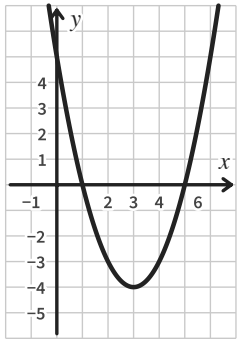
Roots and turning points

1

The graph shows $y = x^2 - 6x + 5$.
Complete the facts.



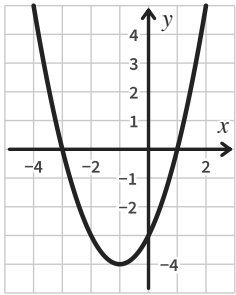
Roots x = 1 and x = 5

***y* intercept**

Turning point

2

The graph shows $y = x^2 + 2x - 3$.
Complete the facts.



Roots

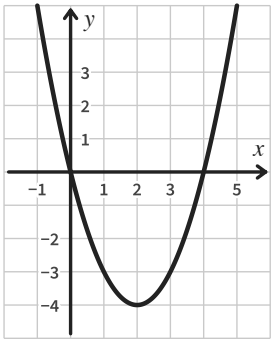
***y* intercept**

Line of symmetry

Turning point

3

The graph shows $y = x^2 - 4x$.
Complete the facts.



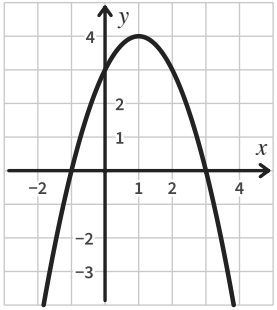
Roots

***y* intercept**

Turning point

4 *Notice the change!*

The graph shows $y = -x^2 + 2x + 3$.
Complete the facts.



Roots

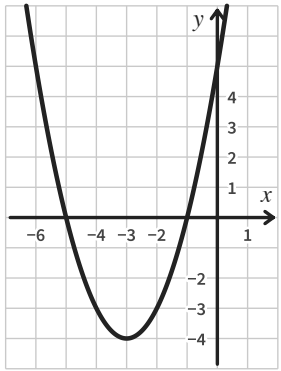
***y* intercept**

Turning point

Maximum or minimum?

5

The graph shows $y = x^2 + 6x + 5$. Use it to solve $x^2 + 6x + 5 = 0$.

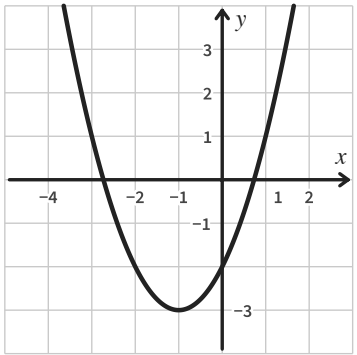


***x* =**

or *x* =

6 *Notice the change!*

The graph shows $y = x^2 + 2x - 2$.
Draw the line $y = 1$ and use it to solve $x^2 + 2x - 2 = 1$.

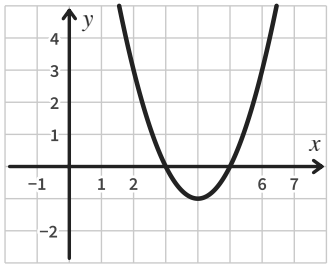


***x* =**

or *x* =

7

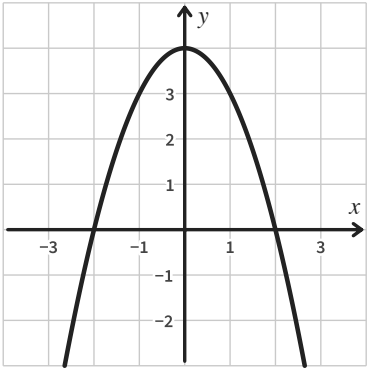
Jade says the turning point of
$y = x^2 - 8x + 15$ is $(-1, 4)$.
Explain her mistake. Write down the turning point.



Turning point

8

The graph shows $y = 4 - x^2$. Use it to solve $4 - x^2 = 3$.



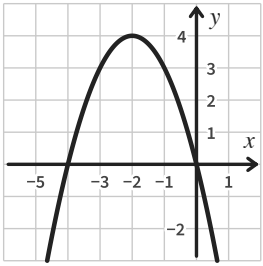
***x* =**

or *x* =

Roots and turning points *further practice*

9

The graph shows $y = -x^2 - 4x$.
Write down the turning point. Is it a maximum or a minimum?



Answer _____

10

A quadratic curve crosses the x axis at $x = -2$ and $x = 6$. Write down the equation of its line of symmetry.

Answer _____

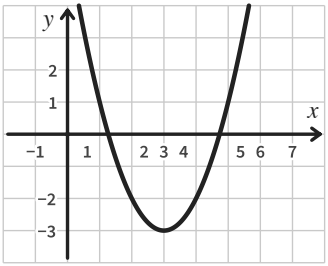
11

A U shaped curve has roots $x = 1$ and $x = 7$. Its lowest point is at $y = -9$.
Write down the coordinates of its turning point.

Answer _____

12

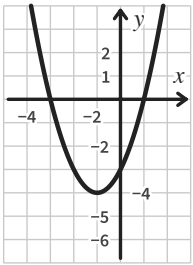
The graph shows $y = x^2 - 6x + 6$.
Use it to solve $x^2 - 6x + 6 = -2$.



Answer _____

13

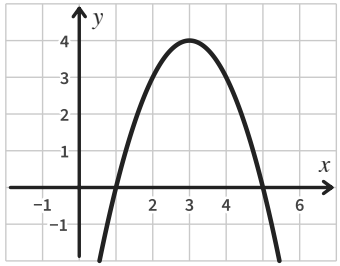
The graph shows $y = x^2 + 2x - 3$.
Explain why $x^2 + 2x - 3 = -5$ has no solutions.



Answer _____

14

The graph shows $y = -x^2 + 6x - 5$.
Use it to solve $-x^2 + 6x - 5 = 3$.



Answer _____

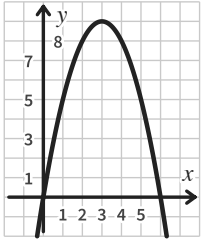
15

A curve has its turning point at $(-3, 5)$.
One root is $x = -7$. Find the other root.

Answer _____

16

A footbridge arch has the shape $y = -x^2 + 6x$, with x and y in metres.
How wide is the arch at ground level, and how high is it at the top?



Answer _____