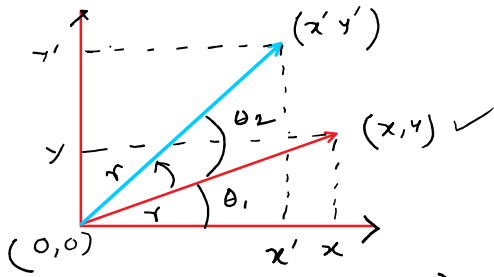


Rotation Matrices Part 1

Friday, May 26, 2023 5:34 PM



$$R_{\theta} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} x' \\ y' \end{pmatrix}$$

Orthogonal Matrix \times Vector =

$$R_{\theta} = ?$$

Vector
($m \times 1$)

Matrix
($m \times n$)
 $\begin{pmatrix} 1 & 2 & 3 \\ 3 & 4 & 5 \end{pmatrix}$
 2×3

$$\begin{aligned} \text{norm} \|A\| &= (A^T A)^{\frac{1}{2}} \\ &= \sqrt{a_1^2 + a_2^2 + a_3^2} \\ &= A \begin{pmatrix} a_1 \\ a_2 \\ a_3 \end{pmatrix} \\ &= A^T = (a_1 \ a_2 \ a_3) \\ A^T A &= a_1^2 + a_2^2 + a_3^2 \end{aligned}$$

$$\begin{aligned} \|OA(n \times 1)\| &= \\ (OA)^T (OA) &= \|OA\|^2 \\ &= \|A\|^2 \end{aligned}$$