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MAT ASSIGNMENT

MATRIC NO.: 18/SCI01/020

DEPARTMENT: COMPUTER SCIENCE

1. Linear transformation is the mapping of elements of the domain onto the codomain.
2. A=$\left[\begin{array}{c}1 9 3\\-2 6 7\\0 -1 3\end{array}\right]$ X=$\left[\begin{array}{c}1\\4\\-8\end{array}\right]$

T(x) = A(x)

T(x) = $\left[\begin{array}{c}1 9 3\\-2 6 7\\0 -1 3\end{array}\right]$ $\left[\begin{array}{c}1\\4\\-8\end{array}\right]$

 1$\left[\begin{array}{c}1\\-2\\0\end{array}\right]$+ 4$\left[\begin{array}{c}9\\6\\-1\end{array}\right]$+ (-8)$\left[\begin{array}{c}3\\7\\3\end{array}\right]$

 $\left[\begin{array}{c}1\\-2\\0\end{array}\right]$+ $\left[\begin{array}{c}36\\24\\-4\end{array}\right]$+ $\left[\begin{array}{c}-24\\-56\\-24\end{array}\right]$

T(x) = $\left[\begin{array}{c}13\\-34\\-28\end{array}\right]$

1. Rank of a matrix A is the order of the largest square matrix or sub-matrix of A whose determinant is not equal to zero.

E.g. the rank of A

 A = $\left(\begin{array}{c}1 2 0\\2 1 3\\0 3 1\end{array}\right)$

 |A| = 1(1-9) – 2(2-0) + 0

 |A| = -8 -4 = -12 ≠0

Hence the rank of A is 3