

Worksheet 17

Sections 207 and 219
MATH 54

April 4, 2019

Exercise 1. True or false! Justify!

- (a) There are symmetric matrices that are not orthogonally diagonalizable.
- (b) An orthogonal matrix is always orthogonally diagonalizable.

Exercise 2. The following matrix has eigenvalues $\lambda = -2, 7$. Orthogonally diagonalize the matrix:

$$A = \begin{bmatrix} 3 & -2 & 4 \\ -2 & 6 & 2 \\ 4 & 2 & 3 \end{bmatrix}$$

Exercise 3. Find an SVD for $\begin{bmatrix} 1 & 1 \\ 0 & 1 \\ -1 & 1 \end{bmatrix}$