Name: _____ 5-a-day Further Maths

28th December

Corbettmaths

Use factor theorem to show that $(x-1)$ is a factor of

$x^3 - 13x + 12$

$f(x) = x^3 - 13x + 12$

if $(x-1)$ is a factor, $f(1) = 0$

$f(1) = 1^3 - 13 + 12$

$= 0$

QED

Find where the matrix $\begin{pmatrix} 5 & -2 \\ -1 & 3 \end{pmatrix}$ maps the point $(-3, 1)$

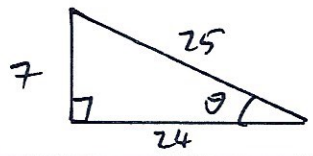
$\begin{pmatrix} 5 & -2 \\ -1 & 3 \end{pmatrix}\begin{pmatrix} -3 \\ 1 \end{pmatrix} = \begin{pmatrix} -17 \\ 6 \end{pmatrix}$

$(-17, 6)$

Given $tan\theta = -\frac{7}{24}$ and θ is reflex

Work out the value of $sin\theta$

reflex $\sin\theta$ negative



$\sin\theta = \frac{O}{H} = \frac{7}{25}$

$-\frac{7}{25}$

The line $y = 2x - 1$ intersects the circle $(x-2)^2 + (y+5)^2 = 144$ at the points A and B.

Find the coordinates of A and B.

$(x-2)^2 + (2x-1+5)^2 = 144$

$x^2 - 4x + 4 + (2x+4)^2 = 144$

$x^2 - 4x + 4 + 4x^2 + 16x + 16 = 144$

$5x^2 + 12x - 124 = 0$

$a = 5 \quad b = 12 \quad c = -124$

$x = \frac{-12 \pm \sqrt{2624}}{10}$

$x = 3.922...$ or $x = -6.322...$

$y = 6.844...$ $y = -13.644...$

$(3.92, 6.84)$ & $(-6.32, -13.64)$