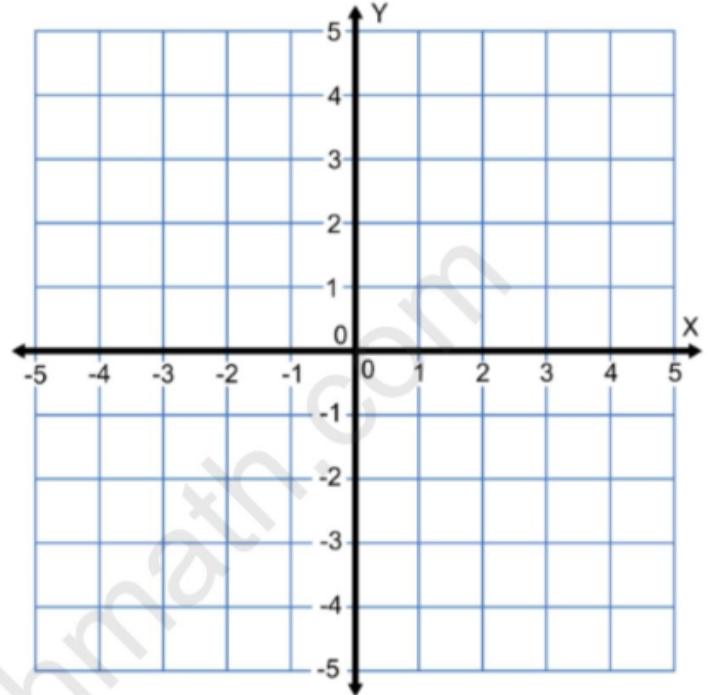




**Sketching Graphs of Quadratic Functions Grade 8**  
(Book Questions)

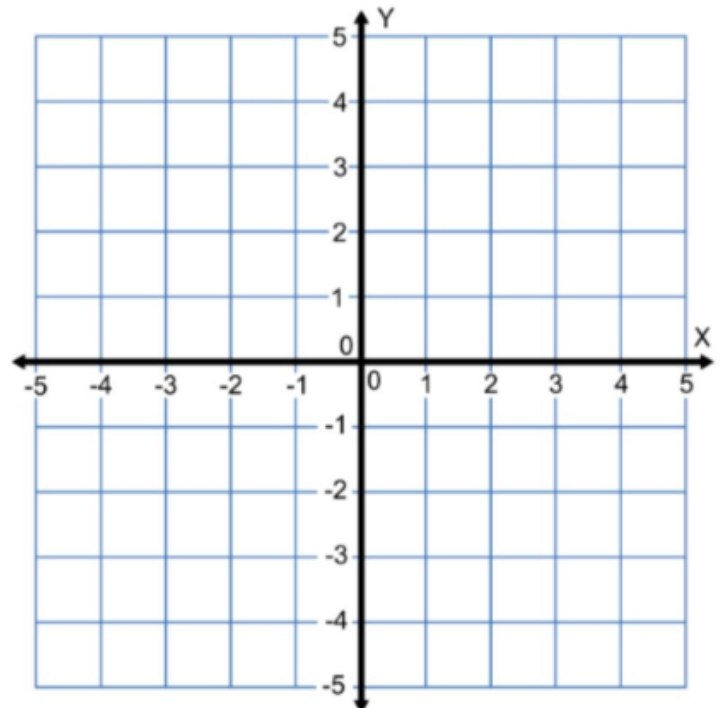
1. Plot the points on the grid provided

A(3,4)  
B(2, -5)  
C(-4, 3)  
D(-2, -4)  
E(0,3)  
F(0,-4)  
G(3,0)  
H(-5,0)



2. Plot the following

(a)  $x = 2$       (b)  $x = 5$       (c)  $x = -3$       (d)  $x = 0$   
(e)  $y = -2$       (f)  $y = -5$       (g)  $y = 3$       (h)  $y = 0$

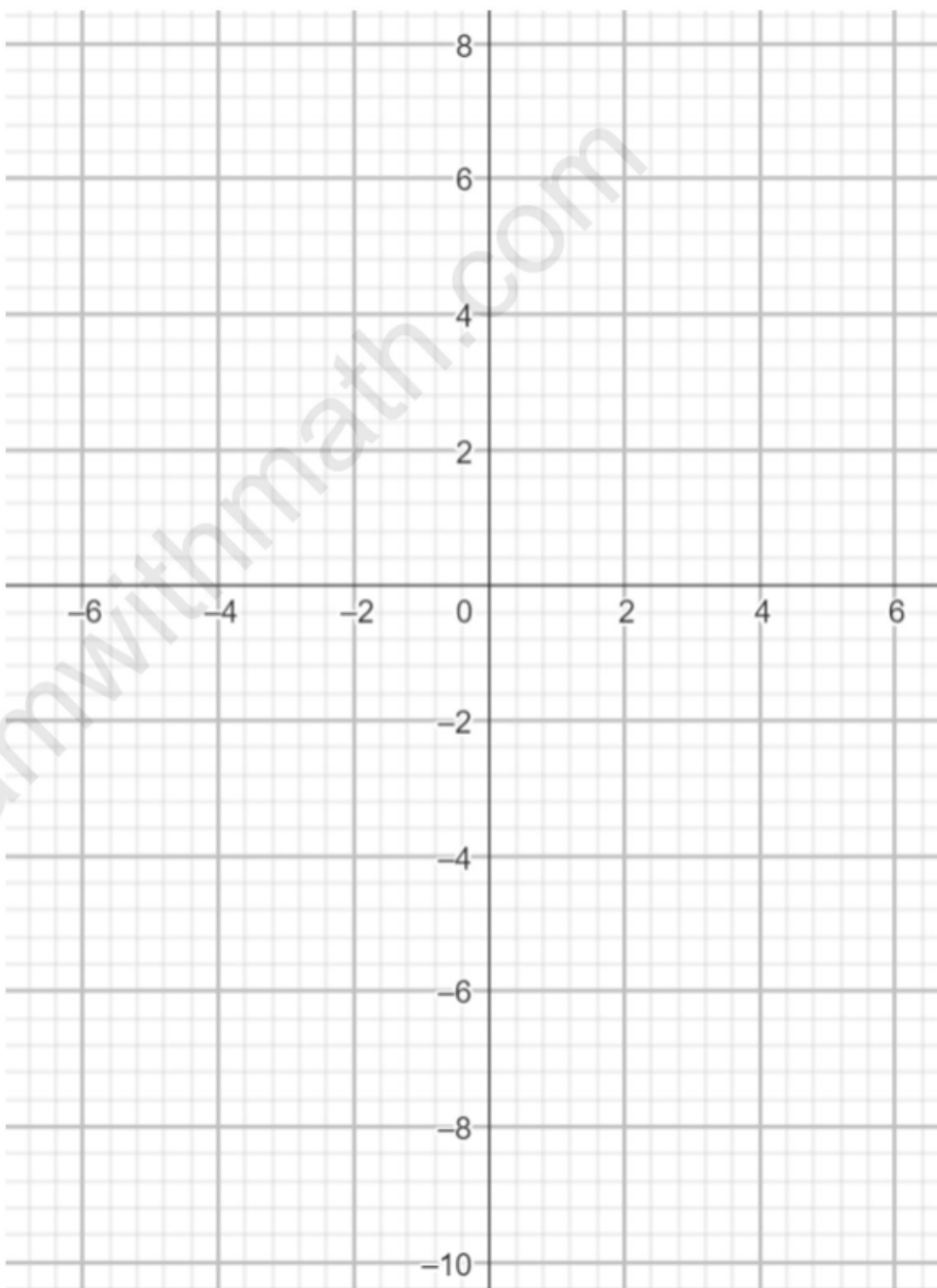




3. The variables  $x$  and  $y$  are connected by the equation  $y = x^2 + 2x - 8$ . Some values of  $x$  and the corresponding values of  $y$  are given in the table.

$x$	-5	-4	-3	-2	-1	0	1	2	3
$y$	7	$a$	-5	-8	-9	-8	$b$	0	7

- (a) Find the value of  $a$  and of  $b$ .  
(b) Draw the graph of  
 $y = x^2 + 2x - 8$   
(c) Use your graph in (b) to find  
(i) the values of  $x$  when  $y = 3$ ,  
(ii) the minimum value of  $y$ .  
(d) State the equation of the line of symmetry of the graph.

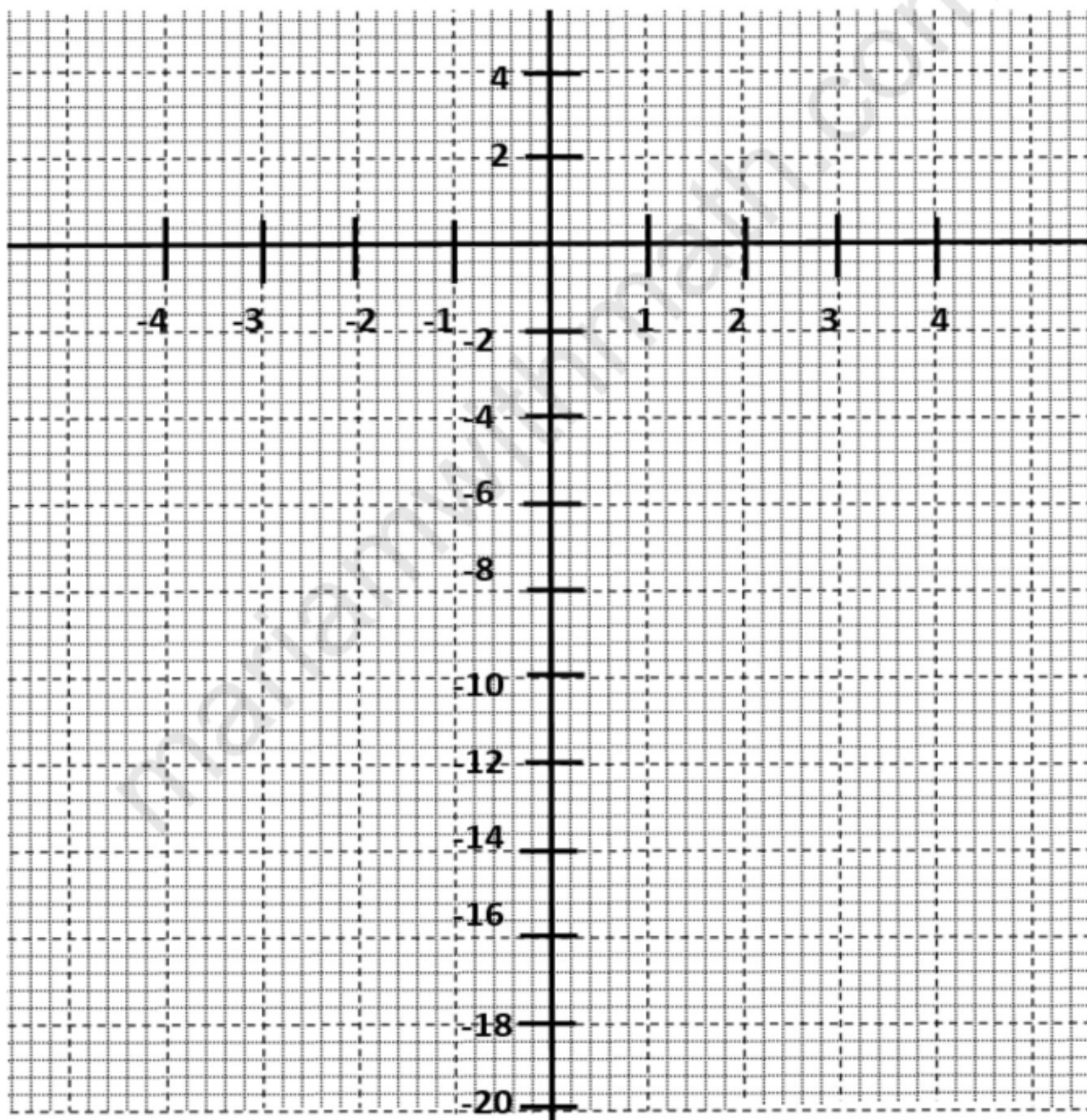




4. The variables  $x$  and  $y$  are connected by the equation  $y = 2 - 3x - 2x^2$ .  
Some values of  $x$  and the corresponding values of  $y$  are given in the table.

$x$	-4	-3	-2	-1	0	1	2
$y$	-18	$p$	0	3	2	$q$	-12

- (a) Find the value of  $p$  and of  $q$ .  
(b) Draw the graph of  $y = 2 - 3x - 2x^2$



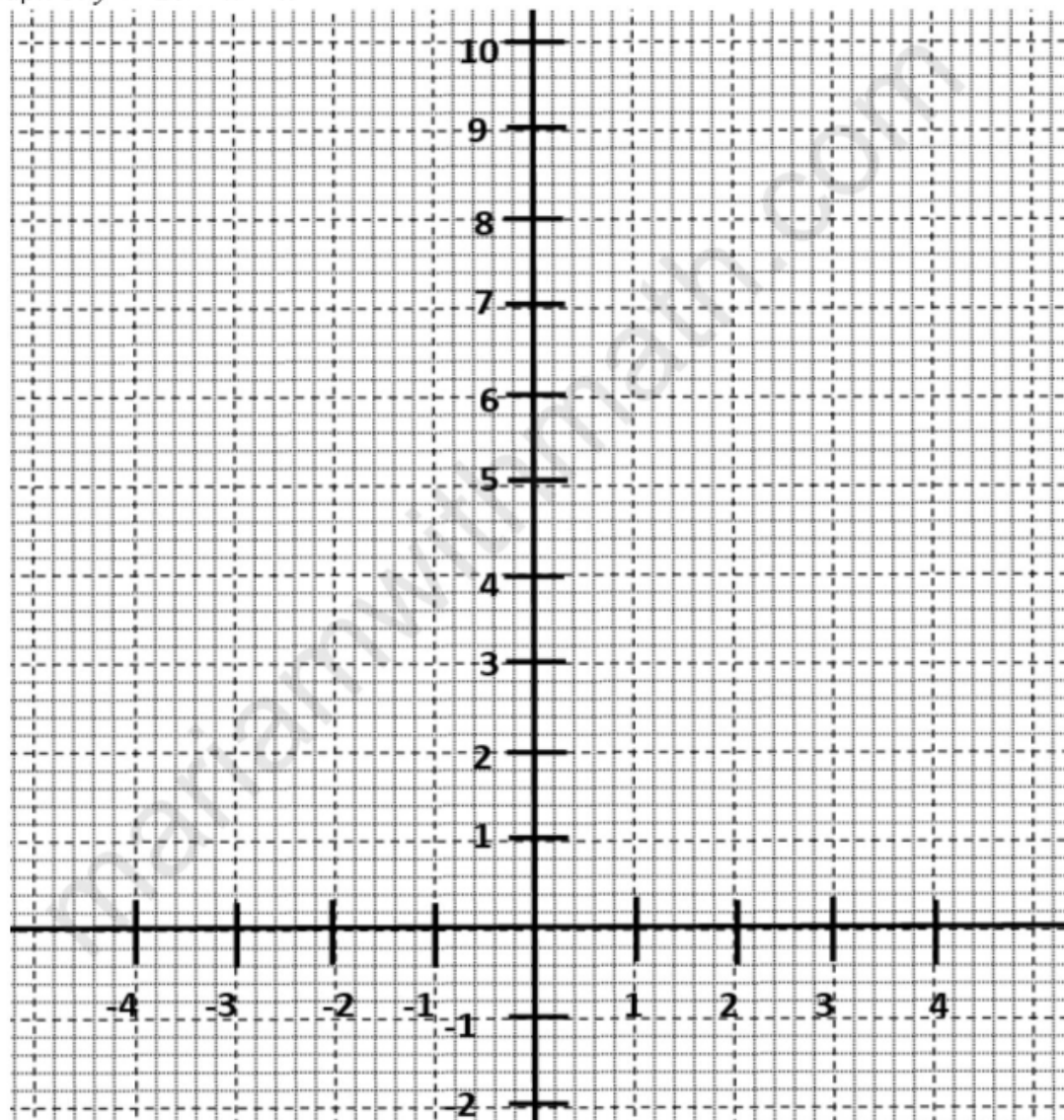
- (c) Use your graph in (b) to find  
(i) the value of  $y$  when  $x = -3.5$ ,  
(ii) the maximum value of  $y$  and the value of  $x$  at which this occurs.



5. The variables  $x$  and  $y$  are connected by the equation  $y = 10 - x - x^2$ . Some values of  $x$  and the corresponding values of  $y$  are given in the table.

$x$	-4	-3	-2	-1	0	1	2	3
$y$	-2	4	8	10	10	8	4	-2

- (a) Draw the graph of  $y = 10 - x - x^2$



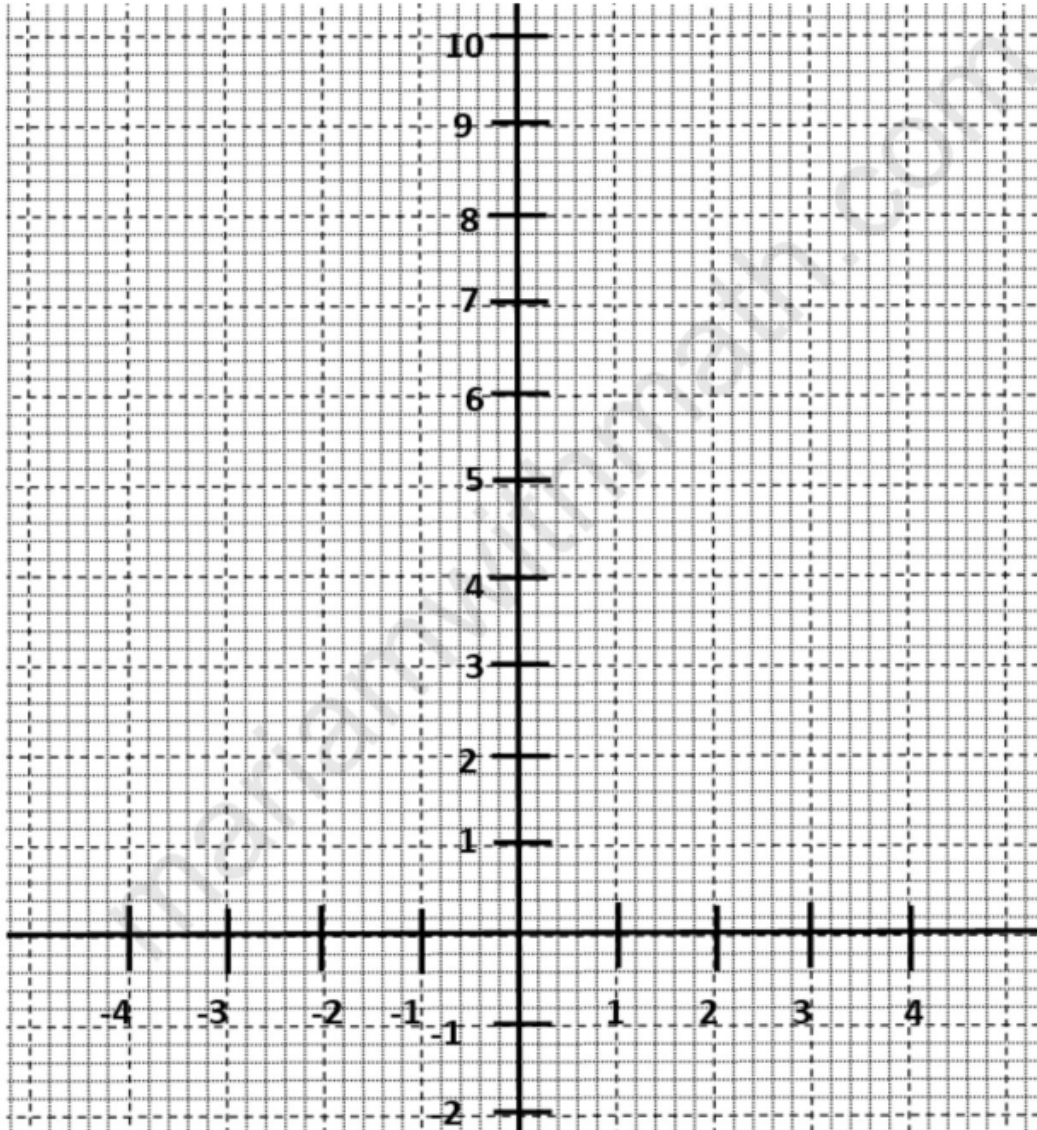
- (b) Use your graph in (a) to find
- (i) the value of  $y$  when  $x = -1.5$ .
  - (ii) the maximum value of  $y$  and the value of  $x$  at which this occurs.
- (c) By drawing an appropriate line in your graph in (a), solve the equation  $10 - x - x^2 = 1.6$ .



6. The variables  $x$  and  $y$  are connected by the equation  $y = x^2 - 2x$ . Some values of  $x$  and the corresponding values of  $y$  are given in the table.

$x$	-2	-1	0	1	2	3	4
$y$	8	3	0	-1	0	3	8

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



- (b) Use your graph in (a) to find
- (i) the values of  $x$  when  $y = 1$ ,
  - (ii) the minimum value of  $y$ .
- (c) State the equation of the line of symmetry of the graph.
- (d) By drawing an appropriate line in your graph in (a), solve the equation  $x^2 - 2x = x$ .



7. The variables  $x$  and  $y$  are connected by the equation  $y = 3 + 2x - x^2$ .

Some values of  $x$  and the corresponding values of  $y$  are given in the table.

$x$	-3	-2	-1	0	1	2	3	4	5
$y$	-12	-5	0	3	4	3	0	<b>p</b>	-12

- (a) Find the value of  $p$

Answer  $p =$  \_\_\_\_\_

- (b) On a the graph below draw the graph of  $y = 3 + 2x - x^2$

- (c) Use the graph to find,

(i) the value of  $y$  when  $x = -1.9$

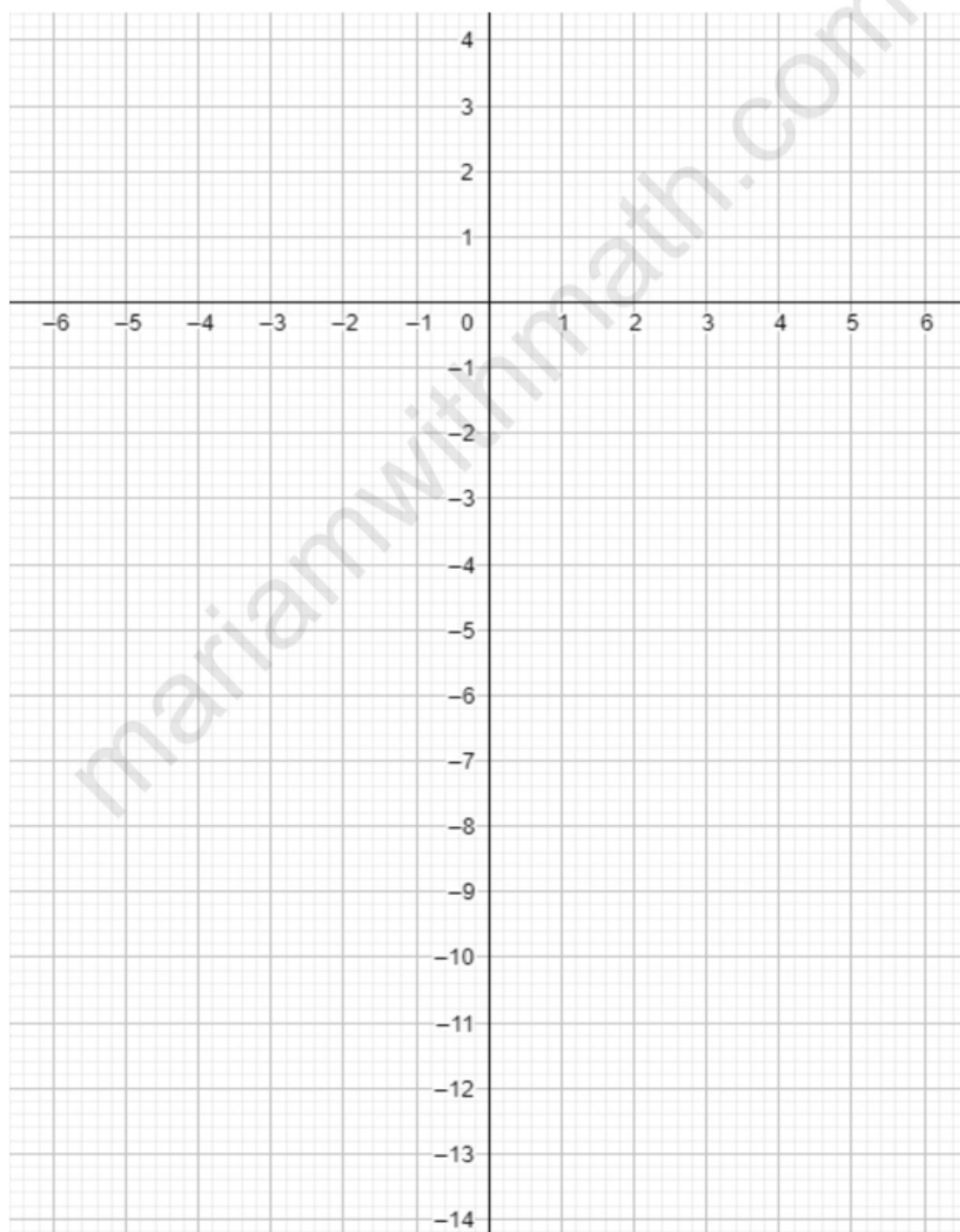
Answer  $y =$  \_\_\_\_\_

(ii) the values of  $x$  when  $y = -10$

Answer  $x =$  \_\_\_\_\_ and \_\_\_\_\_

- (d) State the equation of line of symmetry of the graph

Answer \_\_\_\_\_





8. (a) Complete the table for  $y = \frac{x^2}{2} - 3x + 2$

$x$	-1	0	1	2	3	4	5	6	7
$y$	5.5	2	-0.5	q	-2.5	-2	-0.5	2	5.5

Answer  $q =$  \_\_\_\_\_

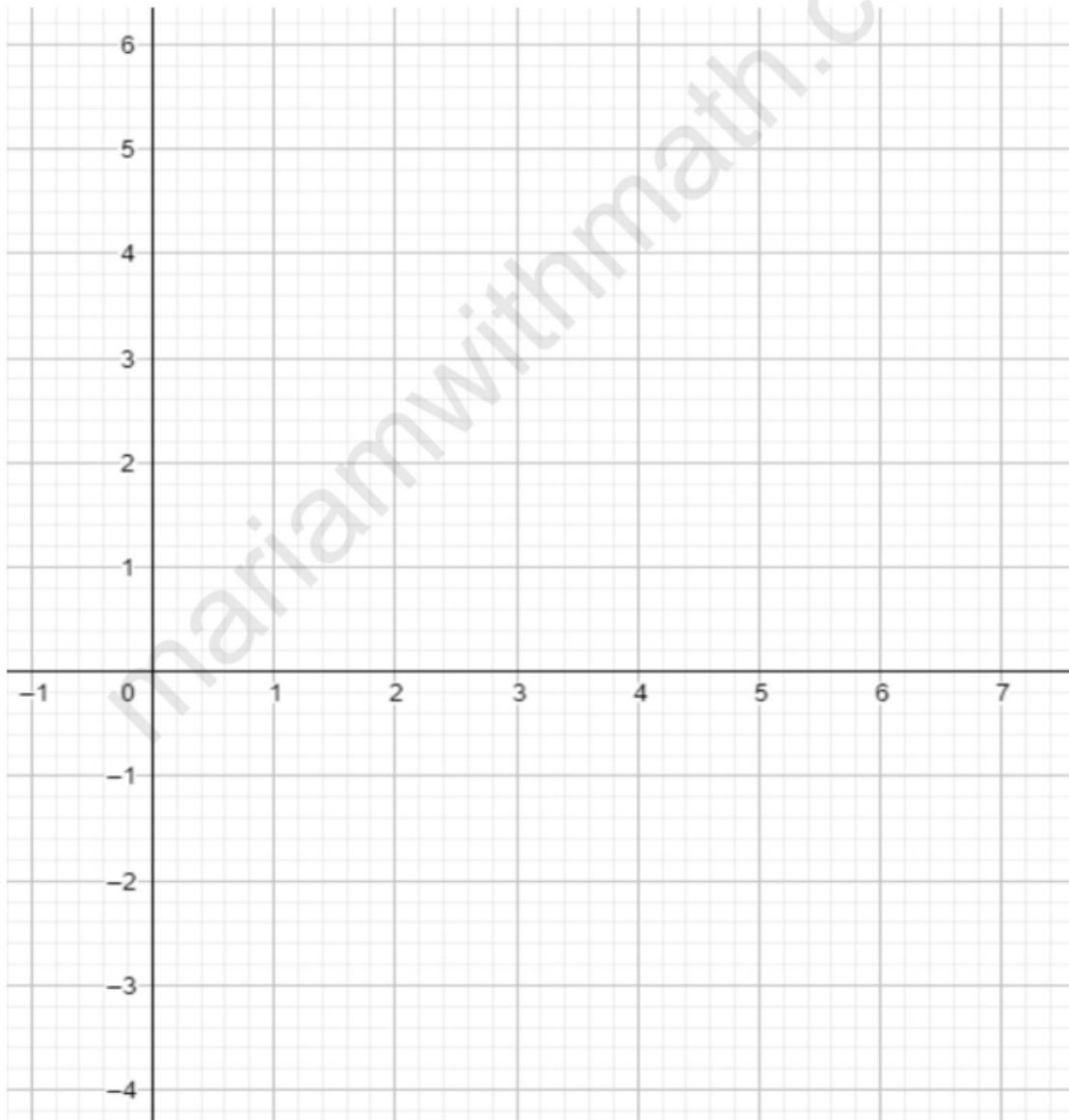
- (b) On the graph below, draw the graph of  $y = \frac{x^2}{2} - 3x + 2$

- (c) State the minimum value of  $y$  and the value of  $x$  at which it occurs.

Answer  $y =$  \_\_\_\_\_,  $x =$  \_\_\_\_\_

- (d) By drawing a straight line on your graph solve the equation  $\frac{x^2}{2} - 3x + 2 = 4$

Answer  $x =$  \_\_\_\_\_ and \_\_\_\_\_



**Answers**

<b>3</b>	(a) $a=0$ , $b=-5$ (c) (i) 2.45 or -4-45 (ii) -9 (iii) $x = -1$
<b>4</b>	(a) $p = -7$ and $q = -3$ c(i) -12 (ii) 3.1 , -0.75
<b>5</b>	(b) (i) 9.3 (ii) 10.3 , -0.5 (c) -3.45 or 2.45
<b>6</b>	b(i) -0.4 or 2.4 (ii) -1 (c) $x = 1$ (d) 0 or 3
<b>7</b>	(c)(i) -4.4 (ii) $x = -2.74$ & $x = 4.74$ (d) $x = 1$
<b>8</b>	(a) -2 (b) -2.5 and 3 (c) -0.6 and 6.6