

SANSKAR College of Engineering & Technology, Ghaziabad

Engineering Mathematics I (KAS-103 T)

Tutorial No: 02

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1. Find the Eigen value and corresponding Eigen vectors of the matrix: $A = \begin{bmatrix} 3 & 10 & 5 \\ -2 & -3 & -4 \\ 3 & 5 & 7 \end{bmatrix}$
2. Find the value of λ for which the vectors $(1, -2, \lambda)$, $(2, -1, 5)$ and $(3, -5, 7\lambda)$ are linearly dependent.
3. Show that the vectors are $[1, 1, 1, 1]$, $[1, -1, -2, -1]$, $[3, 1, 0, 1]$ linearly dependent also find relation
4. Verify Cayley Hamilton Theorem & find A^{-1} , where $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 5 \\ 3 & 5 & 6 \end{bmatrix}$ also express the polynomial

$B = A^8 - 11A^7 - 4A^6 + A^5 + A^4 - 11A^3 - 3A^2 + 2A + I$ as quadratic polynomial in A and hence find B .

5. Reduce the matrix $A = \begin{bmatrix} 2 & 0 & 1 \\ 0 & 3 & 0 \\ 1 & 0 & 2 \end{bmatrix}$ to diagonal form by similarity transformation. Hence find A^3