A37...Drawing Cubic Graphs

OCR

A37

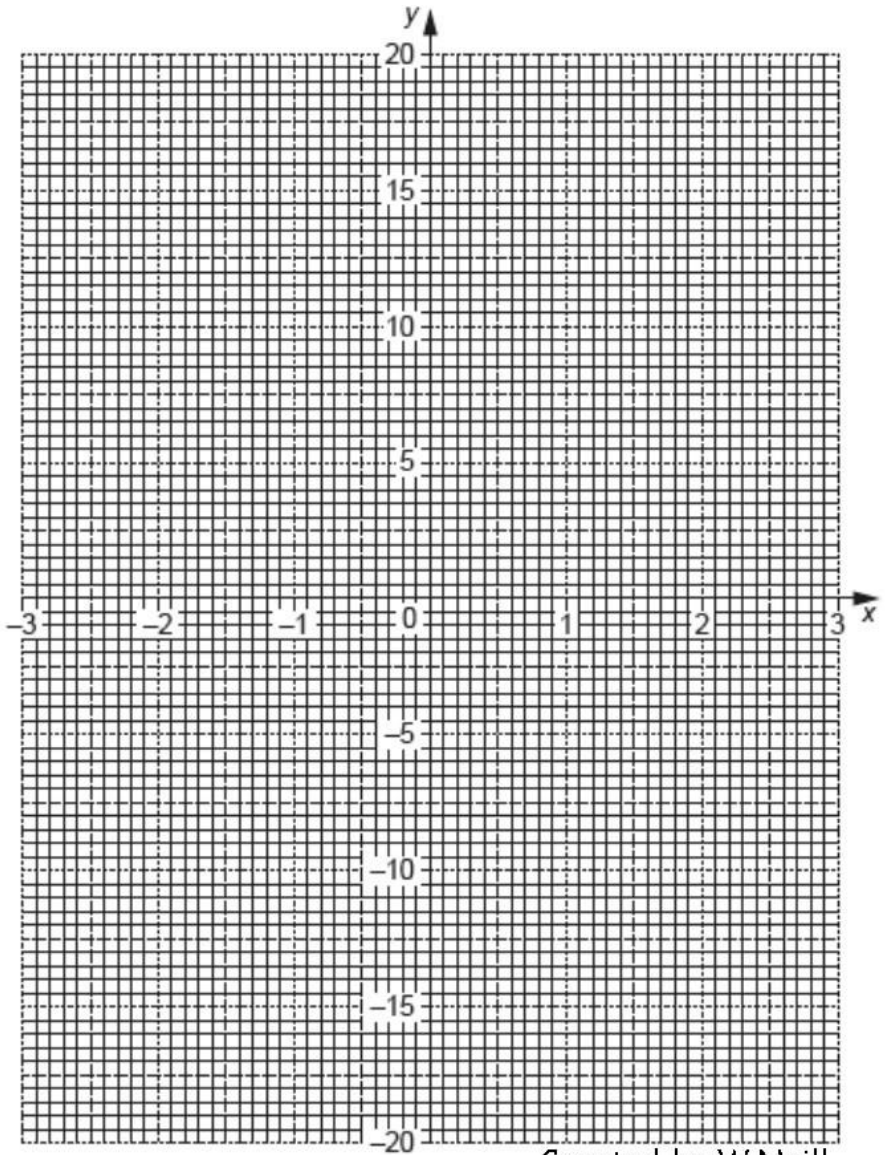
9 **(a)** Complete the table for $y = x^3 - 3x$

x	-3	-2	-1	0	1	2	3
y	-18	-2		0	-2	2	18

(b) Draw the graph of $y = x^3 - 3x$ for $-3 \leqslant x \leqslant 3$.

(c) Use your graph to solve $x^3 - 3x = 10$.

(c) $x =$ ..... **[1]**



Created by W Neill

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y	-18	-2	2	0	-2	2	18

(b) Draw the graph of $y = x^3 - 3x$ for $-3 \leqslant x \leqslant 3$.

$(-1)^3 - 3(-1)$ $\quad -1 \times -1 \times -1 = -1$

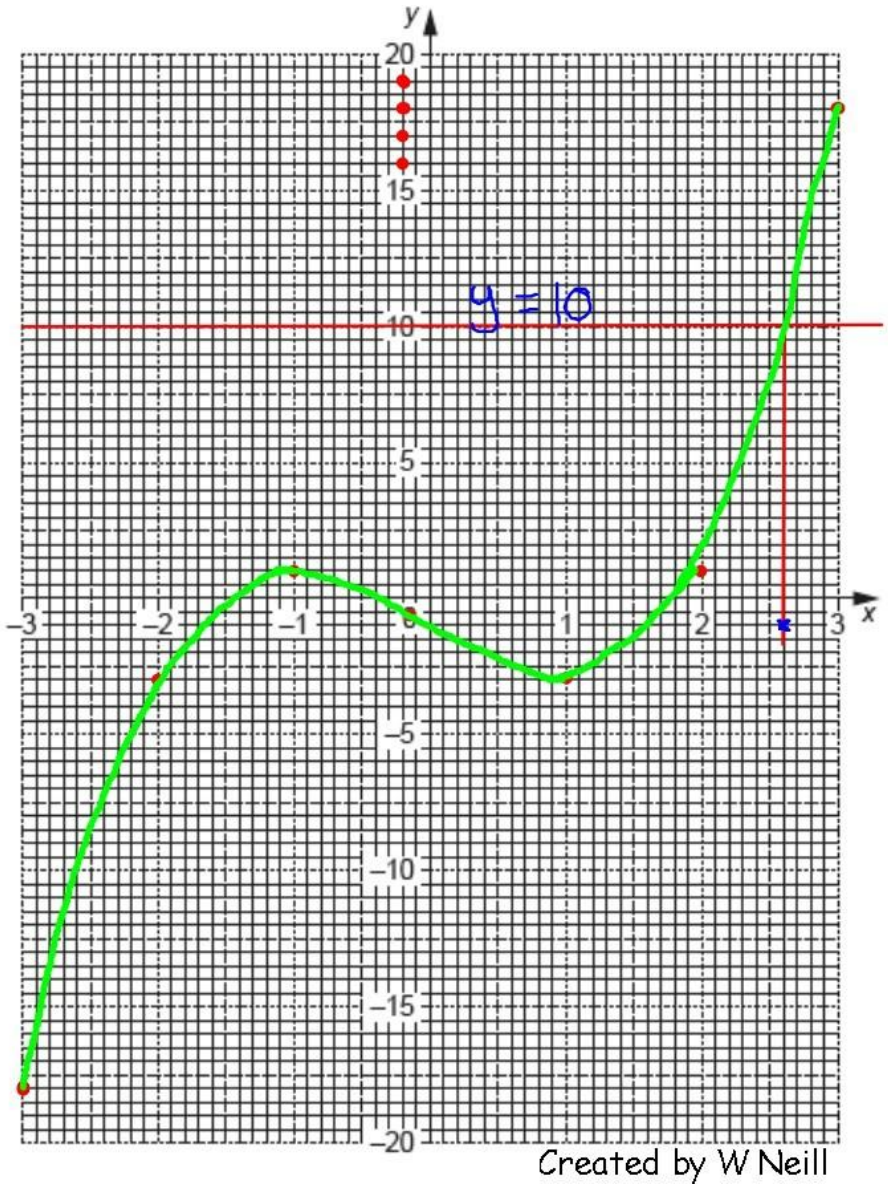
$3 \times -1 = -3$ $\quad -1 - -3 = -1 + 3 = 2$

(c) Use your graph to solve $x^3 - 3x = 10$.

$y = x^3 - 3x$ $\quad y = 10$

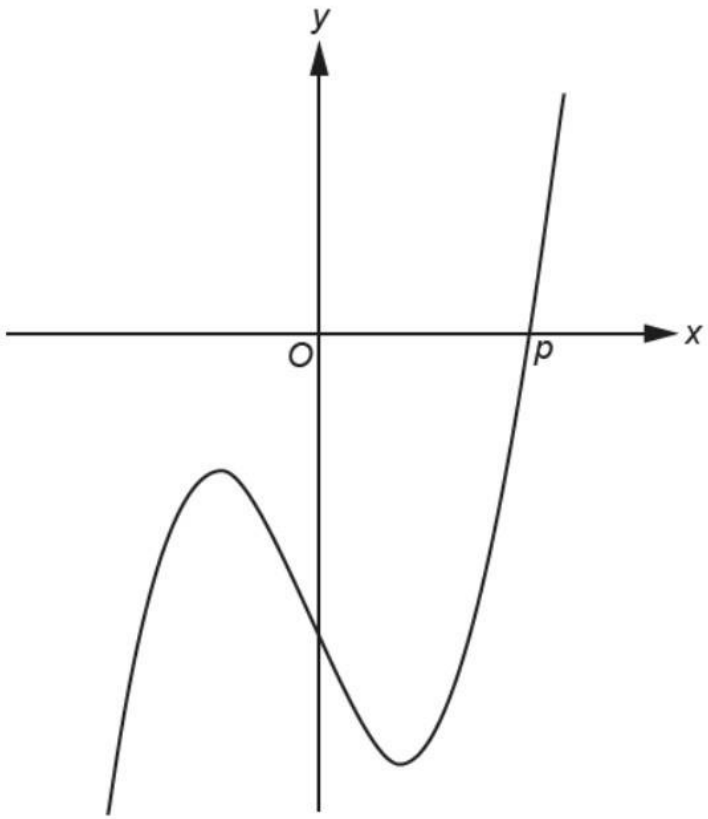
(c) $x =$ 2.6 ..... **[1]**

2.5 — 2.7 ✓



Created by W Neill

9 The graph of $y = x^3 - 7x - 12$ is shown below.
The root of the equation $x^3 - 7x - 12 = 0$ is p.



(a) Calculate y when $x = 3$.

(b) Show that $3 < p < 4$.

(c) Find a smaller interval that contains the value of p.
You must show calculations to support your answer.

(c) ..... $< p <$ ..... **[3]**

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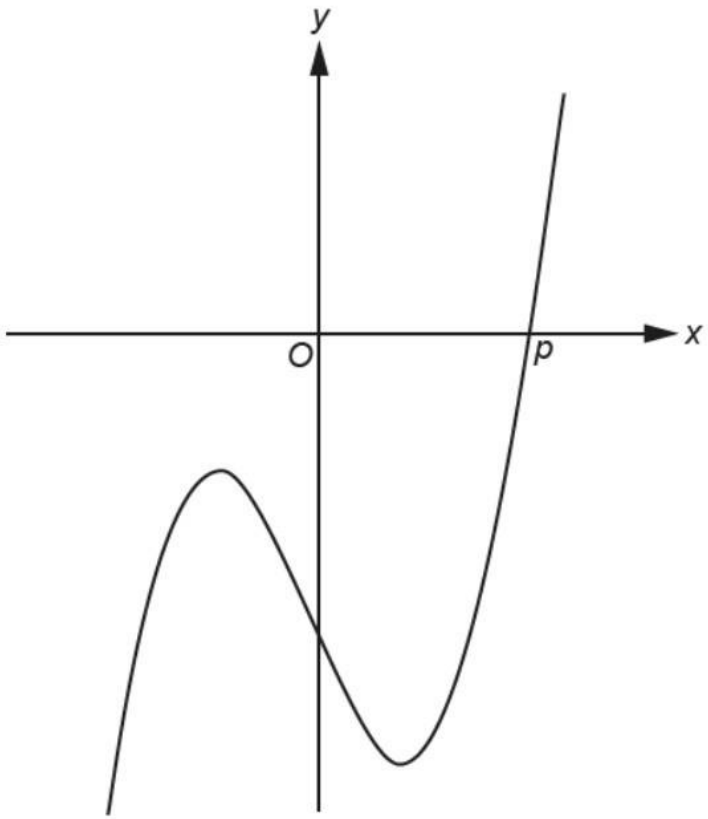


(a) Calculate y when $x = 3$.

$y = 3^3 - 7(3) - 12$

$y = 27 - 21 - 12$ .... $y = -6$

(b) Show that $3 < p < 4$.

$x = 3$ .... -6

$x = 4$ .... $4^3 - 7(4) - 12$

.... $64 - 28 - 12$ .... $y = 24$

as one is a neg and one a + $\therefore 3 < p < 4$

(c) Find a smaller interval that contains the value of p.
You must show calculations to support your answer.

$x = 3.1$ ... $(3.1)^3 - 7(3.1) - 12$ ... -3.909

$x = 3.9$ ... $(3.9)^3 - 7(3.9) - 12$ 20.019

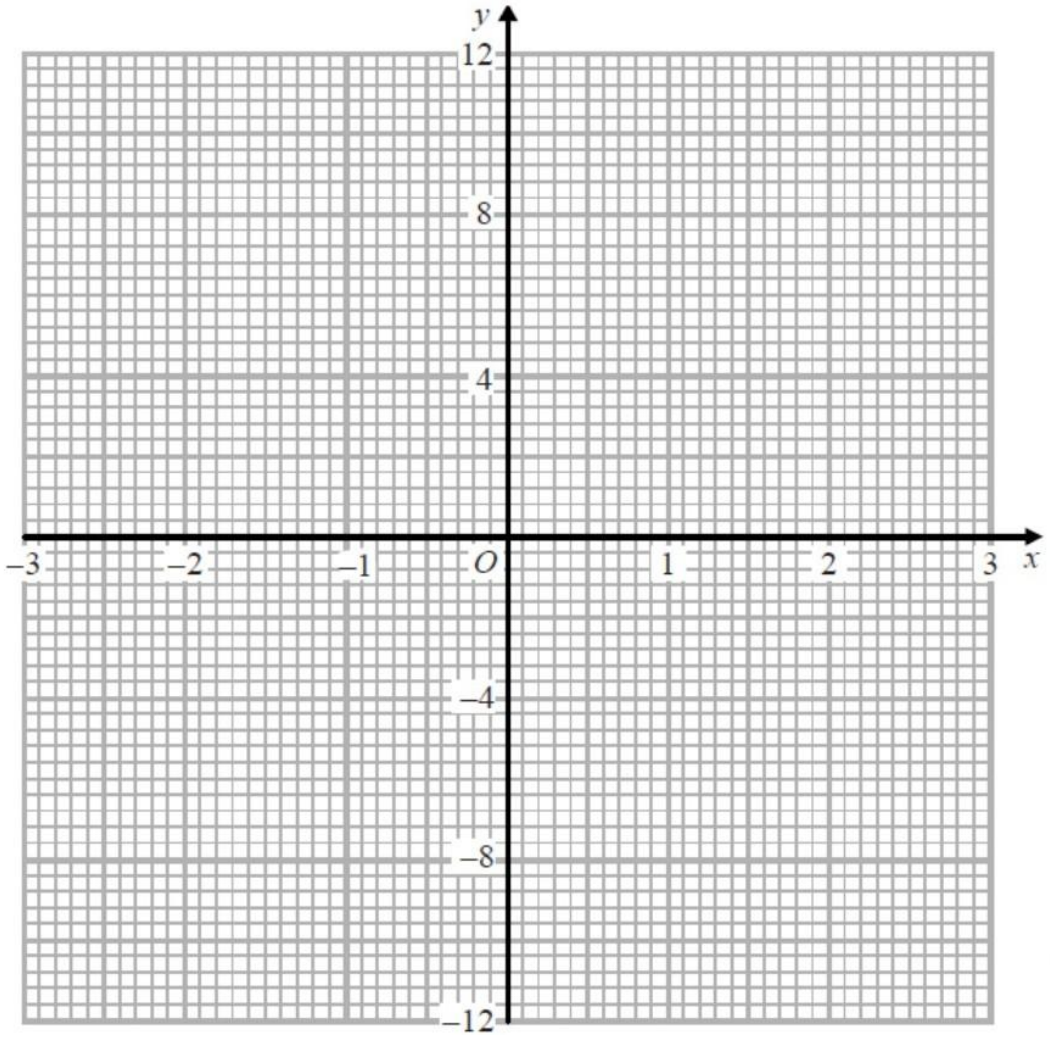
(c) 3.1 ..... $< p <$ 3.9 ..... **[3]**

Edexcel

26 (a) Complete the table of values for $y = x^3 + x^2 - 2x + 1$

x	-3	-2	-1	0	1	2
y		1	3		1	

(b) On the grid, draw the graph of $y = x^3 + x^2 - 2x + 1$ for values of x from -3 to 2



(2)

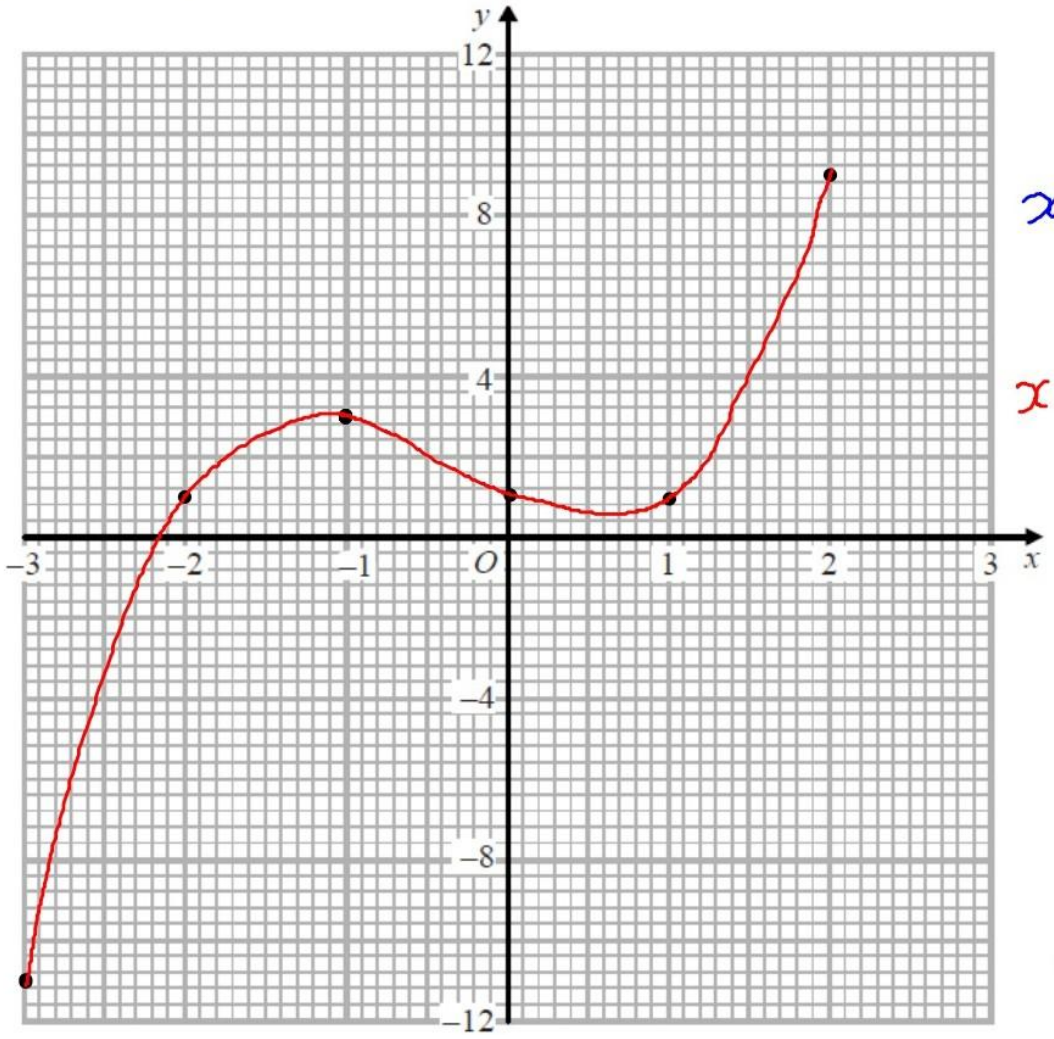
(Total for Question 26 is 4 marks)

26 (a) Complete the table of values for $y = x^3 + x^2 - 2x + 1$

x	−3	−2	−1	0	1	2
y	-11	1	3	1	1	9

x^3

(b) On the grid, draw the graph of $y = x^3 + x^2 - 2x + 1$ for values of x from −3 to 2



$y = x^3 + x^2 - 2x + 1$

$x=2$ $y = 8 + 4 - 4 + 1 = 9$

$x=-3$ $y = -27 + 9 + 6 + 1$

$-27 + 16$

$-3x - 3x - 3$

$-3x - 3 = +9$

(2)

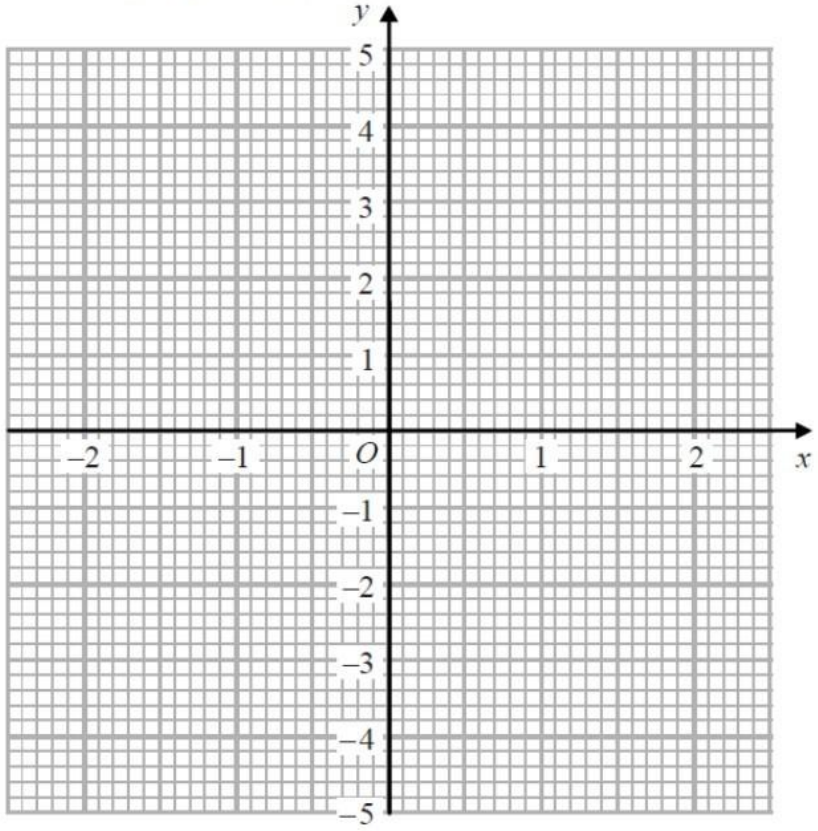
(Total for Question 26 is 4 marks)

27 (a) Complete the table of values for $y = x^3 - 3x + 1$ **(2)**

A37

x	–2	–1	0	1	2
y					

(b) On the grid below, draw the graph of $y = x^3 - 3x + 1$ for values of x from –2 to 2 **(2)**

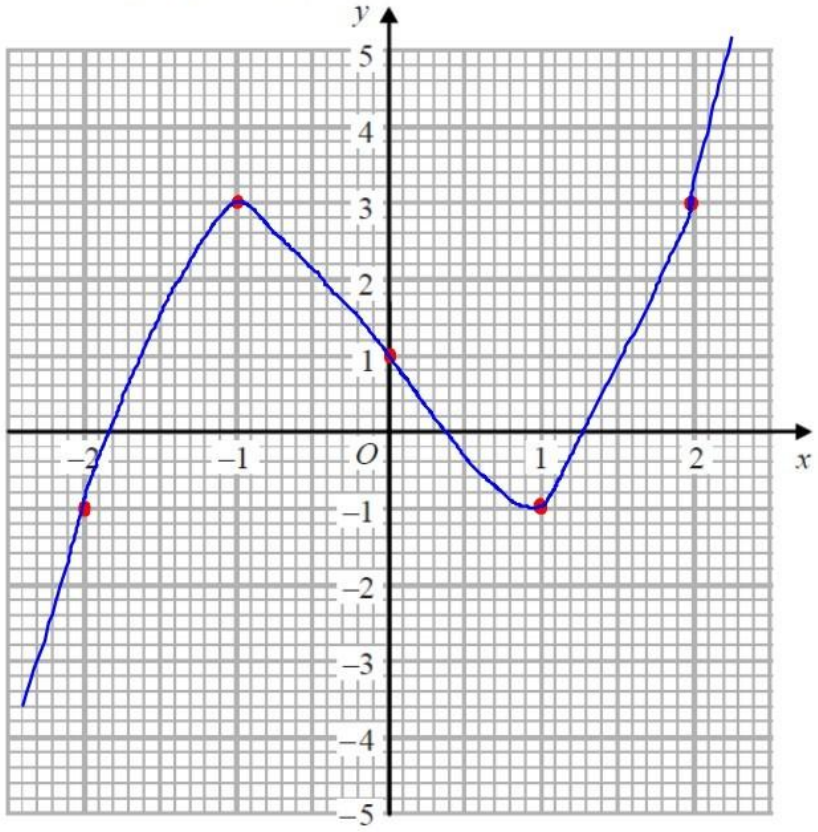


27 (a) Complete the table of values for $y = x^3 - 3x + 1$ **(2)**

A37

x	–2	–1	0	1	2
y	-1	3	1	-1	3

(b) On the grid below, draw the graph of $y = x^3 - 3x + 1$ for values of x from –2 to 2 **(2)**



x^3

24 (a) Complete the table of values for $y = 5 - x^3$

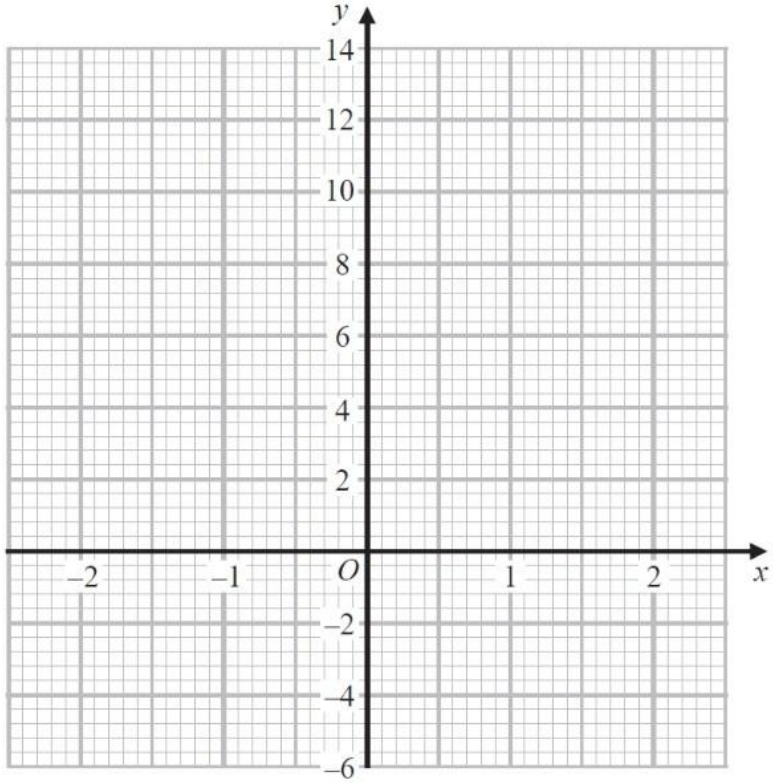
H/F

A37

x	–2	–1	0	1	2
y		6			

(2)

(b) On the grid below, draw the graph of $y = 5 - x^3$ for values of x from –2 to 2



(2)

24 (a) Complete the table of values for $y = 5 - x^3$

A37

x	–2	–1	0	1	2
y	13	6	5	4	-3

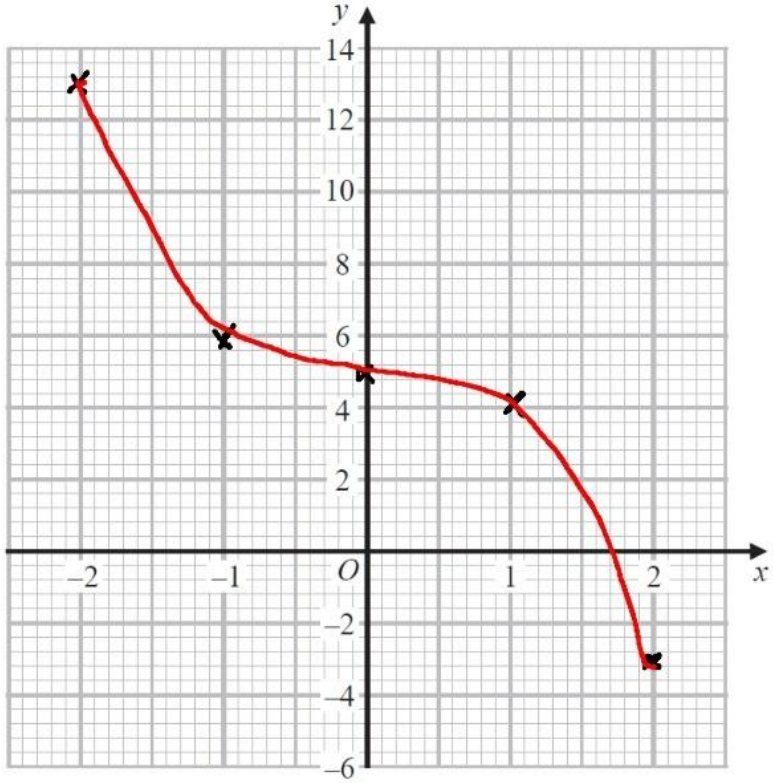
(2)

$2^3 = 2 \times 2 \times 2 = 8$ H/F

$y = 5 - 8$

$= -3$

(b) On the grid below, draw the graph of $y = 5 - x^3$ for values of x from –2 to 2



(2)

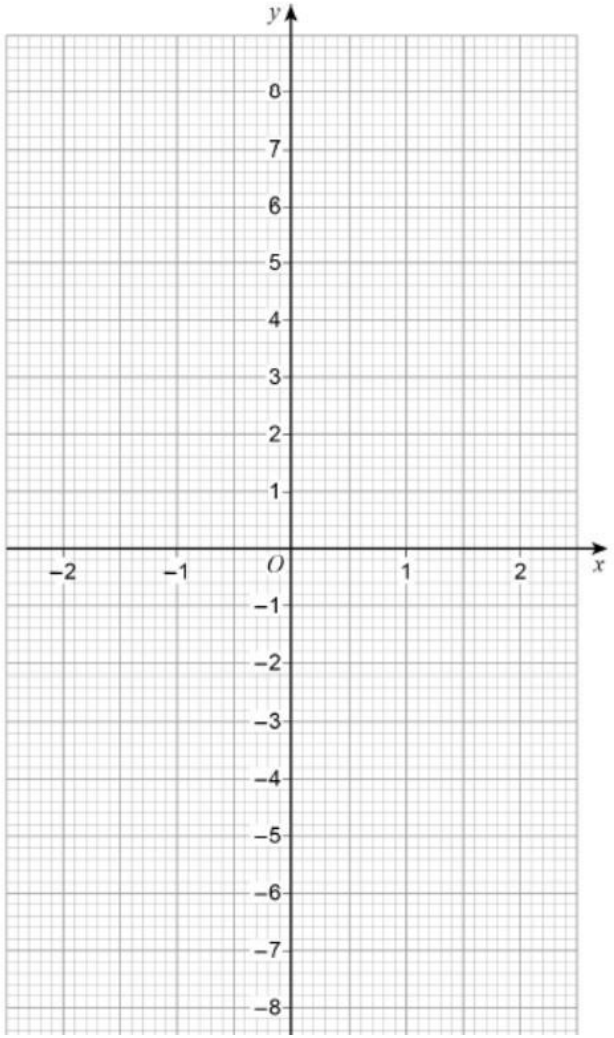
AQA

27 (a) $h(x) = \sqrt[3]{x}$ for all values of x

A37
A66

On the grid, draw the graph of the inverse function $y = h^{-1}(x)$ for $-2 \leqslant x \leqslant 2$

[2 marks]

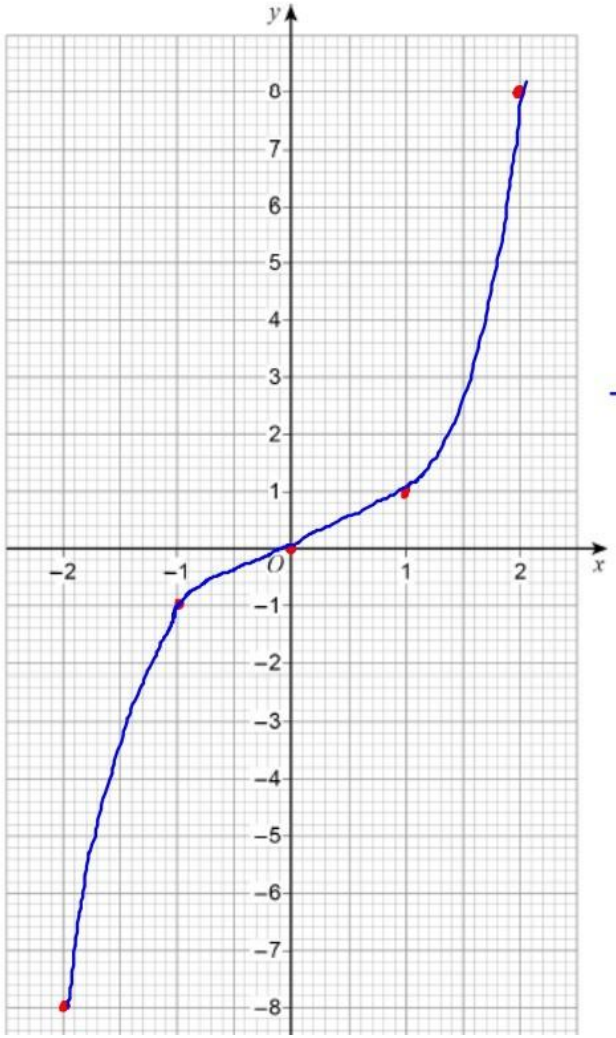


27 (a) $h(x) = \sqrt[3]{x}$ for all values of x

On the grid, draw the graph of the inverse function $y = h^{-1}(x)$ for $-2 \leqslant x \leqslant 2$

[2 marks]

A37
A66



$\sqrt[3]{x}$ x^3

inverse

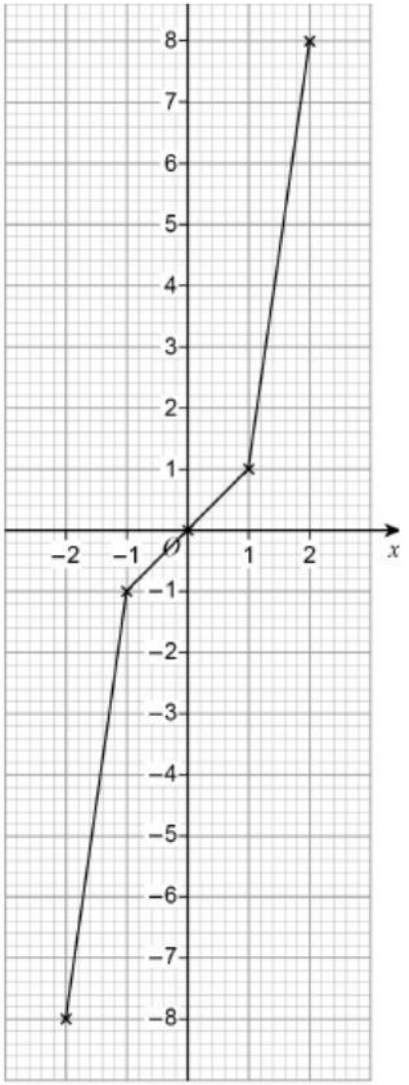
$y = x^3$

x	-2	-1	0	1	2
y	-8	-1	0	1	8

-1 x -1 x -1

12 Lewis wants to draw the graph $y = x^3$ for values of x from –2 to 2

Here is his graph.



Make **one** criticism of his graph. **[1 mark]**

A37

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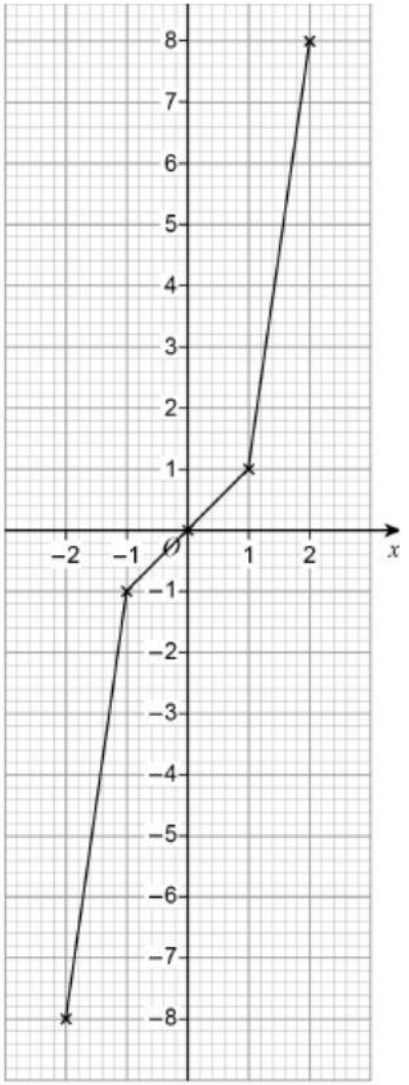


Make **one** criticism of his graph. **[1 mark]**

A37

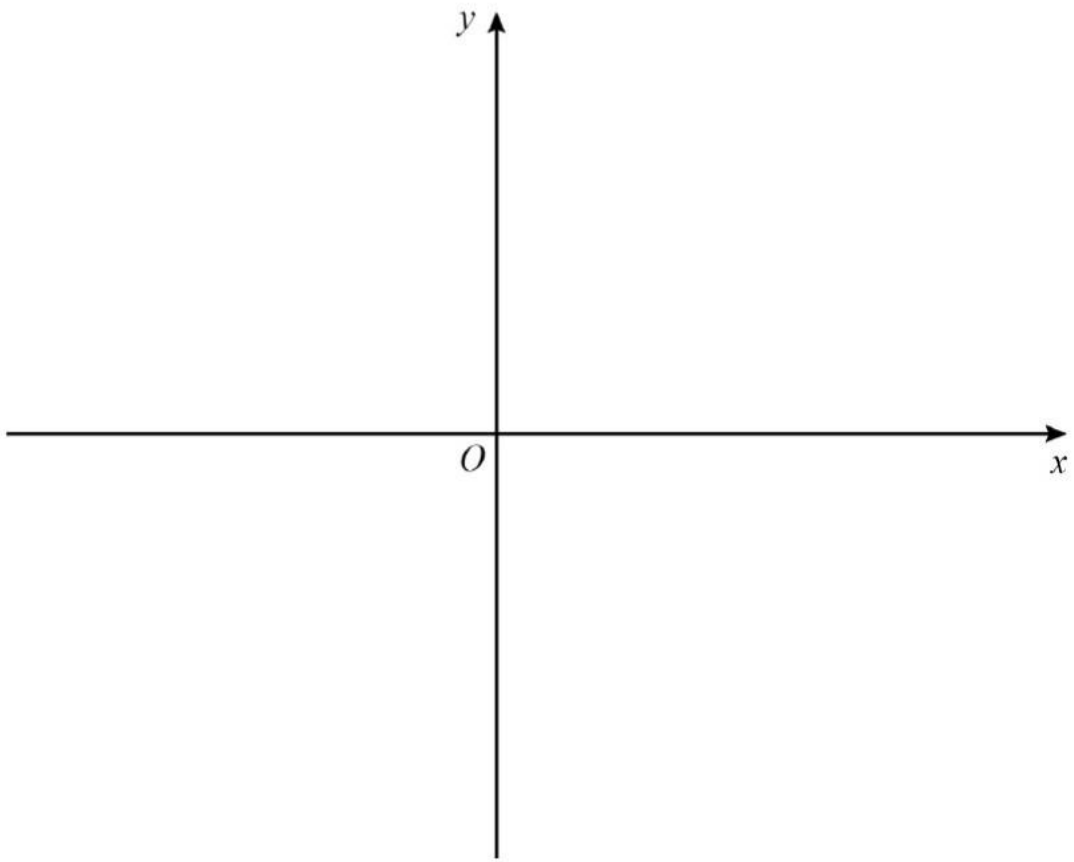
Should be a smooth curve.

8 On the axes, sketch the curve $y = x^3 - 2$

You **must** show the coordinates of the y-intercept.

A37
A79

[2 marks]



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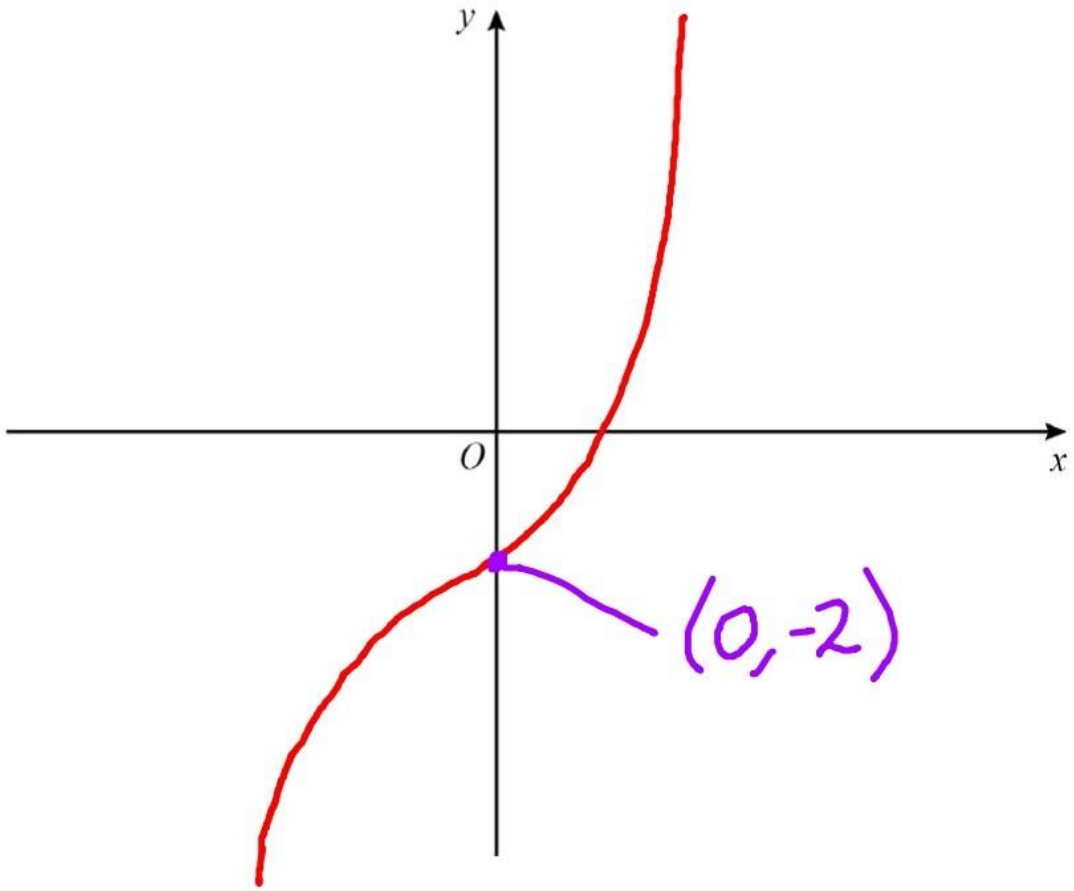
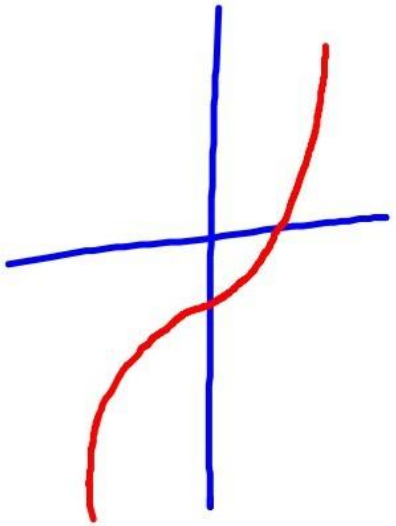
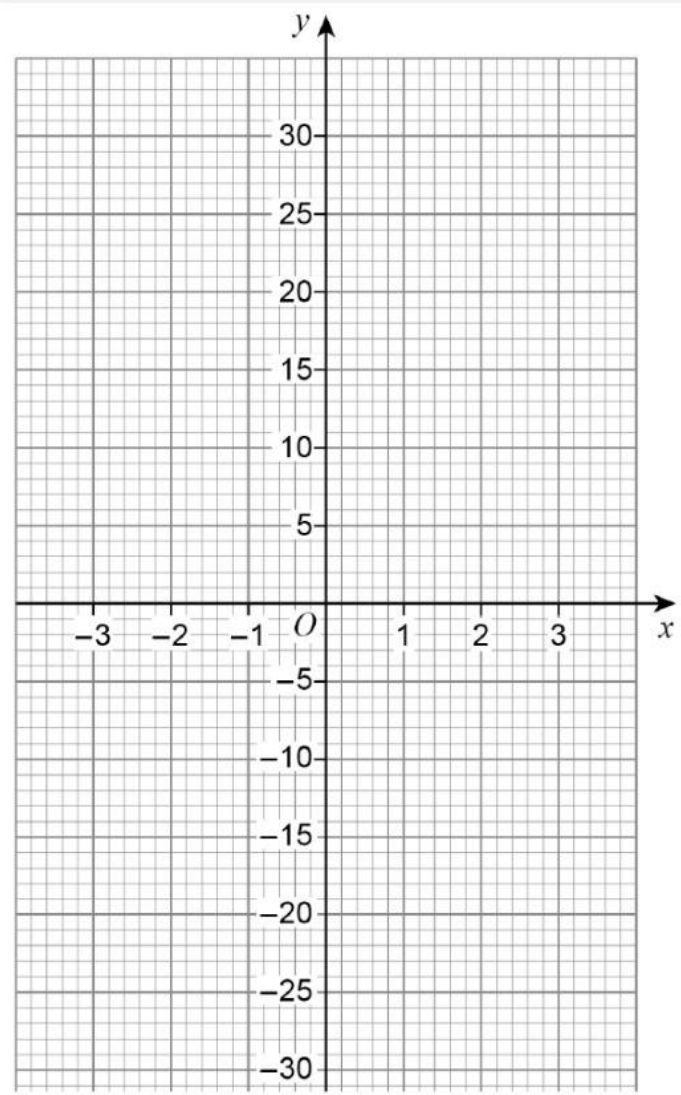




14 A graph has equation $y = x^3 + a$ where a is an integer.

A37 The graph passes through the point (3, 29)

Draw the graph for values of x from –3 to 3



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A37 The graph passes through the point (3, 29)

Draw the graph for values of x from –3 to 3

x	-3	-2	-1	0	1	2	3
	-25	-6	1	2	3	10	29

$y = x^3 + 2$

$2^3 + 2$

$8 + 2$

$= 10$

$y = x^3$

$\therefore x = 3$

$y = 27$

$y = x^3$

$29 = 3^3$

$29 = 27 + 2$