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MAT204 ASSIGNMENT

**QUESTION ONE**

**SINGULAR MATRIX**: A [square (n x n) matrix](https://mathworld.wolfram.com/SquareMatrix.html) that does not have a [matrix inverse](https://mathworld.wolfram.com/MatrixInverse.html). A matrix is singular [iff](https://mathworld.wolfram.com/Iff.html) its [determinant](https://mathworld.wolfram.com/Determinant.html) is 0.

**WHILE**

**NON-SINGULAR MATRIX**:  An *n* × *n* matrix *A* is called *nonsingular* or *invertible* if there exists an *n* × *n* matrix *B* such that

AB=BA=I.

**QUESTION TWO**

1. |X|=

|X|= 3(20 - 42) – 9(4 - 12) + 2(7 - 10)

|X|= -66 + 72 – 6 = -0

|X| EQUAL TO 0, Therefore, Matrix X is a Singular matrix

0 5 0

-3 - 7 -1

2 1 9

1. |Y|=

|Y|= 0(171 + 1) – 5(-27 + 2) + 0(-3 + 14)

|Y|= 0 + 125 – 0 = 125

|Y|NOT EQUAL TO 0, Therefore, Matrix Y is a Non-Singular matrix

1 7 8

1 0 5

11 6 12

1. |C|=

|C|= 1(0 - 30) – 7(12 - 55) + 8(6 - 0)

|C|= -30 + 301 + 48 = 319

|C|NOT EQUAL TO 0, Therefore, Matrix **C** is a Non-Singular matrix

1. |P|=

0 25 0

-15 -35 -5

10 5 45

|P|= 0(-1575 + 25) – 25(-675 + 50) + 0(-75 + 350)

|P|= -0 + 15625 – 0 = 15625

|P|NOT EQUAL TO 0, Therefore, Matrix 5Y is a Non-Singular matrix

1 2 8

4 7 6

9 5 3

1. |A|=

|A|= 1(21 - 30) – 2(12 - 54) + 8(20 - 63)

|A|= -9 + 84 – 344 = - 269

|A| is not equal to zero Therefore, Matrix A is a Non-Singular matrix