


22nd June	
<p>The nth term of a sequence is $\frac{3n}{8n+13}$</p> <p>Work out the position of the term that has a value of $\frac{1}{3}$</p>	 Corbettmaths $\frac{3n}{8n+13} = \frac{1}{3}$ $9n = 8n + 13$ $\underline{n = 13}$
<p>Factorise</p> $x^3 + 3x^2 - 13x - 15 = f(x)$	$f(-1) = -1 + 3 + 13 - 15 = 0$ $f(x) = (x+1)(x^2 + 2x - 15)$ $= \underline{(x+1)(x+5)(x-3)}$
$\mathbf{A} = \begin{pmatrix} -7 & 8 \\ 10 & -3 \end{pmatrix} \quad \mathbf{B} = \begin{pmatrix} 4 \\ -3 \end{pmatrix}$ <p>Work out the matrix AB</p>	$\begin{pmatrix} -7 & 8 \\ 10 & -3 \end{pmatrix} \begin{pmatrix} 4 \\ -3 \end{pmatrix} = \underline{\begin{pmatrix} -52 \\ 49 \end{pmatrix}}$
<p>A curve has equation $y = x^3 - 6x^2 + 8$</p> <p>Show the curve has a minimum point at (4, -24).</p>	$\frac{dy}{dx} = 3x^2 - 12x; \quad \frac{d^2y}{dx^2} = 6x - 12$ $x = 4 \Rightarrow \frac{dy}{dx} = 48 - 48 = 0$ $\frac{d^2y}{dx^2} = 12 > 0 \Rightarrow \text{MIN}$ $y = 64 - 96 + 8 = -24$
<p>Show the tangent to the curve at the minimum point meets the curve again when $x = -2$</p>	<p>Tgt $y = -24$</p> $-24 = x^3 - 6x^2 + 8$ $0 = x^3 - 6x^2 + 32$ $x = -2$ $\underline{-8 - 24 + 32 = 0}$