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19/Sci01/092

 X Y

 1 2 8 0 5 0

 4 7 6 -3 -7 -1

 9 5 3 2 1 9

I) To find if X is singular or non singular.

|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)

|X| = 32

Since |X| is not equal to 0, X is non singular.

II) To determine if Y is singular or non singular.

|Y| = 0 -7 -1 -5 -3 1 +0 -3 -7

 1 9 2 9 2 1

 |Y| = 0(-63 + 1) -5(-27-2) +0(-3+14)

 |Y| = 125

Since |Y| is not equal to 0, Y is non singular.

III) Y is a 125th ranked matrix.

IV) (X+Y)

 X Y

 1 2 8 0 5 0

 4 7 6 + -3 -7 -1

 9 5 3 2 1 9

 1 7 8

= 1 0 5

 11 6 12

|(X+Y)| = 1 0 5 -7 1 5 +8 1 0

 6 12 11 12 11 6

|(X+Y)| =1(0-30)-7(12-55)+8(6-11)

|(X+Y)| = 231

V) 5Y

 0 5 0

 = -3 -7 -1 X 5

 2 1 9

 0 25 0

= -15 -21 -5

 10 5 45

|5Y| = 0 -21 -5 -25 -15 -5 +0 -15 -21

 -5 45 10 45 10 5

|5Y| = 0(-945-25)-25(-675+50)+0(-75+210)

|5Y| = 16875.

2)

Q T R

 m. .1

 h. .3

 i. .5

 k. .7

 o. .9

 r.

 c.

 T: R Q

 T (m) = 3

 T (h) = T (r) = 5

 T (i) = T (o) = 1

 T (k) = 9