



Cambridge International AS & A Level

CANDIDATE
NAME
CENTRE
NUMBER

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CANDIDATE
NUMBER

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MATHEMATICS

9709/11

Paper 1 Pure Mathematics 1

May/June 2025

1 hour 50 minutes

You must answer on the question paper.

You will need: List of formulae (MF19)

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- If additional space is needed, you should use the lined page at the end of this booklet; the question number or numbers must be clearly shown.
- You should use a calculator where appropriate.
- You must show all necessary working clearly; no marks will be given for unsupported answers from a calculator.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.

INFORMATION

- The total mark for this paper is 75.
- The number of marks for each question or part question is shown in brackets [].

This document has **20** pages. Any blank pages are indicated.





[4]

[illegible]

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This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

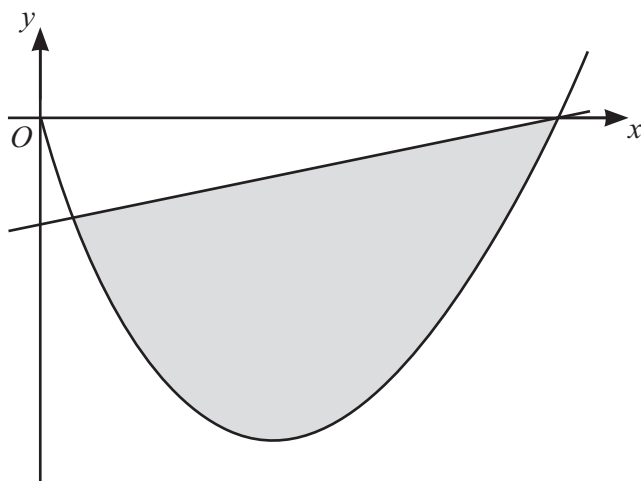


- (a) Find the tenth term of the progression. Give your answer correct to 3 significant figures. [5]

This image shows a full page of a document template designed for handwritten notes or essays. It features approximately 28 evenly spaced, thin grey horizontal lines across the entire width of the page. The margins are consistent on all sides, providing ample space for writing. There are no pre-printed questions, headings, or other markings on the page.

- (b)** Find the exact value of the sum to infinity of the progression. [2]

[illegible]



Find the area of the shaded region between the curve and the line.

[5]

[illegible]



- (i) $(2 - px)^5$ [2]

(i) $(2-px)^5$ [2]

[illegible]

$$\textbf{(ii)} \quad \left(1 - \frac{1}{2}x\right)^4 \qquad [2]$$

[illegible]

- (b) Given that the coefficient of x^2 in the expansion of $(2 - px)^5 \left(1 - \frac{1}{2}x\right)^4$ is 93, find the possible values of the constant p . [3]

[illegible]

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- This image shows a full page of a handwriting practice worksheet. It consists of multiple sets of three horizontal dotted lines, providing a guide for letter height and placement. The lines are evenly spaced across the entire page, leaving ample room for writing practice. There is no text or other markings on the page.



(b) Given instead that $p = 4$, find the set of values of k for which the curve and the line do not intersect. [5]

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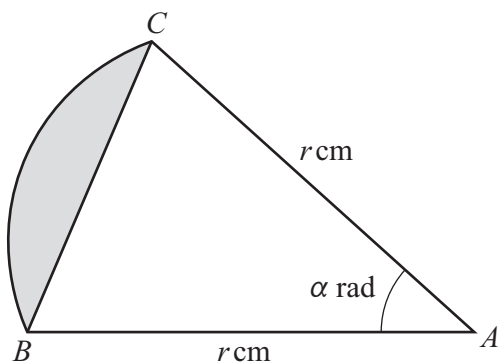


[5]

[illegible]

- Find the area of the triangle formed by the tangents to the circle at P and Q , and the line $x = -2$. [8]

This image shows a full page of primary-ruled paper. It features approximately 20 horizontal dotted lines spaced evenly down the page, providing a guide for handwriting practice. The paper is otherwise blank, with no margins, text, or other markings.



The diagram shows a sector ABC of a circle with centre A and radius r cm. The angle BAC is α radians, where $0 < \alpha < \frac{1}{2}\pi$.

- (a)** It is given that the area of the triangle ABC is 4 cm^2 and the area of the sector ABC is $8\alpha\text{ cm}^2$.

Find the exact area of the shaded segment.

[4]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



- Find the area of the shaded segment. Give your answer correct to 3 significant figures. [4]

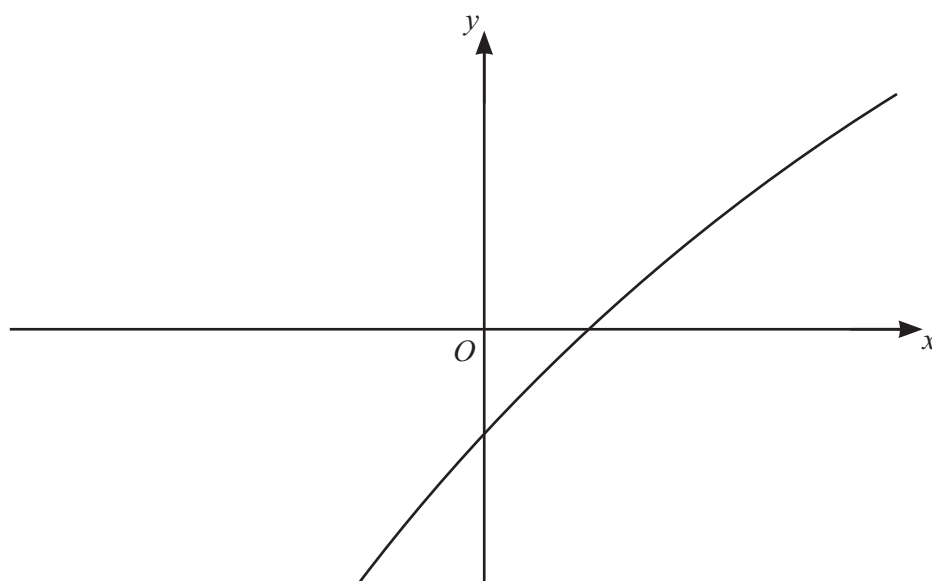
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This image shows a full page of white paper with horizontal dashed lines, typical of primary-ruled notebook paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

DO NOT

- (b)** On the diagram sketch the graph of $y = g^{-1}(x)$ together with any relevant mirror line. [2]



- (c) Find an expression for $g^{-1}(x)$. [2]

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- (d) State the range of g^{-1} . [1]

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The function h is defined by

$$h(x) = x - 2 \quad \text{for } x \geq 0.$$

- (e) Find the value of $g^{-1}h(4)$. [1]

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- (f) Explain why the composite function hg^{-1} cannot be formed. [1]

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[illegible]





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