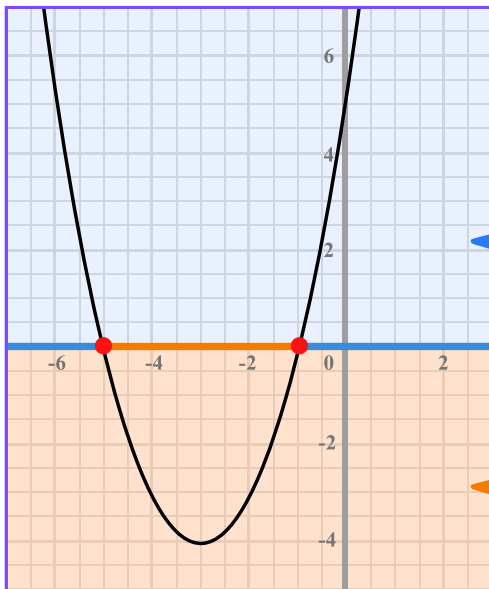


# Quadratic Inequalities

A **quadratic inequality** is an inequality where the highest power of any term is 2.

Look for inequality symbols  $<$ ,  $>$  or  $\leq$ ,  $\geq$

 **Example** This is the graph of  $y = x^2 + 6x + 5$



We can factorise and solve to find the **roots**:

$$x^2 + 6x + 5 = 0 \Rightarrow (x + 1)(x + 5) \Rightarrow \begin{matrix} x = -1 \\ x = -5 \end{matrix}$$

To solve  $x^2 + 6x + 5 > 0$ , we find the  $x$  values when the graph is greater than 0 (above the  $x$  axis)  
The solution is written as  $x > -1$  and  $x < -5$

To solve  $x^2 + 6x + 5 < 0$ , we find the  $x$  values when the graph is less than 0 (below the  $x$  axis)  
The solution is written as  $-5 < x < -1$