MA1140 Elementary Unear Algebra

ASSIGNMENT - I

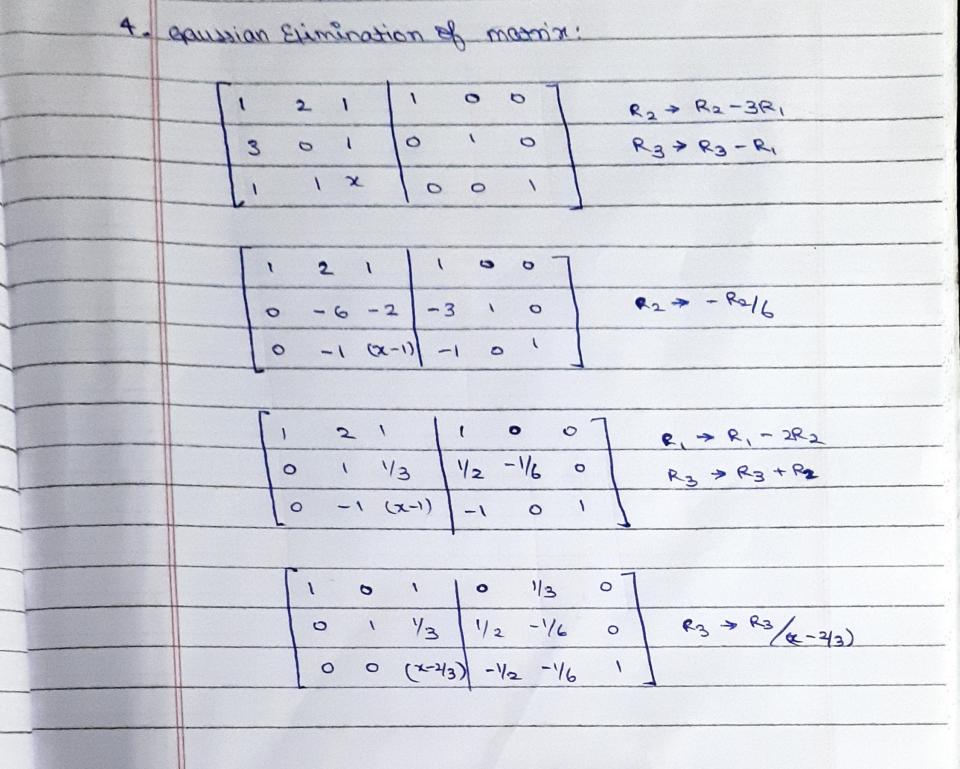
1.
$$\begin{bmatrix} 3 & 4 & -1 & 2 \\ 1 & -2 & 3 & 1 \\ 0 & 10 & -10 & -1 \end{bmatrix} \begin{bmatrix} u \\ v \\ z \end{bmatrix} = \begin{bmatrix} 6 \\ 2 \\ 1 \end{bmatrix}$$

2.
$$\begin{bmatrix} 1 & 1 & 1 \\ -4 & -3 & -2 \\ 3 & 2 & 1 \end{bmatrix}$$
 $R_2 \Rightarrow R_2 + 4R_1$

- 211- 0 1

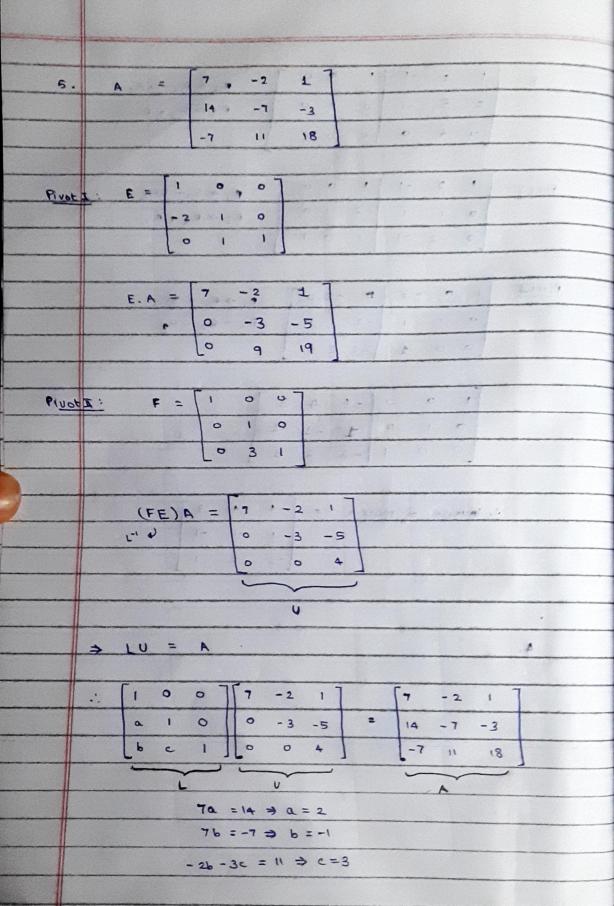
NOLE: (x) = x is a pivot point.

8.	1 2 -1 1 0 0 7 - R2-2R1
	2 5 -1 0 1 0 R3 - R3 + R1
	-1 4 0 0 0 1
Pivot S	[1 2 -1 1 0 0] R, - 2R2 3
	0 1 1 -2 10 R3 -> R3 +2R2
	0 -2 -1 1 0 1
PivotI	1 0 -3 8 -20 R, + R, + 3R3
	0 1 1 -2 1 0 R2 - R2 - R3
	0001 -321
	[100 -443]
	0101-1-1
	0 0 1 -3 2 1
	:. Inverse of motion = -4 4 3
	1 -1 -1
	-3 -2 1



:- For Matrix to have an inverse,

$$x-2/3 \neq 0 \Rightarrow \left[x \neq 2/3\right]$$



6.
$$\begin{bmatrix} 2 & -3 & 1 & 7 \\ -1 & 3 & 1 \end{bmatrix} \begin{bmatrix} u & 14 \\ 0 & -3 & -5 \\ -1 & 3 & 1 \end{bmatrix} \begin{bmatrix} 0 & 0 & 4 \end{bmatrix}$$

C. $\begin{bmatrix} 2 & -3 & 1 & 7 \\ 2 & 8 & -4 & 5 \\ 1 & 3 & -3 & 0 \end{bmatrix} \begin{bmatrix} u & 14 \\ 2 & 8 & -4 & 5 \\ 1 & 3 & -3 & 0 \end{bmatrix} \begin{bmatrix} u & 4 \\ 2 & 7 & 19 \end{bmatrix}$

Augmented Motrix (with rows change)

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$$\begin{bmatrix} 2 & -3 & 1 & 7 & 14 \\ 2 & 8 & -4 & 5 & 1 \\ 1 & 3 & -3 & 0 & 4 \\ 2 & 3 & 4 & -19 \end{bmatrix}$$

$$\begin{bmatrix} 2 & -3 & 1 & 7 & 14 \\ 2 & 3 & -4 & 5 & -15 \\ 3 & 0 & 4.5 & -3.5 & -3.5 \end{bmatrix}$$

$$\begin{bmatrix} 2 & -3 & 1 & 7 & 14 \\ 0 & 11 & -5 & -2 & -15 \\ -1 & 2 & 3 & 4 & -19 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 3 & -3 & 0 & 4 & 8.3 + 8.3 + 8.4 + 8.$$

