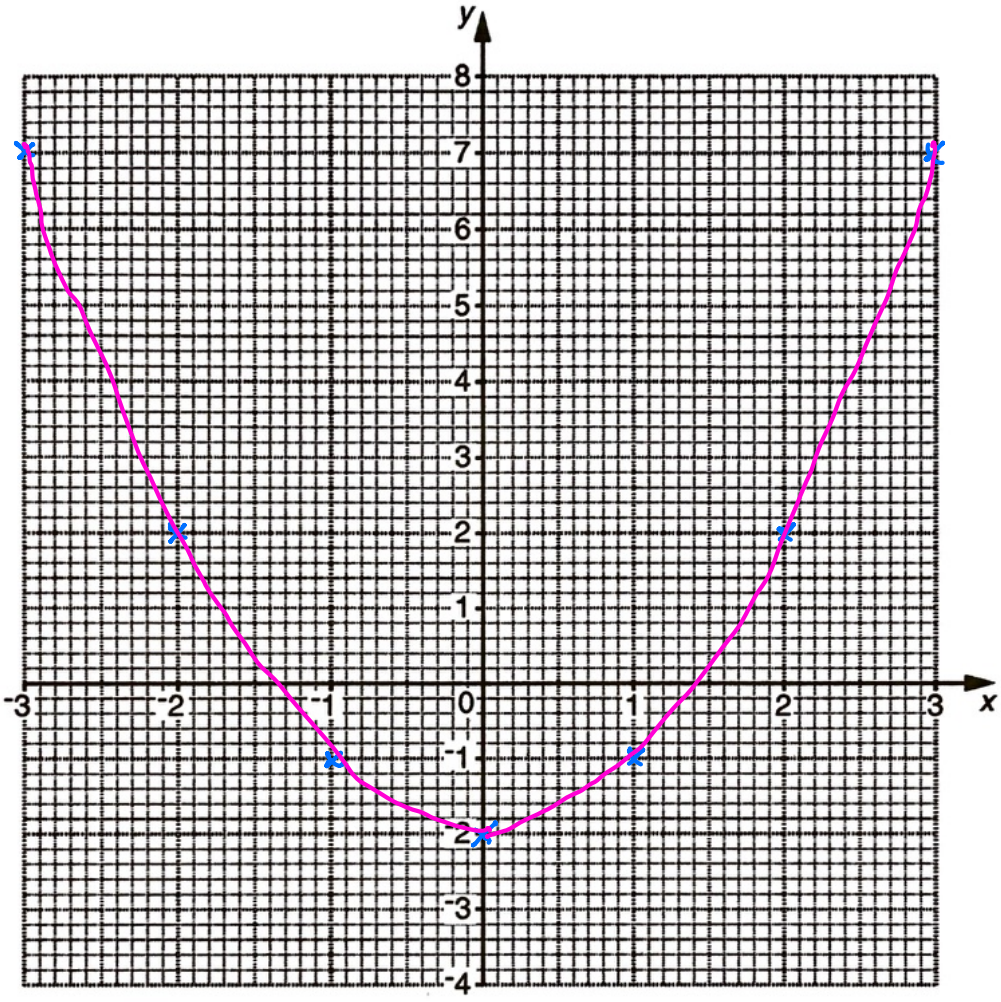
4 **(a)** Complete the table for $y = x^2 - 2$.

x	-3	-2	-1	0	1	2	3
y	7	2	-1	-2	-1	2	7

[2]

(b) Draw the graph of $y = x^2 - 2$.



[2]

(c) Use your graph to solve the equation $x^2 - 2 = 0$.

(c) $x =$ -1.4 and $x =$ +1.4 **[2]**

$2^2 - 3(2)$
$= 4 - 6 = -2$

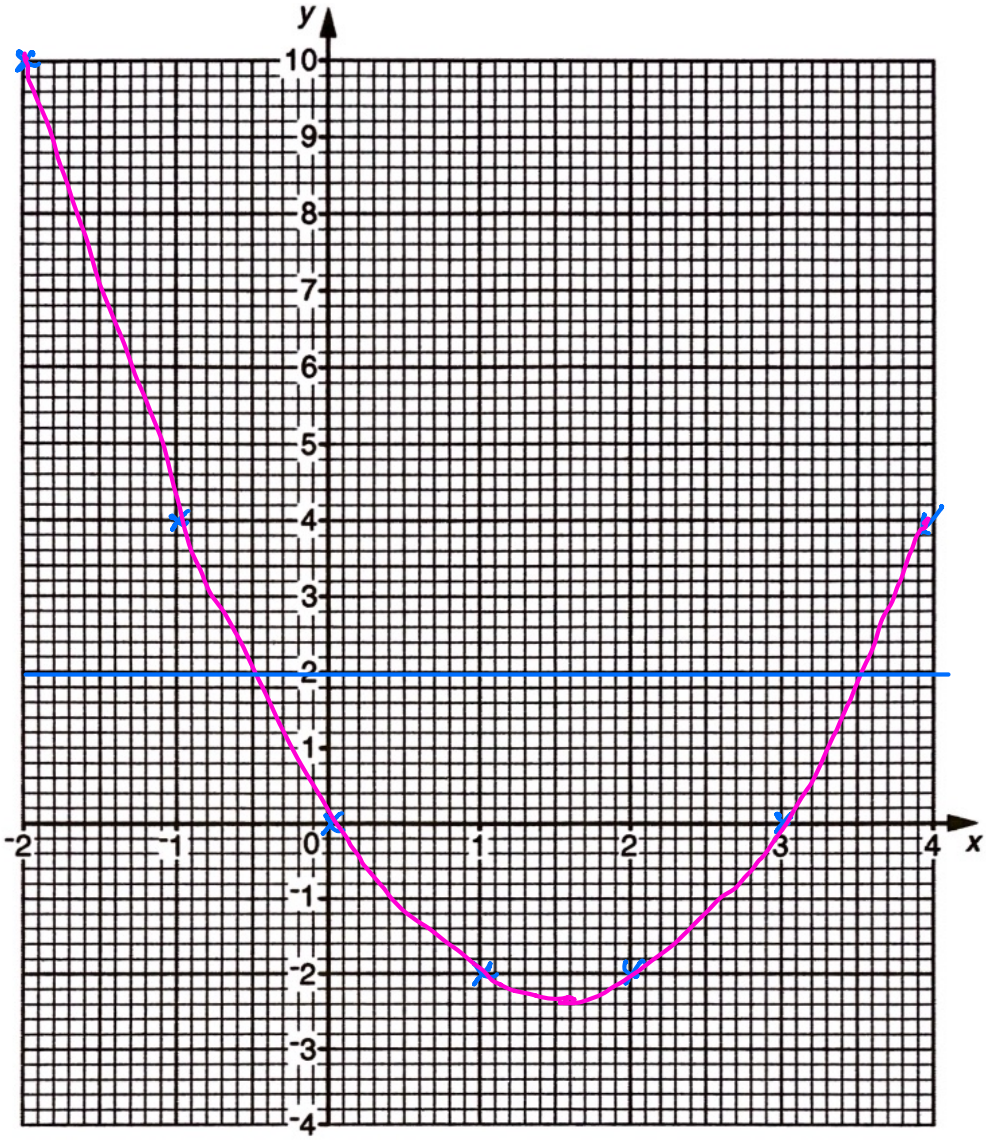
$(-2)^2 - 3(-2)$
$4 + 6 = 10$

9 **(a)** Complete this table for $y = x^2 - 3x$.

x	-2	-1	0	1	2	3	4
y	10	4	0	-2	-2	0	4

[2]

(b) On the grid draw the graph of $y = x^2 - 3x$.



[2]

(c) Use your graph to solve the equation $x^2 - 3x = 2$.

(c) $x =$ -0.5 or $x =$ 3.5 **[2]**

$2 \times (\frac{1}{2})^2 - 6(\frac{1}{2}) - 1$
$\frac{1}{2} - 3 - 1$

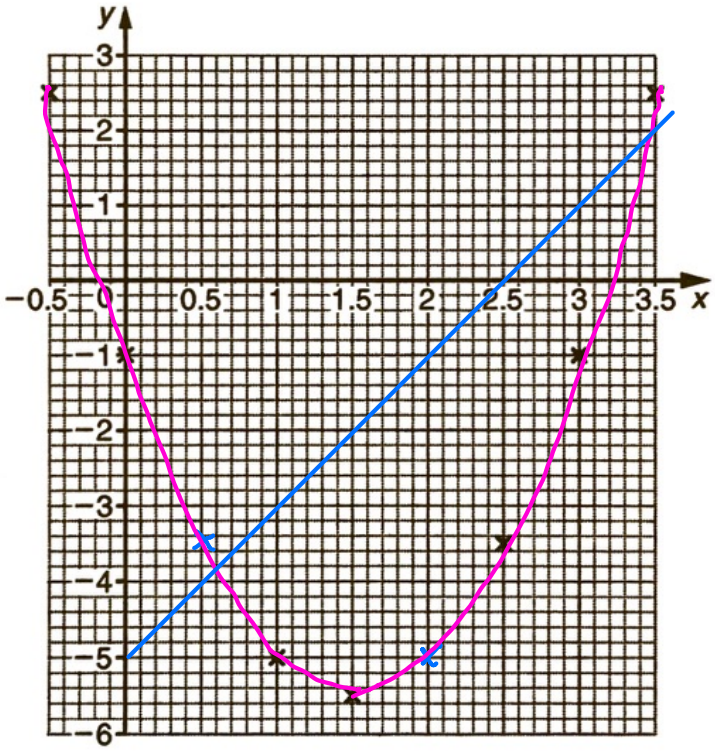
$2(2)^2 - 6(2) - 1$
$8 - 12 - 1$

9 **(a)** Complete this table for $y = 2x^2 - 6x - 1$.

x	−0.5	0	0.5	1	1.5	2	2.5	3	3.5
y	2.5	−1	−3.5	−5	−5.5	−5	−3.5	−1	2.5

[1]

(b) Draw the graph of $y = 2x^2 - 6x - 1$ for $-0.5 \leqslant x \leqslant 3.5$.



[2]

(c) On the grid, draw the line $y = 2x - 5$.

.....

..... **[3]**

(d) Use your graphs to solve $2x^2 - 6x - 1 = 2x - 5$.

.....

(d) $x = 0.6$ **[2]**

$x = 3.45$

11 A ball is dropped from the top of a cliff into the sea.
The height, h metres, of the ball above sea level, t seconds after it is dropped, is given by

$$h = 90 - 5t^2.$$

(a) Write down the height of the top of the cliff above sea level.

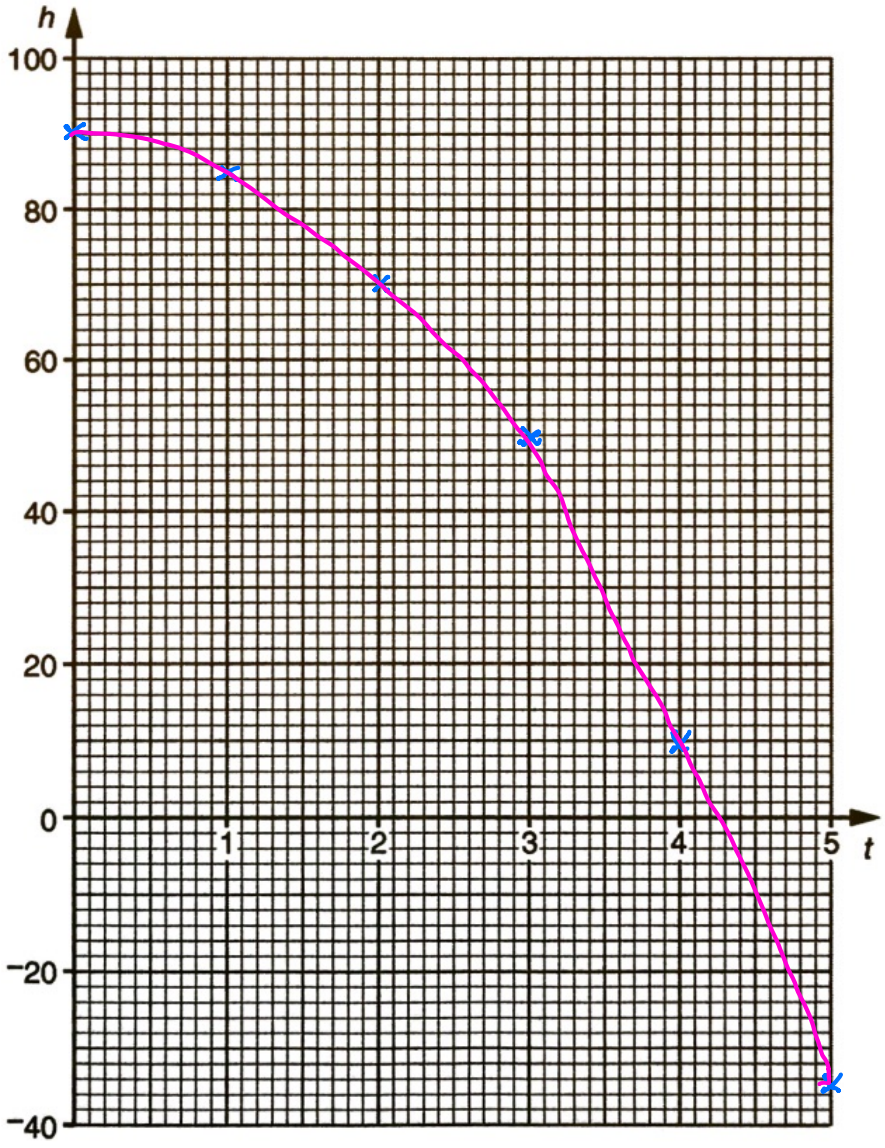
(a) 90 m **[1]**

(b) Complete this table of values for the equation $h = 90 - 5t^2$.

t	0	1	2	3	4	5
h	90	85	70	45	10	−35

[2]

(c) On the axes below draw the graph of $h = 90 - 5t^2$, for values of t from 0 to 5.



[2]

10 A ball is thrown into the air.
The height, h metres, of the ball above the ground after a time t seconds is given by

$$h = 25t - 5t^2.$$

(a) Complete the table of values.

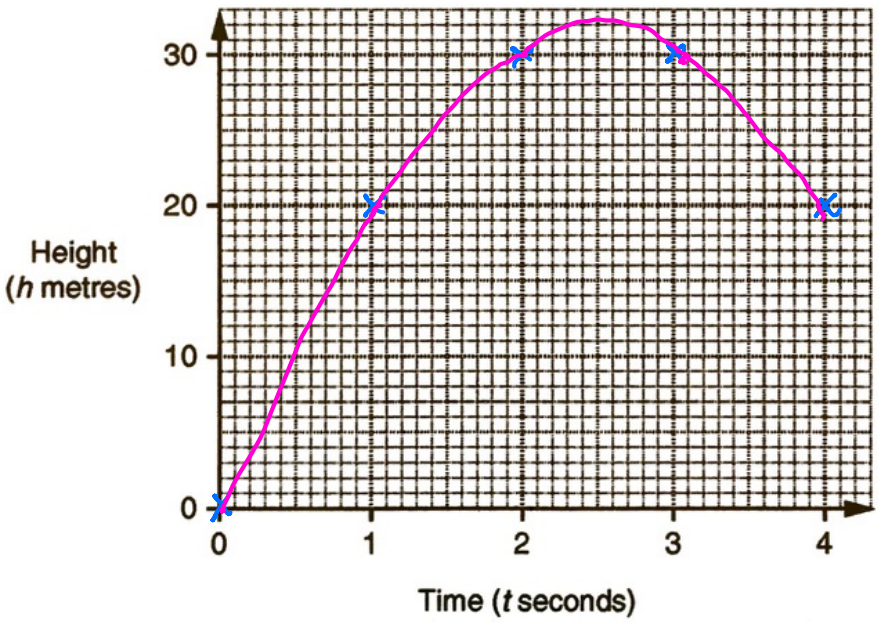
$25(1) - 5(1)^2 = 20$

$25(2) - 5(2)^2 = 50 - 20 = 30$

t	0	1	2	3	4
h	0	20	30	30	20

[2]

(b) Draw the graph of $h = 25t - 5t^2$ for t from 0 to 4.



[2]

(c) Use your graph to estimate

(i) the maximum height of the ball above the ground,

(c)(i) 32.5 m **[1]**

(ii) the time when the ball is 15 m above the ground.

(ii) 0.75 s **[1]**

11 **(a)** Complete this table for $y = x^3 - 4x + 1$.

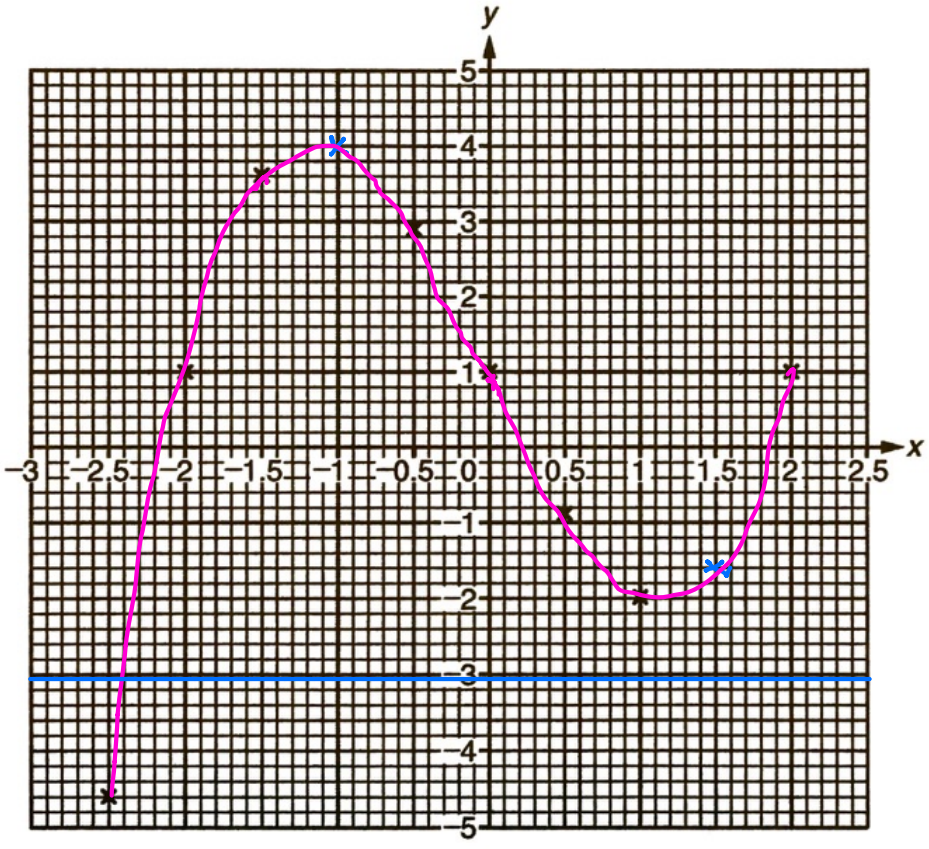
x	−2.5	−2	−1.5	−1	−0.5	0	0.5	1	1.5	2
y	−4.625	1	3.625	4	2.875	1	−0.875	−2	−3.625	1

$(-1)^3 - 4(-1) + 1$ $\quad$ $1.5^3 - 4 \times 1.5 + 1$

$= -1 + 4 + 1 = 4$ $\quad$ $= -1.625$

[2]

(b) Plot the remaining points and draw the graph of $y = x^3 - 4x + 1$ for $-2.5 \leqslant x \leqslant 2$.



[2]

(c) Use your graph to estimate the value of x when $y = -3$.

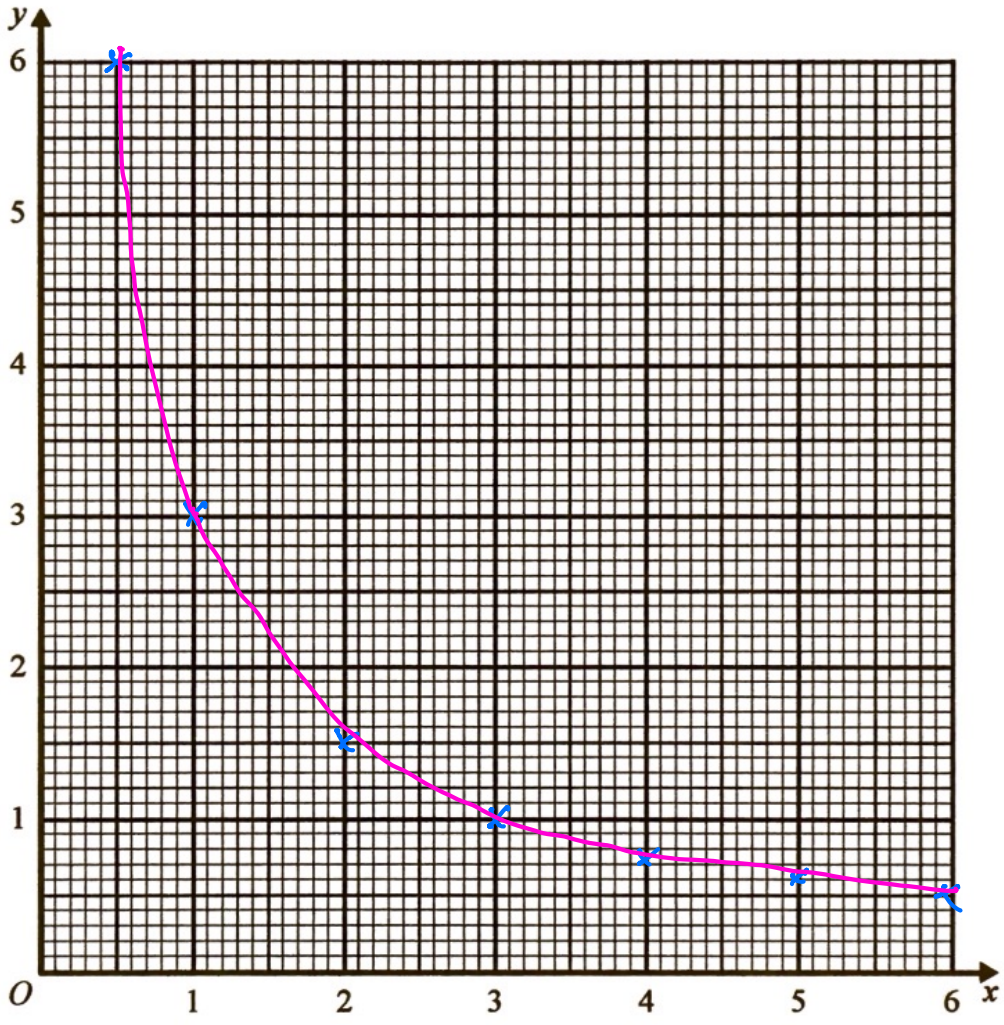
(c) $x = -2.4$ **[1]**

6 (a) Complete the table of values for $y = \frac{3}{x}$

x	0.5	1	2	3	4	5	6
y	6	3	1.5	1	0.75	0.6	0.5

(2)

(b) On the grid, draw the graph of $y = \frac{3}{x}$ for values of x from 0.5 to 6



(2)

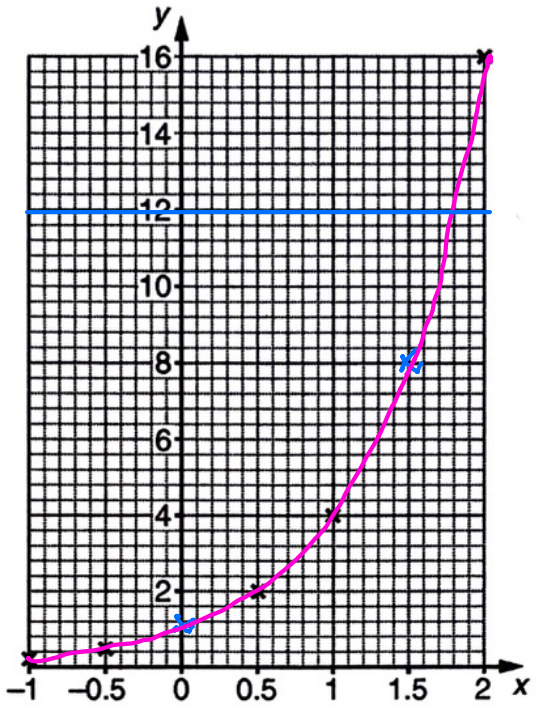
(Total for Question 6 is 4 marks)

17 **(a)** Complete this table for $y = 4^x$.

x	–1	– 0.5	0	0.5	1	1.5	2
y	0.25	0.5	1	2	4	8	16

[2]

(b) Draw the graph of $y = 4^x$ for $-1 \leqslant x \leqslant 2$.



[2]

(c) Use the graph to solve the equation $4^x = 12$.

.....

(c) $x = 1.8$ **[1]**