

Quadratic Functions

FINDING x GIVEN y

Example

If $y = x^2 - 6x + 8$ find the value(s) of x when: **a** $y = 15$ **b** $y = -1$

a If $y = 15$ then

$$x^2 - 6x + 8 = 15$$

$$\therefore x^2 - 6x - 7 = 0$$

$$\therefore (x+1)(x-7) = 0$$

$$\therefore x = -1 \text{ or } x = 7$$

So, there are 2 solutions.

b If $y = -1$ then

$$x^2 - 6x + 8 = -1$$

$$\therefore x^2 - 6x + 9 = 0$$

$$\therefore (x-3)^2 = 0$$

$$\therefore x = 3$$

So, there is only one solution.

For each of the following quadratic functions, find the value(s) of x for the given value of y :

a $y = x^2 + 6x + 10$ when $y = 1$

b $y = x^2 + 5x + 8$ when $y = 2$

c $y = x^2 - 5x + 1$ when $y = -3$

d $y = 3x^2$ when $y = -3$.

