

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Pearson Edexcel
International
Advanced Level

Centre Number

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Candidate Number

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Wednesday 7 November 2018

Morning (Time: 2 hours 30 minutes)

Paper Reference **WMA02/01**

Core Mathematics C34

Advanced

You must have:

Mathematical Formulae and Statistical Tables (Blue)

Total Marks

Candidates may use any calculator allowed by the regulations of the Joint Council for Qualifications. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulae stored in them.

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B). Coloured pencils and highlighter pens must not be used.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions and ensure that your answers to parts of questions are clearly labelled.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- You should show sufficient working to make your methods clear. Answers without working may not gain full credit.
- When a calculator is used, the answer should be given to an appropriate degree of accuracy.

Information

- The total mark for this paper is 125.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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10.

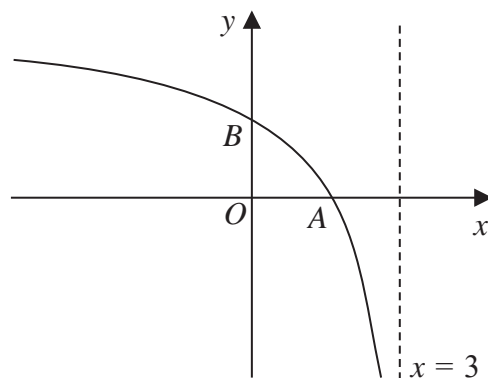


Figure 2

Figure 2 shows a sketch of part of the graph with equation $y = g(x)$, where

$$g(x) = \frac{3x - 4}{x - 3}, \quad x \in \mathbb{R}, \quad x < 3$$

The graph cuts the x -axis at the point A and the y -axis at the point B , as shown in Figure 2.

(a) State the range of g . (1)

(b) State the coordinates of

(i) point A

(ii) point B (2)

(c) Find $gg(x)$ in its simplest form. (3)

(d) Sketch the graph with equation $y = |g(x)|$

On your sketch, show the coordinates of each point at which the graph meets or cuts the axes and state the equation of each asymptote. (3)

(e) Find the exact solution of the equation $|g(x)| = 8$ (3)

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Question 10 continued

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Q10

(Total 12 marks)



11. Relative to a fixed origin O , the line l_1 is given by the equation

$$l_1: \mathbf{r} = \begin{pmatrix} 2 \\ 3 \\ -1 \end{pmatrix} + \lambda \begin{pmatrix} -1 \\ 4 \\ 3 \end{pmatrix}$$

where λ is a scalar parameter.

The line l_2 passes through the origin and is parallel to l_1

(a) Find a vector equation for l_2 (2)

The point A and the point B both lie on l_1 with parameters $\lambda = 0$ and $\lambda = 3$ respectively.

Write down

(b) (i) the coordinates of A ,
 (ii) the coordinates of B . (2)

(c) Find the size of the acute angle between OA and l_1
 Give your answer in degrees to one decimal place. (3)

The point D lies on l_2 such that $OABD$ is a parallelogram.

(d) Find the area of $OABD$, giving your answer to the nearest whole number. (3)

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Question 11 continued

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Q11

(Total 10 marks)



12.

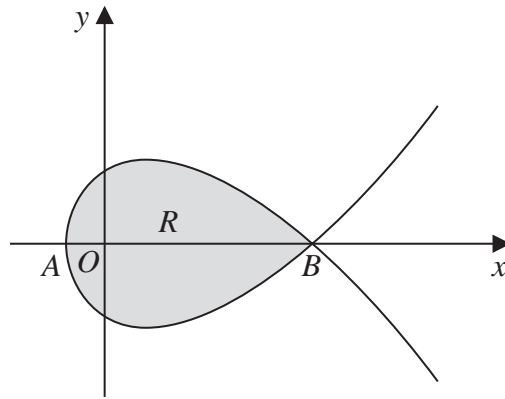


Figure 3

Figure 3 shows a sketch of part of the curve C with parametric equations

$$x = 7t^2 - 5, \quad y = t(9 - t^2), \quad t \in \mathbb{R}$$

- (a) Find an equation of the tangent to C at the point where $t = 1$

Write your answer in the form $ax + by + c = 0$, where a , b and c are integers. (5)

The curve C cuts the x -axis at the points A and B , as shown in Figure 3

- (b) (i) Find the x coordinate of the point A .
 (ii) Find the x coordinate of the point B . (3)

The region R , shown shaded in Figure 3, is enclosed by the loop of the curve C .

- (c) Use integration to find the area of R . (5)

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