

Dynamics Homework Problem on Eigenvalues and Eigenvectors

1. Find the eigenvalues of $\begin{bmatrix} 1 & 2 \\ 4 & 5 \end{bmatrix}$. Find the eigenvectors associated with these eigenvalues.

Normalize them. If the eigenvalues are distinct, form the transformation matrix from the eigenvectors. Diagonalize the matrix (show the steps).

2. Write down the characteristic equation of $\begin{bmatrix} 1 & 2 & 6 \\ 4 & 5 & 8 \\ 1 & 1 & 5 \end{bmatrix}$. Use matlab to find the roots. What are the eigenvalues? Use matlab's eigenvalue command to solve this. How do the answers compare?