EXAM PAPER

Mathematical Methods Unit 3 & 4 — Examination 1 (Practice 1)

PREVIEW
This file has the first 5 of the 9 questions in this paper. The rest is locked: it comes with a PrepNest plan, or with the paper itself for VCE.

Reading time: 15 minutes (no writing)
Writing time: 60 minutes
Total time: 75 minutes

SECTIONS IN THIS PAPER

- Examination 1 — technology-free — 60 min (no calculator)

INSTRUCTIONS

You are not permitted to write during reading time — you may only read the paper and plan your approach. Answer every question you can. Write your working in the space provided for long-answer questions. Marking guidance and full explanations are provided in the separate answer key.

Examination 1 — technology-free

60 minutes • No calculator

Question 1

(4 marks)

This question is about differentiation and antidifferentiation.

a. Let $y = x^2e^{3x}$. Find dy/dx. 2 marks

b. Let $f'(x) = (2x - 3)^4$. Find $f(x)$, given that $f(2) = 1$. 2 marks

Question 2

(3 marks)

The graph of $y = m/(x - a) + c$ has a vertical asymptote at $x = 2$, a y-intercept at $(0, 3)$ and an x-intercept at $(-1, 0)$, where a, c and m are integers.

a. State the value of a. 1 mark

b. Find the values of m and c. 2 marks

Question 3

(5 marks)

The discrete random variable X has the probability distribution shown below.

x:	0	1	2	3
Pr(X = x):	0.1	0.3	k	0.2

a. Find the value of k. 1 mark

b. Find E(X). 2 marks

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c. Find $\Pr(X \geq 2 \mid X \geq 1)$. 2 marks

Question 4

(4 marks)

Consider the function with rule $y = 2\sin(3x)$.

a. State the period of the function. 1 mark

b. Solve $2\sin(3x) = \sqrt{3}$ for x, where $x \in [0, \pi]$. 3 marks

Question 5

(5 marks)

Let $f(x) = 3x^2 - 6x$.

a. Find the x-intercepts of the graph of f. 2 marks

b. Find the area of the region enclosed by the graph of f and the x-axis. 3 marks

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6.

7.

8.

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9.

4 questions locked, up to question 9.

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PREVIEW

That’s the end of the preview

You’ve seen the first 5 of the 9 questions in Mathematical Methods Unit 3 & 4 — Examination 1 (Practice 1). The full paper is worth 40 marks.

STILL TO COME	QUESTIONS	MARKS
Examination 1 — technology-free	4	19

The full paper comes with

- Every question, printed exactly like the ones in this preview
- The complete answer key, with the working behind every mark
- A topic report after marking, showing what to practice next

Get the full paper at

prepnest.com.au/practice/exams/maths_methods-year_12-1-exam1

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