Homework 10

Due Wednesday, May 3

Definition. An *orthogonal matrix* is an invertible matrix A such that $A^{-1} = A^T$.

Exercise 1. Show that the rotation matrix $R_\theta = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$ is orthogonal.

Exercise 2. Show that the determinant of an orthogonal matrix is either 1 or -1.

Exercise 3. Complete the following exercises from Section 6.1 in the course textbook:

\# 1, 3, 5, 9, 13, 15, 33, 34, 35, 37, 38

Exercise 4. Complete the following exercises from Section 6.2 in the course textbook:

\# 1, 3, 5, 7, 9, 34