

Please write clearly in block capitals.

Centre number

Candidate number

Surname

Forename(s)

Candidate signature

I declare this is my own work.

INTERNATIONAL AS

MATHEMATICS

(9660/MA01) Unit P1 Pure Mathematics

Tuesday 6 January 2026

07:00 UK Time

Time allowed: 1 hour 30 minutes

Materials

- For this paper you must have the OxfordAQA Booklet of Formulae and Statistical Tables (enclosed).
- You may use a graphical calculator.

Instructions

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.

Advice

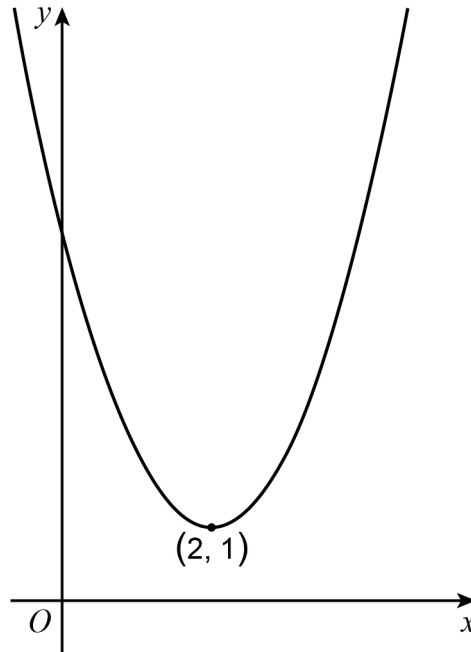
- Unless stated otherwise, you may quote formulae, without proof, from the booklet.
- Show all necessary working; otherwise marks may be lost.

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
TOTAL	

Answer **all** questions in the spaces provided.

- 1 (a)** **Figure 1** shows part of the curve C with equation $y = f(x)$

Figure 1



The curve C has a single minimum point at $(2, 1)$

- 1 (a) (i)** Find the coordinates of the minimum point of the curve with equation $y = f(4x)$

Circle your answer.

[1 mark]

(0.5, 1) (2, 0.25) (2, 4) (8, 1)

- 1 (a) (ii)** Find the coordinates of the minimum point of the curve with equation $y = 4f(x)$

Circle your answer.

[1 mark]

(0.5, 1) (2, 0.25) (2, 4) (8, 1)



1 (b) The curve D has equation $y = x^2 + 5x - 12$

The translation $\begin{bmatrix} -3 \\ -4 \end{bmatrix}$ maps D onto the curve with equation

$$y = x^2 + bx + c$$

where b and c are constants.

Find the value of b and the value of c

[4 marks]

[illegible]
$$b = \quad \quad \quad c =$$

6

Turn over for the next question

Turn over ►



The distance of A from the origin O is $\sqrt{146}$

[4 marks]

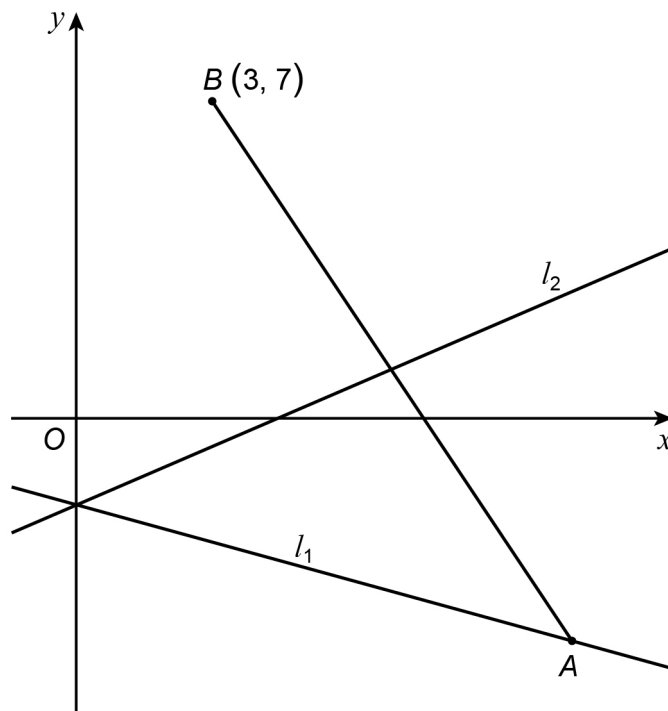
[illegible]

Answer _____

The lines l_1 and l_2 , the points A and B and the line segment AB are shown in **Figure 2**



Figure 2



Find the equation of l_2

Give your answer in the form $px + qy + r = 0$ where p , q and r are integers.

[4 marks]

Answer _____



3

Simplify $5(2xy^4)^3 x^2 \sqrt{y^7}$ Give your answer in the form $ax^b y^c$ where a , b and c are constants.**[3 marks]**

Answer _____

3

4 A curve has equation

$$y = (3k - 1)x^2 + (7k - 4)x + (k + 4)$$

where k is a constant.

The line with equation

$$y = (3k - 5)x$$

touches the curve at exactly one point.

4 (a) Show that the x -coordinate of the point at which the curve and line touch satisfies

$$(3k - 1)x^2 + (4k + 1)x + (k + 4) = 0$$

[2 marks]

4 (b) Find the possible values of k

[5 marks]

Answer _____

7

Turn over ►



- 5** The n th term u_n of a sequence is given by

$$u_n = 240 - 6n$$

The sequence has first term a and common difference d

- 5 (a)** Find the value of a and the value of d

[2 marks]

$$a = \quad d = \quad$$

- 5 (b)** The 13th term of the sequence is equal to 3 times the k th term.

Find the value of k

[2 marks]

$$k = \quad$$

- 5 (c)** Find the sum of the first 54 terms of the sequence.

[2 marks]

Answer



The first four terms in ascending powers of x of $(1+ax)^n$ are

$$1 + 24x + 270x^2 + bx^3$$

where a and b are constants and n is a positive integer.

Find the value of a , the value of b and the value of n

[7 marks]

[illegible]
$$a = \qquad b = \qquad n =$$

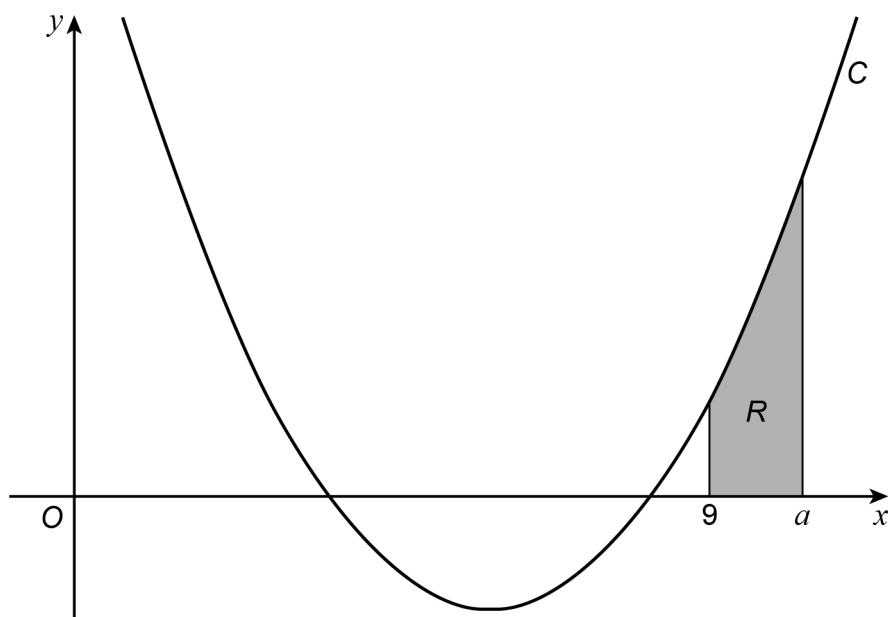
7

Turn over ►



- 7 **Figure 3** shows part of the curve C and the shaded region R

Figure 3



The equation of C is $y = 0.3x^2 - 3.6x + 9.2$

R is bounded by C , the x -axis and the lines $x = 9$ and $x = a$ where $a > 9$

- 7 (a) The area of R is 2.1 square units.

Show that a satisfies the equation

$$a^3 - 18a^2 + 92a - 120 = 0$$

[5 marks]



7 (b) (i) Use the Factor Theorem to show that $(a - 6)$ is a factor of $a^3 - 18a^2 + 92a - 120$

[2 marks]

7 (b) (ii) Hence, by expressing $a^3 - 18a^2 + 92a - 120$ as the product of three linear factors, find the value of a

[4 marks]

$a =$ _____



8

where $x > 0$

8 (a)

$$\frac{dy}{dx} =$$

8 (b)

[3 marks]

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[4 marks]

[illegible]

Answer

[3 marks]

$$2ax^2 + 7bx + 4c = 0$$

By completing the square show that

$$x = \frac{-7b \pm \sqrt{mb^2 - nac}}{4a}$$

[6 marks]

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10 The function f is defined by

$$f(x) = 10x\sqrt{x} - 18\sqrt{x} - 14 + \frac{4}{\sqrt{x}}$$

where $x > 0$

10 (a) Find $\int f(x) dx$

[4 marks]

Answer _____

10 (b) A curve C has equation $y = \int f(x) dx$ and passes through the point $(4, 23)$

Find the equation of C

[2 marks]

Answer _____



The first terms, common ratios and sums to infinity of two geometric series, W and X , are given in **Figure 4**

Geometric series	First term	Common ratio	Sum to infinity
W	a	r	2304
X	a	$\frac{3}{4}r$	1536

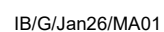
[8 marks]

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Answer

8



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ANSWER IN THE SPACES PROVIDED**



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