

Lab Assignment 10

1. Given the following matrices:

$$(a) \begin{bmatrix} 11 & -8 & 4 \\ -8 & -1 & -2 \\ 4 & -2 & -4 \end{bmatrix} \quad (b) \begin{bmatrix} 4 & 2 & -2 \\ -2 & 8 & 1 \\ 2 & 4 & -4 \end{bmatrix} \quad (c) \begin{bmatrix} 2 & 0 & 1 \\ 1 & -1 & 0 \\ 3 & 0 & 4 \end{bmatrix}$$

Apply the power method to find the maximum eigenvalue and corresponding eigenvector.

2. Use the shift method to find the “other” eigenvalue.

3. Repeat problem 1 with

$$(a) \begin{bmatrix} 2 & 0 & 1 & 0 \\ 0 & 0 & 3 & 1 \\ 1 & 3 & -4 & -2 \\ 0 & 1 & -2 & 0 \end{bmatrix} \quad (b) \begin{bmatrix} 3 & 2 & 0 & 1 \\ 2 & 0 & 5 & -1 \\ 0 & 5 & 2 & 1 \\ 1 & -1 & 1 & 4 \end{bmatrix} \quad (c) \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 2 & -1 & 0 \\ 0 & -1 & 3 & 0 \\ 1 & 0 & 0 & -1 \end{bmatrix}$$