



Cambridge International AS & A Level

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MATHEMATICS

9709/23

Paper 2 Pure Mathematics 2

May/June 2025

1 hour 15 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 50.
- The number of marks for each question or part question is shown in brackets [].

This document has **16** pages. Any blank pages are indicated.





[3]

[illegible]



- 2 (a) Sketch on the same diagram the graphs of $y = |2x - 9|$ and $y = 4x - 5$.

[2]

- (b) Solve the inequality $|2x - 9| < 4x - 5$.

[3]

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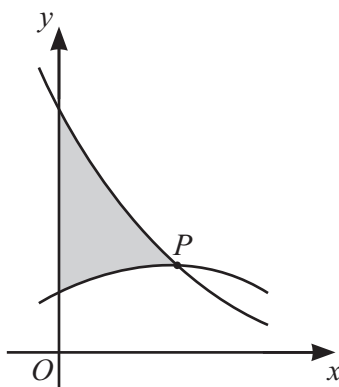
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[illegible]



4



The diagram shows parts of the curves with equations $y = 4e^{-2x}$ and $y = 1 + 0.5 \sin 3x$. Point P is a point of intersection of the curves, and the shaded region is bounded by the two curves and the y -axis.

- (a) Show that the x -coordinate of P satisfies the equation $x = -0.5 \ln(0.25 + 0.125 \sin 3x)$. [1]

[illegible]

- (b)** Use an iterative formula, based on the equation in part **(a)**, to find the x -coordinate of P correct to 4 significant figures. Use an initial value of 0.5 and give the result of each iteration to 6 significant figures. [3]

[illegible]

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.

$$p(x) = ax^4 + bx^3 + 13x^2 - 35x + 15,$$

where a and b are constants. It is given that $(2x - 1)$ and $(x - 3)$ are factors of $p(x)$.

(a) Find the values of a and b .

[4]

This image shows a full page of white paper with horizontal dashed lines, typical of primary school handwriting practice paper. The lines are evenly spaced and run across the entire width of the page. There are no margins, text, or other markings present.



(b) Hence factorise $p(x)$.

[3]

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(c) Find the least positive value of θ in radians such that $p(\cot 2\theta) = 0$.

[2]

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(a) Show that there is no point on the curve at which the y -coordinate is e^{-1} . [3]

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(b) Find the equation of the tangent to the curve at the point $(2, e^2)$. Give your answer in the form $y = mx + c$, where m and c are exact constants. [6]

[illegible]

[illegible]

[illegible]


$$12 \cos 2\phi \sin (2\phi + 30^\circ) = 5$$

[5]

[illegible]

[illegible]





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