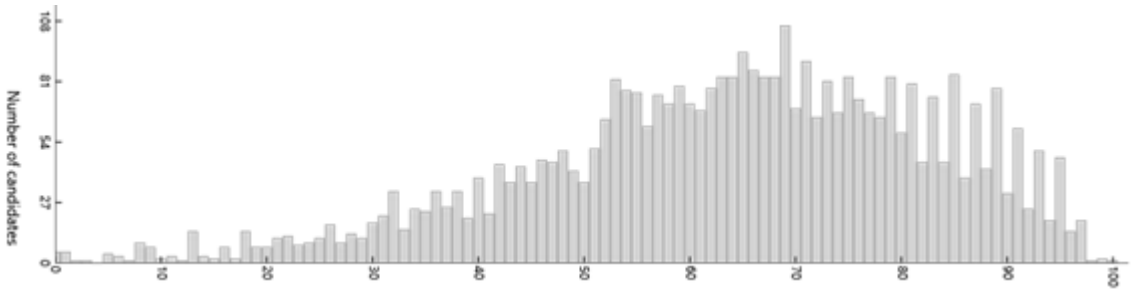
Summary report of the 2024 ATAR course examination report: Mathematics Methods

Year	Number who sat	Number of absentees
2024	3975	37
2023	3611	38
2022	3590	65
2021	3997	55

The number of candidates sitting and the number attempting each section of the examination can differ as a result of non-attempts across sections of the examination.

Examination score distribution



Summary

The examination consisted of two sections, Section One: Calculator-free and Section Two: Calculator-assumed. Most candidates were able to access all questions. The mean for Section One was lower than the mean for Section Two.

Attempted by 3973 candidates	Mean 63.72%	Max 100.00%	Min 0.00%
Section means were:			
Section One: Calculator-free	Mean 58.76%		
Attempted by 3972 candidates	Mean 20.57(/35)	Max 35.00	Min 0.00
Section Two: Calculator-assumed	Mean 66.39%		
Attempted by 3971 candidates	Mean 43.15(/65)	Max 65.00	Min 0.00

General comments

Candidates generally performed well in the examination. The main areas of weakness included: a lack of clear understanding of the rectilinear motion concepts; representing areas between curves using definite integrals; log laws, the manipulation of logarithm expressions and interpretation of logarithm related graphs; articulating worded explanations; and basic algebra skills.

Advice for candidates

- Take care when interpreting key words in context questions. For example, in Question 2 part (a) students were asked to determine the 'velocity of the graphic when it first appears on screen'. Many candidates associated the word 'first' with the number 1, and therefore incorrectly evaluated $v(1)$ rather than $v(0)$. In the context of the question, the graphic first appeared on screen at $t = 0$.
- Be careful to use radians when dealing with trigonometric functions, particularly in the context of calculus (differentiation and integration).

- Include appropriate units when answering questions related to an application/real world scenario.

Advice for teachers

- Ensure students clearly understand the difference between the concepts of distance and displacement, the concepts of speed and velocity, and their mathematical and graphical representations.
- Work on developing skills in articulating short written explanations. Students generally underperform when asked to explain.
- Encourage students to answer bias related questions with direct reference to the context rather than providing generic answers. In explaining a source of bias, it is essential to explain how one subset of the population is more or less likely to be sampled based on the sampling method presented.
- For optimisation questions specifying the use of calculus techniques, allocation of full marks requires that either the second derivative test or sign test be used to verify the nature of the stationary point/s.
- Ensure students have a thorough understanding of log laws and their application.
- Provide opportunities for students to practise determining areas between curves using definite integrals, particularly when the upper and/or lower bounds are made up of multiple functions.

Comments on specific sections and questions

Section One: Calculator-free (51 Marks)

Candidates generally found this section more challenging than Section Two. Errors stemmed from both limitations in conceptual understanding and technical skill. Some notable areas of weakness included the understanding of the key concepts/terms related to rectilinear motion, working with logarithmic functions and graphs, and algebraic skills in simplifying expressions.

Section Two: Calculator-assumed (100 Marks)

Candidates performed better in Section Two compared to Section One. The main challenges experienced by candidates were the use of log laws, representing areas using definite integrals, and providing worded explanations/justifications when required to do so.