

18th October



Corbettmaths

Factorise fully $x^4 - y^4$

$$(x^2 - y^2)(x^2 + y^2)$$

$$(x - y)(x + y)(x^2 + y^2)$$

Solve the simultaneous equations

$$y = 4x^2 - 3x - 4$$

$$20x + 4y = -17$$

$$20x + 4(4x^2 - 3x - 4) = -17$$

$$20x + 16x^2 - 12x - 16 = -17$$

$$16x^2 + 8x + 1 = 0$$

$$(4x + 1)(4x + 1) = 0$$

$$x = -\frac{1}{4}$$

$$y = -3$$

Prove that

$$\tan^2\theta - \frac{1}{\cos^2\theta} \equiv -1$$

$$\frac{\sin^2\theta}{\cos^2\theta} - \frac{1}{\cos^2\theta}$$

$$\frac{\sin^2\theta - 1}{\cos^2\theta}$$

$$= \frac{-(1 - \sin^2\theta)}{\cos^2\theta}$$

$$= \frac{-\cos^2\theta}{\cos^2\theta} = -1 \quad \text{Q.E.D.}$$

Work out the matrix that transforms the unit square by a reflection in the y-axis.

$$\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$$