Tutorial Exercises Week 8

Qs. 1

Given the matrix, $M = \begin{bmatrix} 4 & -1 \\ 2 & 1 \end{bmatrix}$

- Find the Eigen Values of the matrix, M.
- Find the Eigen Vectors of the matrix, M.

Qs. 2

Given the matrix $M = \begin{bmatrix} 2 & 0 & 1 \\ -1 & 4 & -1 \\ -1 & 2 & 0 \end{bmatrix}$

- Determine the Characterstic Equation for M.
- Find the Eigen Values for the matrix, M.
- Show that the vector $x = \begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix}$ is a eigen vector of the

matrix, M.

Qs. 3

Given the matrix, $M = \begin{bmatrix} 4 & -1 \\ 2 & 1 \end{bmatrix}$

- Find the Eigen Values of the matrix, M^{-1}.
- Find the Eigen Vectors of the matrix, M^{-1}.