

14th January



Corbettmaths

For what values of x is $y = x^2 + 3$ an increasing function?

$$\frac{dy}{dx} > 0$$

$$2x > 0$$

$$x > 0$$

$$x > 0$$

$$y = (x + 7)(x + 3)$$

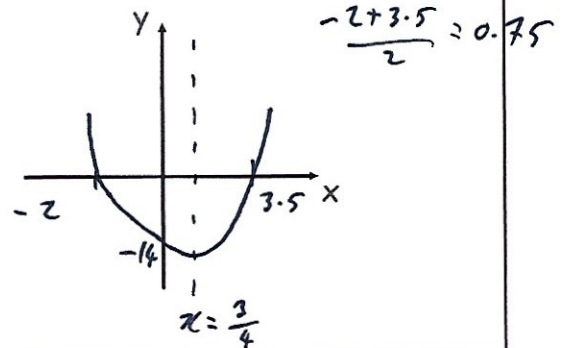
$$y = x^2 + 10x + 21$$

Work out $\frac{dy}{dx}$

$$\frac{dy}{dx} = 2x + 10$$

Sketch the graph of $y = 2x^2 - 3x - 14$ and work out the equation of the line of symmetry of the graph.

$$(2x - 7)(x + 2)$$



$$\begin{pmatrix} 1 & 2 \\ x & 3x \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ 10 \end{pmatrix}$$

Work out the possible values for x and y

$$x + 2y = 3$$

$$x^2 + 3xy = 10$$

$$2y = 3 - x$$

$$y = \frac{3}{2} - \frac{x}{2}$$

$$x^2 + 3x \left(\frac{3}{2} - \frac{x}{2} \right) = 10$$

$$x^2 + \frac{9x}{2} - \frac{3x^2}{2} = 10 \quad \times 2$$

$$2x^2 + 9x - 3x^2 = 20$$

$$0 = x^2 - 9x + 20$$

$$0 = (x - 4)(x - 5)$$

$$x = 4 \quad \text{or} \quad x = 5$$

$$y = -\frac{1}{2} \quad \text{or} \quad y = -1$$