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SOLUTION

1 (i) **Linear transformation** is a function that carries elements of the veto space U(domain) to vector space V(co-domain) and which has two properties.

(ii) **Rank of a matrix** is defined as the maximum number of linearly independent column of vectors in the matrix or the maximum number of linearly independent row vectors in the matrix.

1 2 8

4 7 6

9 5 3

2. X=

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

5 3 9 3 9 5

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

= -9+84-344

= -269

Since X ≠0 , X is a non singular matrix

X T Y

**.**2

**.**4

**.**6

**.**8

**.**10

e**.**

f**.**

g**.**

h**.**

i**.**

j**.**

k**.**

3.

From the diagram X transforms to Y and the small dots inside the oval represents a vector. We can conclude that

T(e)= 2

T(g)=4

T(i)=6

T(j)= 8

T(k)= 10