

Solving Equations Using Graphs

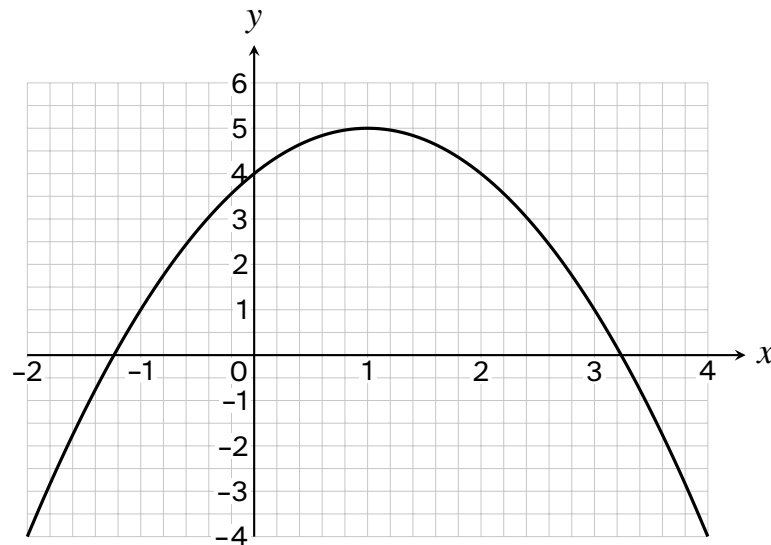
For AQA GCSE Mathematics (8300) • Foundation tier

Name _____

Total marks: **21**

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

1 Here is the graph of $y = 4 + 2x - x^2$



(a) Use the graph to estimate the solutions of $4 + 2x - x^2 = 0$

[2 marks]

Answer _____

(b) Write down the coordinates of the turning point of the curve.

[1 mark]

Answer (_____ , _____)

(c) Use the graph to solve $4 + 2x - x^2 = 1$

[2 marks]

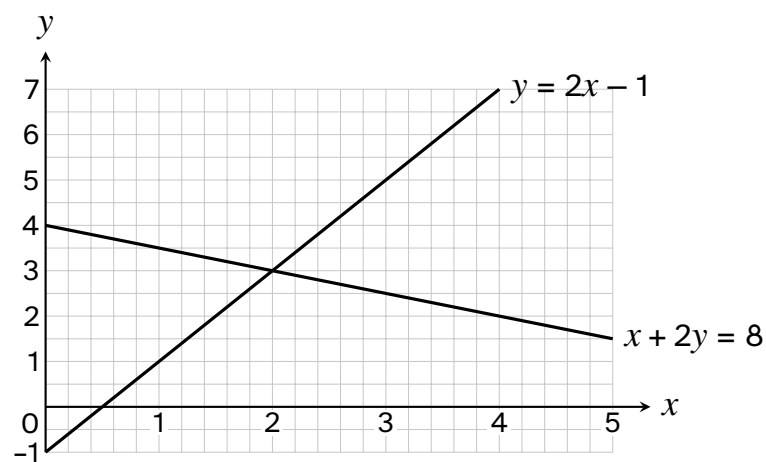
Answer _____

(d) Use the graph to estimate the solutions of $4 + 2x - x^2 = 2$

[2 marks]

Answer _____

2 The graphs of $y = 2x - 1$ and $x + 2y = 8$ are drawn on the grid.



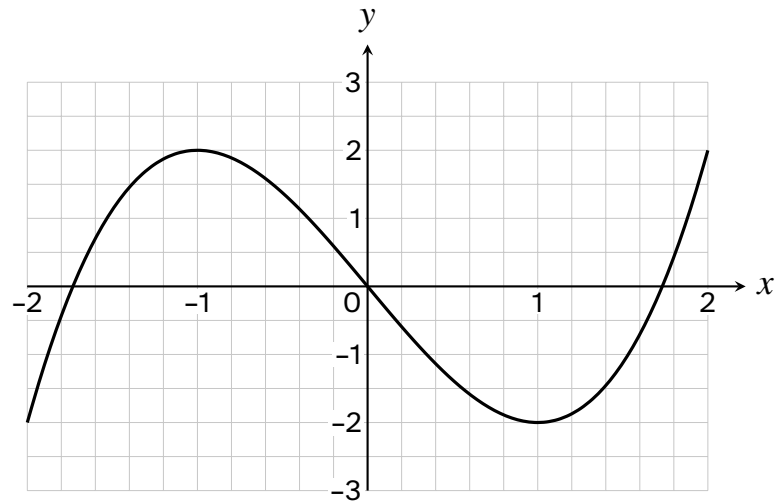
Use the graphs to solve the simultaneous equations

$$\begin{aligned}y &= 2x - 1 \\x + 2y &= 8\end{aligned}$$

[2 marks]

$x =$ _____ $y =$ _____

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



- (a) Use the graph to estimate the three solutions of $x^3 - 3x = 0$

[2 marks]

Answer _____

- (b) How many solutions does $x^3 - 3x = 1$ have?
Give a reason for your answer.

[2 marks]

- 4 Circle the equation whose solutions are where the graph of $y = x^2 - 4$ meets the line $y = 5$

[1 mark]

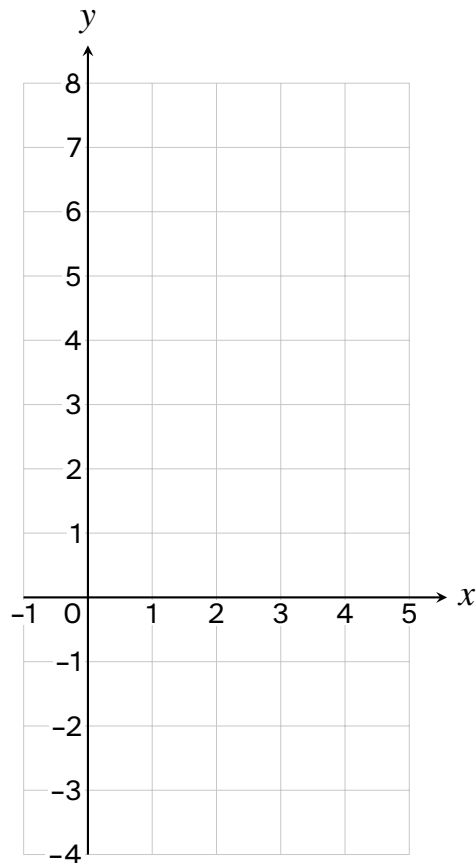
$x^2 - 4 = 0$

$x^2 = 5$

$x^2 - 4 = 5$

$x^2 + 1 = 0$

- 5 (a) On the grid, draw the graph of $y = 3x - 4$ for values of x from 0 to 4



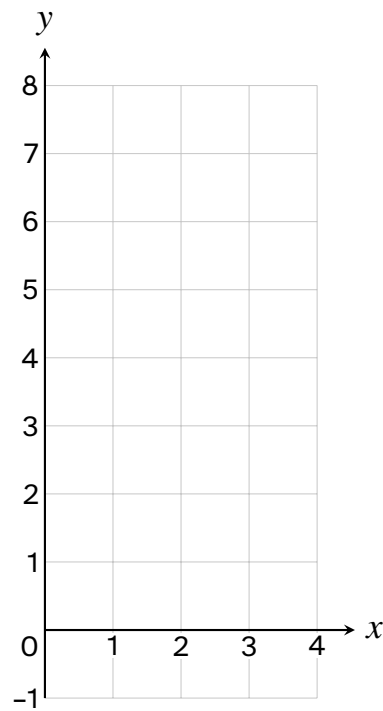
[2 marks]

- (b) By drawing another straight line on the grid, solve $3x - 4 = 2 - x$

[2 marks]

$x =$ _____

- 6** (a) On the grid, draw the graphs of $y = 3x - 1$ and $x + y = 7$ for values of x from 0 to 3



[2 marks]

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

$$\begin{aligned}y &= 3x - 1 \\x + y &= 7\end{aligned}$$

[1 mark]

$x =$ _____ $y =$ _____