1. Let $T : \mathbb{R}^3 \to \mathbb{R}^3$ be a rotation by angle $\pi/2$ around the line spanned by $(0, 1, 0)$. (In fact there are two of these; choose whichever one you like.) Find the matrix of $T$.

2. Let $T : \mathbb{R}^3 \to \mathbb{R}^3$ be a rotation by angle $\pi/2$ around the line spanned by $(0, 1/2, \sqrt{3}/2)$. Find the matrix of $T$. Hint: a pretty way to do this is to
   
   (a) rotate your coordinate system so that $(0, 1/2, \sqrt{3}/2)$ becomes $(0, 1, 0)$,
   
   (b) use your answer to the previous part, and then
   
   (c) change back to the original coordinates.