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18/SCI01/025

MAT204 ASSIGNMENT

QUESTION ONE

 1 3 1 2 1 2 3 1 4

A= 2 2 4 B= 2 3 4 C= 4 3 3

 2 3 2 2 4 1 4 2 2

Transformation of A with Matrix X = (a, b, c)

 1 3 1 a

A= 2 2 4 X= b

 2 3 2 c

 1 3 1

= a 2 +b 2 +c 4

 2 3 2

= a + 3b + c

 2a + 2b + 4c

 2a + 3b + 2c

QUESTION TWO

Find the rank of (B+C)T

(B+C)

=

 2 1 2 3 1 4

 2 3 4 + 4 3 3

 2 4 1 4 2 2

= 5 2 6

 6 6 7

 6 6 3

(B+C)T

 5 6 6

= 2 6 6

 6 6 3

|(B+C)T|

=5 6 6 -6 2 6 +6 2 6

 7 3 6 3 6 7

|(B+C)T|= 5(18-42)-6(6-36)+6(14-36)

|(B+C)T|= -120+180-132

= -72

Since |(B+C)T|≠0

The matrix is of Rank 3

QUESTION THREE

 1 3 1

A= 2 2 4

 2 3 2

1 2 4 -3 2 4 +1 2 2

 3 2 2 2 2 3

|A|= 1(4-12)-3(4-8)+1(6-4)

|A|= -8+12+2

|A|= 6

It is non-singular.

 2 1 2

B= 2 3 4

 2 4 1

|B|= 2 3 4 -1 2 4 +2 2 3

 4 1 2 1 2 4

|B|= 2(3-16)-1(2-8)+2(8-6)

|B|=-26+6+4

=-16

It is non-singular.

 3 1 4

C= 4 3 3

 4 2 2

=

3 3 3 -1 4 3 +4 4 3

 2 2 4 2 4 2

|C|= 3(6-6)-1(8-12)+4(8-12)

|C|= 0+4-16

 |C| = -12

It is non-singular since