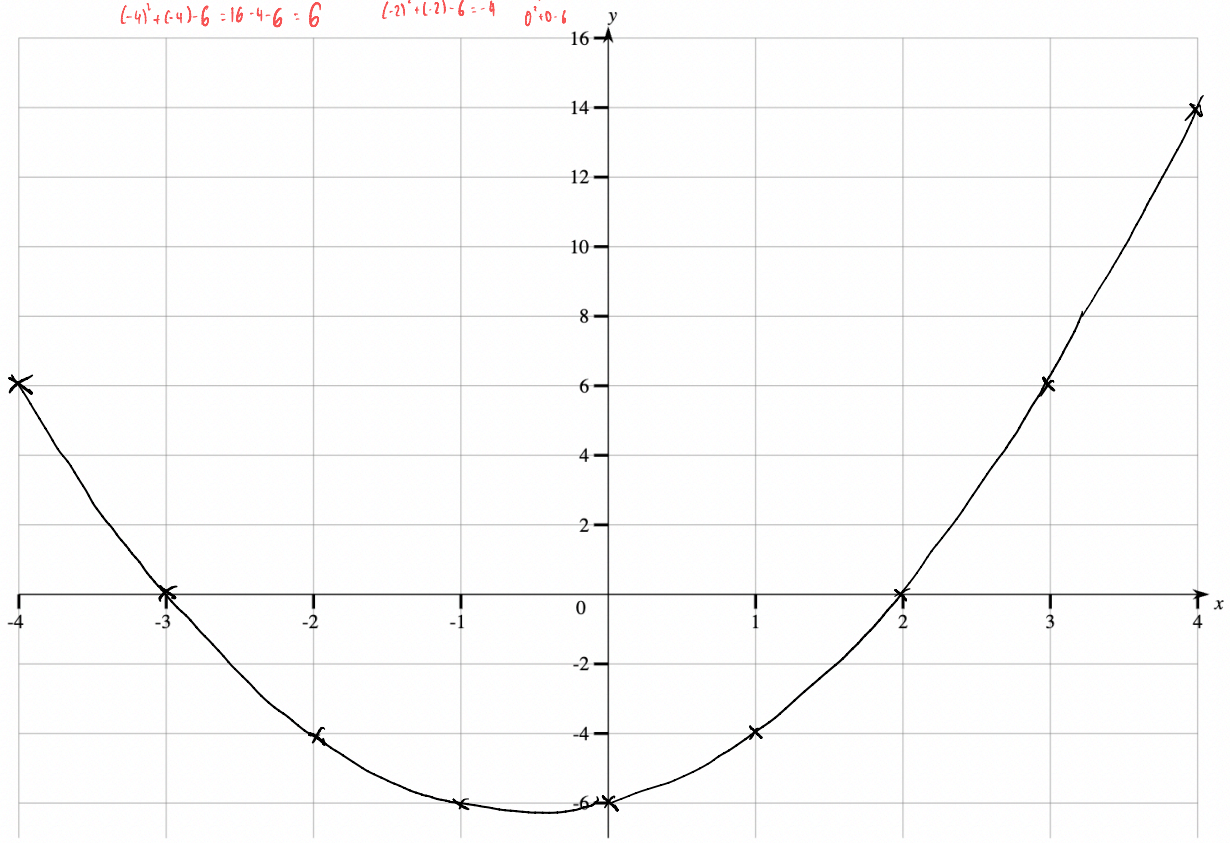
Graphs of Quadratics

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+0-6



(3)

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

(-0·5, -6·1) (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 $x = 2$.

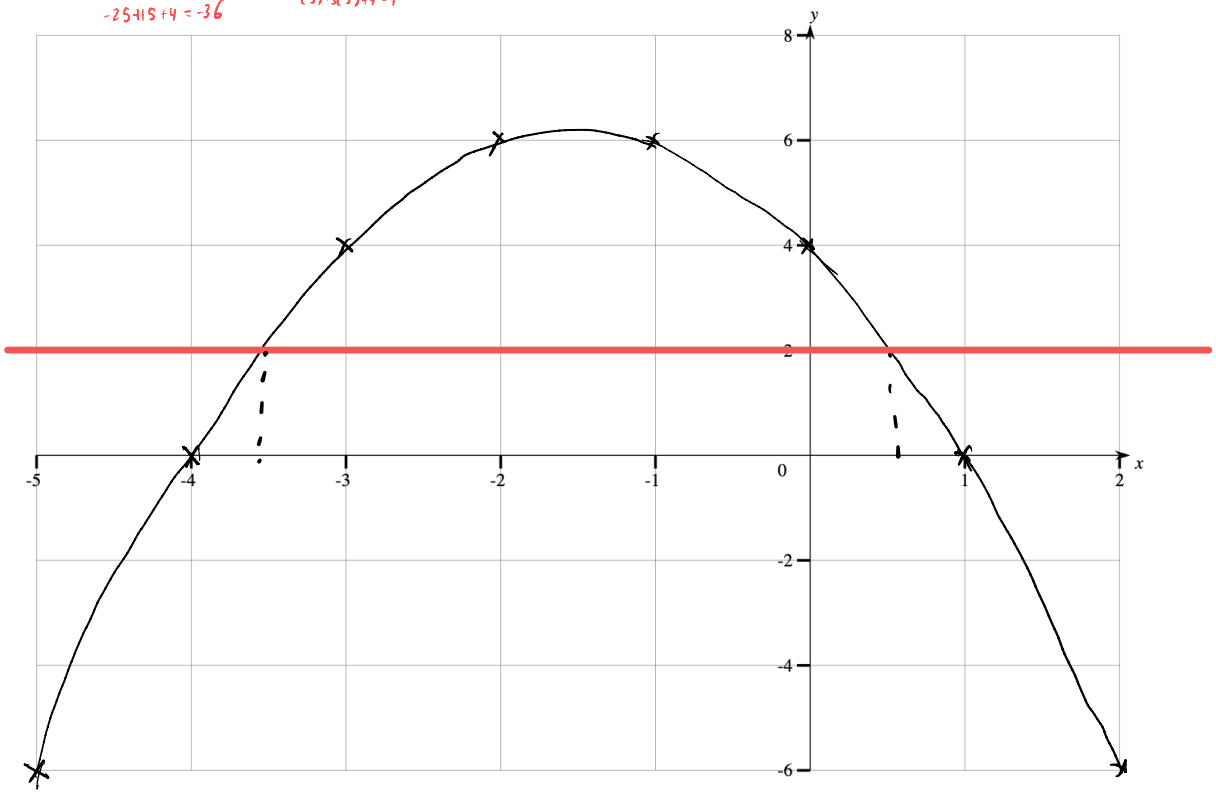
x	-5	-4	-3	-2	-1	0	1	2
y	-6	0	4	6	6	4	0	-6

$-(-5)^2-3(-5)+4$
$-25+15+4=-36$

$-(-4)^2-3(-4)+4$
$-16+12+4$

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

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



(3)

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

(-1·5, 6·1) ..... (1)

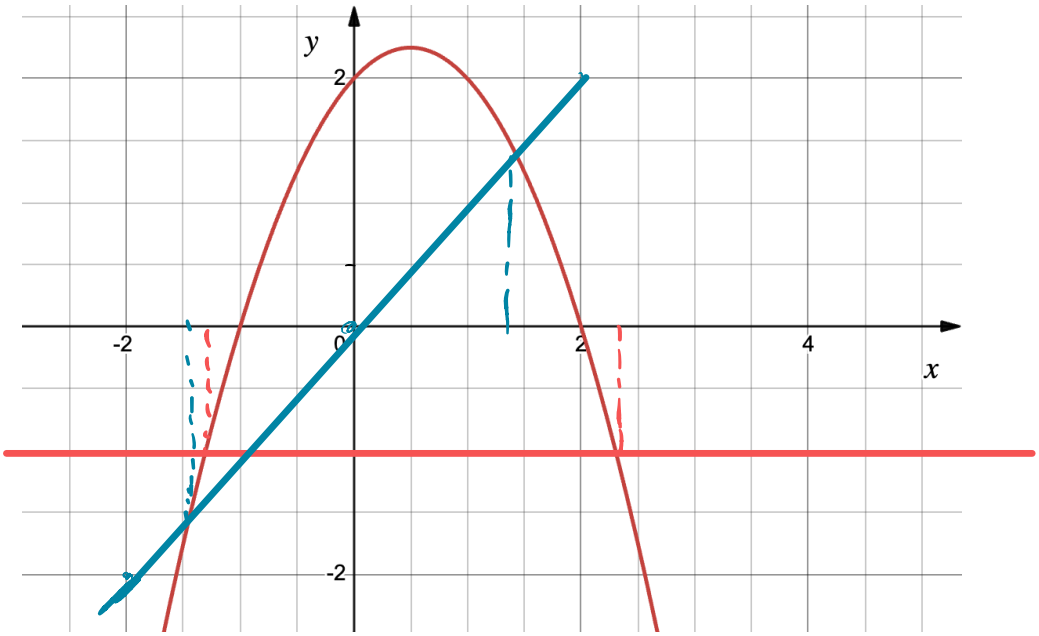
(c) Using the graph, write down the roots of $-x^2 - 3x + 4 = 0$

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