Drawing Quadratic Graphs

Grade 5 topic · Foundation and Higher · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Foundation students: aim for Questions 1–15 (42 marks) and have a go at the rest. Higher students: complete all 20. Show your working on the lines and write your final answer on the answer line, then mark yourself with the answers at the back. Diagrams are not drawn accurately. Total: 66 marks.

Warm-up

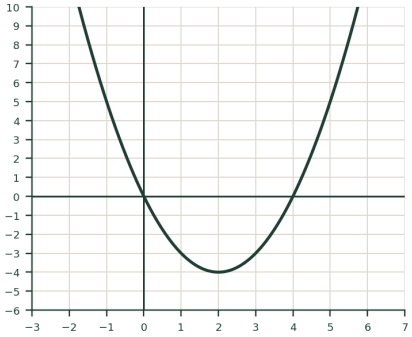
1 Complete the table of values for $y = x^2 - 2x - 3$ for $x = -2, -1, 0, 1, 2, 3, 4$. **[3 marks]**

Answer _____

2 Work out y when x = 3 on the curve $y = x^2 + 2x - 3$. **[2 marks]**

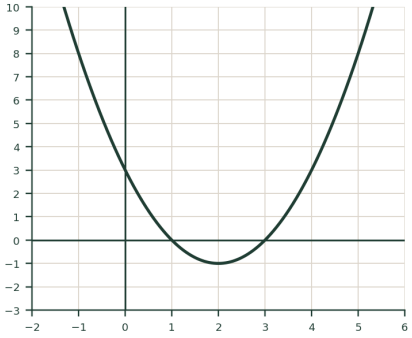
Answer _____

3 The graph of $y = x^2 - 4x$ is shown. Write down the coordinates of the point where it crosses the y-axis. **[2 marks]**



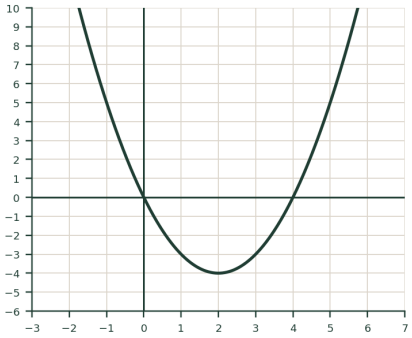
Answer _____

4 The graph of $y = x^2 - 4x + 3$ is shown. Write down the solutions of $x^2 - 4x + 3 = 0$. **[3 marks]**



Answer _____

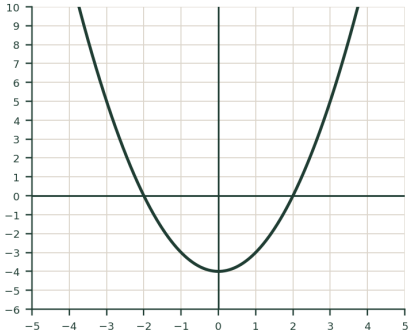
5 Write down the equation of the line of symmetry of the graph $y = x^2 - 4x$. **[2 marks]**



Answer _____

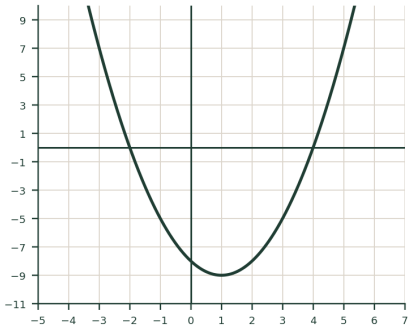
Core

6 The graph of $y = x^2 - 4$ is shown. Write down the coordinates of the turning point. **[3 marks]**



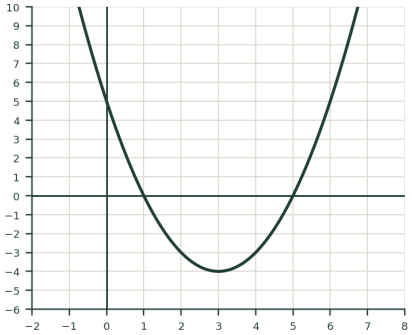
Answer _____

7 State the minimum value of y on the graph of $y = x^2 - 2x - 8$. **[2 marks]**



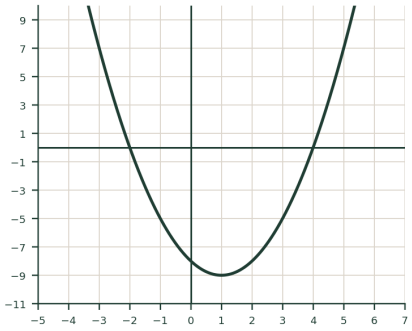
Answer _____

8 Use the graph of $y = x^2 - 6x + 5$ to estimate the solutions of $x^2 - 6x + 5 = 3$. Give your answers to 1 decimal place. **[4 marks]**



Answer _____

9 For what values of x is $y < 0$ on the graph of $y = x^2 - 2x - 8$? **[3 marks]**



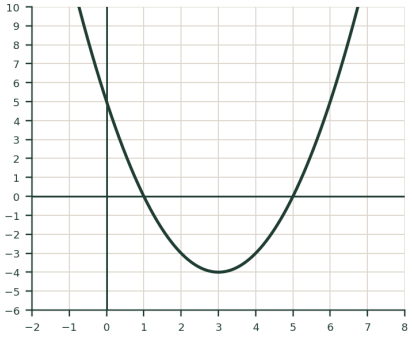
Answer _____

10 Work out the value of y when $x = 2$ on the curve $y = x^2 - 4x - 5$. **[2 marks]**

Answer _____

Stretch

11 Use the graph of $y = x^2 - 6x + 5$ to solve $x^2 - 6x + 5 = 3$. Give answers to 1 decimal place. **[4 marks]**

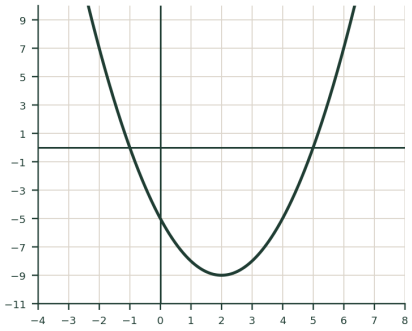


Answer _____

12 Draw the graph of $y = x^2 - 4x + 3$ for $-2 \leq x \leq 5$. (Describe its shape.) **[3 marks]**

Answer _____

13 Write down the coordinates of the points where $y = x^2 - 4x - 5$ crosses the x-axis. **[3 marks]**

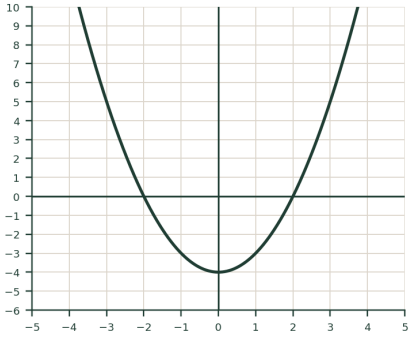


Answer _____

14 The graph $y = x^2 - 6x + 5$ is translated 2 units up. State the new y-intercept. **[3 marks]**

Answer _____

15 The line $y = 4$ crosses $y = x^2 - 4$ twice. Write the equation whose roots give these x-values. **[3 marks]**



Answer _____

Challenge

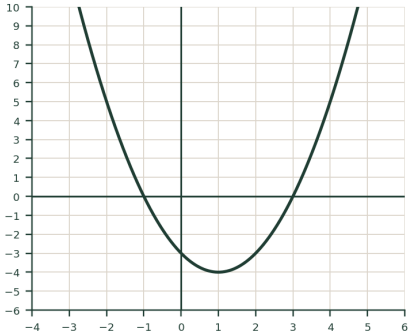
16 By completing the square, find the turning point of $y = x^2 - 2x - 3$. **[5 marks]**

Answer _____

17 The graph $y = x^2 - 4x - 5$ is reflected in the x-axis. Write down the equation of the new graph. **[5 marks]**

Answer _____

18 Find the range of values of x for which $x^2 - 2x - 3 > 0$. **[5 marks]**



Answer _____

19 Sketch $y = x^2 - 6x + 5$ showing the intercepts and turning point. Write down the y-intercept and the roots. **[5 marks]**

Answer _____

20 Work out the distance between the two roots of $y = x^2 - 4x + 3$. **[4 marks]**

Answer _____