

MATH 6643 - Problem Set #5

Problem 1: Write a program to find the eigenvalue of largest absolute value by means of the power method. Use that program to find the eigenvalue of largest absolute value and an associated eigenvector, with four digits of accuracy, of the following matrices

$$a) \begin{bmatrix} 1 & 1 & 2 \\ 0 & 1 & -1 \\ 3 & 0 & 1 \end{bmatrix}, \quad b) \begin{bmatrix} 2 & 1 & 0 \\ 0.2 & 0.5 & 1 \\ 0 & 0 & 3 \end{bmatrix}$$

Problem 2: Write a program to find the eigenvalue of smallest absolute value by means of the inverse power method. Use that program to find the eigenvalue of smallest absolute value and an associated eigenvector, with four digits of accuracy, the same matrices of problem 1.

Problem 3: Write a program to find an eigenvalue by means of Rayleigh quotient iteration. Use that program find an eigenvalue and an associated eigenvector, with four digits of accuracy, of the same matrices of problem 1.