

If you know the equation of two lines, say

$y = 2x + 1$
 $y = -3x + 4$

you can find the x-coordinate of their point of intersection by setting the equations equal to each other and solving.

EXAMPLE

$$\begin{array}{r} 2x + 1 = -3x + 4 \\ +3x \qquad +3x \end{array}$$

Add +3x to both sides

$$\begin{array}{r} 5x + 1 = 4 \\ -1 \qquad -1 \end{array}$$

Subtract 1 from each side

$$5x = 3$$

Divide both sides by 5

$$\frac{5x}{5} = \frac{3}{5}$$

$x = \frac{3}{5}$

You can now use either of the original two equations to find y at $x = \frac{3}{5}$.

Use $y = 2x + 1$ so $y = 2\left(\frac{3}{5}\right) + 1 \therefore y = \frac{6}{5} + 1 = \frac{11}{5} = y$

\therefore The point of intersection is $x = \frac{3}{5}, y = \frac{11}{5} \Rightarrow \left(\frac{3}{5}, \frac{11}{5}\right)$

Find the x and y coordinates of the point where the following lines meet (intersect).

$y = x - 1$
 $y = -\frac{1}{2}x + 2$

Check your solution by graphing both lines on the same axes \rightarrow

