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MATH 204 ASSIGNMENT

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

1. Additive Property

T(U1 + U2)= T(U1) + T(U2)

1. Multiplicative Property

T(αU)= αT(U)

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

2. X = 1 2 8

 4 7 6

 9 5 3

/X/= 1 2 8

 4 7 6

 9 5 3

/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.

1. T: X Y

 X(Domain) Y(Co-domain) T(e)=4

2

4

6

8

10

e

f

g

h

i

j

k

 T(f)=2

 T(g)=6

T T(h)=10

 T(j)=8