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1i). Linear transformation T: U V is a function that carries element of the vector space U(domain) to vector space V(co-domain) and which has 2 properties:

Additive property: T(U1 + U2) = T(U1) + T(U2) Multiplicative property: T(αU) = αT(U)

ii). Rank of a matrix is the dimension of the vector space generated by it’s columns. It is also the maximum number of linearly independent column vectors in the matrix.

2).X= 1 2 8 476 953

/X/= 1 2 8 476 953

/X/=1 7 6 -2 4 6 +8 4 7 539395

/X/ = 1(21 – 30) – 2 (12 – 54) + 8(20 – 63)

/X/ = - 9 + 84 – 344

/X/ = - 269

/X/≠ 0 , therefore, X is a non-singular matrix

3). T: X Y XY

e. .2 f. .4

g. h. i . j. k.

Domain T(e) = 4

T(f) = 2 T(g) = 6 T(h) = 10 T(j) = 8

.6 .8 . 10

Co-domain