

Solving Equations Using Graphs

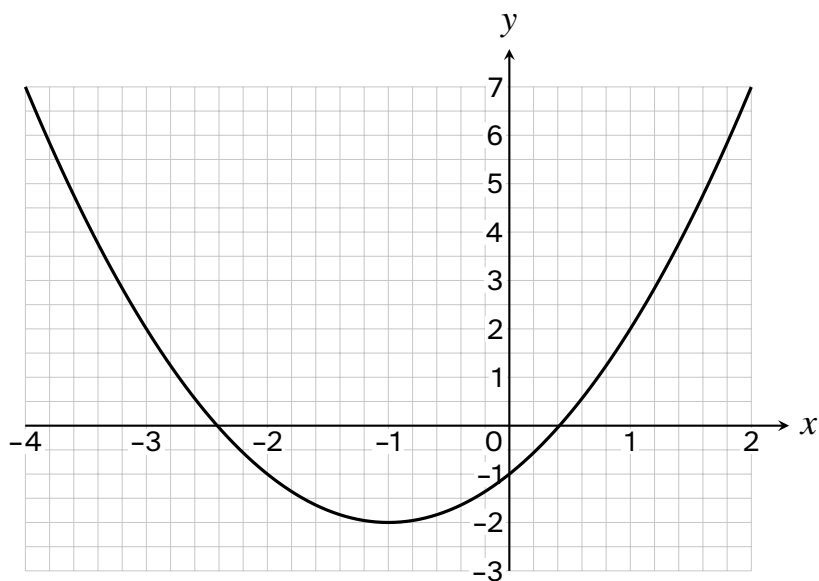
For Pearson Edexcel GCSE Mathematics (1MA1) • Foundation tier

Name _____

Total marks: **20**

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

1 Here is the graph of $y = x^2 + 2x - 1$



(a) Use the graph to find estimates for the solutions of the equation $x^2 + 2x - 1 = 0$

.....
(2)

(b) Use the graph to find estimates for the solutions of the equation $x^2 + 2x - 1 = 3$

.....
(2)

(c) Write down the coordinates of the turning point of the graph.

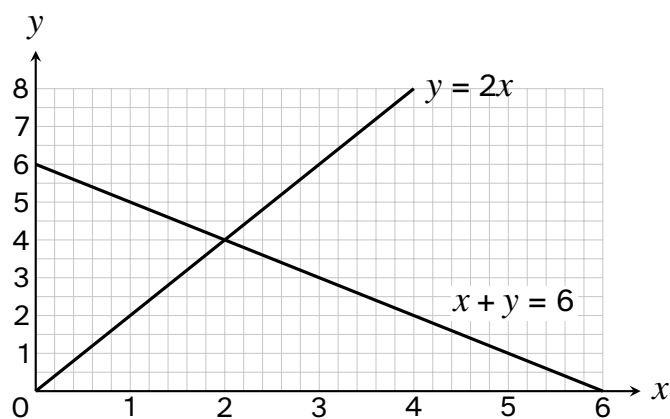
(..... ,)
(1)

(d) Write down the y intercept of the graph of $y = x^2 + 2x - 1$

.....
(1)

(Total for Question 1 is 6 marks)

2 The diagram shows the graphs of $y = 2x$ and $x + y = 6$



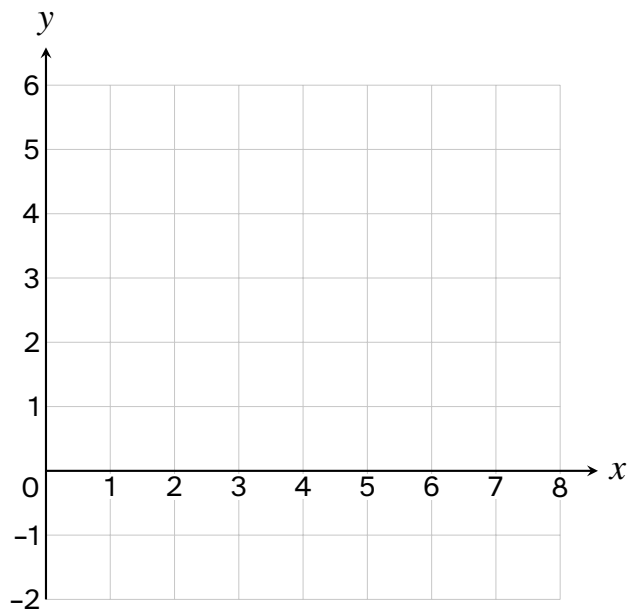
Use these graphs to solve the simultaneous equations

$$\begin{aligned} y &= 2x \\ x + y &= 6 \end{aligned}$$

$x = \dots\dots\dots$ $y = \dots\dots\dots$
(1)

(Total for Question 2 is 1 mark)

- 3 (a) On the grid, draw the graph of $x + 2y = 8$ for values of x from 0 to 8



(2)

- (b) On the same grid, draw the graph of $y = x - 2$ for values of x from 0 to 8

(1)

- (c) Use your graphs to solve the simultaneous equations

$$x + 2y = 8$$

$$y = x - 2$$

$x = \dots\dots\dots$ $y = \dots\dots\dots$ (1)

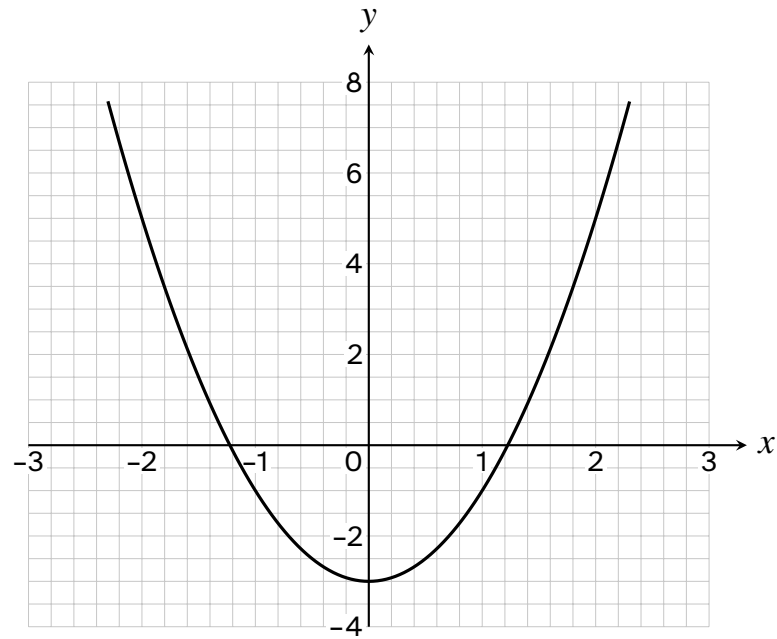
(Total for Question 3 is 4 marks)

- 4 Megan says the equation $x^2 + 3 = 1$ has no solutions.
Explain why Megan is correct.

(1)

(Total for Question 4 is 1 mark)

5 Here is the graph of $y = 2x^2 - 3$



(a) Use the graph to solve $2x^2 - 3 = 5$

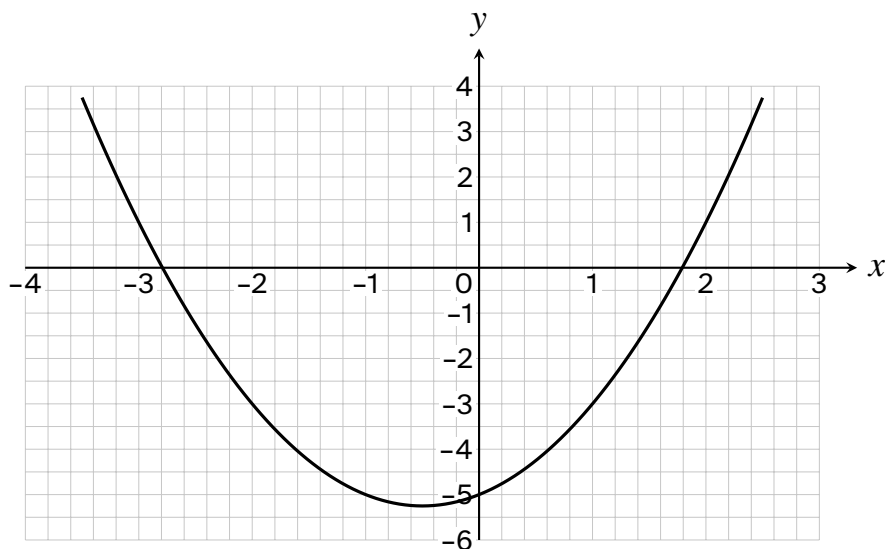
.....
(2)

(b) Use the graph to find estimates for the solutions of $2x^2 - 3 = 0$

.....
(2)

(Total for Question 5 is 4 marks)

- 6 Here is the graph of $y = x^2 + x - 5$ for values of x from -3.5 to 2.5



- (a) Use the graph to find estimates for the solutions of $x^2 + x - 5 = 0$

.....
(2)

- (b) Use the graph to find the solutions of $x^2 + x - 5 = -3$

.....
(2)

(Total for Question 6 is 4 marks)