



Cambridge International AS & A Level

 CANDIDATE
NAME


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NUMBER

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MATHEMATICS

9709/21

Paper 2 Pure Mathematics 2

May/June 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 **12** pages.

- Determine the exact values of m and c . Give each value in the form $\frac{\ln p}{\ln q}$. [4]

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



2 (a) Solve the equation $|3x + 7| = |4x - 1|$. [3]

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(b) Hence, solve the equation $|3 \cot \theta + 7| = |4 \cot \theta - 1|$ for $0 < \theta < \pi$. Give each solution correct to 3 decimal places. [3]

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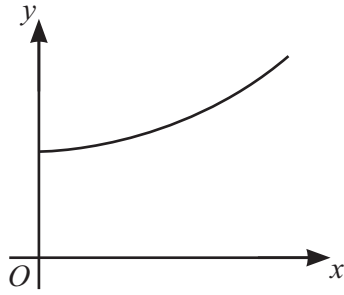
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3



The diagram shows the curve with equation $y = \sqrt{x^3 + 9}$ for $0 \leq x \leq 3$.

- (a) Use the trapezium rule with three intervals to find an approximate value of $\int_0^3 \sqrt{x^3 + 9} \, dx$.

Give your answer correct to 3 significant figures.

[3]

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- (b) State, with a reason, whether your answer to **3(a)** is an over-estimate or under-estimate of the true value of $\int_0^3 \sqrt{x^3 + 9} \, dx$.

[1]

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- [illegible]

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- This image shows a full page of a handwriting practice worksheet. It consists of multiple sets of three horizontal dashed 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.

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

$$p(x) = 2x^4 + 3x^3 + 4x^2 - 8x.$$

- (a) Find the quotient when $p(x)$ is divided by $(2x + 3)$, and show that the remainder is 21. [3]

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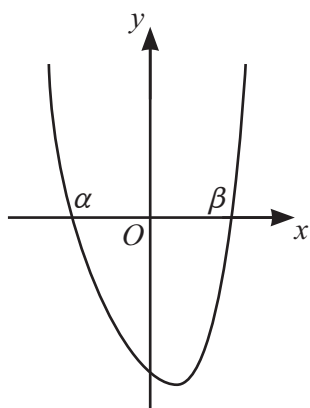
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The diagram shows the curve with equation $y = p(x) - 21$. The curve crosses the x -axis at the points $(\alpha, 0)$ and $(\beta, 0)$.

- (b) State the value of α , and show that β satisfies the equation $x = \sqrt[3]{7 - 2x}$. [2]

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- (c) Show by calculation that the value of β lies between 1.5 and 1.6. [2]

- (d) Use an iterative formula, based on the equation in **5(b)**, to find the value of β correct to 4 significant figures. Give the result of each iteration to 6 significant figures. [3]



$$x = 1 + 2e^{2t}, \quad y = \frac{e^t}{9 + e^{2t}}.$$

(a) Find an expression for $\frac{dy}{dx}$ in terms of t .

[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.



(b) Find the coordinates of M .

[3]

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(c) Find the gradient of the curve at the point for which $x = 33$.

[3]

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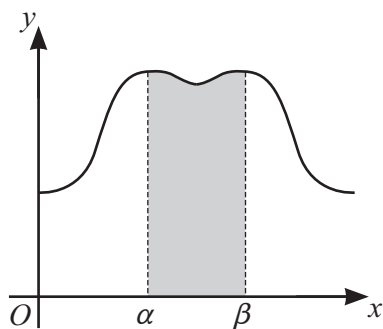
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7


$$y = 3 + \sin^2 2x - \cos 2x$$

for $0 \leq x \leq \pi$. The x -coordinates of the two maximum points on the curve are α and β . The shaded region is bounded by the curve, the x -axis and the lines $x = \alpha$ and $x = \beta$.

Find the exact area of the shaded region.

[9]

[illegible]

This image shows a full page of primary-ruled paper. It features approximately 20 evenly spaced horizontal dotted lines across the entire page, providing a guide for handwriting practice. The background is white, and there are no margins or additional markings.

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.

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