



$$\begin{pmatrix} x' \\ y' \end{pmatrix} = \begin{pmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$$

$\cos 90^\circ = 0$   
 $\sin 90^\circ = 1$

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

$$\begin{pmatrix} b_1 \\ b_2 \end{pmatrix} = \begin{pmatrix} m_{11} & m_{12} \\ m_{21} & m_{22} \end{pmatrix} \begin{pmatrix} a_1 \\ a_2 \end{pmatrix}$$

$$b_1 = m_{11}a_1 + m_{12}a_2$$

$$b_2 = m_{21}a_1 + m_{22}a_2$$

---



3

$$\cos \theta = .6$$

$$\sin \theta = .8$$

$$\frac{\cos \theta}{\sin \theta} = \frac{1}{2}$$

$$L = \sqrt{(-1)^2 + 2^2}$$
$$= \sqrt{5}$$

$$M = \begin{pmatrix} .6 & .8 \\ .8 & .6 \end{pmatrix}$$

$$\begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

$$\sqrt{1+4} = \sqrt{5}$$