Assignment 10

Due on 2020-11-26, 23:59:59 IST.

1. Let \( M = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \). Then, which of the following is an incorrect option?
   - The eigenvalues of \( M \) are \( \lambda_1 = -1 \) and \( \lambda_2 = 1 \).
   - The eigenvalues of \( M \) are \( \lambda_1 = -1 \) and \( \lambda_2 = -1 \).
   - The eigenvalues of \( M \) are \( \lambda_1 = 5 \) and \( \lambda_2 = 1 \).

2. Let \( M = \begin{bmatrix} 2 & 1 \\ -1 & 3 \end{bmatrix} \). Then, which of the following is an incorrect option?
   - The eigenvalues of \( M \) are \( \lambda_1 = 1 \) and \( \lambda_2 = 2 \).
   - The eigenvalues of \( M \) are \( \lambda_1 = 2 \) and \( \lambda_2 = 1 \).
   - The eigenvalues of \( M \) are \( \lambda_1 = 3 \) and \( \lambda_2 = 1 \).

3. Let \( M = \begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix} \). Then, which of the following is an incorrect option?
   - \( \lambda_1 = 1 \) is not an eigenvalue of \( M \).
   - \( \lambda_2 = 2 \) is an eigenvalue of \( M \).
   - \( \lambda_1 = 0 \) is an eigenvalue of \( M \).

4. Let \( M = \begin{bmatrix} 3 & 0 \\ 0 & 3 \end{bmatrix} \). Then, which of the following is an incorrect option?
   - \( \lambda_1 = 3 \) is an eigenvalue of \( M \).
   - \( \lambda_2 = 0 \) is an eigenvalue of \( M \).
   - \( \lambda_3 = 3 \) is not an eigenvalue of \( M \).

5. Let \( M = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix} \). Then, which of the following is an incorrect option?
   - \( \lambda_1 = 1 \) is an eigenvalue of \( M \).
   - \( \lambda_2 = 2 \) is an eigenvalue of \( M \).
   - \( \lambda_3 = 0 \) is an eigenvalue of \( M \).

6. Let \( M = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix} \). Then, which of the following is an incorrect option?
   - \( \lambda_1 = 1 \) is an eigenvalue of \( M \).
   - \( \lambda_2 = 2 \) is an eigenvalue of \( M \).
   - \( \lambda_3 = 0 \) is an eigenvalue of \( M \).

7. Let \( M = \begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix} \). Then, which of the following is an incorrect option?
   - \( \lambda_1 = 2 \) is an eigenvalue of \( M \).
   - \( \lambda_2 = 0 \) is an eigenvalue of \( M \).
   - \( \lambda_3 = 2 \) is an eigenvalue of \( M \).

8. Let \( M = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix} \). Then, which of the following is an incorrect option?
   - \( \lambda_1 = 1 \) is an eigenvalue of \( M \).
   - \( \lambda_2 = 2 \) is an eigenvalue of \( M \).
   - \( \lambda_3 = 0 \) is an eigenvalue of \( M \).

9. Let \( M = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix} \). Then, which of the following is an incorrect option?
   - \( \lambda_1 = 1 \) is an eigenvalue of \( M \).
   - \( \lambda_2 = 2 \) is an eigenvalue of \( M \).
   - \( \lambda_3 = 0 \) is an eigenvalue of \( M \).

10. Let \( M = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix} \). Then, which of the following is an incorrect option?
    - \( \lambda_1 = 1 \) is an eigenvalue of \( M \).
    - \( \lambda_2 = 2 \) is an eigenvalue of \( M \).
    - \( \lambda_3 = 0 \) is an eigenvalue of \( M \).