

26th March



Corbettmaths

P(-6, 11)



PQR is a straight line.

$$16 \div 8 = 2$$

PQ : PR = 3 : 8

$$2 \times 3 = 6$$

$$11 - 6 = 5$$

Work out the coordinates of the point Q

$$32 \div 8 = 4 \quad 4 \times 3 = 12$$

$$-6 + 12 = 6$$

$$(6, 5)$$

A circle has equation

$$(x + 7)^2 + (y - 5)^2 = 4$$

Write down the equation of a tangent to the circle

Centre $(-7, 5)$ $r = 2$

$$y = 7, \quad y = 3$$

$$x = -9, \quad x = -5$$

The transformation matrix $\begin{pmatrix} a & b \\ -a & 2b \end{pmatrix}$ maps the point $(2, -4)$ onto the point $(10, 40)$.Find the values of a and b

$$\begin{pmatrix} a & b \\ -a & 2b \end{pmatrix} \begin{pmatrix} 2 \\ -4 \end{pmatrix} = \begin{pmatrix} 10 \\ 40 \end{pmatrix}$$

$$2a - 4b = 10$$

$$-2a - 8b = 40 \quad \text{add}$$

$$-12b = 50$$

$$b = -\frac{25}{6}$$

$$a = -\frac{10}{3}$$

$$y = \frac{2}{3}x^9 - \frac{1}{2}x^4$$

$$\frac{dy}{dx} = 6x^8 - 2x^3$$

Work out the value of $\frac{d^2y}{dx^2}$ when

$$x = -1$$

$$\frac{d^2y}{dx^2} = 48x^7 - 6x^2$$

$$\text{when } x = -1 \quad \frac{d^2y}{dx^2} = -54$$

$$\boxed{-54}$$