

Recognising and Sketching Graphs

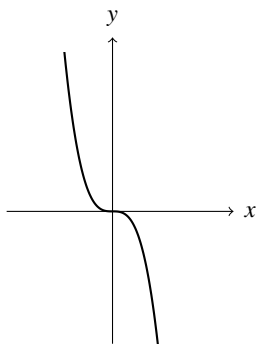
For Pearson Edexcel GCSE Mathematics (1MA1) • Higher tier

Name _____

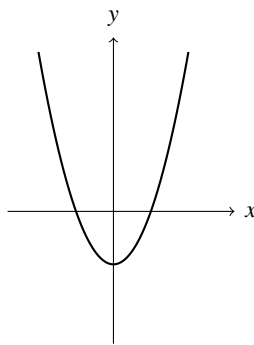
Total marks: **26**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

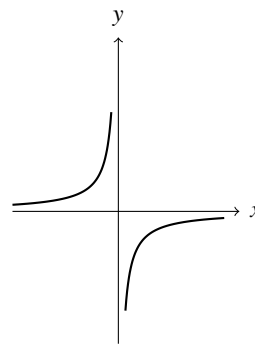
1 Here are four graphs.



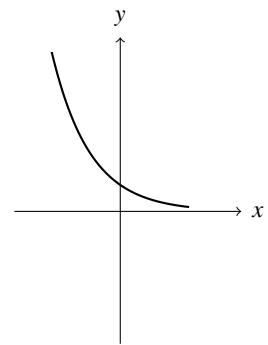
A



B



C



D

Match each equation to its graph.

$$y = x^2 - 2 \quad y = -x^3 \quad y = \left(\frac{1}{2}\right)^x \quad y = -\frac{1}{x}$$

(3)

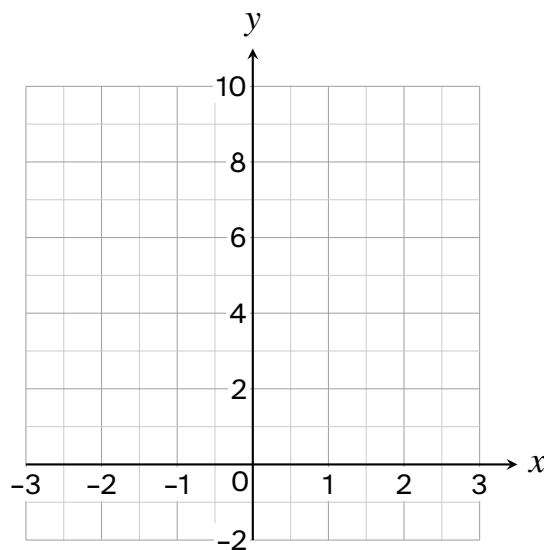
(Total for Question 1 is 3 marks)

- 2 The graph of $y = (x + a)^2 + b$ has a turning point at $(4, -6)$
Write down the value of a and the value of b .

$a = \dots\dots\dots$ $b = \dots\dots\dots$
(2)

(Total for Question 2 is 2 marks)

- 3 On the grid, draw a sketch of the graph of $y = 0.25^x$
Label the coordinates of the point where the graph meets the y-axis.



(2)

(Total for Question 3 is 2 marks)

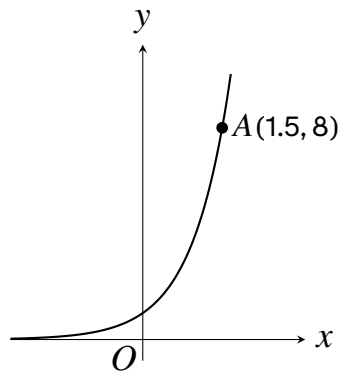
- 4 The graph of $y = a \times b^x$ passes through the points (0, 3) and (2, 12)
Find the values of a and b , where $b > 0$

$$a = \dots\dots\dots b = \dots\dots\dots$$

(3)

(Total for Question 4 is 3 marks)

- 5 The sketch shows part of the curve with equation $y = k^x$, where $k > 1$
The point $A(1.5, 8)$ lies on the curve.



- (a) Find the value of k .

$$k = \dots\dots\dots$$

(1)

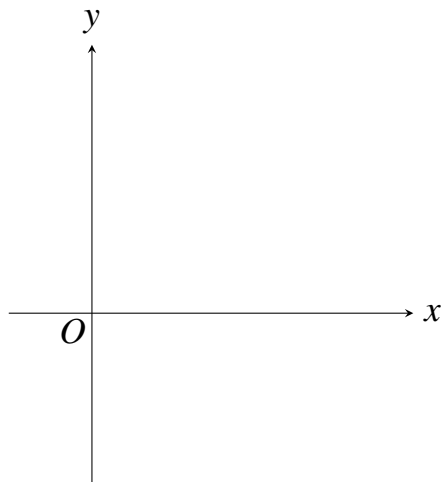
- (b) The point B on the curve has x -coordinate -0.5
Find the y -coordinate of B .

$$\dots\dots\dots$$

(1)

(Total for Question 5 is 2 marks)

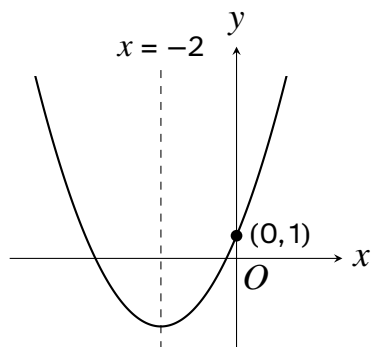
- 6 Sketch the graph of $y = x^2 - 6x + 5$
Show the coordinates of the turning point and any points where the graph crosses the axes.



(4)

(Total for Question 6 is 4 marks)

7 Here is a sketch of a curve.



The curve has equation $y = x^2 + ax + b$

The line $x = -2$ is a line of symmetry of the curve.

The curve crosses the y -axis at $(0, 1)$.

Find the coordinates of the turning point of the curve.

(..... ,)

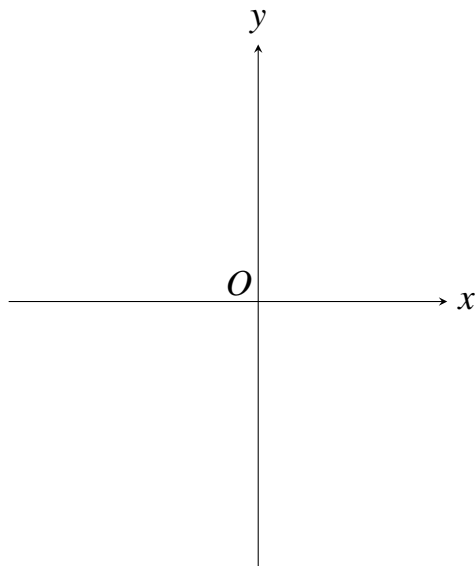
(3)

(Total for Question 7 is 3 marks)

- 8 (a) Write $x^2 + 4x - 1$ in the form $(x + p)^2 + q$

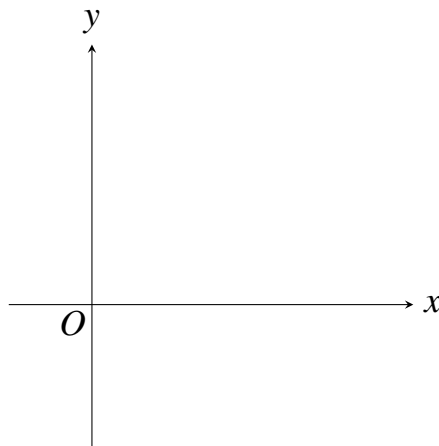
.....
(2)

- (b) Hence sketch the graph of $y = x^2 + 4x - 1$
Mark the turning point and the points where the graph meets the x -axis, giving their exact coordinates.



(2)
(Total for Question 8 is 4 marks)

- 9 Sketch the graph of $y = (x - k)(x - 3k)$, where k is a positive constant.
On your sketch, show the coordinates of the turning point and of the points where the graph meets the axes, in terms of k .



(3)

(Total for Question 9 is 3 marks)
