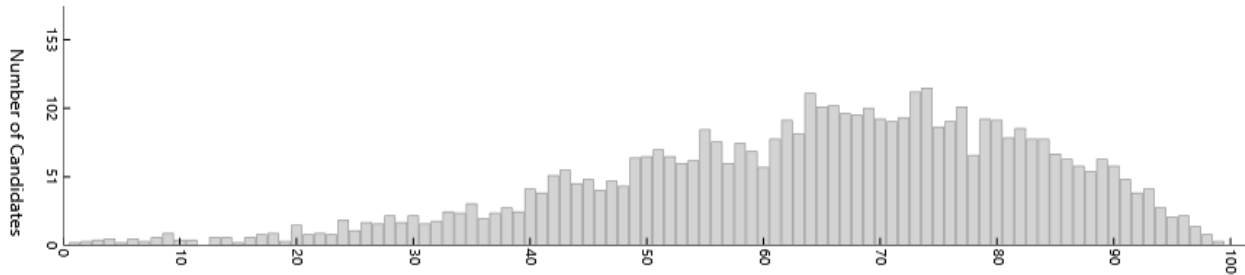




Summary report of the 2016 ATAR course examination: Mathematics Methods

| Year | Number who sat | Number of absentees |
|------|----------------|---------------------|
| 2016 | 4540 | 48 |

Examination score distribution



Summary

The mean for the whole paper was 64.15% with a standard deviation of 18.60%. Candidate scores for the examination ranged from 0.64% to 99.03%. The section means were: Section One: Calculator-free 61.48% with a standard deviation of 19.40%; and Section Two: Calculator-assumed 65.63% with a standard deviation of 19.29%.

Attempted by 4540 candidates

Mean 64.15%(/100) Max 99.03% Min 0.64%

Section means were:

Section One: Calculator-free

Mean 21.52(/35)

Max 35.00

Min 0.00

Section Two: Calculator-assumed

Mean 42.66(/65)

Max 64.36

Min 0.00

General comments

The correlation of the first section with the total was 0.93 and the second section 0.98. This was expected as candidates rely heavily on their CAS calculator. Candidates were not confident handling trigonometry calculus in the first section without their CAS calculators.

The examination was well attempted by candidates and accessible to most as is indicated by the high mean. Topics that were answered well were differentiation of polynomials together with use of product and quotient rules, normal probabilities and pdfs. Topics that were of concern were the use of log laws, curve sketching and applications of confidence intervals.

Advice for candidates

- Be aware of the facility of CAS calculators to determine mean, standard deviation and confidence intervals.
- Use overlapping confidence intervals to determine whether data can be modelled by the same population distribution and the exact trigonometry ratios of basic angles.

Advice for teachers

- Students were very good at determining confidence intervals but did not understand what they really represented.
- Many students had problems recognising the various ways that the fundamental theorem of calculus can be used.

Comments on specific sections and questions

Section One: Calculator-free

Attempted by 4540 candidates

Mean 21.52(/35) Max 35.00 Min 0.00%

Candidates found this section to be more difficult than Section Two. This was due, in some measure, to candidates not being prepared to handle trigonometry calculus and not being familiar with trigonometry ratios of basic angles. Curve sketching was attempted poorly, with some candidates being unable to make the connection between fundamental theorem and area calculations. Differentiation and integration of the exponential function was handled well.

Section Two: Calculator-assumed

Attempted by 4537 candidates

Mean 42.66(/65) Max 64.36 Min 0.00

The standard deviation for Section Two was 19.29%. Candidates showed great success in using basic probability rules and the use of binomial, normal and uniform probability distributions. Sample proportions were calculated, but many candidates were unable to explain their significance in solving problems in context. Many candidates calculated confidence intervals by hand instead of using their CAS calculators, which is time consuming. The application of calculus to velocity and acceleration was handled well.