

Linear Algebra and Probability- Case Study

1. Calculate the Eigen value and Eigen vector for the following matrix $\begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$
2. Find all eigenvalues and corresponding eigenvectors for the matrix A

$$\begin{bmatrix} 2 & -3 & 0 \\ 2 & -5 & 0 \\ 0 & 0 & 3 \end{bmatrix}$$

3. Calculate the inverse of the matrix

$$\begin{bmatrix} 2 & 4 & -6 \\ 7 & 3 & 5 \\ 1 & -2 & 4 \end{bmatrix}$$

4. Calculate the inverse of the matrix

$$\begin{bmatrix} 4 & 3 & 8 \\ 6 & 2 & 5 \\ 1 & 5 & 9 \end{bmatrix}$$

5. Find SVD of $\begin{bmatrix} 4 & 0 \\ 3 & -5 \end{bmatrix}$
6. Find SVD of $\begin{bmatrix} 2 & 3 \\ 4 & 10 \end{bmatrix}$
7. Find SVD of

$$\begin{bmatrix} 1 & 1 & 1 \\ -1 & -3 & -3 \\ 2 & 4 & 4 \end{bmatrix}$$