1...5 Solve, write up solutions and hand in for grading the problems 2.6.1, 2.6.2, 2.6.5, 2.6.7, 2.6.16 found in the first two pages of the hand-out.

Solve more problems from the hand-out (but do not hand in the solutions for grading), they are nice, interesting, and will help you master the concepts.

6. Consider the reflexion of the plane about the first bisector: $T : \mathbb{R}^2 \to \mathbb{R}^2$, $T(x, y) = (y, x)$.

a) Show that T is a linear transformation and find its matrix in the standard basis.

b) Now rotate the plane by an angle of $\pi/4$ and denote $\mathbf{v}_k = R_{\pi/4}\mathbf{e}_k$, for $k = 1, 2$. Find the matrix of the reflexion T in the basis $\mathbf{v}_1, \mathbf{v}_2$.