



Cambridge IGCSE™

CANDIDATE
NAME

--

CENTRE
NUMBER

--	--	--	--	--

CANDIDATE
NUMBER

--	--	--	--



ADDITIONAL MATHEMATICS

0606/02

Paper 2

For examination from 2025

PRACTICE PAPER

2 hours

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should use a scientific calculator where appropriate.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- For π , use either your calculator value or 3.142.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [].

This document has **16** pages. Any blank pages are indicated.

- 1 Variables b and t are related by the equation $b = P + Qe^{2t}$ where P and Q are constants.
It is given that when $t = 0$, $b = 500$ and when $t = 1$, $b = 600$.

(a) Find the value of b when $t = 2$.

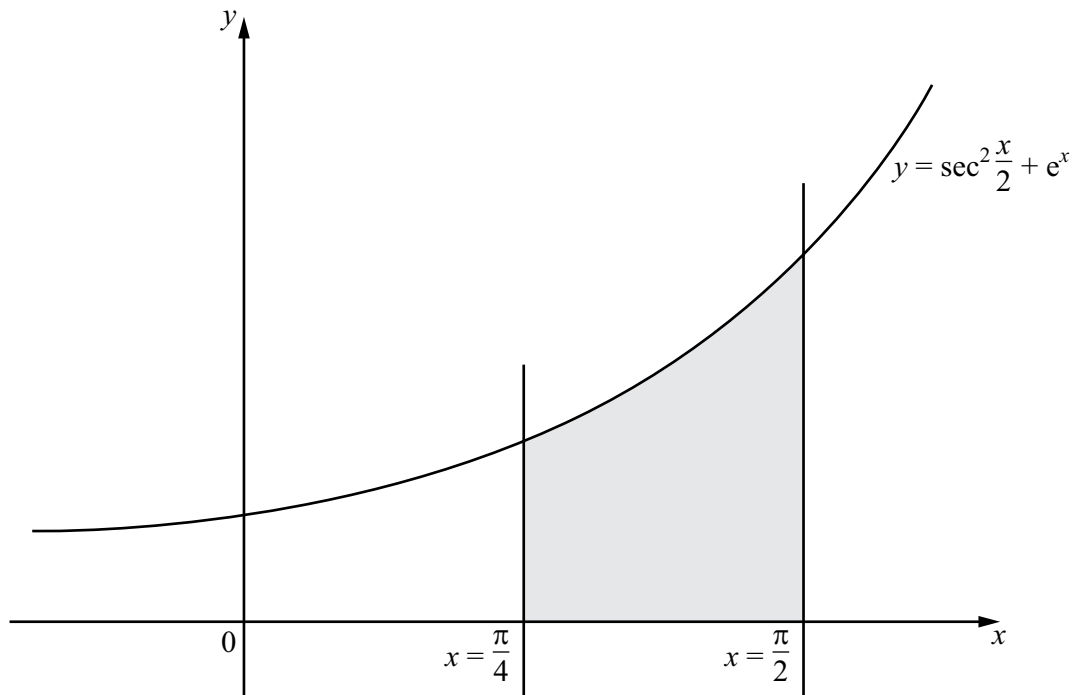
[5]

(b) Find the smallest value of t that gives a value of b greater than 2 000 000.

[3]

- 2 Find the coefficient of x^2 in the expansion of $\left(x - \frac{3}{x}\right)\left(x + \frac{2}{x}\right)^5$. [5]



3
R

The graph shows part of the curve $y = \sec^2 \frac{x}{2} + e^x$ and the lines $x = \frac{\pi}{4}$ and $x = \frac{\pi}{2}$.

Find the area of the shaded region.

Give your answer correct to 2 decimal places.

[5]

4 (a) In an arithmetic progression the first term is 176 and the tenth term is 149.



(i) Find the common difference of the progression.

[2]

(ii) Find the least number of terms for their sum to be negative.

[3]

(b) In a geometric progression the first term is 3 and the second term is 2.4.

(i) Find the sum of the first 8 terms of the progression. [3]

(ii) Find the sum to infinity of the progression. [1]

(iii) Starting with the 10th term, find the sum of 50 terms of the progression. [4]

- 5 (a) 4-digit numbers are to be formed using four of the digits 2, 3, 7, 8 and 9.
Each digit may be used once only in any 4-digit number.



(i) Find how many 4-digit numbers can be formed when there are no restrictions. [1]

(ii) Find how many 4-digit numbers can be formed when the number is even. [1]

(iii) Find how many 4-digit numbers can be formed when the number is greater than 7000 and odd. [3]

(b) Find the number of ways 12 people can be put into 3 groups containing 3, 4 and 5 people. [3]

6 A curve has equation $y = \frac{\ln(3x^2 - 5)}{2x + 1}$ for $3x^2 > 5$.

7

(a) Find the equation of the normal to the curve at the point where $x = \sqrt{2}$. [6]

(b) Find the approximate change in y as x increases from $\sqrt{2}$ to $\sqrt{2} + h$ where h is small. [1]

7 Solve the equation $5 \tan x - 3 \cot x = 2 \sec x$ for $0^\circ \leq x \leq 360^\circ$.

[6]



8 A curve has equation $y = (2x - 1)\sqrt{4x + 3}$.



(a) Show that $\frac{dy}{dx} = \frac{k(3x + 1)}{\sqrt{4x + 3}}$, where k is a constant.

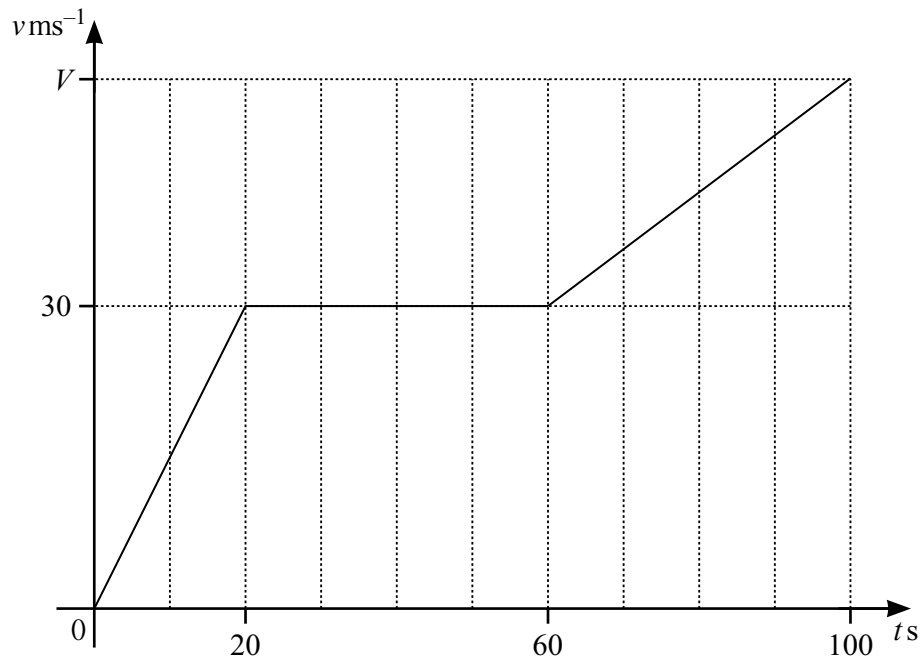
[5]

(b) Hence write down the x -coordinate of the stationary point of the curve.

[1]

(c) Determine the nature of this stationary point.

[2]

9
R

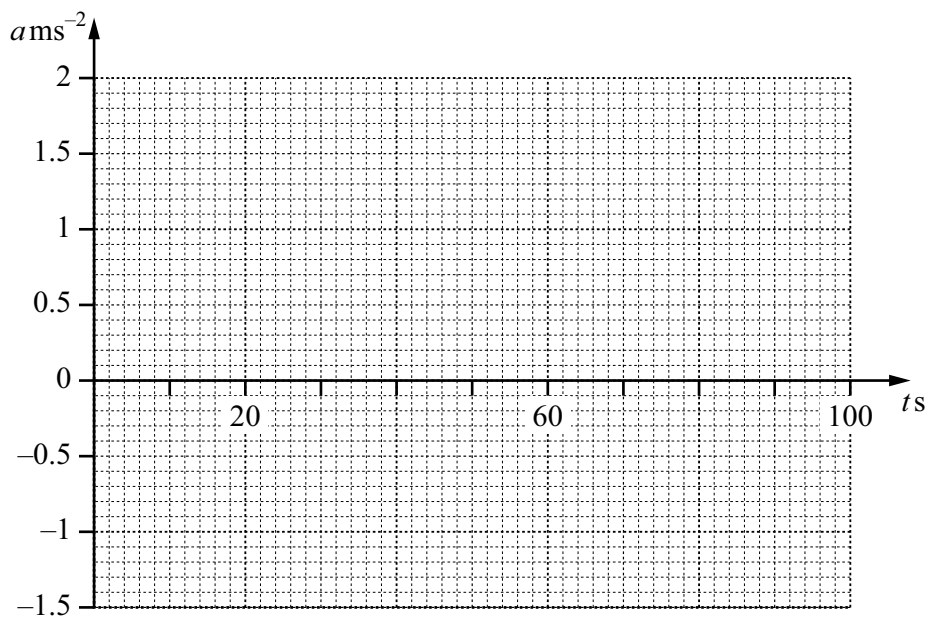
(a) The diagram shows the velocity–time graph of a particle P .
 P travels 3260 m in 100 s, reaching a final velocity of $V \text{ ms}^{-1}$.

(i) Find the value of V .

[3]

(ii) On the axes below, draw the acceleration–time graph for P .

[2]



(b) Particle Q is travelling in a straight line.

The acceleration, $a \text{ ms}^{-2}$, of Q is given by $a = 6 \cos 2t$ at time t s.

When $t = 0$, Q is at point O and is travelling with a velocity of 10 ms^{-1} .

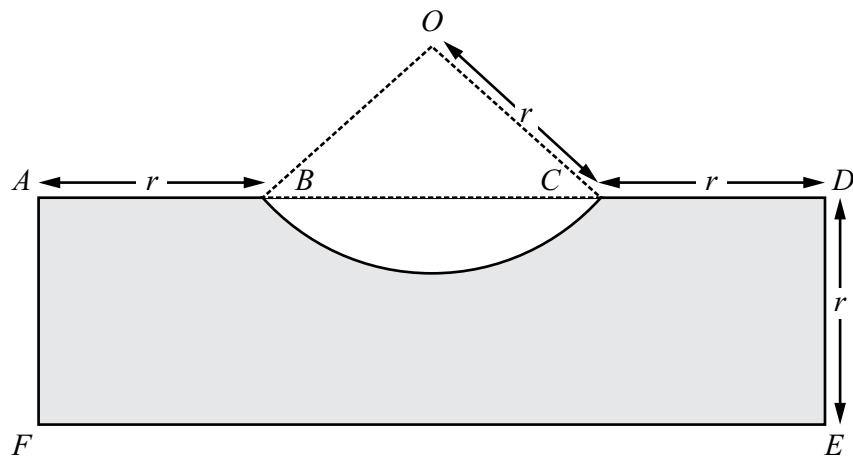
(i) Find the velocity of Q at time t .

[3]

(ii) Find the displacement of Q from O at time t .

[3]

10 In this question all lengths are in centimetres and all angles are in radians.



The diagram shows the rectangle $ADEF$, where $AF = DE = r$.

The points B and C lie on AD such that $AB = CD = r$.

The curve BC is an arc of the circle, centre O , radius r .

Arc BC has a length of $1.5r$.

(a) Show that the perimeter of the shaded region is $(7.5 + 2 \sin 0.75)r$.

[5]

(b) Find the area of the shaded region.

Give your answer in the form kr^2 , where k is a constant correct to 2 decimal places.

[4]