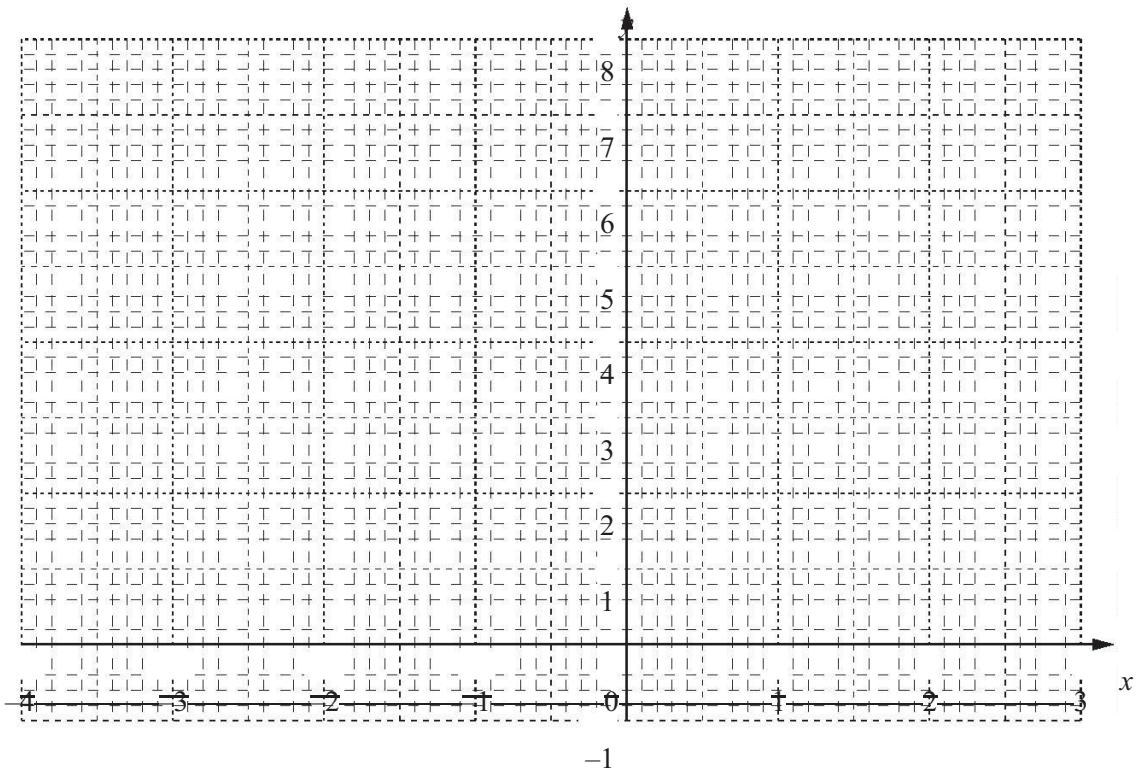
1 (a)

Complete this table of values for $y = 2^x$.

	−3	−2	−1				
x				0	1	2	3
y	0.125		0.5		2	4	8

[2]

1 (b) On the grid, draw the graph of $y = 2^x$ for $-3 \leq x \leq 3$.



(c)

Use your graph to solve $2^x = 5$.

Answer(c) x =.....

(d) Find the equation of the line joining the points (1, 2) and (3, 8).

(e) By drawing a suitable line on your graph, solve $2^x - 2 - x = 0$.

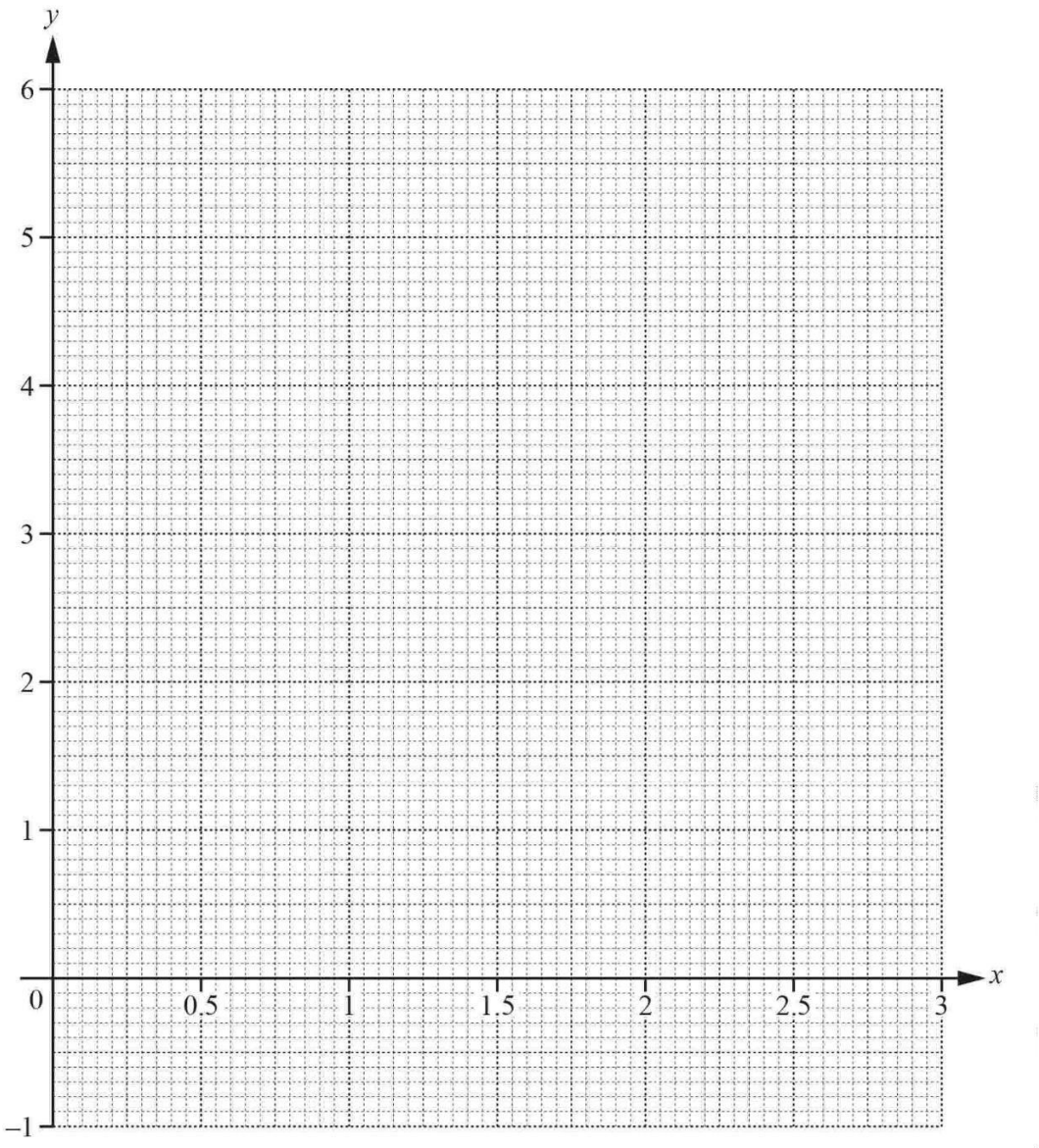
Answer(e) $x =$..... or $x =$ .....

2 The table shows some values for $y = 2x + \frac{1}{x} - 3$ for $0.125 \leqslant x \leqslant 3$.

x	0.125	0.25	0.375	0.5	0.75	1	1.5	2	2.5	3
y	5.25	1.5	0.42			0	0.67	1.5		3.33

(a) Complete the table. [3]

(b) On the grid, draw the graph of $y = 2x + \frac{1}{x} - 3$ for $0.125 \leqslant x \leqslant 3$.



(c) Use your graph to solve $2x + \frac{1}{x} - 3 \geqslant 2$.

(d) The equation $\frac{1}{x} = 7 - 3x$ can be solved using your graph in **part (b)** and a straight line.

(i) Write down the equation of this straight line.

(ii) Draw this straight line and solve the equation $\frac{1}{x} = 7 - 3x$.

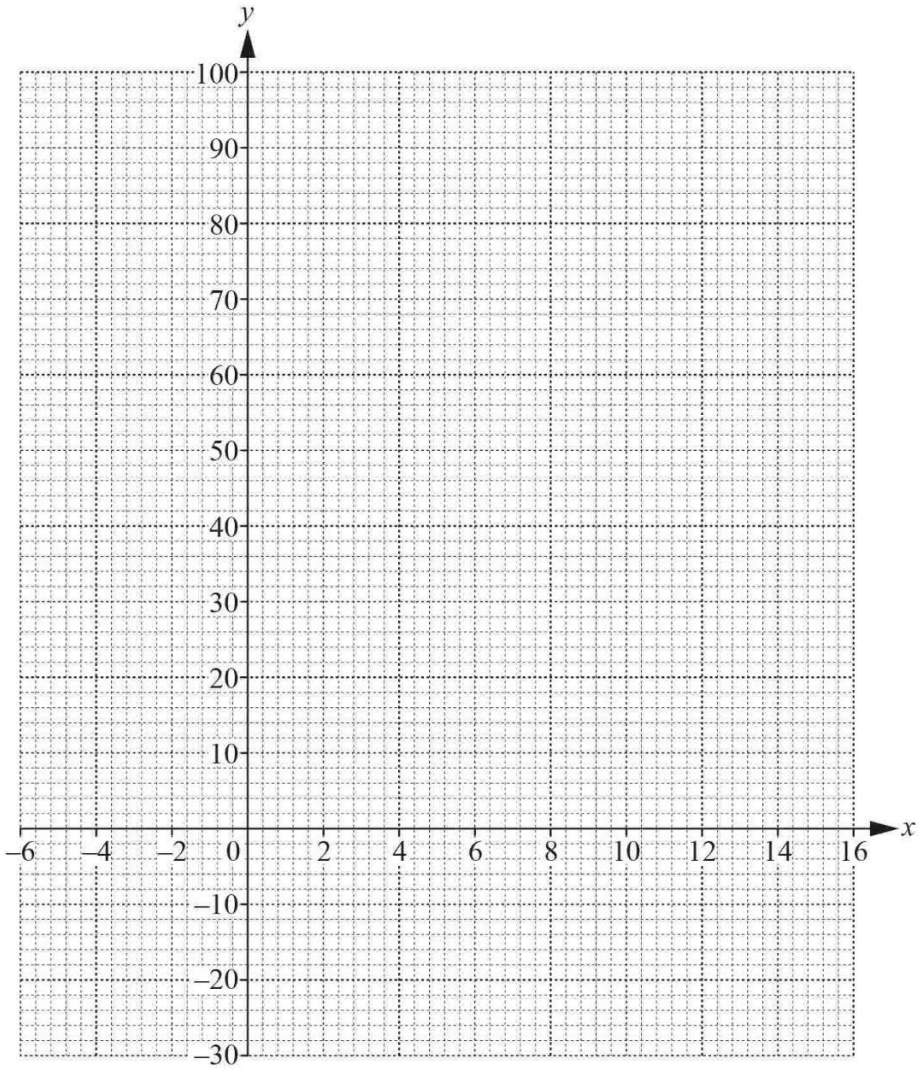
$x =$ ..... or $x =$ .....

3 **(a)** Complete the table of values for $y = x^2 - 10x$.

x	−6	−3	0	3	6	9	12	15
y	96			−21	−24		24	75

$y = x^2 - 10x$

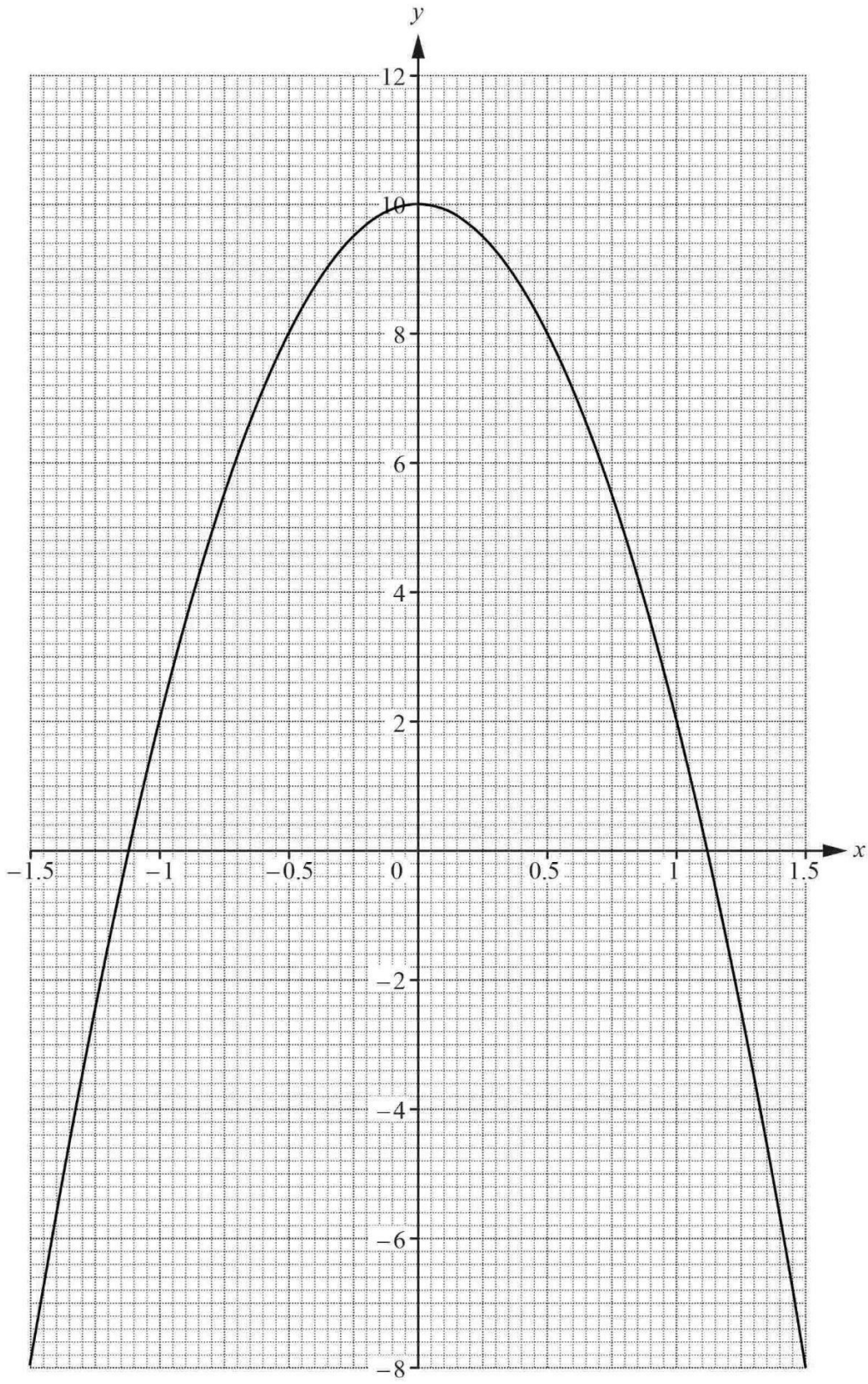
3 **(b)** On the grid, draw the graph of $y = x^2 - 10x$ for $-6 \leqslant x \leqslant 15$.



(c) Write down the co-ordinates of the lowest point of the graph.

(..... , ...)

4 The graph of $y = 10 - 8x^2$ for $-1.5 \leq x \leq 1.5$ is drawn on the grid.



(a) Write down the equation of the line of symmetry of the graph.

(b) On the grid opposite, draw the tangent to the curve at the point where $x = 0.5$.
Find the gradient of this tangent.

(c) The table shows some values for $y = x^3 + 3x + 4$.

x	−1.5	−1	−0.5	0	0.5	1	1.5
y	−3.9				5.6	8	11.9

(i) Complete the table.

(ii) On the grid, draw the graph of $y = x^3 + 3x + 4$ for $-1.5 \le x \le 1.5$.

(d) Show that the values of x where the two curves intersect are the solutions to the equation $x^3 + 8x^2 + 3x - 6 = 0$.

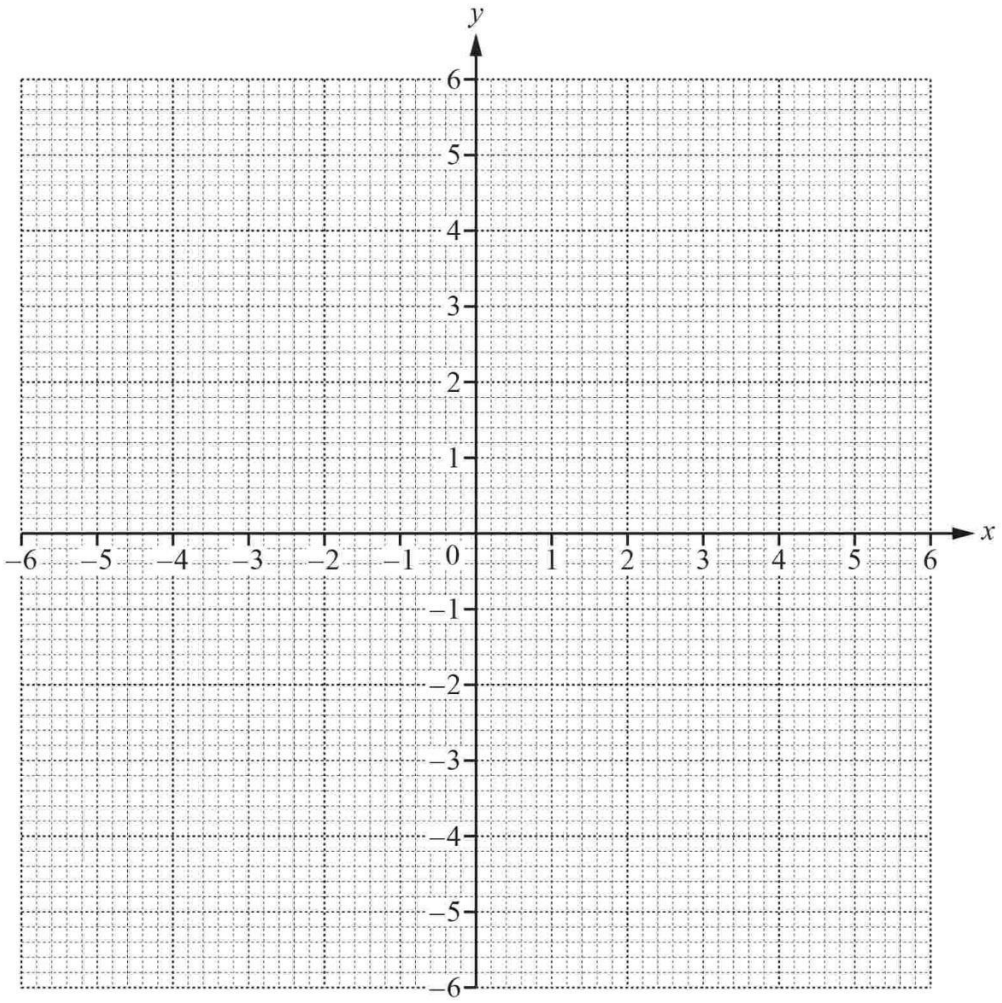
(e) By drawing a suitable straight line, solve the equation $x^3 + 5x + 2 = 0$ for $-1.5 \le x \le 1.5$.

$x =$ .....

5 **(a)** Complete the table of values for $y = \frac{6}{x}, x \neq 0$.

x	−6	−4	−3	−2	−1		1	2	3	4	6
y		−1.5		−3				3		1.5	

5 **(b)** On the grid, draw the graph of $y = \frac{6}{x}$ for $-6 \leqslant x \leqslant -1$ and $1 \leqslant x \leqslant 6$.



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

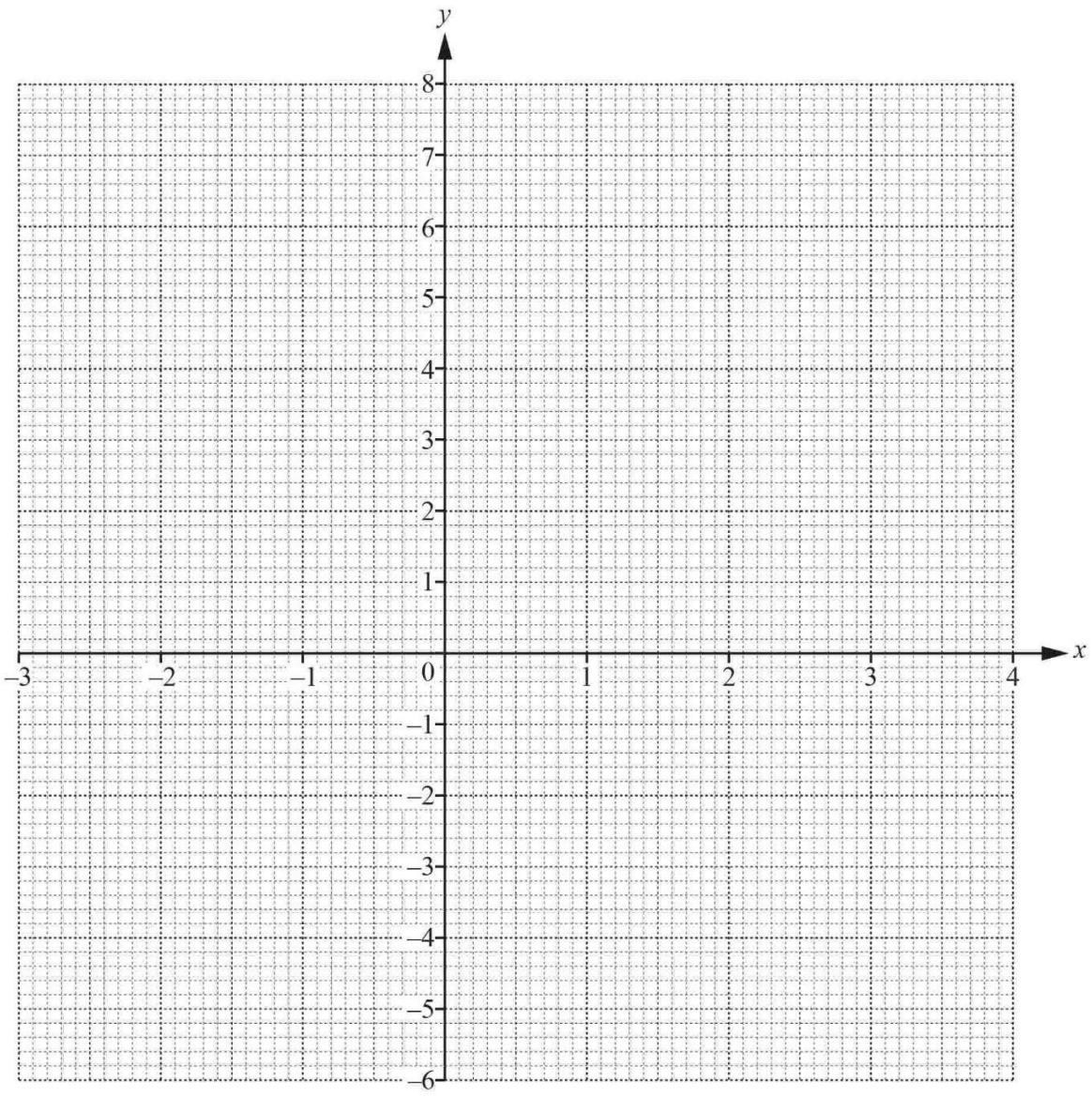
(d) Use your graph to solve the equation $\frac{6}{x} = -5$.

$x =$ .....

6 **(a)** Complete the table of values for $y = x^2 - x - 5$.

x	−3	−2	−1	0	1	2	3	4
y	7		−3		−5			

6 **(b)** On the grid, draw the graph of $y = x^2 - x - 5$ for $-3 \leq x \leq 4$.



(c) Write down the co-ordinates of the lowest point on the graph.

(..... , ...)

(d) **(i)** On the grid, draw the line of symmetry of the graph.

(ii) Write down the equation of this line.

.....