

9th June



Corbettmaths

The line passing through $(3, -4)$ and $(m, 10)$ has a gradient of 1.25

Find m .

$$\frac{10+4}{m-3} = 1.25$$

$$14 = 1.25(m-3)$$

$$11.2 = m-3$$

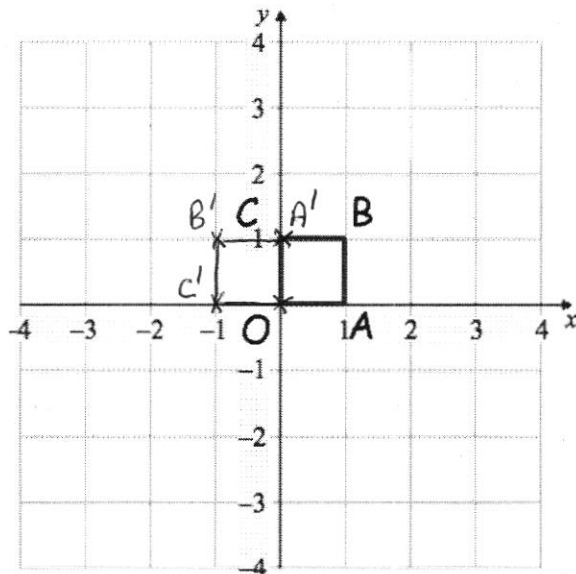
$$\underline{m = 14.2}$$

OABC is transformed by the matrix

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

to give OA'B'C'

Draw and label OA'B'C'



Describe the transformation fully.

Rotation 90° anti-clockwise about $(0,0)$.

A curve has equation

$$y = 4x^3 - 15x^2 - 18x + 2$$

Find the stationary points and their nature.

$$\frac{dy}{dx} = 12x^2 - 30x - 18$$

$$\text{At SPs } 12x^2 - 30x - 18 = 0$$

$$2x^2 - 5x - 3 = 0$$

$$(2x+1)(x-3) = 0$$

$$\downarrow$$

$$\left(-\frac{1}{2}, \frac{27}{4}\right) \quad (3, -79)$$

MAX

MIN.

$$\frac{d^2y}{dx^2} = 24x - 30$$

$$= -42 \text{ at } x = -\frac{1}{2}$$

$$= 42 \text{ at } x = 3$$