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Matric Number: 18/SCI01/010

Course Code: MAT204

Assignment

A = 1 2 3 B = 2 1 3 C = 1 -1 3

0 4 -1 1 2 3 2 4 2

3 2 1 0 -1 4 3 0 1

X = 1

3

5

1. LINEAR TRANSFORMATION OF A:

A = 1 2 3 1

0 4 -1 3 =

3 2 1 5

1 2 3 1 + 6 + 15 22

1 0 + 3 4 + 5 -1 = 0 + 12 -5 = 7

3 2 1 3 + 6 + 5 14

22 1

7 Transforms 3

14 5

1. Rank of ( B + C ) Transpose

( B+ C ) =

2 1 3 1 -1 3 3 0 6

1 2 3 + 2 4 2 = 3 6 5

0 -1 4 3 0 2 3 -1 6

{ B + C } T = 3 3 3

0 6 -1

6 5 6

Rank of ( B + C )T = D

|D| = 3( 36 + 5 ) -3( 0+ 6) + 3( 0 -36 )

=3(41) -3 (0)+ 3(-36)

=123-0-108 = 15

|D| ≠ 0

Hence, the rank of D is 3

1. i) 1 2 3

0 4 -1

3 2 1

|A| = 1(4 + 2) -2 ( 0 + 3 ) + 3( 0 -12 )

= 1(6) -2(3) +3 (-12)

= 6 – 6 – 36 = -36

= |A| ≠ 0, A is a non-singular matrix.

ii) 2 1 3

1 2 3

0 -1 4

| B |= 2(8 + 3) -1( 4 – 0 ) + 3( 0 – 12 )

= 2(11) – 1(4) +3(-1)

= 22 – 4 – 3 = 15

= |B| ≠ 0, B is a non-singular matrix.

iii) 1 -1 3

2 4 2

3 0 1

| C| = 1( 4 – 0 ) + 1( 2 – 6 ) +3 ( 0 - 12)

= 1(4) + 1( -4) +3(-12)

= 4 – 4 – 36 = -36

= |C| ≠ 0, C is a non-singular matrix.