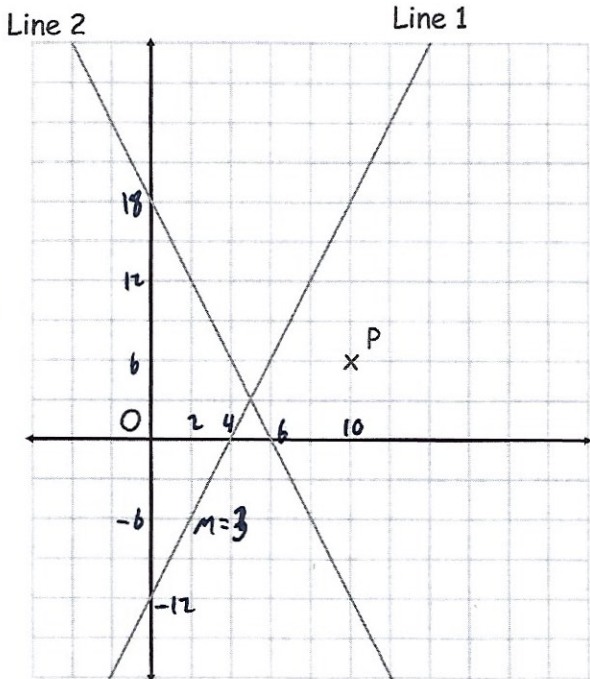


9th March



Corbettmaths



Line 1 has equation $y = 3x - 12$

Find the coordinates of P

$$(10, 6)$$

Find the equation of Line 2

$$y = -3x + 18$$

OABC is transformed by the matrix $\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$ to give OA'B'C'

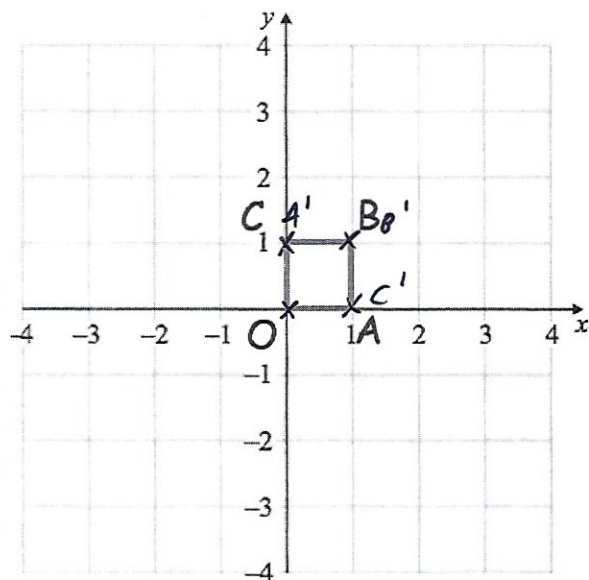
$$\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} 0 \\ 1 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} 1 \\ 0 \end{pmatrix} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

Draw and label OA'B'C'

$$\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} 0 \\ 0 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$$

$$\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} 1 \\ 1 \end{pmatrix} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$



Describe the transformation fully.

Reflection in the line $y = x$

Find the coordinates of the stationary points of the curve

$$y = \frac{1}{3}x^3 + 5x^2 + 21x + 3$$

$$\frac{dy}{dx} = x^2 + 10x + 21$$

$$0 = x^2 + 10x + 21$$

$$0 = (x + 7)(x + 3)$$

$$x = -7 \quad \text{or} \quad x = -3$$

$$(-7, -13\frac{1}{3}) \quad (-3, -24)$$