

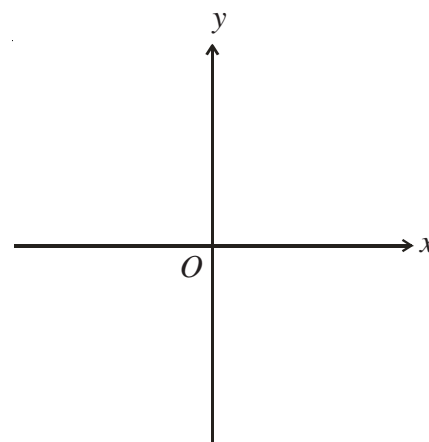
- 1) Show that if $y = x^2 + 8x - 3$
then $y \geq -19$ for all values of x .
- 2) Show that if $y = x^2 - 10x + 30$
then $y \geq 5$ for all values of x .
- 3) The expression $x^2 + 4x + 10$ can be written in the form $(x + p)^2 + q$ for all values of x .
Find the values of p and q .
- 4) Given that $x^2 - 6x + 17 = (x - p)^2 + q$ for all values of x ,
find the value of p and the value of q .

- 5) For all values of x ,

$$x^2 + 6x = (x + p)^2 + q$$
 - a) Find the values of p and q .
 - b) Find the minimum value of $x^2 + 6x$.

- 6) For all values of x ,

$$x^2 - 8x - 5 = (x - p)^2 + q$$
 - a) Find the value of p and the value of q .
 - b) On the axes, sketch the graph of $y = x^2 - 8x - 5$.



- c) Find the coordinates of the minimum point on the graph of $y = x^2 - 8x - 5$.
- 7) The expression $10x - x^2$ can be written in the form $p - (x - q)^2$ for all values of x .
 - a) Find the values of p and q .
 - b) The expression $10x - x^2$ has a maximum value.
 - (i) Find the maximum value of $10x - x^2$.
 - (ii) State the value of x for which this maximum value occurs.