

Problems on Eigenvalues and Eigenvectors

For each of the following matrices, find the eigenvalues and bases for corresponding eigenspace.

1. $A = \begin{pmatrix} 1 & 0 \\ 1 & -4 \end{pmatrix}$

2. $A = \begin{pmatrix} -1 & 2 \\ 0 & 1 \end{pmatrix}$

3. $A = \begin{pmatrix} 1 & 0 \\ 0 & 4 \end{pmatrix}$

✓ 4. $A = \begin{pmatrix} 1 & -4 \\ 2 & -5 \end{pmatrix}$

✓ 5. $A = \begin{pmatrix} 6 & -4 \\ 3 & -1 \end{pmatrix}$

6. $A = \begin{pmatrix} -2 & 2 & 3 \\ -2 & 3 & 2 \\ -4 & 2 & 5 \end{pmatrix}$

7. $A = \begin{pmatrix} 2 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & 3 \end{pmatrix}$

8. $A = \begin{pmatrix} 0 & 0 & -2 \\ 1 & 2 & 1 \\ 1 & 0 & 3 \end{pmatrix}$

9. $A = \begin{pmatrix} 5 & 6 & 2 \\ 0 & -1 & -8 \\ 1 & 0 & -2 \end{pmatrix}$

✓ 10. $A = \begin{pmatrix} 1 & 2 & 3 \\ 0 & 4 & 5 \\ 0 & 0 & 6 \end{pmatrix}$