



# Cambridge International AS & A Level

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NAME
CENTRE  
NUMBER

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## MATHEMATICS

9709/22

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 **16** pages. Any blank pages are indicated.



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This image shows a full page of a notebook or worksheet. It features approximately 28 horizontal dotted lines spaced evenly down the page, providing a guide for handwriting practice. The lines are light gray and extend across the entire width of the page. There is no text or other markings on the page.

[4]

[illegible]



A graph showing the relationship between  $\ln y$  (vertical axis) and  $x$  (horizontal axis). The origin is labeled  $O$ . A straight line is drawn through two points:  $(1.5, 3.22)$  and  $(4.0, 4.69)$ .

The variables  $x$  and  $y$  satisfy the equation  $y = ka^{x+2}$ , where  $k$  and  $a$  are positive constants. The graph of  $\ln y$  against  $x$  is a straight line passing through the points  $(1.5, 3.22)$  and  $(4.0, 4.69)$ , as shown in the diagram.

Find the values of  $k$  and  $a$  correct to 2 significant figures. [5]

This image shows a full page of white paper with horizontal dotted lines, typical of notebook paper. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper. A faint watermark reading "Khan Academy" is visible diagonally across the middle-left portion of the page.

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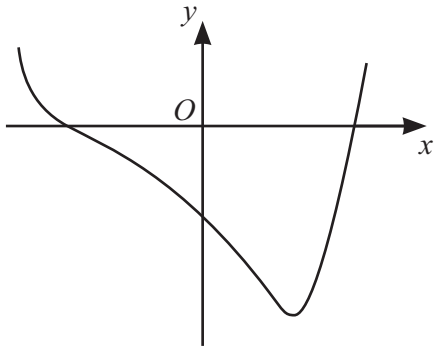
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[4]

[illegible]
$$\left| 4 \ln \left( \frac{1}{2} N \right) - 7 \right| \leq \left| 2 \ln \left( \frac{1}{2} N \right) + 3 \right|. \quad [3]$$
[illegible]



The diagram shows the curve with equation  $y = f(x)$ , where

$$f(x) = ax^4 + 4x^3 - 3ax^2 - 21x - 18$$

and  $a$  is a constant. It is given that  $(x + 2)$  is a factor of  $f(x)$ .

(a) Find the value of  $a$ .

[2]

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(b) Show that the positive root of the equation  $f(x) = 0$  satisfies the equation

$$x = \sqrt[3]{3x + 4.5}.$$

[3]

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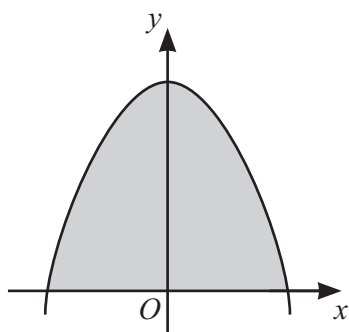




- (c) Use an iterative formula based on the equation  $x = \sqrt[3]{3x+4.5}$  to find the positive root of the equation  $f(x) = 0$  correct to 4 significant figures. Give the result of each iteration to 6 significant figures.

[3]



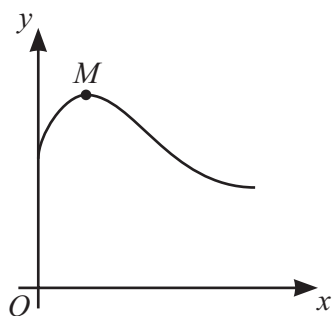


Find the exact area of the shaded region.

[7]

[illegible]

[illegible]



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[5]

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[illegible]



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