



## Cambridge International AS & A Level

CANDIDATE  
NAME

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CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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### MATHEMATICS

9709/32

Paper 3 Pure Mathematics 3

May/June 2020

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. Blank pages are indicated.



























(b) Use the iterative formula  $p_{n+1} = \tan^{-1}\left(\frac{1}{1+p_n}\right)$  to determine the value of  $p$  correct to 3 decimal places. Give the result of each iteration to 5 decimal places. [3]

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(c) Hence find the value of  $k$  correct to 2 decimal places. [2]

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The line through  $M$  and  $N$  intersects the line through  $O$  and  $B$  at the point  $P$ .

(b) Find the position vector of  $P$ . [3]

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(c) Calculate angle  $OPM$ , giving your answer in degrees. [3]

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