**SRM Institute of Science and Technology**
**Department of Mathematics**
**21MAB101T-CALCULUS & LINEAR ALGEBRA**
**ACADEMIC YEAR 2022-2023 (ODD)**
**Tutorial 2 (Unit-I)**

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1. Verify Cayley Hamilton theorem and find $A^{-1}$ for $A = \begin{pmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{pmatrix}$

2. Verify Cayley-Hamilton theorem and find $A^5 + 5A^4 - 6A^3 + 2A^2 - 4A + 7I$ for $A = \begin{pmatrix} 1 & 4 \\ 2 & 3 \end{pmatrix}$.

3. Diagonalize the matrix $\begin{pmatrix} 4 & 2 & 2 \\ 2 & 4 & 2 \\ 2 & 2 & 4 \end{pmatrix}$.

4. Diagonalize the matrix $\begin{pmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{pmatrix}$ via orthogonal transformation.

5. Diagonalize the matrix $A = \begin{pmatrix} 2 & -2 & 0 \\ -2 & 1 & -2 \\ 0 & -2 & 0 \end{pmatrix}$ orthogonally.

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