Wednesday, October 6, 2021 4:16 PM

Revision

① Find the sum and product of the eigen values of $\begin{bmatrix} 7 & -2 & -2 \\ -2 & 1 & 4 \\ -2 & 4 & 1 \end{bmatrix}$ Ans 9, −81

② If $\lambda_1 = 3$, $\lambda_2 = 15$ then find λ_3

if $A = \begin{bmatrix} 8 & -6 & 2 \\ 6 & 7 & -4 \\ -2 & 4 & 1 \end{bmatrix}$ Ans −2

③ Find the sum of the squares of the eigen values of $A = \begin{bmatrix} 3 & 2 & 4 \\ 0 & 2 & 6 \\ 0 & 0 & 5 \end{bmatrix}$ Ans 38

④ If 1,1,5 are the eigen values of $A = \begin{bmatrix} 2 & 3 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$

Find the eigen value of 5A. Ans:- 5,5,25

⑤ Find the eigen values and eigen vectors

a) $A = \begin{bmatrix} 2 & -1 \\ -8 & 4 \end{bmatrix}$ Ans $\lambda = 0, 6$ $X_1 = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$ $X_2 = \begin{bmatrix} -4 \\ 1 \end{bmatrix}$

b) $A = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 1 & 0 & 2 \end{bmatrix}$ Ans

c) $A = \begin{bmatrix} 2 & -2 & 2 \\ 1 & 1 & 3 \\ 1 & 3 & -1 \end{bmatrix}$

⑥ If A and B are orthogonal matrices then their product is also

a) diagonal b) triangular c) orthogonal d) Quadratic

⑦ Write the characteristic equation of $A = \begin{bmatrix} 1 & -2 \\ -5 & 4 \end{bmatrix}$

⑧ Find the constant a and b such that $\begin{bmatrix} a & 4 \\ 1 & b \end{bmatrix}$ matrix has 3 and −2 as its eigen values.