



Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2024

Centre Number

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Candidate Number

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Mathematics

Assessment Unit AS 1

assessing

Pure Mathematics

MV18

[SMT11]

THURSDAY 16 MAY, AFTERNOON

Time

1 hour 45 minutes, plus your additional time allowance.

Instructions to Candidates

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer **all nine** questions in the spaces provided.

Do not write on blank pages.

Complete in black ink only.

Questions which require drawing or sketching should be completed using an HB pencil.

All working should be clearly shown in the spaces provided.

Marks may be awarded for partially correct solutions. **Answers without working may not gain full credit.**

Answers should be given to three significant figures unless otherwise stated.

You are permitted to use a graphic or scientific calculator in this paper.

Information for Candidates

The total mark for this paper is 100.

Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.

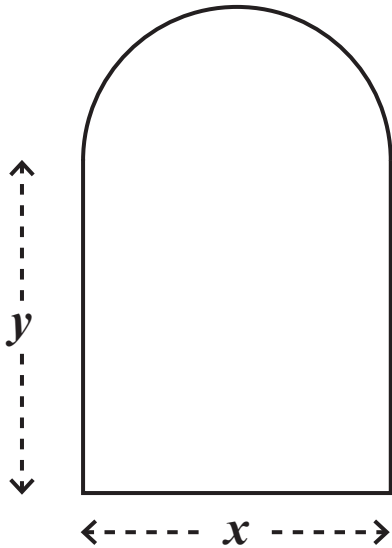
A copy of the **Mathematical Formulae and Tables booklet** is provided.

Throughout the paper the logarithmic notation used is $\ln z$, where it is noted that $\ln z \equiv \log_e z$.

Blank Page
(Questions start overleaf)

- 7 A single piece of wire is bent into a shape as shown in Fig.1 below

Fig.1



The wire forms the outline of three sides of a rectangle surmounted by a semi-circle.

The rectangle has width x cm and length y cm.

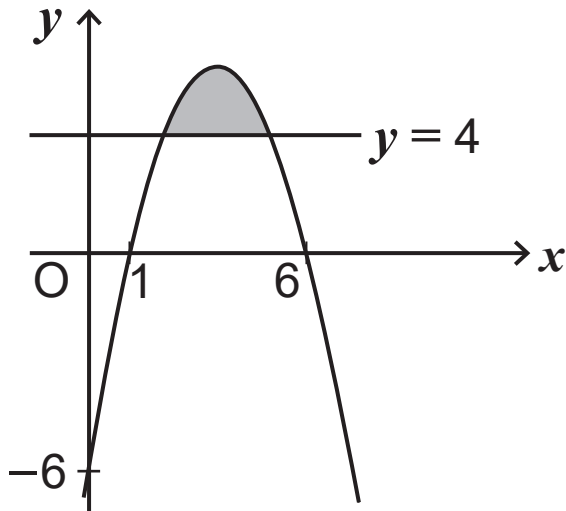
The wire is 8 cm long.

(i) Show that

$$y = 4 - \frac{x}{2} - \frac{\pi x}{4} \quad [4 \text{ marks}]$$

- 9 (a) Fig. 2 below shows a sketch of a quadratic curve and a straight line.

Fig. 2



The curve crosses the x -axis at $x = 1$ and $x = 6$

The curve crosses the y -axis at $y = -6$

The straight line has equation $y = 4$

Find the value of the shaded area. [11 marks]

SOURCES

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Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
Total Marks	

Examiner Number

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