PRINT Your Name:____________________________________

Quiz for November 1, 2005

Let $T\colon \mathbb{R}^2 \to \mathbb{R}^2$ be the function which fixes the origin and rotates the plane by the angle $\theta = \frac{\pi}{3}$. Find a matrix M with $T(v) = Mv$ for all vectors v in $\mathbb{R}^2$.

ANSWER: We saw in class that

$$M = \begin{bmatrix} \cos\frac{\pi}{3} & -\sin\frac{\pi}{3} \\ \sin\frac{\pi}{3} & \cos\frac{\pi}{3} \end{bmatrix} = \boxed{\begin{bmatrix} \frac{1}{2} & -\frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \end{bmatrix}}.$$