Counter-clockwise **Rotation**

(column geometry)

n geometry)
$$R_1 = \begin{bmatrix} \cos \theta \\ \sin \theta \end{bmatrix}$$

$$R_2 = \begin{bmatrix} -\sin \theta \\ \cos \theta \end{bmatrix}$$

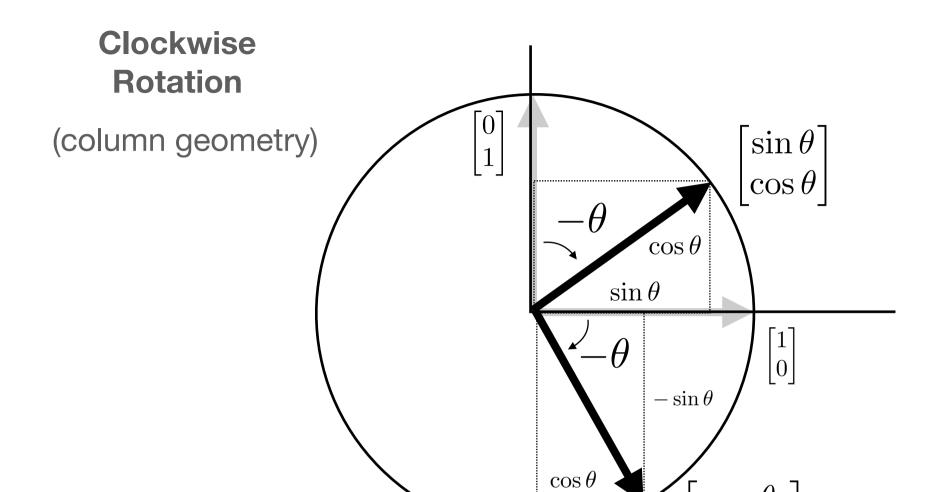
$$\frac{\theta}{\cos \theta}$$

$$\cos \theta$$

$$\frac{1}{\theta}$$

$$\cos \theta$$

$$R = \begin{bmatrix} R_1 & R_2 \end{bmatrix} = \begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{bmatrix}$$



$$R^{-1} = R^{T} = \begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{bmatrix} = \begin{bmatrix} \cos(-\theta) & -\sin(-\theta) \\ \sin(-\theta) & \cos(-\theta) \end{bmatrix}$$

 $\cos \theta$

 $-\sin\theta$