7th August	Corbettmaths
Use factor theorem to show that $(x+3)$ is a factor of $x^3 + x^2 - 14x - 24 = f(x)$	$f(-3) = -27 + 9 + 42 - 24 = 0$ $\Rightarrow x+3$ factor
$\mathbf{A} = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$ Callum says that $\mathbf{A}^2$ equals the identity matrix, **I** Is Callum correct?	$\underline{A}^2 = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$ $= \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} = \underline{I}$ Yes.
Work out the equation of the normal to the curve $y = x^3 + 2x^2 - x - 1$ at the point $(2, 13)$	$\frac{dy}{dx} = 3x^2 + 4x - 1$ $x = 2 \Rightarrow \frac{dy}{dx} = 19$ $\Rightarrow m_\perp = -\frac{1}{19}$ $y - 13 = -\frac{1}{19}(x-2)$ $y = -\frac{1}{19}x + \frac{249}{19}$
Prove $sin^4\theta - cos^4\theta \equiv 1 - 2cos^2\theta$	$LHS = (\sin^2\theta + \cos^2\theta)(\sin^2\theta - \cos^2\theta)$ $= 1 \times (1 - \cos^2\theta - \cos^2\theta)$ $= 1 - 2\cos^2\theta$