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Ans 1 $\begin{bmatrix} 1 & 1D3 & 3 & 0 & 5 \\ 0 & 1 & -1D-LAST & 0 & 7 \\ 0 & 0 & 1 & 0 & -6 \\ 0 & 0 & 0 & 1 & 1D3 \end{bmatrix}$

Sol:- ID = 158

$\begin{bmatrix} 1 & 8 & 3 & 0 & 5 \\ 0 & 1 & -3 & 0 & 7 \\ 0 & 0 & 1 & 0 & -6 \\ 0 & 0 & 0 & 1 & 8 \end{bmatrix}$

Now Apply Row operation

$\begin{bmatrix} 1 & 8 & 27 & 0 & -51 \\ 0 & 1 & -3 & 0 & 7 \\ 0 & 0 & 1 & 0 & -6 \\ 0 & 0 & 0 & 1 & 8 \end{bmatrix}$ R1 - 8R2

$\begin{bmatrix} 1 & 0 & 0 & 0 & 111 \\ 0 & 1 & -3 & 0 & 7 \\ 0 & 0 & 1 & 0 & -6 \\ & & & & \end{bmatrix}$ R1 - 27R3

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$$\sim \begin{bmatrix} -8 & 0 & 0 \\ -1 & 5 & 8 \\ 1 & -4 & 13 \end{bmatrix}$$ interchange R1 and R3

$$\sim \begin{bmatrix} -8 & 0 & 0 \\ 0 & -2 & -17 \\ 1 & 5 & 8 \\ 1 & -4 & 13 \end{bmatrix}$$ $R2 - 2R1$

$$\sim \begin{bmatrix} -8 & 0 & 0 \\ 0 & -2 & -17 \\ 0 & 40 & 64 \\ 1 & -4 & 13 \end{bmatrix}$$ $8R3 + R1$

$$\sim \begin{bmatrix} -8 & 0 & 0 \\ 0 & -2 & -17 \\ 0 & 0 & 64 \\ 1 & -4 & 13 \end{bmatrix}$$ $R3 + 20R2$

$$\sim \begin{bmatrix} -8 & 0 & 0 \end{bmatrix}$$

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Ans 2 PartA

$$\begin{bmatrix} 1 & 3 & -1 & 5 \\ 0 & 1 & -4 & 2 \\ 0 & 2 & -5 & -1 \end{bmatrix} \begin{bmatrix} 1 & 3 & -1 & 5 \\ 0 & 1 & -4 & 2 \\ 0 & 0 & 3 & -5 \end{bmatrix}$$

$$A = \begin{bmatrix} 1 & 3 & -1 & 5 \\ 0 & 1 & -4 & 2 \\ 0 & 2 & -5 & -1 \end{bmatrix}$$

$$A = \begin{bmatrix} 1 & 3 & -1 & 5 \\ 0 & 1 & -4 & 2 \\ 0 & 0 & 3 & -5 \end{bmatrix} R3 - 2R2$$

$$B = \begin{bmatrix} 1 & 3 & -1 & 5 \\ 0 & 1 & -4 & 2 \\ 0 & 0 & 3 & -5 \end{bmatrix}$$

$$B \begin{bmatrix} 1 & 3 & -1 & 5 \\ 0 & 1 & -4 & 2 \\ 0 & 2 & -5 & -1 \end{bmatrix} R3 + 2R2$$

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Ans 2

Part (B)

$$B = \begin{bmatrix} 1 & 0 & \pi \\ 0 & 1 & e \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

Sol:-

$$\begin{bmatrix} 1 & 0 & \pi \\ 0 & 1 & e \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$$\begin{bmatrix} \textcircled{1} & 0 & \pi \\ 0 & \textcircled{1} & e \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

These are echelon form A matric (A) is said to

(i) The first non-zero element in each row, is called its leading entry is 1.

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Ans 3 Part A

(i) It is in row echelon form

(ii) The leading entry in each row is a 1 (called a leading 1).

(iii) Each column containing a leading 1 has zero in all its other.

For example:-

$$\begin{bmatrix} 1 & 0 & a_1 & 0 & b_1 \\ 0 & 1 & a_2 & 0 & b_2 \\ 0 & 0 & 0 & 1 & b_3 \end{bmatrix}$$

* Practical use of Reduced Row Echelon Form :-

Reduce row echelon form is a type of matric used to solve systems of linear equation. It has four main Required which

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seems to be very inefficient and on easy way to make mistake.

Ans 3 Part (B)

(B)

$$\begin{bmatrix} 1 & 1D2 & 8 \\ 2 & 8 & -1 \\ -1D3 & 0 & 0 \\ 1 & -4 & 1D\_first\ Last \end{bmatrix}$$

(B) Sol:

$$\begin{bmatrix} 1 & 1D2 & 8 \\ 2 & 8 & -1 \end{bmatrix}$$

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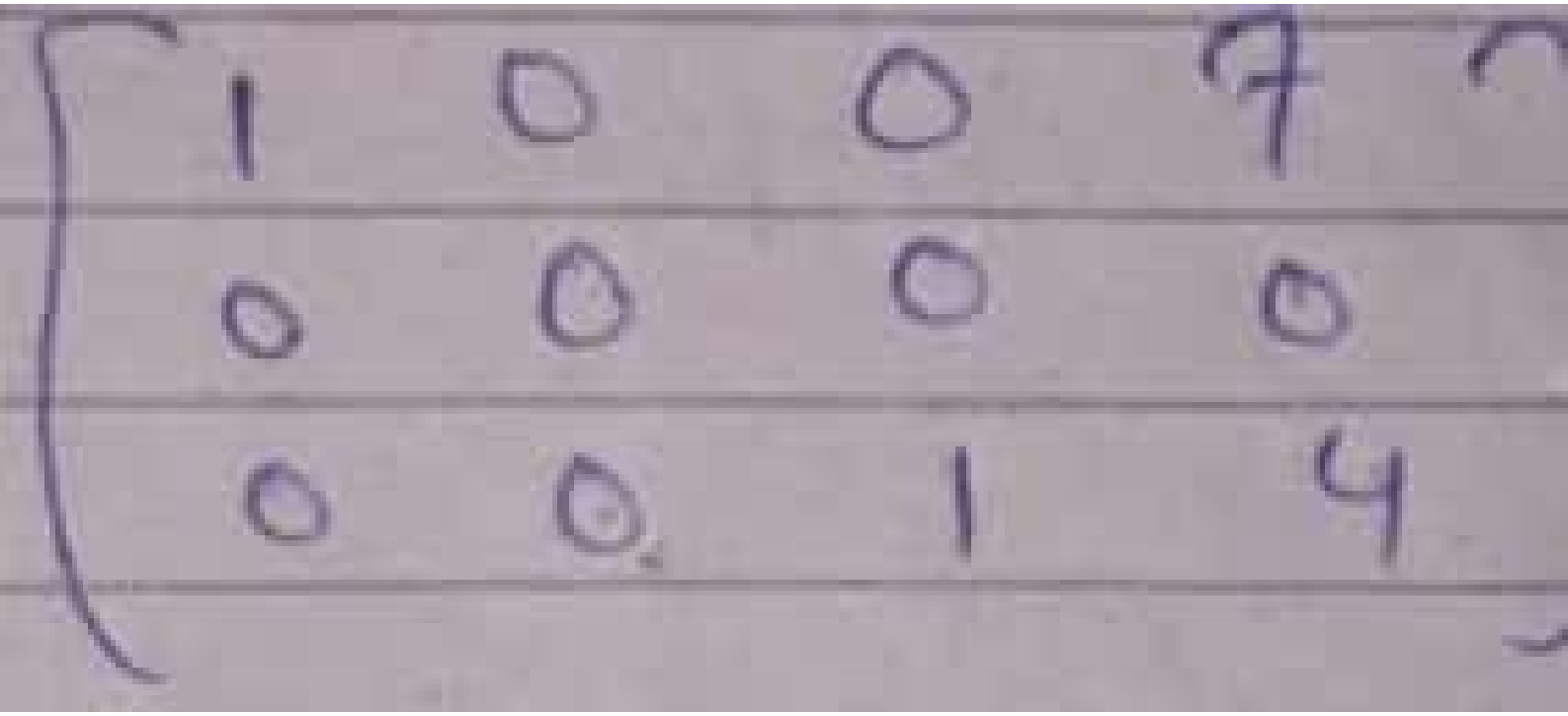

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linear equation = ____
Give one example.

Sol (A)

Difference b/w Row Echelon form and reduced row echelon form:-

The matric in row echelon form meets the following requirents (i) The first non-zero number form the left is always to the right of the first non-zero number in the row above.

(ii) Rows consisting of all zero are at the botton of the matric.

For Example $\begin{bmatrix} 1 & a_0 & a_1 & a_2 & a_3 \\ 0 & 0 & 2 & a_4 & a_5 \\ 0 & 0 & 0 & 1 & a_6 \end{bmatrix}$

1) But on the other hand reduced row echelon form meets different

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Ans No 2 Part No B 4 Parts

Part No 1 A

$$\begin{bmatrix} e & 0 & 0 & 0 \\ 0 & \pi & 0 & 0 \\ 0 & 0 & -\pi & 0 \\ 0 & 0 & 0 & e \end{bmatrix}$$

Sol:-

$$\begin{bmatrix} e & 0 & 0 & 0 \\ 0 & \pi & 0 & 0 \\ 0 & 0 & -\pi & 0 \\ 0 & 0 & 0 & e \end{bmatrix}$$ is in echelon form

yes in echelon form becauses no of zero increases as we goes down row by row before 1st non-zero.

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$$\sim \begin{bmatrix} -8 & 0 & 0 \\ 0 & .8 & 0.08 \\ 0 & 0 & .64 \\ 0 & 0 & 0.32 \end{bmatrix} \quad .376R_2 + R_3$$

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I.D — 15873
SECTION — A

Ans 2 Part(e) C

Part Q1 C

$$C = \begin{bmatrix} 5 & 0 & 0 & 7 \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & 4 \end{bmatrix}$$

Sol:

$$\begin{bmatrix} 5 & 0 & 0 & 7 \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & 4 \end{bmatrix}$$

$$\begin{bmatrix} 5 & 0 & 0 & 7 \\ 0 & \textcircled{1} & 0 & 5 \\ 0 & 0 & \textcircled{1} & 4 \end{bmatrix}$$

- Its in echelon form because it satisfies the 4th condition that is in a column that contains the leading entry of row all the other element are zero.

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* Agumented Matrix converted into System of linear form :-

$1x_1 = 111$; $x_2 = -11$

$x_1 = 111$

$x_3 = -6$, $x_4 = 8$ Ans

Ans 2 Part (A)

(A)

$$\begin{bmatrix} 1 & 3 & -1 & 5 \\ 0 & 1 & -4 & 2 \\ 0 & 2 & -5 & -1 \end{bmatrix} \rightarrow$$

$$\begin{bmatrix} 1 & 3 & -1 & 5 \\ 0 & 1 & -4 & 2 \\ 0 & 0 & 3 & -5 \end{bmatrix}$$

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