Pearson Edexcel International Advanced Level

Tuesday 13 January 2026

Morning (Time: 1 hour 30 minutes)

Paper reference **WMA12/01A**

Mathematics

International Advanced Subsidiary/Advanced Level
Pure Mathematics P2
Question paper

You must have:
Answer book (sent separately).
Do not return this question paper with the answer book.

Turn over ▶

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P 8 7 5 9 3 A

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1. **In this question you must show all stages of your working.**
Solutions relying on calculator technology are not acceptable.

An arithmetic series has first term a and common difference d.

Given that the sum of the first 9 terms is 54

(a) show that

$$a + 4d = 6$$

(2)

Given also that the 8th term is half the 7th term,

(b) find the values of a and d.

(4)

(Total for Question 1 is 6 marks)

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2. **In this question you must show all stages of your working.**
Solutions relying on calculator technology are not acceptable.

A sequence is defined by

$$u_1 = 3$$

$$u_{n+1} = 2 - \frac{4}{u_n} \quad n \geqslant 1$$

Find the exact values of

(a) u_2, u_3 and u_4

(3)

(b) u_{61}

(1)

(c) $\sum_{i=1}^{99} u_i$

(2)

(Total for Question 2 is 6 marks)

3.

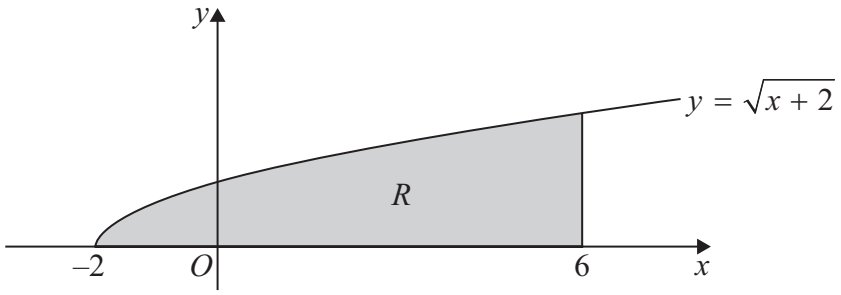

Figure 1

Figure 1 shows a sketch of part of the curve with equation $y = \sqrt{x+2}$ $x \geqslant -2$

The finite region R, shown shaded in Figure 1, is bounded by the curve, the x-axis and the line with equation $x = 6$

The table below shows corresponding values of x and y for $y = \sqrt{x+2}$

x	–2	0	2	4	6
y	0	1.4142	2	2.4495	2.8284

(a) Use the trapezium rule, with all of the values of y in the completed table, to find an approximate value for the area of R, giving your answer to 3 decimal places.

(3)

Use your answer to part (a) to find the approximate value of

(b) $\displaystyle\int_{-2}^{6} (2x + \sqrt{4x+8})\,\mathrm{d}x$

(3)

(Total for Question 3 is 6 marks)

4. **In this question you must show all stages of your working.**
Solutions relying on calculator technology are not acceptable.

$$f(x) = 3x^3 + ax^2 + bx - 10$$

Given that $(x - 2)$ is a factor of $f(x)$,

(a) use the factor theorem to show that $2a + b = -7$

(2)

Given also that when $f(x)$ is divided by $(x + 1)$ the remainder is -36

(b) find the value of a and the value of b.

(4)

(c) Hence find the quotient and remainder when $f(x)$ is divided by $(x - 5)$

(3)

(Total for Question 4 is 9 marks)

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5. **In this question you must show all stages of your working.**
Solutions relying on calculator technology are not acceptable.

Given that k is a constant and

$$\int_2^4 \left(\frac{4}{\sqrt{x}} + k \right) dx = 30$$

find the exact value of k.

(5)

(Total for Question 5 is 5 marks)

6.

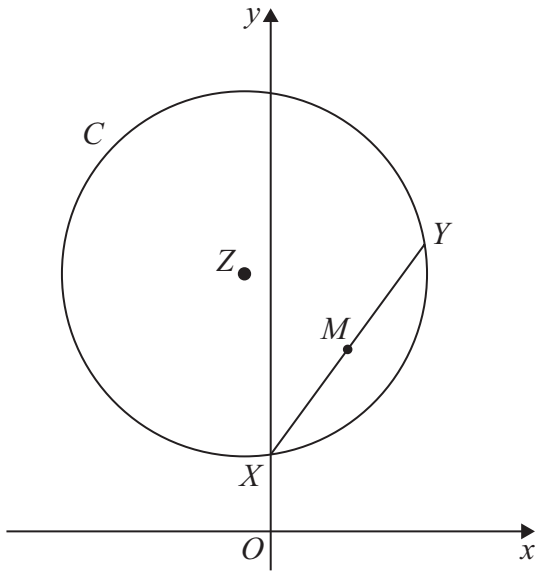

Diagram **NOT** drawn to scale

Figure 2

Figure 2 shows a circle C with centre Z

Points X and Y lie on C and have coordinates (0, 3) and (6, 11) respectively.

Given that M is the midpoint of XY

(a) Find an equation for the straight line which passes through Z and M, giving your answer in the form $ax + by + d = 0$ where a, b and d are integers.

(4)

Given that the y coordinate of Z is 10

(b) Find the x coordinate of Z

(2)

(c) Hence find an equation of C

(3)

The point W lies on C such that angle $WXY = 90°$

(d) Find the coordinates of W

(2)

(Total for Question 6 is 11 marks)

7.

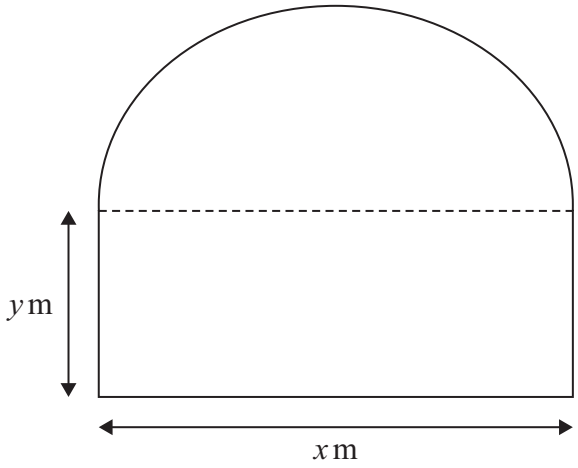

Diagram **NOT** drawn to scale

Figure 3

In this question you must show all stages of your working.
Solutions relying entirely on calculator technology are not acceptable.

Figure 3 shows the plan view of a garden. The shape of this garden consists of a rectangle joined to a semicircle.

The rectangle has length x metres and width y metres.

The area of the garden is $100\,\text{m}^2$.

(a) Show that the perimeter, P metres, of the garden is given by

$$P = \frac{1}{4}x(4 + \pi) + \frac{200}{x}$$

(4)

(b) Use calculus to find the exact value of x for which the perimeter of the garden is a minimum.

(3)

(c) Justify, by further use of calculus, that the value of x found in part (b) gives a minimum value for P.

(2)

(d) Find the minimum perimeter of the garden, giving your answer in metres to one decimal place.

(2)

(Total for Question 7 is 11 marks)

8. **In this question you must show all stages of your working.**
Solutions relying on calculator technology are not acceptable.

Given the first three terms of a geometric sequence are

$$2\sin\theta,\ \cos\theta \text{ and } 1+\sin\theta$$

where θ is a constant

(a) show that

$$3\sin^2\theta + 2\sin\theta - 1 = 0$$

(3)

Given that θ is acute,

(b) use trigonometric identities to find the exact value of the second term in the sequence.

(3)

(c) find the value of the 11th term in the sequence.

(3)

(Total for Question 8 is 9 marks)

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9. **In this question you must show all stages of your working.**
Solutions relying on calculator technology are not acceptable.

Given that a and b are positive constants, solve the simultaneous equations

$$ab = 25$$

$$\log_4 a - \log_4 b = 3$$

Show each step of your working, giving exact values for a and b.

(4)

(Total for Question 9 is 4 marks)

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10. **In this question you must show all stages of your working.**
Solutions relying entirely on calculator technology are not acceptable.

The binomial expansion, in ascending powers of x, of $(1 + kx)^n$ is

$$1 + 36x + 567x^2 + px^3 + ...$$

where k and p are non-zero constants and n is an integer greater than 1.

(a) Use this information to set up and solve two simultaneous equations to find the value of k and the value of n.

(6)

(b) Hence find the value of p.

(2)

(Total for Question 10 is 8 marks)

TOTAL FOR PAPER IS 75 MARKS

Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel International Advanced Level

Tuesday 13 January 2026

Morning (Time: 1 hour 30 minutes)

Paper reference **WMA12/01A**

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Mathematics

International Advanced Subsidiary/Advanced Level
Pure Mathematics P2
Answer Book

You must have:
Question paper (sent separately).
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.
- If you change your mind about an answer, cross it out and put your new answer and any working underneath.

Turn over ▶

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Question 1

Write the answer to Question 1 on these 2 pages

DO NOT WRITE IN THIS AREA

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DO NOT WRITE IN THIS AREA

Question 1 continued

This is the end of Question 1 answer space. Please turn the page for Question 2 answer space.

(Total for Question 1 is 6 marks)

Question 2

Write the answer to Question 2 on these 2 pages

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DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 2 continued

This is the end of Question 2 answer space. Please turn the page for Question 3 answer space.

(Total for Question 2 is 6 marks)

Question 3

Write the answer to Question 3 on these 2 pages

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DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 3 continued

This is the end of Question 3 answer space. Please turn the page for Question 4 answer space.

(Total for Question 3 is 6 marks)

Question 4

Write the answer to Question 4 on these 2 pages

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DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 4 continued

This is the end of Question 4 answer space. Please turn the page for Question 5 answer space.

(Total for Question 4 is 9 marks)

Question 5

Write the answer to Question 5 on these 2 pages

DO NOT WRITE IN THIS AREA

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DO NOT WRITE IN THIS AREA

Question 5 continued

This is the end of Question 5 answer space. Please turn the page for Question 6 answer space.

(Total for Question 5 is 5 marks)

Question 6

Write the answer to Question 6 on these 2 pages

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DO NOT WRITE IN THIS AREA

Question 6 continued

This is the end of Question 6 answer space. Please turn the page for Question 7 answer space.

(Total for Question 6 is 11 marks)

Question 7

Write the answer to Question 7 on these 4 pages

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Question 7 continued

Question 7 continued

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Question 7 continued

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(Total for Question 7 is 11 marks)

Question 8

Write the answer to Question 8 on these 2 pages

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Question 8 continued

This is the end of Question 8 answer space. Please turn the page for Question 9 answer space.

(Total for Question 8 is 9 marks)

Question 9

Write the answer to Question 9 on these 2 pages

Question 9 continued

This is the end of Question 9 answer space. Please turn the page for Question 10 answer space.

(Total for Question 9 is 4 marks)

Question 10

Write the answer to Question 10 on these 3 pages

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 10 continued

Question 10 continued

(Total for Question 10 is 8 marks)

TOTAL FOR PAPER IS 75 MARKS

DO NOT WRITE IN THIS AREA

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