**MAT 204 Assignment**

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Matric number: **18/SCI01/045**

 **Question 1**

1. A **linear transformation** is a function from one vector space to another that respects the underlying (linear) structure of each vector space. A linear transformation is also known as a linear operator or map.
2. The **rank** of a matrix is defined as (a) the maximum number of linearly independent *column* vectors in the matrix or (b) the maximum number of linearly independent *row* vectors in the matrix.

**QUESTION 2**

$\left|A\right|=$$\left[\begin{matrix}1&4&9\\2&7&5\\8&6&3\end{matrix}\right] $

 **= 1**$\left|\begin{matrix}7&5\\6&3\end{matrix}\right|$ **- 4**$\left|\begin{matrix}2&5\\8&3\end{matrix}\right|$**+9**$\left|\begin{matrix}2&7\\8&6\end{matrix}\right|$

$\left|A\right|$ **= 1(21-30) – 4(6-40) + 9(12-56)**

$\left|A\right|$ **= -9 -4(35) + 9(-44)**

$\left|A\right|$ **= -9 -140+396**

$\left|A\right|$ **= -149 + 396**

$\left|A\right|$ **= 247**

The vector $\left|A\right|$ is non-singular, since it’s not equals to zero

Question 3

 E 2

 F 4

 G 6

 H 8

 I 10

 J

 K

 T

 X Y

 T(e) = 2

 T(g)= 4

 T(h)=6

 T(j)=8

 T(k)=10