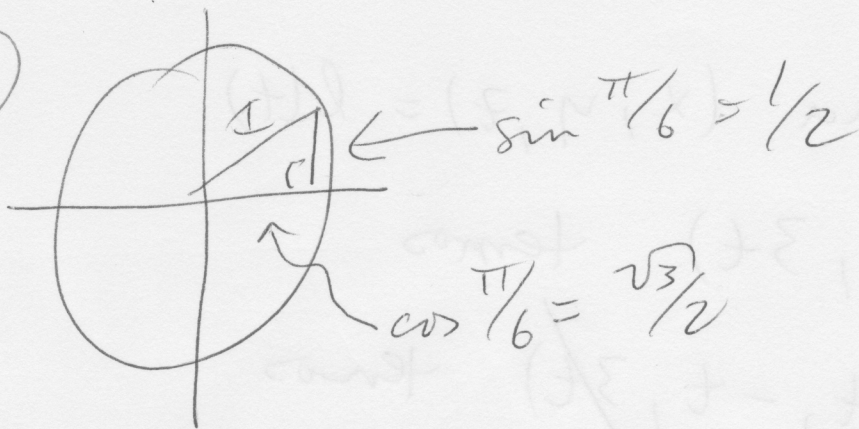


(3)



(4)

(a)

$$M = \begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{bmatrix} = \begin{bmatrix} \sqrt{3}/2 & -1/2 \\ 1/2 & \sqrt{3}/2 \end{bmatrix}$$

(b)

$$M^3 = M_{3 \cdot \pi/6} = M_{\pi/2} = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$$

$$M^9 = M_{3\pi/2} = M_{-\pi/2} = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$$

transpose

$$M^{-1} = M_{-\pi/6} = M^t = \begin{bmatrix} \sqrt{3}/2 & 1/2 \\ -1/2 & \sqrt{3}/2 \end{bmatrix}$$

(c)

$$N = M_{\pi/4} = \begin{bmatrix} \sqrt{2}/2 & -\sqrt{2}/2 \\ \sqrt{2}/2 & \sqrt{2}/2 \end{bmatrix}$$

