

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Centre Number

Candidate Number

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Pearson Edexcel International Advanced Level

Time 1 hour 30 minutes

Paper

reference

WMA11/01

Mathematics

**International Advanced Subsidiary/Advanced Level
Pure Mathematics P1**

You must have:

Mathematical Formulae and Statistical Tables (Yellow), calculator

Total Marks

Candidates may use any calculator permitted by Pearson regulations. 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).
- **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.
- Inexact answers should be given to three significant figures unless otherwise stated.

Information

- A booklet 'Mathematical Formulae and Statistical Tables' is provided.
- There are 10 questions in this question paper. The total mark for this paper is 75.
- 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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Pearson

1. Find

$$\int \left(\frac{8x^3}{5} - \frac{2}{3x^4} - 1 \right) dx$$

giving each term in simplest form.

(4)

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Question 1 continued

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Q1

(Total 4 marks)





Question 2 continued

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Blank area for writing answers, consisting of 20 horizontal lines.

(Total 6 marks)

Q2



Question 3 continued

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Question 3 continued

Lined area for writing the answer to Question 3.



Question 3 continued

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Q3

(Total 7 marks)



Question 4 continued

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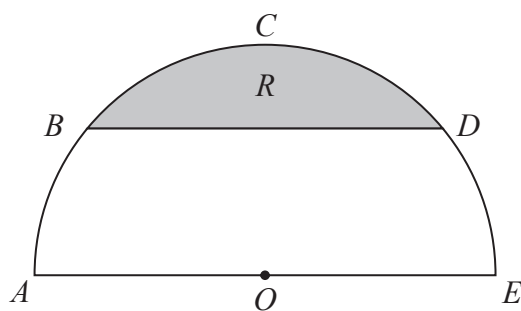
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Q4

(Total 7 marks)



5.



Not to scale

Figure 2

Figure 2 shows a plan view of a semicircular garden $ABCDEOA$

The semicircle has

- centre O
- diameter AOE
- radius 3 m

The straight line BD is parallel to AE and angle BOA is 0.7 radians.

- (a) Show that, to 4 significant figures, angle BOD is 1.742 radians.

(1)

The flowerbed R , shown shaded in Figure 2, is bounded by BD and the arc BCD .

- (b) Find the area of the flowerbed, giving your answer in square metres to one decimal place.

(3)

- (c) Find the perimeter of the flowerbed, giving your answer in metres to one decimal place.

(3)



Question 5 continued

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Question 5 continued

Handwriting practice area with 25 horizontal lines.



Question 5 continued

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Q5

(Total 7 marks)





Question 6 continued

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Question 6 continued

Lined area for writing the answer to Question 6.



Question 6 continued

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Lined area for writing the answer to Question 6.

(Total 11 marks)

Q6



7.

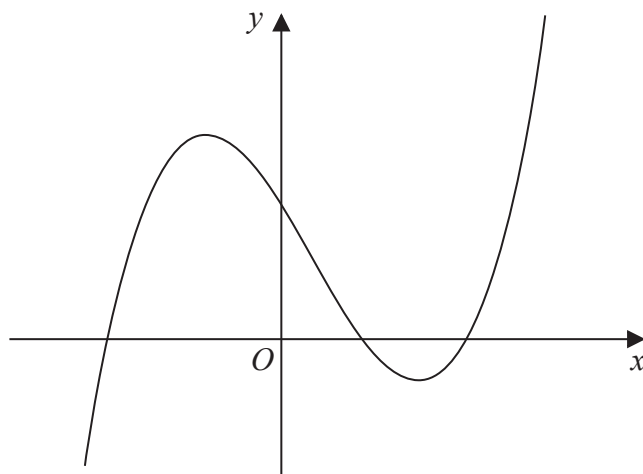


Figure 3

Figure 3 shows a sketch of part of the curve with equation $y = f(x)$, where

$$f(x) = (x + 4)(x - 2)(2x - 9)$$

Given that the curve with equation $y = f(x) - p$ passes through the point with coordinates $(0, 50)$

- (a) find the value of the constant p . (2)

Given that the curve with equation $y = f(x + q)$ passes through the origin,

- (b) write down the possible values of the constant q . (2)

- (c) Find $f'(x)$. (4)

- (d) Hence find the range of values of x for which the gradient of the curve with equation $y = f(x)$ is less than -18 (3)



Question 7 continued

Handwriting practice area with 30 horizontal lines.

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Question 7 continued

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Question 7 continued

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Lined area for writing the answer to Question 7.

(Total 11 marks)

Q7



Question 8 continued

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Question 8 continued

Lined area for writing the answer to Question 8.



Question 8 continued

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Q8

(Total 9 marks)



P 7 0 4 8 2 A 0 2 7 3 2

Question 9 continued

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Q9

(Total 4 marks)



P 7 0 4 8 2 A 0 2 9 3 2

10. The curve C has equation

$$y = \frac{1}{x^2} - 9$$

(a) Sketch the graph of C .

On your sketch

- show the coordinates of any points of intersection with the coordinate axes
- state clearly the equations of any asymptotes

(4)

The curve D has equation $y = kx^2$ where k is a constant.

Given that C meets D at 4 distinct points,

(b) find the range of possible values for k .

(5)

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Question 10 continued

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TOTAL FOR PAPER: 75 MARKS

END