

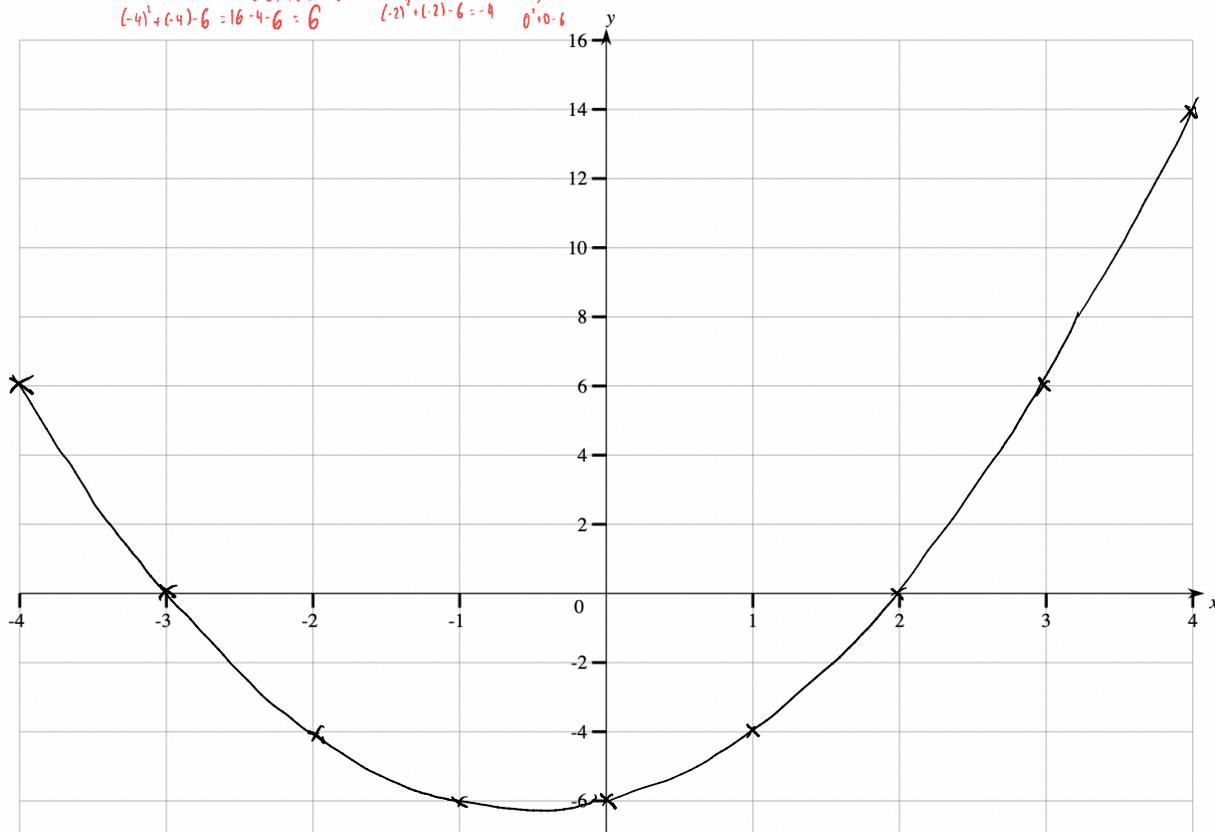
## Graphs of Quadratics

### Exam Style Questions

1. (a) Sketch the graph of  $y = x^2 + x - 6$  for  $x = -4$  to  $x = 4$ .

$x$	-4	-3	-2	-1	0	1	2	3	4
$y$	6	0	-4	-6	-6	-4	0	6	14

$(-4)^2 + (-4) - 6 = 16 - 4 - 6 = 6$     
 $(-3)^2 + (-3) - 6 = 0$     
 $(-2)^2 + (-2) - 6 = -4$     
 $(-1)^2 + (-1) - 6 = -6$     
 $0^2 - 6 = -6$



(3)

- (b) Estimate the turning point of the graph  $y = x^2 + x - 6$

$(-0.5, -6.25)$  (1)

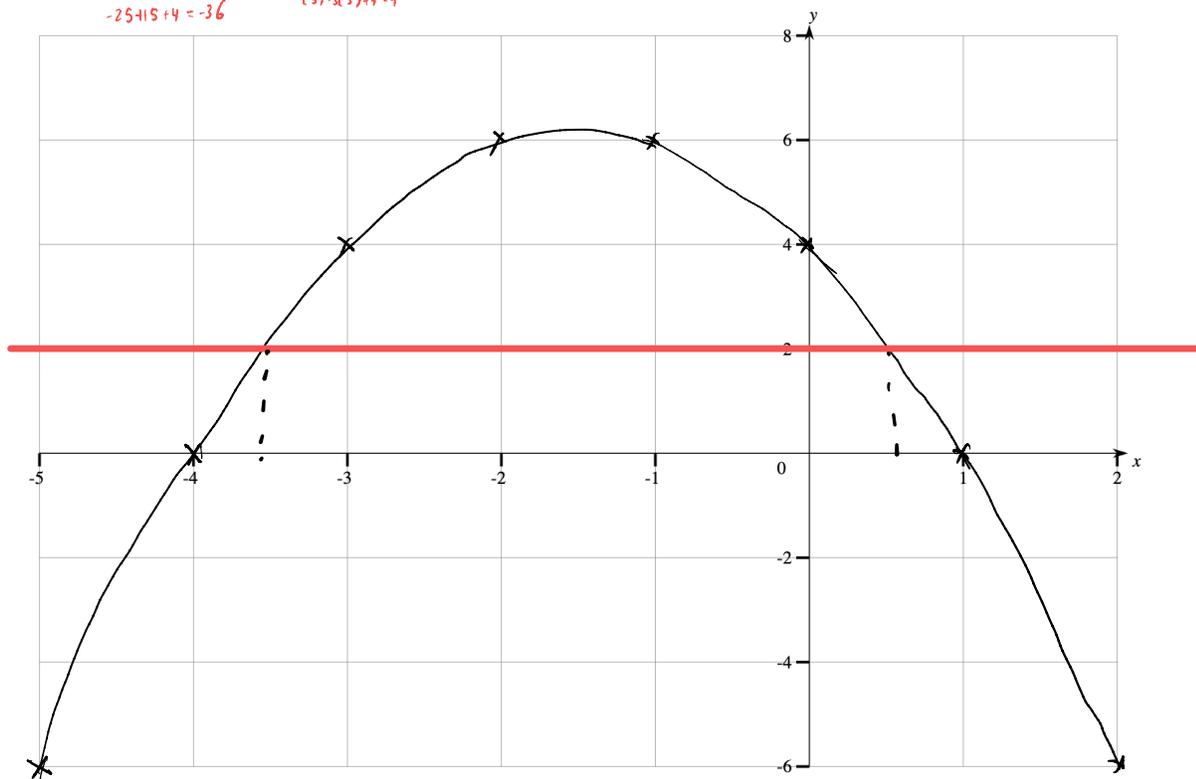
- (c) Using the graph, write down the roots of  $x^2 + x - 6 = 0$

$x = 2$  or  $x = -3$  (1)

2. (a) Sketch the graph of  $y = -x^2 - 3x + 4$  for  $x = -5$  to  $x = 2$ .

$x$	-5	-4	-3	-2	-1	0	1	2
$y$	-6	0	4	6	6	4	0	-6

$\begin{matrix} \uparrow & \uparrow & \uparrow \\ -(-5)^2 - 3(-5) + 4 & -(-4)^2 - 3(-4) + 4 & -(-3)^2 - 3(-3) + 4 \\ -25 + 15 + 4 = -36 & -16 + 12 + 4 & -9 + 9 + 4 = 4 \end{matrix}$



(3)

(b) Estimate the turning point of the graph  $y = -x^2 - 3x + 4$

$(-1.5, 6.1)$ ..... (1)

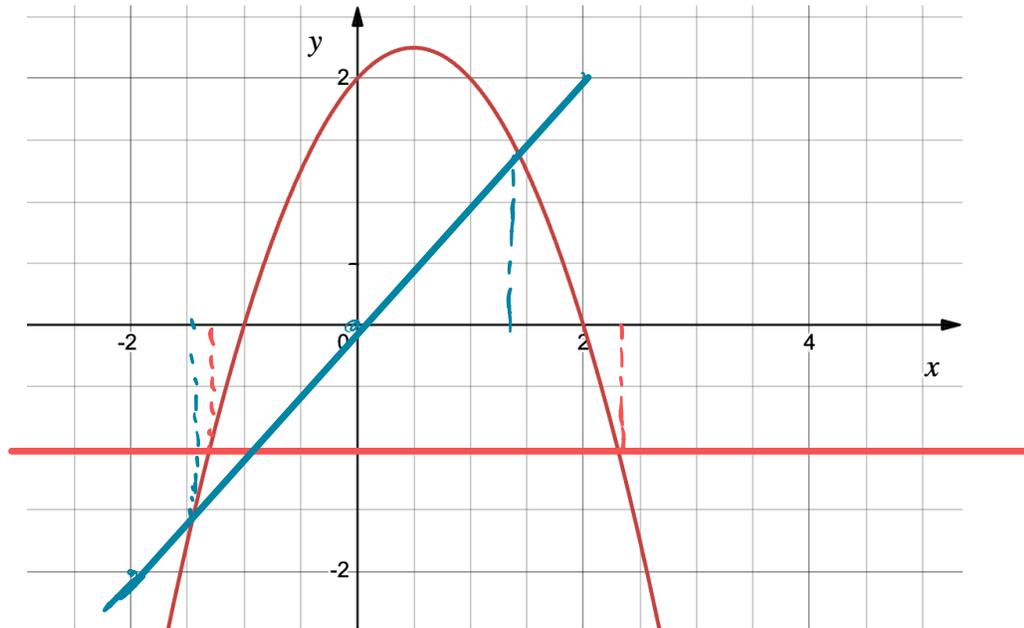
(c) Using the graph, write down the roots of  $-x^2 - 3x + 4 = 0$

$x = -4$   
 $x = 1$ ..... (1)

(d) Using the graph, write down the roots of  $-x^2 - 3x + 4 = 2$

$x = -3.5$   
 $x = 0.5$ ..... (1)

Below is the graph of  $y = -x^2 + x + 2$



(b) Estimate the turning point of the graph  $y = -x^2 + x + 2$

...  $(0.5, 2.25)$  (1)

(c) Using the graph, write down the roots of  $-x^2 + x + 2 = 0$

...  $x = 2, x = -1$  (1)

(d) Using the graph, estimate the roots of  $-x^2 - 3x + 4 = -1$

...  $x = -1.25, x = 2.25$  (1)

(e) Using the graph, estimate the roots of  $-x^2 - 3x + 4 = x$

...  $x = 1.25, x = -1.5$  (1)