EXAM PAPER

Mathematical Methods Unit 1 & 2 — Practice Exam 2

PREVIEW
This file has the first 15 of the 30 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: 45 minutes
Total time: 60 minutes

SECTIONS IN THIS PAPER

- Mathematical Methods — 45 min

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.

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Mathematical Methods

45 minutes

1. What does f'(a) represent geometrically for a curve y = f(x)?

A. The y-value of the curve at x = a

B. The gradient of the tangent to the curve at x = a

C. The area under the curve up to x = a

D. The x-intercept of the curve

2. Find the gradient of $f(x) = x^2 - 4x + 3$ at x = 2.

A. −4

B. 0

C. 4

D. 3

3. Differentiate f(x) = 1/x (x ≠ 0).

A. $f'(x) = 1/x^2$

B. $f'(x) = -1/x$

C. f'(x) = x

D. $f'(x) = -1/x^2$

4. Differentiate $f(x) = (2x + 1)^2$ by first expanding it.

A. f'(x) = 4x + 2

B. f'(x) = 2(2x + 1)

C. f'(x) = 8x + 4

D. f'(x) = 4x + 4

5. A stationary point of a function f(x) occurs where:

A. f'(x) = 0

B. f(x) = 0

C. f''(x) = 0

D. f(x) is undefined

6. Differentiate f(x) = √x (x > 0).

A. f'(x) = 2x^(½)

B. f'(x) = ½x^(½)

C. f'(x) = x^(−½)

D. f'(x) = ½x^(−½)

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7. What does the second derivative f''(x) tell you about a function?

A. Its value at a point

B. The rate of change of the gradient (concavity)

C. Its x-intercepts

D. Its domain

8. Find f'(x) for $f(x) = 4x^3 - 6x^2 + 5x - 1$, then find the gradient of the curve at $x = 1$. Show your working.

9. Find the coordinates of the stationary point of $f(x) = x^2 - 6x + 8$. Show your working.

10. Differentiate $f(x) = 2x^4 - 3x^3 + x$, and evaluate $f'(-1)$.

11. Explain what the derivative of a function represents geometrically, and describe what it means when $f'(x) = 0$ at a point.

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12. What is the sample space when rolling a standard six-sided die?

A. {1, 2, 3}

B. {1, 2, 3, 4, 5, 6}

C. {0, 1, 2, 3, 4, 5}

D. {1, 3, 5}

13. What is the probability of rolling an even number on a fair six-sided die?

A. 1/6

B. 1/3

C. 1/2

D. 2/3

14. If events A and B are mutually exclusive, what is P(A or B)?

A. P(A) × P(B)

B. P(A) + P(B)

C. P(A) − P(B)

D. P(A) + P(B) − P(A and B)

15. If P(A) = 0.35, what is P(not A)?

A. 0.35

B. 0.65

C. 1.35

D. 0

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30.

15 questions locked, up to question 30.

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PREVIEW

That’s the end of the preview

You’ve seen the first 15 of the 30 questions in Mathematical Methods Unit 1 & 2 — Practice Exam 2. The full paper is worth 30 marks.

STILL TO COME	QUESTIONS	MARKS
Mathematical Methods	15	15

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_11-2

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