2.4) Quadratic graphs

Worked example	Your turn
Write down the line of symmetry of: $y = x^2 + 4x - 5$	Write down the line of symmetry of: $y = x^2 + 8x - 17$
	$x = -4$
$y = x^2 - 6x + 10$	

Worked example

Write down the line of symmetry of:

$$y = 12x - 2x^2 - 5$$

$$y = 12x - 3x^2 + 5$$

Your turn

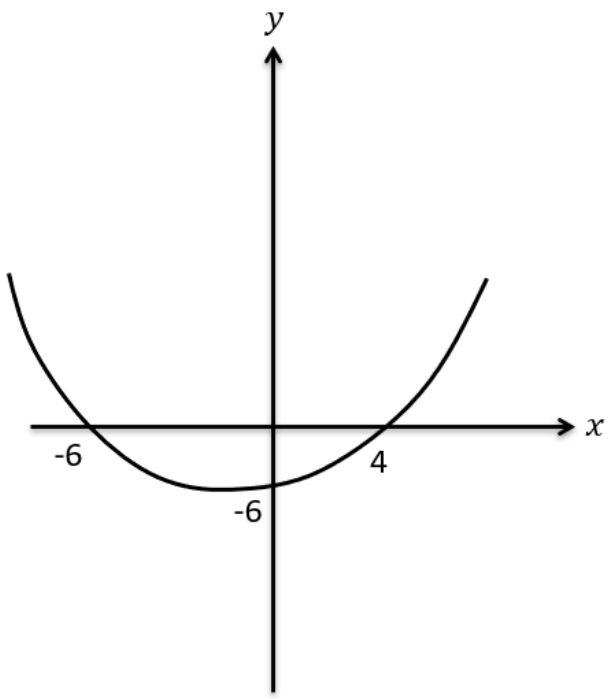
Write down the line of symmetry of:

$$y = 4x - 2x^2 - 3$$

$$x = 1$$

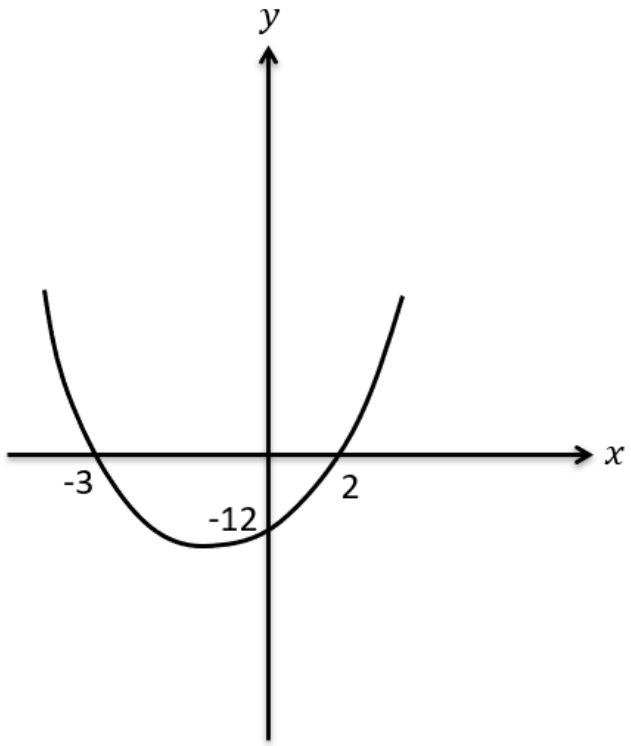
Worked example

Determine the equation of this quadratic graph, in the form $y = ax^2 + bx + c$.



Your turn

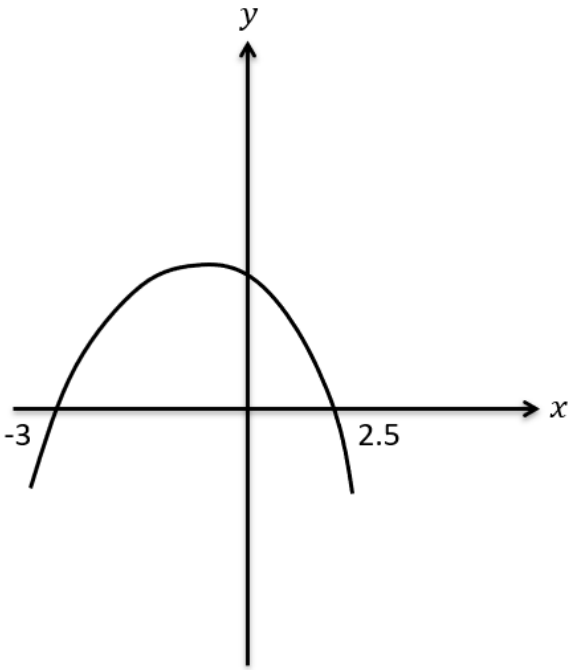
Determine the equation of this quadratic graph, in the form $y = ax^2 + bx + c$.



$y = 2x^2 + 2x - 12$

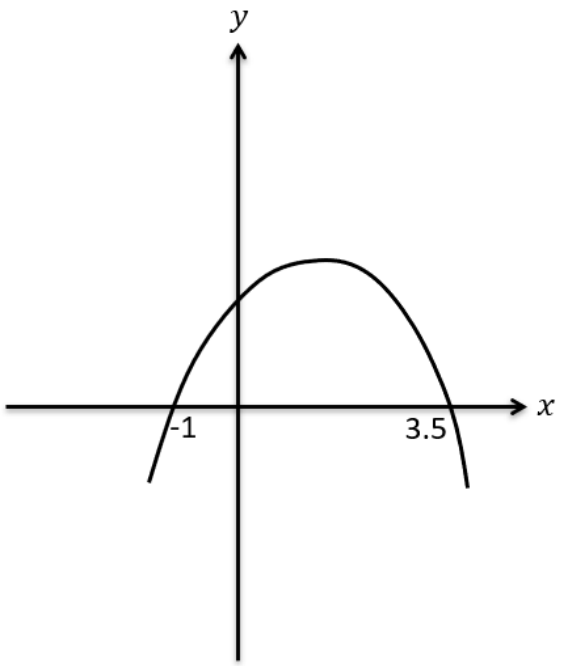
Worked example

Determine the equation of this quadratic graph, in the form $y = ax^2 + bx + c$, where a, b, c are integers.



Your turn

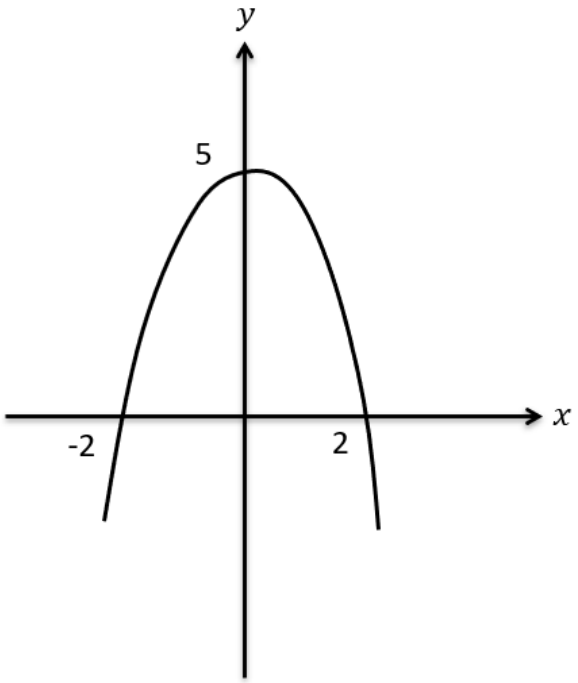
Determine the equation of this quadratic graph, in the form $y = ax^2 + bx + c$, where a, b, c are integers.



$y = -2x^2 + 5x + 7$

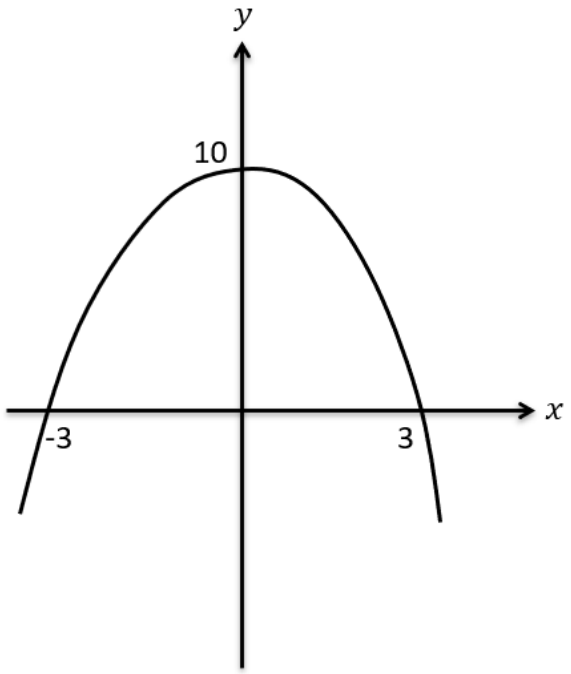
Worked example

Determine the equation of this quadratic graph, in the form $y = ax^2 + bx + c$, where a, b, c are integers.



Your turn

Determine the equation of this quadratic graph, in the form $y = ax^2 + bx + c$, where a, b, c are integers.



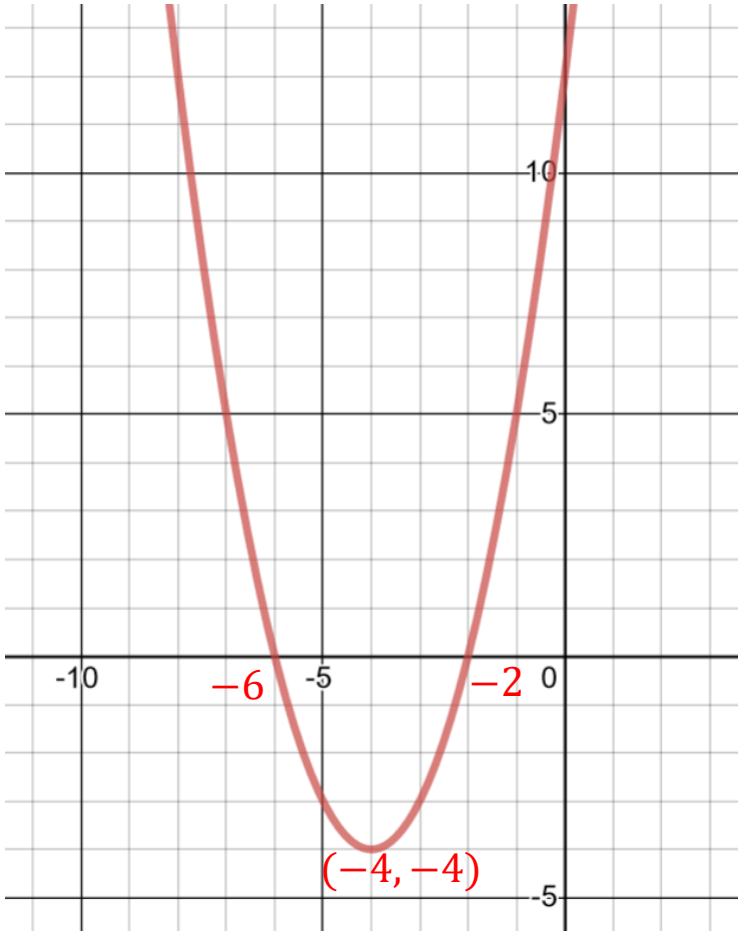
$$y = \frac{10}{9}(x + 3)(3 - x)$$

Worked example	Your turn
The graph of $y = ax^2 + bx + c$ has a minimum at $(3, -5)$ and passes through $(4, 0)$. Find the values of a, b and c	The graph of $y = ax^2 + bx + c$ has a minimum at $(7, -2)$ and passes through $(8, 0)$. Find the values of a, b and c $a = 2, b = -28, c = 96$

Worked example	Your turn
Find the coordinates of the turning point of: $y = x^2 + 6x - 5$ $y = x^2 - 8x + 3$	Find the coordinates of the turning point of: $y = x^2 + 8x - 2$ $(-4, -18)$

Worked example	Your turn
Find the coordinates of the turning point of: $y = 2x^2 + 6x - 5$	Find the coordinates of the turning point of: $y = 2x^2 + 10x - 3$ $(-\frac{5}{2}, -\frac{31}{2})$
$y = 2x^2 - 8x + 3$	

Worked example	Your turn
Sketch $y = x^2 + 6x + 8$, labelling the intercepts with the axes and the turning points.	Sketch $y = x^2 + 8x + 12$, labelling the intercepts with the axes and the turning points.



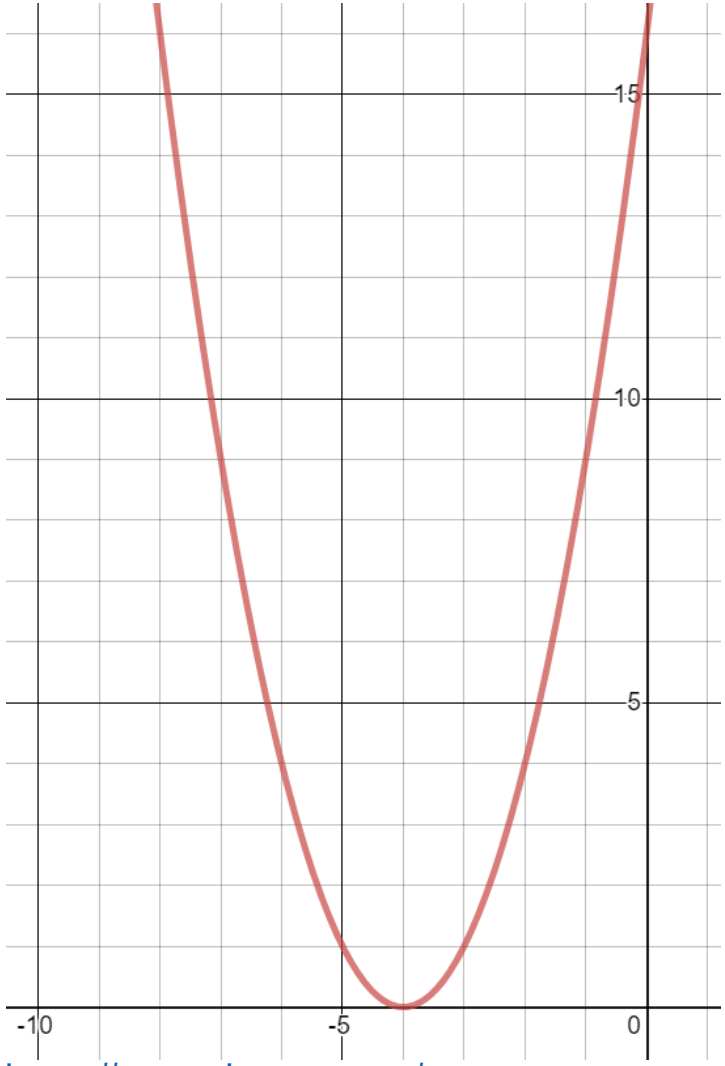
Graph used with permission from DESMOS: https://www.desmos.com/

Worked example

Sketch $y = x^2 + 6x + 9$, labelling the intercepts with the axes and the turning points.

Your turn

Sketch $y = x^2 + 8x + 16$, labelling the intercepts with the axes and the turning points.



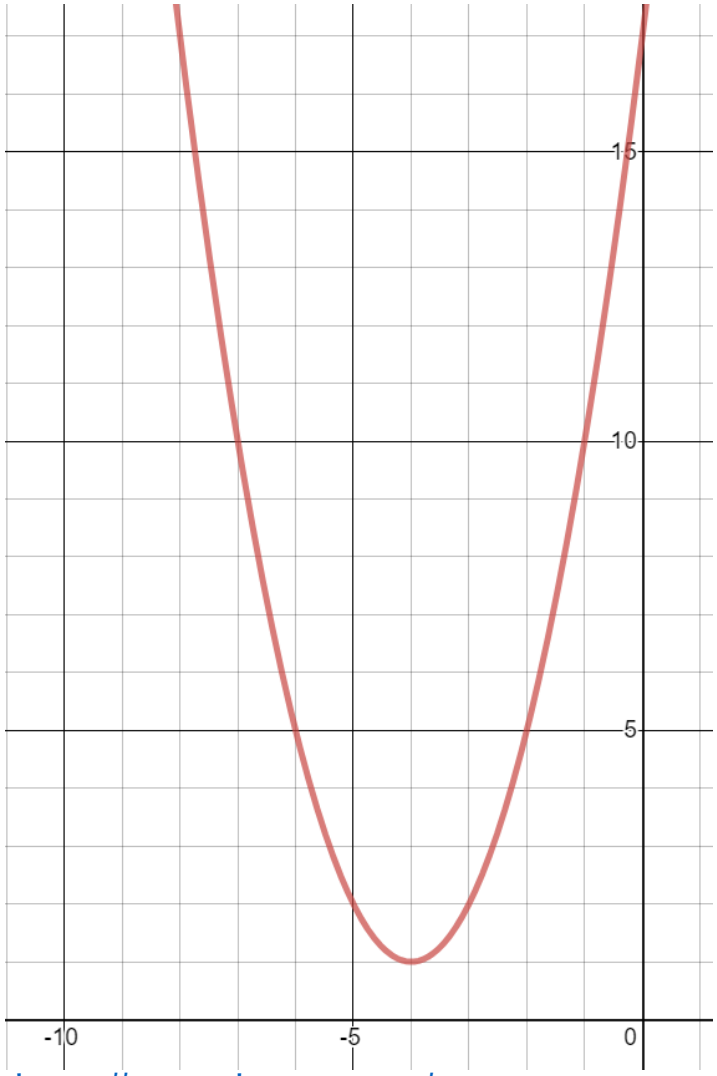
Graph used with permission from DESMOS: https://www.desmos.com/

Worked example

Sketch $y = x^2 + 6x + 10$, labelling the intercepts with the axes and the turning points.

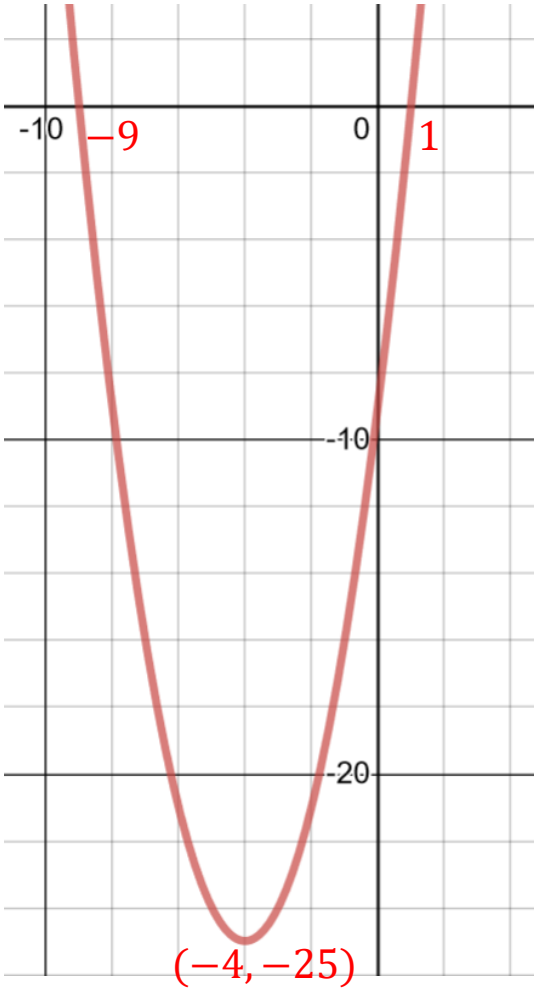
Your turn

Sketch $y = x^2 + 8x + 17$, labelling the intercepts with the axes and the turning points.



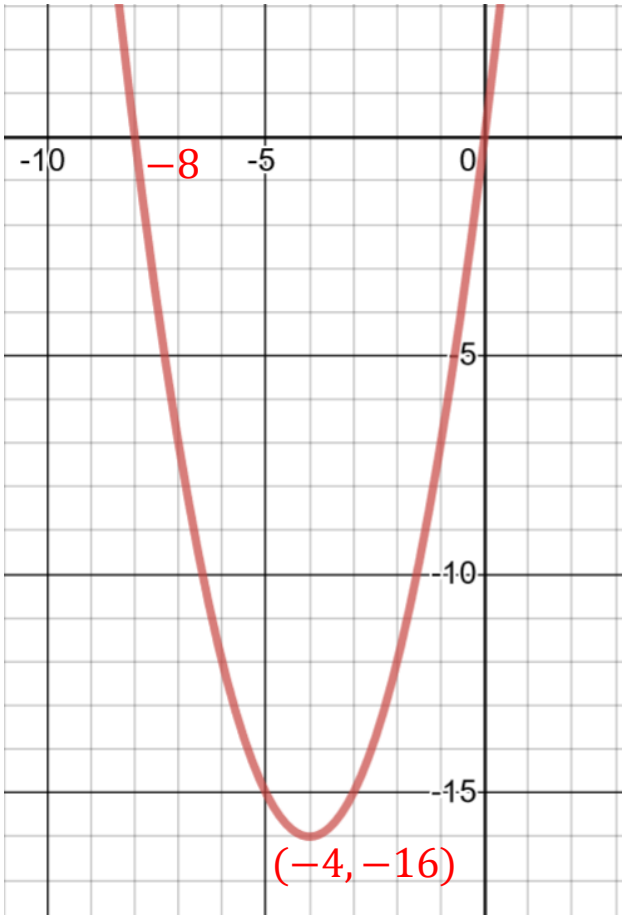
Graph used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch $y = x^2 + 6x - 7$, labelling the intercepts with the axes and the turning points.	Sketch $y = x^2 + 8x - 9$, labelling the intercepts with the axes and the turning points.



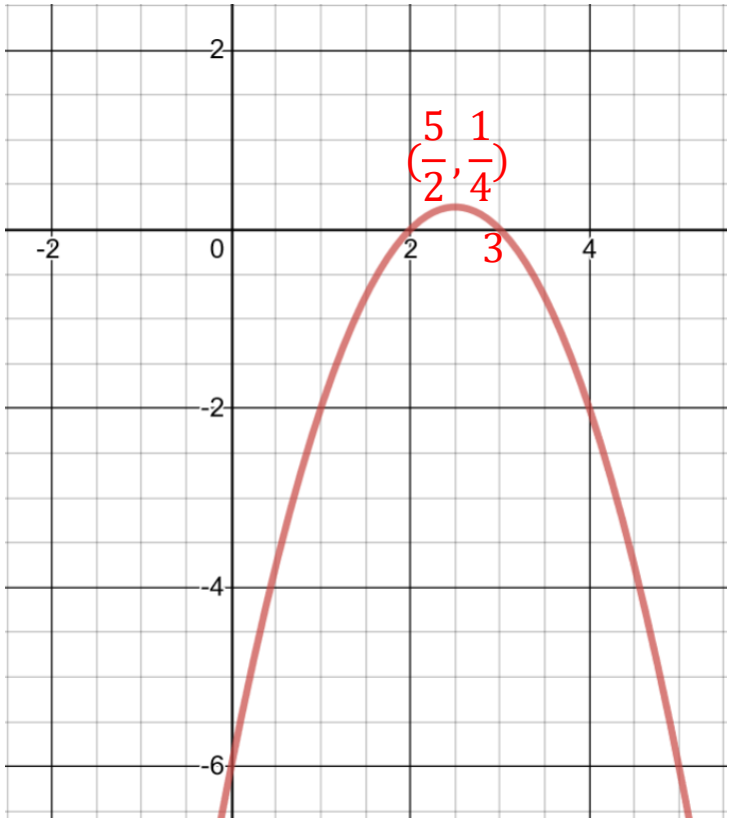
Graph used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch $y = x^2 + 6x$, labelling the intercepts with the axes and the turning points.	Sketch $y = x^2 + 8x$, labelling the intercepts with the axes and the turning points.



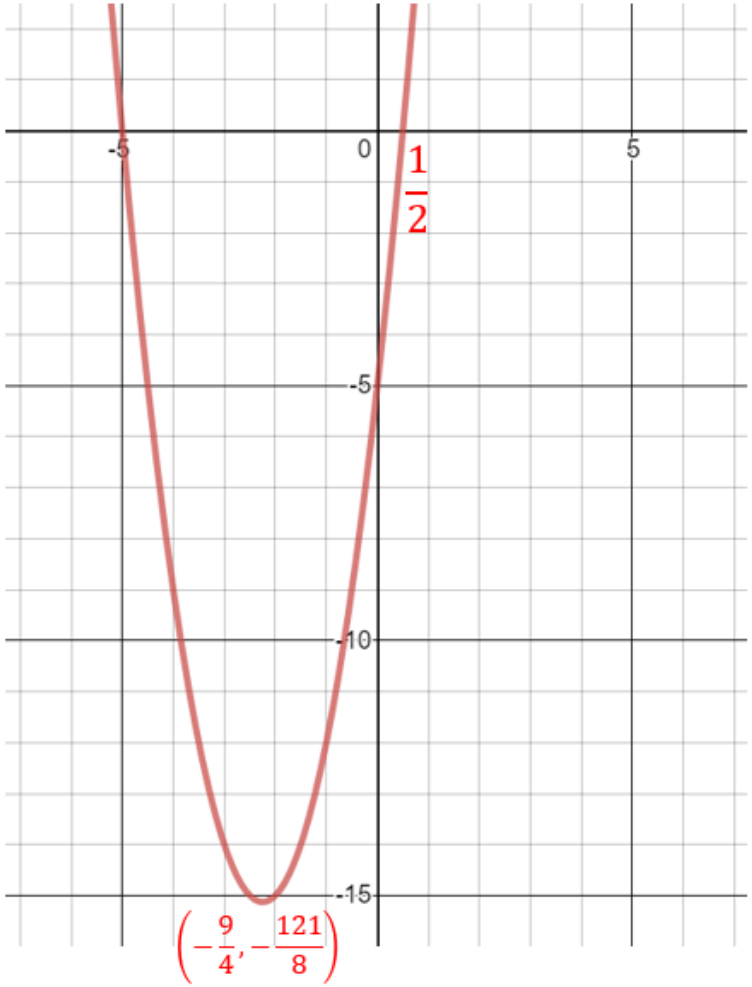
Graph used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch $y = -x^2 + 3x - 2$, labelling the intercepts with the axes and the turning points.	Sketch $y = -x^2 + 5x - 6$, labelling the intercepts with the axes and the turning points.



Graph used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch $y = 2x^2 + 5x - 3$, labelling the intercepts with the axes and the turning points.	Sketch $y = 2x^2 + 9x - 5$, labelling the intercepts with the axes and the turning points.



Graph used with permission from DESMOS: https://www.desmos.com/