



Cambridge International AS & A Level

CANDIDATE
NAME

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MATHEMATICS

9709/22

Paper 2 Pure Mathematics 2

February/March 2026

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. Do **not** use correction fluid or tape.
- 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.



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- 2 (a) Sketch, on the same diagram, the graphs of $y = |3x - 4|$ and $y = 7 - 10x$.

[2]

- (b) Solve the equation $|3x - 4| = 7 - 10x$.

[2]

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- (c) Hence, solve the equation $|3^{2t+1} - 4| = 7 - 10 \times 3^{2t}$. Give your answer correct to 3 significant figures.

[2]

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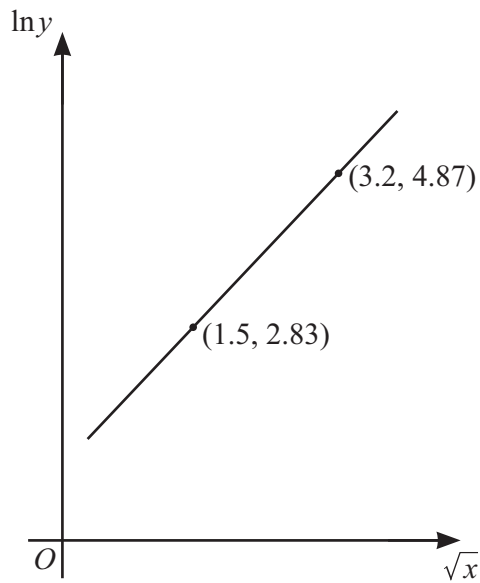
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3



The variables x and y satisfy the equation $y = ke^{a\sqrt{x}}$, where k and a are positive constants.

The graph of $\ln y$ against $\sqrt{x}$ is a straight line passing through the points $(1.5, 2.83)$ and $(3.2, 4.87)$, as shown in the diagram.

Find the values of k and a correct to 1 decimal place.

[5]

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4 A curve has equation

$$(x^2 - 3) \cos y + 4 \cos^3 y = 1.$$

Find the exact gradient of the curve at the point $(2, \frac{1}{3}\pi)$.

[6]

[illegible]

- 5 The polynomial $p(x)$ is defined by

$$p(x) = ax^3 + x^2 + (a+1)x + 1,$$

where a is a constant. It is given that the remainder is -3 when $p(x)$ is divided by $(2x+1)$.

- (a) Find the value of a .

[2]

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- (b) Hence, factorise the expression $p(x) + 3$.

[2]

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- (c) Solve the equation $\sin\left(\frac{1}{2 + \operatorname{cosec} \theta}\right) + 3 = 0$ to find the least positive value of θ in degrees. [2]

[illegible]



6 Find the exact value of $\int_{\frac{1}{2}\pi}^{\frac{1}{3}\pi} (4 \cos^2 2x + 3 \tan^2 x) dx$.

[6]

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9

[illegible]



7 It is given that $\int_a^{2a} \frac{1}{4} e^{2x} (2 + e^{-x}) dx = 50$, where a is a positive constant.

(a) Show that $a = \frac{1}{4} \ln(200 + e^a)$.

[5]

[illegible]



(b) Show by calculation that the value of a lies between 1.0 and 1.5.

[2]

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(c) Use an iterative formula, based on the equation in 7(a), to find the value of a correct to 4 significant figures. Give the result of each iteration to 6 significant figures.

[3]

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8 A curve has equation

$$y = \frac{10 + 2 \ln x}{1 + \ln x}.$$

The point on the curve for which $y = 4$ is denoted by P . The tangent to the curve at P meets the x -axis at the point Q .

Find the exact x -coordinate of Q .

[8]

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[illegible]



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