



$$\begin{bmatrix} 3 \\ 1 \end{bmatrix} \cdot \begin{bmatrix} \overset{\hat{i}}{\cos \theta} & -\overset{\hat{j}}{\sin \theta} \\ \sin \theta & \cos \theta \end{bmatrix}$$

$\theta = 30^\circ$

$$\begin{bmatrix} 3 \\ 1 \end{bmatrix} \cdot \begin{bmatrix} \frac{\sqrt{3}}{2} \\ \frac{1}{2} \end{bmatrix}$$

$$-\frac{1}{2} \begin{bmatrix} \frac{\sqrt{3}}{2} \\ \frac{1}{2} \end{bmatrix} = \begin{bmatrix} 3 \cdot \frac{\sqrt{3}}{2} + \frac{3}{2} \\ -\frac{1}{2} + \frac{\sqrt{3}}{2} \end{bmatrix}$$

$$\approx \begin{bmatrix} 2.36 \\ 0.36 \end{bmatrix}$$