14th November

Corbettmαths

A circle has a radius of 9

The centre of the circle is $(-8, 1)$

Write down the equation of the circle.

$(x+8)^2 + (y-1)^2 = 81$

Factorise $2x^2 + 11xy + 15y^2$

$(2x + 5y)(x + 3y)$

For what values of x is
$y = x^2 - 2x - 24$ an increasing function?

$\dfrac{dy}{dx} = 2x - 2$

Increasing $\Rightarrow 2x - 2 > 0$
$\Rightarrow x > 1$

The transformation matrix $\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$

maps point P to point Q.

The transformation matrix $\begin{pmatrix} -3 & 0 \\ 0 & -3 \end{pmatrix}$

maps point Q to point R.

Point P is $(-2, 1)$.

Work out the coordinates of point R.

$\begin{pmatrix} -3 & 0 \\ 0 & -3 \end{pmatrix} \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} -2 \\ 1 \end{pmatrix}$

$= \begin{pmatrix} 0 & -3 \\ -3 & 0 \end{pmatrix} \begin{pmatrix} -2 \\ 1 \end{pmatrix}$

$= \begin{pmatrix} -3 \\ 6 \end{pmatrix}$

$R(-3, 6)$