

MATH 311 WORKSHEET #3

- (1) For each of the following matrices, find the eigenvalues and eigenvectors.

$$\mathbf{A} = \begin{bmatrix} 4 & 2 \\ 1 & 3 \end{bmatrix}$$

$$\mathbf{B} = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix}$$

$$\mathbf{C} = \begin{bmatrix} 1 & 3 \\ 3 & 4 \end{bmatrix}$$

$$\mathbf{D} = \begin{bmatrix} 1 & 4 \\ -2 & -1 \end{bmatrix}$$

$$\mathbf{E} = \begin{bmatrix} -2 & 0 \\ 1 & -2 \end{bmatrix}$$

$$\mathbf{F} = \begin{bmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}$$

$$\mathbf{G} = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 4 & 5 \\ 0 & 0 & 6 \end{bmatrix}$$

- (2) Explain the connection between eigenvalues and norms.