30th November

Corbettmaths

Expand and simplify fully $(3-x)(x+4)^2$	$(3-x)(x^2+8x+16)$ $= 3x^2+24x+48-x^3-8x^2-16x$ $= \underline{-x^3-5x^2+8x+48}$
$y = \dfrac{4}{x^2}$ Find $\dfrac{dy}{dx}$	$y = 4x^{-2}$ $\Rightarrow \dfrac{dy}{dx} = -8x^{-3} = \underline{-\dfrac{8}{x^3}}$
Show that $(sin\theta + cos\theta)^2 + (sin\theta - cos\theta)^2 \equiv 2$	$LHS = \sin^2\theta + 2\sin\theta\cos\theta + \cos^2\theta$ $+ \sin^2\theta - 2\sin\theta\cos\theta + \cos^2\theta$ $= 2(\sin^2\theta + \cos^2\theta)$ $\underline{= 2}$
The unit square is transformed by matrix **Q** followed by matrix **R** followed by the matrix **S** This is equivalent to transforming the unit square by the identity matrix. Matrix **R** represents a rotation. Matrices **Q** and **S** represent reflections. Write down three possible matrices for **Q**, **R** and **S**	E.g. $\underline{R}$ rotation $180°$ abt $(0,0)$ $\underline{Q}$ reflection in y-axis $\underline{S}$ reflection in x-axis $\underline{R} = \begin{pmatrix} -1 & 0 \\ 0 & -1 \end{pmatrix}$ $\underline{Q} = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$ $\underline{S} = \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$