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REVISION

1). Summarize what you understand by singular and non-singular matrices.

2). Give 5 examples to back your explanation in (1) above

1. A singular is a matrix in which the determinant is equal 0 while a non-singular matrix is a matrix in which the determinant is not equal to 0
2. **A= 1 -3 6 B= 1 1 2 C= 0**  **4 3**

 **4 0 2 1 -2 1 6 -7 1**

 **8 5 1 0 3 -4 1 -3 2**

1. **Check if A is singular or non-singular**

 **A** = 1 -3 6

 4 0 2

 8 5 1

= **1**  0 2 -(**-3)**  4 2 **+6** 4 0

 5 1 8 1 8 5

= 1(0 - 10) +3(4-16) +6(20-0)

= -10 - 36 +120

= **74**

**Since** A ≠ 0 ,  **therefore A is a non singular matrix**

1. **Check if BT is a singular or non-singular matrix**

**B** = 1 1 2 **B**T = 1 1 0

 1 -2 1 1 -2 3

 0 3 -4 2 1 -4

= **1** -2 3 **-1** 1 3 **+0** 1 -2

 1 -4 2 -4 2 1

1(8 - 3) -1(-4-6) +0(1+4)

= 5 + 10 + 0

**=15**

**Since** BT ≠ 0 , **therefore BT is a non-singular matrix**

1. **Check if (A+C)T is singular or non-singular**

A = 1 -3 6 C= 0 4 3 1 1 9

 4 0 2 **+** 6 -7 1 = 10 -7 3

 8 5 1 1 -3 2 9 2 3

(A+C)T= 1 10 9

 1 -7 2

 9 3 3

= **1**  -7 2 -**10** 1 2 +9 1 -7

 3 3 9 3 9 3

1(-21-6) -10(3-18) +9(3+63)

= -27 +150 + 594

**= 742**

Since (A+C)T ≠ 0 **, Therefore it is a non-singular matrix**

1. **Check if D is singular or non-singular**

 D= 3 9 2

 1 5 6

 2 7 4

= **3** 5 6 **-9** 1 6 **+2** 1 5

 7 4 2 4 2 7

= 3(20– 42) -9(4 –1 2) +2( 7 - 10)

= -66+72-6

= **0**

Hence,  **D is a singular matrix**

1. **Check if A+B+C is singular or non-singular**

A+B+C = 5 0 5 1 1 20 4 3 **2 2 11**

 -3 - 7 -1 + 1 -2 1 + 6 -7 1 = **11 -9 4**

 2 1 9 0 3 -41 -3 2 **9 5 -1**

= **2** -9 4 **-2**  11 4 +11 11 -9

 5 -1 9 -1 9 5

= 2(9 - 20) -2(-11 -36 ) +11( 55 + 81)

= -22 +94 + 1496

=**1,568**

**Since, A+B+C ≠ 0 Hence , its non-singular matrix**