LINEAR ALGEBRA AND ITS APPLICATIONS
UE19MA251

Transformations Represented by Matrices

***Rotation Matrices Q*:**

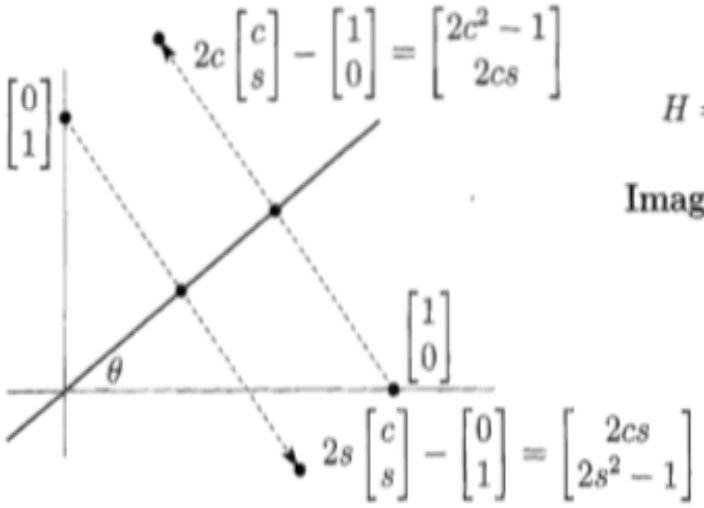
The matrix that rotates (left) every point in R^2 about origin through θ is given by

$$Q_\theta = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$$

This transformation is invertible since the matrix has an inverse.

A rotation through –θ brings back the original.

Transformations Represented by Matrices



$$H = 2P - I = \begin{bmatrix} 2c^2-1 & 2cs \\ 2cs & 2s^2-1 \end{bmatrix}$$

Image + original = 2 × projection

$$Hx + x = 2Px$$

Transformations Represented by Matrices

To conclude….

Product of two transformations is another transformation by itself. Matrix multiplication is so defined that product of matrices corresponds to the product of the transformations that they represent.

THANK YOU