Name: _____ 5-a-day Further Maths

25th March

Corbettmaths

The nth term of a sequence is

$\frac{2n-9}{8n}$

Write down the limiting value of the sequence $n \to \infty$

$\frac{2}{8} = \frac{1}{4}$

$4\begin{pmatrix}-5 & -2\\ 3 & 2\end{pmatrix}\begin{pmatrix}4\\ -1\end{pmatrix} = \begin{pmatrix}p\\ q\end{pmatrix}$

Find p and q

$4\begin{pmatrix}-18\\ 10\end{pmatrix} = \begin{pmatrix}p\\ q\end{pmatrix}$

$\begin{pmatrix}-72\\ 40\end{pmatrix} = \begin{pmatrix}p\\ q\end{pmatrix}$

$p = -72 \quad q = 40$

Factorise $6x^2 - 35xy + 49y^2$

$(2x - 7y)(3x - 7y)$

Work out the rate of change of y with respect to x at the point on the curve

$y = \frac{3}{x^2}$ where x = 1

$y = 3x^{-2}$

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

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

$x = 1 \quad \frac{dy}{dx} = -6$

Find the equation of the tangent to the circle with equation

$(x-5)^2 + (y+2)^2 = 25$

at the point (2, 2)

(5, -2)

$m = \frac{-2-2}{5-2} = -\frac{4}{3}$

$y = \frac{3}{4}x + c$

$2 = \frac{6}{4} + c$

$c = \frac{1}{2}$

$y = \frac{3}{4}x + \frac{1}{2}$