

MATH 121A Prep: Eigenvalues & Eigenvectors

Facts to Know:

Eigenvalue:

Eigenvector:

Eigenspace:

Finding Eigenvalues:

Finding Eigenvectors:

Examples:

1. Find the eigenvalues of the matrix $\begin{bmatrix} 1 & 4 & -1 \\ 0 & 1 & 2 \\ 0 & 2 & -2 \end{bmatrix}$

2. Find the eigenvalues and corresponding eigenvectors for the matrix $\begin{bmatrix} 4 & 10 \\ 5 & -1 \end{bmatrix}$

3. Explain why a matrix A is not invertible if and only if 0 is an eigenvalue of A .