3$, or a cumulative distribution function for a continuous random variable]. Explain why each feature (turning

> points, points of inflection, asymptotes, end behaviour) appears, then give me a blank version to annotate myself.

What this helps you practise: Understanding the maths behind standard curves, not just their shapes.

How to use it well: Examiners ask you to explain features, not just sketch. Always tie each feature to the underlying calculation.

Prompt 43: Make a Proof into a Story

Copy this prompt into your AI tool:

> Turn [proof, e.g. proof by induction that the sum from r=1 to n of r^2 is $n(n+1)(2n+1)/6$, or proof by contradiction that $\sqrt{2}$ is irrational] into a short, vivid story with a clear sequence of moves, then quiz me on the order of steps and the key justification at each step.

What this helps you practise: Using narrative structure to remember multi-step proofs.

How to use it well: Proofs are easier to recall as a story than as a list of lines. Make the logical 'because' chain the plot.

V

Verify

Familiar is not the same as known. The Verify stage uses AI as an examiner: it asks exam-style questions, marks you against realistic mark schemes, and shows you exactly where marks are won and lost. This is the heart of the method, so this is the longest chapter.

Prompt 44: Examiner Marking Against a Mark Scheme

Copy this prompt into your AI tool:

> Act as a senior AP Mathematics AP grader. Give me one extended question on [topic] worth 6–8 marks. After I answer, mark it against a realistic mark scheme: list each available mark point (method marks M, accuracy marks A, B marks), show which I hit and which I missed, award a total, and tell me the single most valuable improvement.

What this helps you practise: Practising extended questions and learning how method versus accuracy marks are awarded.

How to use it well: M marks reward correct method even if the answer is wrong. Always show working — that's where they're won.

Prompt 45: Closed-Book Retrieval Quiz

Copy this prompt into your AI tool:

> Quiz me on [topic, e.g. solving trigonometric equations in radians] with ten questions, one at a time, no notes allowed. Don't give me the answer until I've committed to mine, then tell me if I'm right and correct any error precisely. Before you confirm or reject my answer, ask me to articulate in one sentence how I arrived at it. Mark me on the reasoning as well as the conclusion — a right answer from shaky reasoning is not yet secure.

What this helps you practise: Strengthening memory through the act of retrieval itself.

How to use it well: Retrieval, not re-reading, is what builds durable memory. Commit to an answer before checking — the effort is the point.

Prompt 46: Drill the 'Show That' Justification

Copy this prompt into your AI tool:

> Give me a 'show that' question on [topic]. Mark me specifically on whether every step is justified to lead to the stated target — not just whether the answer matches.

What this helps you practise: Building the explicit justification 'show that' demands.

How to use it well: In 'show that' questions, the target is given; only the method earns marks. Every step needs a reason or a clear algebraic move.

Prompt 47: Find the Missing Mark Points

Copy this prompt into your AI tool:

> Write a model answer to a 5-mark question on [topic], then remove two of the mark-worthy moves (the substitution, or the final accuracy mark) and present it to me. Ask me to identify exactly which two are missing.

What this helps you practise: Training your eye to see what a full-mark answer requires.

How to use it well: Learning to spot what's missing from a good answer is how you stop leaving marks on the table in your own.

Prompt 48: Demand Precise Notation

Copy this prompt into your AI tool:

> Test me on writing precise notation in [topic, e.g. integration, vectors, statistics]. Accept only answers in standard AP notation — if I miss the constant of integration, the dx, the vector hat, or the correct distributional notation, tell me exactly which mark I just lost.

What this helps you practise: Producing the exact notation that accuracy marks require.

How to use it well: Notation marks are easy to drop in a moment. Train yourself to add 'dx', '+ c', and direction signs by reflex.

Prompt 49: Mark a Proof

Copy this prompt into your AI tool:

> Ask me to write a proof of [statement, e.g. that the sum of the angles in a triangle is π radians, or by induction that $2^n > n$ for all $n \geq 1$]. Mark me as an AP grader would: are the assumptions stated, is each step justified, is the conclusion linked back to the original statement? Give me a mark out of 4.

What this helps you practise: Producing proofs that earn every available mark.

How to use it well: Most proof marks are lost on missing justification or no concluding statement. Always tie the last line back to the original target.

Prompt 50: Application Question, Marked

Copy this prompt into your AI tool:

> Give me an application question that places [topic, e.g. exponential growth, or projectile motion] in an unfamiliar context. After I answer, mark whether I correctly modelled the situation and applied the method, rather than just stating the formula.

What this helps you practise: Practising the modelling and application skill that distinguishes strong candidates.

How to use it well: Application questions reward setting up the model. State your variables and assumptions explicitly at the start.

Prompt 51: Structure a Long-Answer Question

Copy this prompt into your AI tool:

> Give me a 7- or 8-mark extended question on [topic]. Before marking my content, assess the structure of my working: is it logically ordered, clearly labelled where I switch methods, and easy for an AP grader to award marks against?

What this helps you practise: Structuring long answers so every mark is reachable.

How to use it well: Examiners can only award marks they can find. Show your method clearly and label parts as you go.

Prompt 52: Check a Multi-Step Calculation

Copy this prompt into your AI tool:

> Give me a multi-step quantitative problem on [topic, e.g. solving a quadratic in cos x and giving solutions in a stated range, or a Newton's-second-law problem with two connected particles]. Mark my working as well as my answer, since method marks matter.

What this helps you practise: Securing the method marks behind multi-step calculations.

How to use it well: Show full working — method marks are available even when the final answer is wrong. Never just write the answer.

Prompt 53: Interpret Data, Then Get Marked

Copy this prompt into your AI tool:

> Present me with a set of statistics data — for example a sample from a normal distribution, a contingency table, or a sample for a hypothesis test on a proportion — on [topic]. Ask me to describe the data, choose the appropriate test, and interpret the conclusion, then mark me separately on description, choice and interpretation.

What this helps you practise: Separating description, method-choice and interpretation in statistics.

How to use it well: Statistics marks split between procedure and interpretation. Make sure your conclusion is written in context, not just 'reject H_0'.

Prompt 54: Synoptic Retrieval Challenge

Copy this prompt into your AI tool:

> Ask me a question that requires me to pull together at least three different AP Mathematics topics to answer fully — for example, a vectors question that requires trigonometry and algebraic manipulation, or a kinematics question that requires integration. Mark me on the breadth and the quality of the links I make.

What this helps you practise: Retrieving and connecting across topics under question pressure.

How to use it well: Synoptic questions reward range. Notice when a question wants a method from a different topic and reach for it deliberately.

Prompt 55: Same Topic, Different Command Words

Copy this prompt into your AI tool:

> Ask me three questions on [topic] using three different command words — for example 'find', 'show that' and 'prove'. Mark each against what that specific command word requires, and tell me which I handle worst.

What this helps you practise: Matching your answer to what each command word actually demands.

How to use it well: The content may overlap, but the command word changes what scores. This builds that discrimination.

Prompt 56: Mark Significant Figures and Exact Form

Copy this prompt into your AI tool:

> Test me on calculations from [topic]. Mark me strictly on whether I gave answers in the requested form — exact, three significant figures, simplest surd form — and whether I rounded only at the final step. These are easy A-marks regularly lost.

What this helps you practise: Hardening the accuracy discipline that quietly costs marks across the paper.

How to use it well: Round only at the end. If a question asks for exact form, decimals lose the mark even if numerically correct.

Prompt 57: Spring the Common Error Trap

Copy this prompt into your AI tool:

> Ask me questions on [topic] that are deliberately designed around the errors AP Mathematics students most commonly make (for example, ln(0) when solving a log equation, forgetting the ± when square-rooting, or using degree mode in a calculus question). Catch me if I fall for one and explain the precise correct version.

What this helps you practise: Inoculating yourself against the classic, predictable mistakes.

How to use it well: Examiners know the common errors and test for them. Knowing yours in advance is half the battle.

Prompt 58: Rapid-Fire Formulae

Copy this prompt into your AI tool:

> Fire 15 standard formulae or identities from [module, e.g. trigonometry — double-angle, compound-angle, $\sin^2\theta + \cos^2\theta = 1$, sum-to-product, and so on] at me, one at a time, and ask me to write each from memory. Then list the ones I got wrong or vague for me to drill again.

What this helps you practise: Making core identities and formulae fast and automatic.

How to use it well: Identities you have to look up cost you time. Drill the few that aren't on the formula sheet until they're automatic.

Prompt 59: Predict the Mark Scheme

Copy this prompt into your AI tool:

> Show me a past-paper-style question on [topic]. Before answering, I'll predict where the M, A and B marks fall. Then reveal a realistic mark scheme and tell me how accurate my prediction was.

What this helps you practise: Learning to think like the AP grader who wrote the mark scheme.

How to use it well: If you can predict the M and A marks, you can target your method to make them visible. This builds that AP grader's instinct.

Prompt 60: Verify a Free-Body Diagram

Copy this prompt into your AI tool:

> Ask me to draw a free-body diagram for [mechanics scenario, e.g. a particle being towed up a slope with friction, or two connected particles over a pulley]. Then critique my diagram against what an AP grader expects: all forces shown, correct directions, no missing reactions, clear axes.

What this helps you practise: Producing exam-accurate diagrams under recall conditions.

How to use it well: Most mechanics errors begin with a wrong free-body diagram. Always draw it before writing any equations.

Prompt 61: Practise a Hypothesis Test, End to End

Copy this prompt into your AI tool:

> Give me a hypothesis-test scenario at AP level — for example a one-tailed test on the proportion of a binomial random variable, or on the mean of a normal sample. Mark me end-to-end: hypotheses written correctly, test statistic chosen, critical value or p-value computed correctly, comparison made, and conclusion in context.

What this helps you practise: Securing all the hypothesis-test marks examiners predictably award.

How to use it well: Conclusions in context score; bare 'reject H_0' does not. Always state what the conclusion means about the situation.

Prompt 62: Practise a 'Compare' Question

Copy this prompt into your AI tool:

> Give me a 'compare' question on [X and Y, e.g. two regression models for a data set, or two solutions to a differential equation]. Mark me on whether I made genuine comparative statements (linking the two) rather than describing each separately, which scores poorly.

What this helps you practise: Writing true comparisons rather than parallel descriptions.

How to use it well: A real comparison uses linking words — 'whereas', 'in contrast', 'both'. Two separate descriptions side by side rarely earn the comparison marks.

Prompt 63: Practise an 'Evaluate the Model' Question

Copy this prompt into your AI tool:

> Give me an 'evaluate the model' question — for example, judging the suitability of an exponential growth model for a real data set. Mark me on whether I presented evidence on more than one side, criticised the assumptions, and reached a justified conclusion.

What this helps you practise: Building the modelling-evaluation skill examiners now test routinely.

How to use it well: Modelling questions want you to name the assumption and the limit. Always end with a reasoned recommendation.

Prompt 64: Practise an Open-Ended Problem

Copy this prompt into your AI tool:

> Give me an open-ended problem-solving question that places [topic] in a scenario where there isn't one textbook method. Mark me on whether my chosen approach is mathematically reasonable and properly justified.

What this helps you practise: Building the applied reasoning that 'problem-solve' questions test.

How to use it well: Open-ended questions reward sensible, justified maths in a new context — there's room for more than one good approach, so reason it through.

Prompt 65: Climb the Method–Justify–Interpret Ladder

Copy this prompt into your AI tool:

> On [single concept, e.g. a definite integral as the area under a curve], ask me first to compute, then to justify each step, then to interpret the answer in context. Mark each rung separately so I can see where my answer stops being strong.

What this helps you practise: Seeing exactly where your understanding shifts from procedure to meaning.

How to use it well: The rung where your answer weakens shows the boundary of your real understanding — revise from there.

Prompt 66: Mark My Real Answer

Copy this prompt into your AI tool:

> Here is my working for [question]: [paste]. Mark it strictly to score 5 standard against a realistic mark scheme, tell me the exact mark, and rewrite one line of mine to show what top-mark presentation looks like.

What this helps you practise: Getting precise, personalised feedback on your actual working.

How to use it well: The rewritten line is a model to imitate. Compare it with yours to see exactly what 'top mark' presentation adds.

Prompt 67: Fill a Retrieval Grid

Copy this prompt into your AI tool:

> Create a retrieval grid for [topic, e.g. trigonometry]: a set of prompts or blank cells covering the key identities, derivatives, integrals and conceptual questions, which I'll fill in entirely from memory. Then check my grid and highlight the gaps.

What this helps you practise: Wide-coverage recall practice in one efficient exercise.

How to use it well: Retrieval grids cover a lot of ground fast. Redo the gaps a day later to confirm they've stuck.

Prompt 68: Simulate a Timed Question

Copy this prompt into your AI tool:

> Give me a single AP question on [topic] with a stated mark allocation, and tell me the realistic time I'd get for it in the exam (about a mark a minute is a sensible rule). I'll answer under that time pressure, then you mark it.

What this helps you practise: Practising working accurately at exam pace.

How to use it well: Knowing your content isn't enough if you're too slow. Practise to the clock so timing never surprises you.

Prompt 69: Sit a Mini Past-Paper Set

Copy this prompt into your AI tool:

> Give me a short set of five exam-style questions covering the breadth of [module], mixing short recall, multi-step problem-solving and a 'show that'. Mark the whole set and summarise my strongest and weakest question types.

What this helps you practise: Rehearsing the mixed demands of a real exam paper.

How to use it well: Mixed sets reveal which question types you fear. Drill the weakest type specifically afterwards.

Prompt 70: Catch the AI's Deliberate Error

Copy this prompt into your AI tool:

> Answer this question yourself: [question, e.g. an integration by parts, or a probability calculation]. Include exactly one subtle but real mathematical error in your working — for example, a missing minus sign in the second by-parts step, or a wrong limit in a definite integral — and challenge me to find and correct it. Tell me if I got it, then explain the error and why it would have been easy to miss — so I learn the spotting pattern, not just the specific instance. After I respond, ask me how confident I felt before checking. The gap between my confidence and my accuracy is the most important thing for me to learn — I want to surface where I'm certain but wrong, not just where I'm wrong.

What this helps you practise: Building the critical eye to spot when AI (or you) is wrong.

How to use it well: This is essential AI-literacy: the AI can be confidently wrong, especially with signs and limits. Practising spotting errors protects you from absorbing them.

Prompt 71: Mixed Whole-Paper Retrieval

Copy this prompt into your AI tool:

> Quiz me with 12 questions drawn from across everything in AP Mathematics I've named: [list topics]. Mix pure, statistics and mechanics randomly, as the papers do, and at the end tell me which topics I'm weakest on overall.

What this helps you practise: Retrieving under the topic-switching conditions of a real exam.

How to use it well: Random topic order is harder than block revision — and exactly what the exam does. Train for it.

E

Explore

Top grades come from thinking, not just knowing. The Explore stage uses AI to push you into application, analysis, unseen data, and synoptic links across the course — the level that separates good answers from excellent ones.

Prompt 72: Tackle an Unseen Problem

Copy this prompt into your AI tool:

> Give me a novel AP Mathematics problem-solving question related to [topic] in a context I won't have seen — for example, optimisation in an unusual real-world setting, or a sequences problem in finance. Ask me to set up the maths from scratch and tell me how well I handled the unfamiliarity.

What this helps you practise: Applying methods to genuinely new contexts, as top questions demand.

How to use it well: The hardest marks come from unfamiliar contexts. The more strange problems you practise on, the less anything surprises you.

Prompt 73: Build a Synoptic Chain

Copy this prompt into your AI tool:

> Challenge me to connect at least three different AP Mathematics topics into a single solution to a problem about [theme, e.g. modelling a damped oscillation that needs trigonometry, differential equations and exponential functions]. Push me to make each link explicit.

What this helps you practise: Constructing the extended, cross-topic reasoning that earns top grades.

How to use it well: Top candidates connect topics. Practise building chains: algebra → calculus → mechanics → interpretation.

Prompt 74: Apply a Method to a New Context

Copy this prompt into your AI tool:

> Take [method, e.g. integration to find volumes of revolution, or vectors to find the distance from a point to a line] and give me a scenario I won't have studied — an unusual geometry or model — where I have to apply it. Then judge whether I applied it correctly.

What this helps you practise: Transferring a method beyond the example you learned it with.

How to use it well: Real understanding is shown by transfer. If you can only use a method in its original example, you don't fully own it yet.

Prompt 75: Critique a Mathematical Model

Copy this prompt into your AI tool:

> Describe a real-world situation and a proposed mathematical model for it — for example modelling population growth as exponential, or projectile motion ignoring air resistance. Ask me to identify the modelling assumptions, the limitations, and how I would refine the model. Then evaluate my critique.

What this helps you practise: Building the modelling-criticism skill examiners now reward heavily.

How to use it well: Identify each assumption explicitly. The mark scheme wants 'the model assumes…, which fails when…' phrasing.

Prompt 76: Predict and Justify

Copy this prompt into your AI tool:

> Set me a scenario about [topic, e.g. transformations of a graph, or a vector problem in three dimensions] and ask me to predict an outcome (where a curve cuts the axes, which way a particle moves), then justify my prediction with mathematics. Tell me whether my reasoning, not just my prediction, was sound.

What this helps you practise: Reasoning forward from principles to predicted outcomes.

How to use it well: In application questions the justification scores, not the guess. Always explain the maths behind your prediction.

Prompt 77: Investigate an Open Question

Copy this prompt into your AI tool:

> Pose me a genuinely open mathematical question related to [topic, e.g. 'are there always real solutions to a cubic with real coefficients?'] — one where you explore possibilities with me rather than giving a single answer — and challenge my reasoning at each step.

What this helps you practise: Practising the exploratory thinking behind the hardest problems.

How to use it well: Sit with open questions rather than rushing to one answer. The ability to reason through uncertainty is a top-band skill.

Prompt 78: Connect to a Real-World Model

Copy this prompt into your AI tool:

> Link [topic] to a real-world example or piece of applied mathematics — for instance modelling the spread of a disease, the trajectory of a basketball shot, or the depreciation of a car — and ask me application questions that use that context.

What this helps you practise: Seeing how textbook techniques show up in unfamiliar exam contexts.

How to use it well: Exam contexts are often drawn from real applications. Familiar examples make unseen contexts less intimidating.

Prompt 79: Generalise a Result

Copy this prompt into your AI tool:

> Take [result, e.g. the binomial expansion for (1 + x)^n with n a positive integer] and ask me what happens when I relax a condition (n is rational, n is negative, |x| > 1). Push me to think about which conditions matter and why.

What this helps you practise: Building the generalisation instinct that turns AP technique into university-level mathematics.

How to use it well: Generalising a result tests whether you understand the conditions it needs. Always state the validity range.

Prompt 80: Interpret a Graph You've Never Seen

Copy this prompt into your AI tool:

> Show me (in words) an unfamiliar graph or figure related to [topic] that I wouldn't have met in class — for example a piecewise function with discontinuities, or a parametric curve. Ask me to interpret it from first principles, then tell me what I read well and what I missed.

What this helps you practise: Reading unfamiliar figures using underlying mathematics, not memory.

How to use it well: Unseen graphs test whether you understand the mathematics or just memorised familiar shapes. Reason from the axes up.

Prompt 81: Reason Across Topics

Copy this prompt into your AI tool:

> Ask me a question that requires me to reason from algebra through calculus to a mechanical interpretation, or from a statistical experiment back to a probability model, for [topic]. Judge whether I kept the chain of cause and effect intact across the topics.

What this helps you practise: Building the multi-area reasoning that cross-unit questions demand.

How to use it well: Keeping a chain of inference coherent across topics is a high-level skill. Practise it deliberately.

Prompt 82: Design a Statistical Investigation

Copy this prompt into your AI tool:

> Ask me to design a statistical investigation to answer [question, e.g. 'do students who revise more sleep less?']. Require me to state the population, sample, sampling method, variables, suitable test, and how I'd guard against bias. Then critique my design.

What this helps you practise: Mastering statistical design, a source of marks across the statistics paper.

How to use it well: Designing investigations forces you to understand sampling and variables deeply — exactly what statistics questions test.

Prompt 83: Challenge My Reasoning

Copy this prompt into your AI tool:

> I'll make a mathematical claim and my reasoning for it about [topic, e.g. why a particular integral converges]. Your job is to challenge it — find the flaw, the missing step, or the better counter-argument — and push me to defend or revise my position.

What this helps you practise: Strengthening arguments by stress-testing them.

How to use it well: Having your reasoning challenged is uncomfortable and valuable. A claim that survives scrutiny is one you can defend in the exam.

Prompt 84: Choose the Right Method

Copy this prompt into your AI tool:

> Give me a problem in [topic] and a set of possible methods. Ask me which is most appropriate and to justify the choice (computational cost, applicability, elegance), then tell me if I'm right and why.

What this helps you practise: Applying mathematical judgement to decide between competing methods.

How to use it well: Top candidates often see a problem and pick the cleanest method. Practising 'which method here?' is itself a skill.

Prompt 85: Reflect on a Counterexample

Copy this prompt into your AI tool:

> Make a plausible-sounding mathematical claim about [topic, e.g. 'if a function is differentiable then it is continuous, and the converse holds']. Ask me to decide whether it's true, and if not to construct a counterexample. Then evaluate my reasoning.

What this helps you practise: Building the counter-example instinct that strengthens proofs and disproofs.

How to use it well: Counter-examples are the cheapest way to disprove a claim. Practising them sharpens your sense of what a definition requires.

Prompt 86: Solve a Novel Mechanics Problem

Copy this prompt into your AI tool:

> Give me a mechanics problem that I can only solve by combining two or more principles I've learned separately — for example, a question on a particle on a slope with friction that also requires energy considerations. Don't tell me which principles — let me work it out, then review my approach.

What this helps you practise: Combining principles to solve unfamiliar problems, the mark of mastery.

How to use it well: The hardest mechanics questions hide which knowledge to use. Practising 'which principle applies here?' is itself a skill.

Prompt 87: Run a Differential-Equation Model

Copy this prompt into your AI tool:

> Give me a real-world rate-of-change scenario (population, cooling, drug absorption) and ask me to set up and solve a differential equation modelling it. Then ask me to state the assumptions, interpret the solution, and judge when the model would break down.

What this helps you practise: Applying differential equations to real models and stating their limits.

How to use it well: Modelling marks are earned by stating each assumption and its limit. Always interpret the constants in context.

Prompt 88: Investigate Parameter Sensitivity

Copy this prompt into your AI tool:

> Give me a model with a parameter — for example y = e^(kx), or a binomial distribution with probability p — and ask me to investigate how the solution changes as the parameter varies. Push me to describe the behaviour analytically, not just from a single calculation.

What this helps you practise: Building the parameter-sensitivity instinct top-grade questions reward.

How to use it well: Parameter studies reveal the structure of a model. Always describe trends with mathematical reason, not just numbers.

T

Transform

Learning that isn't reviewed is learning that fades. The Transform stage uses AI to help you reflect on how you studied, log your mistakes, plan your next session, and schedule spaced reviews — turning effort today into memory that lasts to the exam.

Prompt 89: Review the Session

Copy this prompt into your AI tool:

> Summarise what I worked on in this session on [topic]. Tell me what now looks secure, what's still shaky, and what I should revisit — and schedule reviews at widening intervals (1 day, 3 days, 7 days, 14 days) — this is the rhythm the cognitive-science research on spacing shows beats forgetting. Before you schedule the reviews, ask me to compress the single biggest insight from this session into one sentence — the thing I want to remember next year, not just next week. That compression is the learning consolidating.

What this helps you practise: Consolidating a session and planning the right review timing.

How to use it well: Ending each session with a review-and-schedule step is what turns effort into lasting memory.

Prompt 90: Build a Spaced-Repetition Schedule

Copy this prompt into your AI tool:

> Help me build a spaced-repetition schedule for [topic or set of topics] running up to my exam on [date]. Space the reviews so I revisit each topic at widening intervals, and tell me what to do on each review day (formulae Monday, technique practice Tuesday, mixed problems Wednesday).

What this helps you practise: Scheduling reviews at the intervals that beat forgetting.

How to use it well: Spacing is one of the most powerful study principles there is. A schedule removes the guesswork and the cramming.

Prompt 91: Build an Error Log

Copy this prompt into your AI tool:

> Help me set up an error log for AP Mathematics. Give me a simple structure to record each mistake (question, my working, the correct working, the cause: sign error, wrong identity, misread, method choice). Then take this mistake I just made — [describe it] — and show me how to log it.

What this helps you practise: Turning mistakes into a targeted, personal revision resource.

How to use it well: Your errors are the most efficient thing you can revise. A good log makes sure you actually learn from each one.

Prompt 92: Plan Tomorrow from Today's Gaps

Copy this prompt into your AI tool:

> Based on the gaps we found in today's session — [list them] — build me a focused plan for tomorrow's revision: what to do, in what order, and how long on each, with the biggest weakness first.

What this helps you practise: Converting today's diagnosis directly into tomorrow's action.

How to use it well: A plan built from real diagnosed gaps beats a generic timetable every time. Let the evidence drive the plan.

Prompt 93: Run a Metacognitive Check

Copy this prompt into your AI tool:

> Ask me reflective questions about how I just studied [topic]: did I work on technique or just re-read, did I attempt problems before reading the solution, where did I lose focus? Then suggest one change to my method.

What this helps you practise: Becoming aware of, and improving, how you study.

How to use it well: Studying smarter starts with noticing how you study now. One honest change per week compounds quickly.

Prompt 94: Set Up a Progress Tracker

Copy this prompt into your AI tool:

> Help me create a simple progress tracker for AP Mathematics: a list of all my topics (across pure, statistics and mechanics) with a confidence rating for each that I can update over time. Suggest how often to revisit and update it.

What this helps you practise: Keeping a clear, evolving picture of where you stand.

How to use it well: A tracker stops you over-revising comfortable topics and neglecting weak ones. Update it honestly after each session.

Prompt 95: Find My Recurring Mistakes

Copy this prompt into your AI tool:

> Here are several mistakes I've made recently: [paste or describe them]. Look for the pattern — is there a recurring type of error (sign errors when integrating, dropping the ± on a square root, calculator in the wrong mode, treating limits at infinity loosely) — that I keep repeating?

What this helps you practise: Spotting the systematic weakness behind scattered errors.

How to use it well: Individual mistakes are noise; the pattern is signal. Fixing one recurring flaw can lift marks across many questions.

Prompt 96: Plan a Timetable to the Exam

Copy this prompt into your AI tool:

> Work backwards from my exam date [date] to build a realistic AP Mathematics revision timetable across pure, statistics and mechanics: [list]. Build in review days, weak-topic time, and full past-paper practice near the end.

What this helps you practise: Turning a daunting syllabus into a paced, finishable plan.

How to use it well: Working back from the exam date keeps the plan realistic. Protect the review and past-paper days — don't let content crowd them out.

Prompt 97: Analyse a Mock Paper

Copy this prompt into your AI tool:

> Here are my results and the questions I dropped marks on in a recent mock: [paste]. Help me analyse it: which topics, which question types (method, justification, modelling, interpretation), and which skills cost me marks, and what I should prioritise as a result.

What this helps you practise: Mining a mock for everything it can tell you.

How to use it well: A mock is a diagnostic, not a verdict. The marks you dropped are a precise map of what to revise next.

Prompt 98: Turn Weaknesses into a To-Do List

Copy this prompt into your AI tool:

> Take everything we've identified as weak across my recent sessions — [summarise] — and turn it into a concrete, prioritised to-do list of specific revision actions, not vague intentions (for example: 'do 10 integration-by-parts questions from past papers and log every sign error').

What this helps you practise: Converting fuzzy weaknesses into clear next actions.

How to use it well: 'Revise calculus' is vague; 'do five chain-rule questions and one optimisation problem' is an action. Make every item doable.

Prompt 99: Establish a Brain-Dump Routine

Copy this prompt into your AI tool:

> Teach me a brain-dump routine for [topic, e.g. trigonometric identities or kinematics]: I write everything I can recall from memory (formulae, methods, common pitfalls), you check it against what I should know, and we reflect on what was missing and why. Help me make this a regular habit.

What this helps you practise: Combining free-recall retrieval with reflective review.

How to use it well: The brain dump is pure retrieval; the check-and-reflect is where it sharpens. Doing it regularly builds both memory and self-awareness.

Prompt 100: Consolidate the Week

Copy this prompt into your AI tool:

> It's the end of my study week. I covered [list topics]. Run a consolidation: a quick mixed quiz across all of them, a note of what improved and what's slipping, and a plan for what next week should prioritise.

What this helps you practise: Closing each week with review, reflection, and re-planning.

How to use it well: A weekly consolidation stops topics quietly fading and keeps your plan responsive to how you're actually progressing.

Final Closing Note

You have now worked through 100 prompts designed to help you think more clearly, revise more effectively, and prepare more confidently for your AP Calculus AB exams.

Remember: the goal was never to rely on AI for answers. It was to use AI as a tool to test, challenge, and strengthen your own understanding. The strongest students are not those who avoid difficulty, but those who engage with it deliberately. Each gap you found, each explanation you improved, and each mistake you corrected has strengthened your thinking.

As you continue, aim to depend less on the prompts and more on your own judgement. AI can support you — but your reasoning, clarity, and persistence are what earn the marks.

Approach your exams calmly. Think carefully. Write clearly. You are more prepared than you think.

Using AI Beyond This Book

The prompts in this book are starting points, not final forms. As you grow more confident, begin to modify them:

- Add constraints, for example “limit your answer to three key points”.
- Increase the difficulty gradually as you improve.
- Ask the AI to challenge your reasoning rather than agree with it.
- Request alternative explanations when the first doesn't click.
- Ask it to critique your thinking instead of handing you the answer.

The most powerful use of AI is not asking it to tell you things — it is asking it to test and refine your thinking. Treat AI as a tutor, not a shortcut. The skill of asking better questions will keep mattering long after these exams are over.

About the Velvet Method

The Velvet Method is a study system built by teachers who believe that AI, used well, can give every student the kind of personalised support that was once the preserve of expensive private tutoring.

Our resources are designed around cognitive science — retrieval practice, spaced repetition, schema-building, and metacognition — and around a single principle: AI should strengthen a student's thinking, never replace it.

Explore the full series of subject guides, free revision games and tools, and the Velvet Method course at aistudymethod.co.uk.

The Velvet Method Series

The 100 AI Prompts series supports students across GCSE, A-Level and IBDP. Every title is free to download.

GCSE

- English Language
- English Literature
- Mathematics
- Physics
- Biology
- Chemistry
- Geography
- History
- Computer Science
- Economics
- Business Studies
- Religious Studies
- Psychology
- French
- Spanish
- German

A-Level

- Mathematics
- Further Mathematics
- Physics
- Chemistry
- Biology
- Economics
- History
- Geography
- English Literature
- Psychology
- Computer Science
- Politics
- Business

IBDP

- Mathematics: Analysis & Approaches
- Mathematics: Applications & Interpretation
- Physics
- Chemistry
- Biology
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