JRA Tutors
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Drawing Other Graphs: Cubic and Reciprocal

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: 62 marks.

Warm-up

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

Answer _____

2 Complete the table for $y = 4/x$ for $x = 1, 2, 3, 4, 6, 4$. Give any answers as exact values. **[3 marks]**

Answer _____

3 Work out y when x = −2 for $y = x^3 - 1x$. **[3 marks]**

Answer _____

4 Work out y when x = −4 for y = 2/x. **[2 marks]**

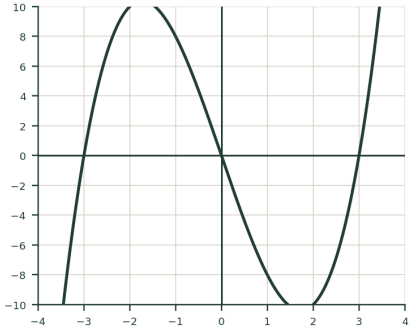
Answer _____

5 Work out y when x = 3 for $y = x^3 - 4x$. **[2 marks]**

Answer _____

Core

6 The graph of $y = x^3 - 9x$ is shown. Write down the three x-values where it crosses the x-axis. **[3 marks]**

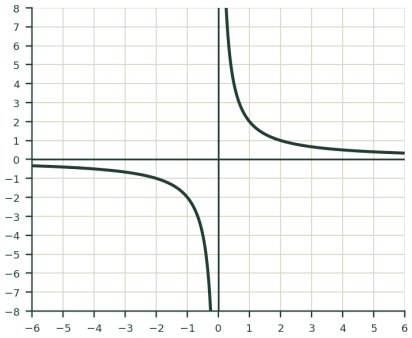


Answer _____

7 Describe the shape of the graph of $y = x^3$. **[2 marks]**

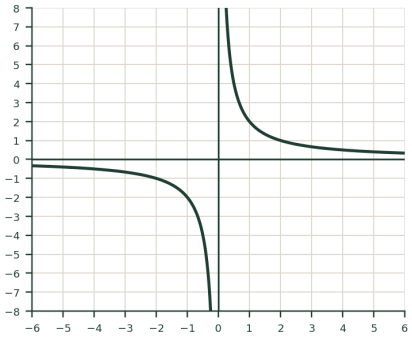
Answer _____

8 Describe the graph of y = 2/x. **[3 marks]**



Answer _____

9 Write down the equations of the two asymptotes of the graph of y = 2/x. **[3 marks]**



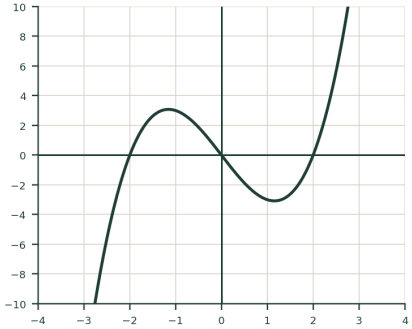
Answer _____

10 Does the graph of $y = 2/x$ cross the y-axis? Explain. **[2 marks]**

Answer _____

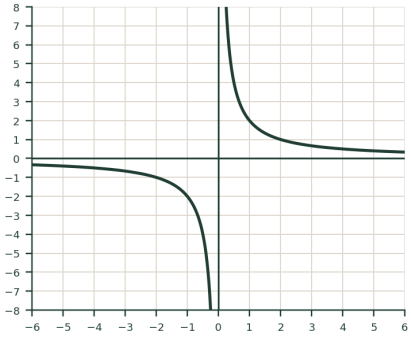
Stretch

11 Use the graph of $y = x^3 - 4x$ to estimate the solution of $x^3 - 4x = 3$ (the largest root). Give your answer to 1 d.p. **[4 marks]**



Answer _____

12 Use the graph of y = 2/x to estimate x when y = 2.5. Give your answer to 1 d.p. **[3 marks]**



Answer _____

13 Write down the coordinates of the turning points of $y = x^3 - 3x$ to 1 d.p. (local maximum). **[4 marks]**

Answer _____

14 Is the graph of $y = 12/x$ symmetrical? State the line(s) of symmetry. **[3 marks]**

Answer _____

15 Write down the y-intercept of $y = x^3 - 1x$. **[2 marks]**

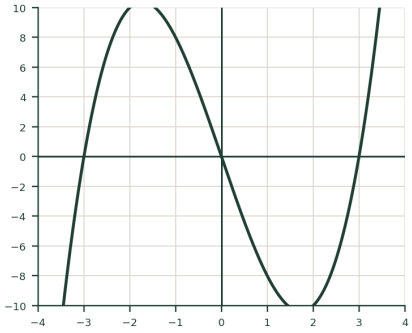
Answer _____

Challenge

16 Solve $x^3 = 50$ to 1 decimal place. **[4 marks]**

Answer _____

17 Use the graph of $y = x^3 - 9x$ to solve $x^3 - 9x = 0$. **[4 marks]**



Answer _____

18 A rectangle has area 2 cm². Write down the equation linking its length x and width y, and its width when the length is 4 cm. **[4 marks]**

Answer _____

19 Find the points where $y = 8/x$ meets $y = x$ for $x > 0$. Give the x-value to 2 d.p. **[5 marks]**

Answer _____

20 The graph of $y = x^3$ is translated up by 2. Write down the new equation. **[3 marks]**

Answer _____