Assignment 6

Eigenvalues and Eigenvectors

For each of these matrices, find all its eigenvalues and determine all their corresponding eigenvectors:

1. $A = \begin{pmatrix} 4 & -1 \\ 2 & 1 \end{pmatrix}$.

2. $B = \begin{pmatrix} 5 & 3 \\ 3 & -3 \end{pmatrix}$.

3. $C = \begin{pmatrix} 1 & -2 \\ -2 & 4 \end{pmatrix}$.

4. $D = \begin{pmatrix} 3 & -1 & 1 \\ -2 & 4 & 2 \\ -1 & 1 & 5 \end{pmatrix}$.

5. $E = \begin{pmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \end{pmatrix}$.

Moreover, write the diagonalization form of each of those matrices.