07/07/2020

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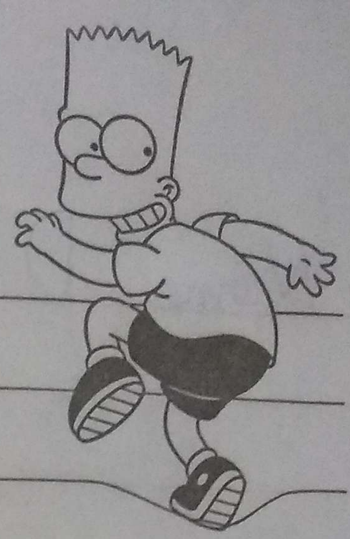


Atividade – 07/07/2020

① $\begin{bmatrix} 3 & 0 & 1 \\ 3 & 2 & 1 \\ -3 & 1 & 3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \\ 3 \end{bmatrix}$

$A^{(1)} = \left[\begin{array}{ccc|c} 3 & 0 & 1 & 1 \\ 3 & 2 & 1 & 1 \\ -3 & 1 & 3 & 3 \end{array}\right]$

I) Pivô: 3 (a_{11})

• 2ª linha

$m_{21} = \frac{3}{3} = 1$

• 2ª linha

$$m_{21} = \frac{3}{3} = 1$$

$$a_{21} = 3 - (3 \cdot 1) = 0$$
$$a_{22} = 2 - (0 \cdot 1) = 2$$
$$a_{23} = 1 - (1 \cdot 1) = 0$$
$$b_2 = 1 - (1 \cdot 1) = 0$$

• 3ª linha

$$m_{31} = \frac{-3}{3} = -1$$

$$a_{31} = (-3) - (3 \cdot (-1)) = 0$$
$$a_{32} = 1 - (0 \cdot (-1)) = 1$$
$$a_{33} = 3 - (1 \cdot (-1)) = 4$$
$$b_3 = 3 - (1 \cdot (-1)) = 4$$

$$A^{(2)} = \left[\begin{array}{ccc|c} 3 & 0 & 1 & 1 \\ 0 & 2 & 0 & 0 \\ 0 & 1 & 4 & 4 \end{array}\right]$$

tilibra

II) Pivô: 2 (a_{22})

• 3ª linha

$$m_{32} = \frac{1}{2}$$

$$a_{32} = 1 - \left(2 \cdot \frac{1}{2}\right) = 0$$

$$a_{33} = 4 - 0 = 4$$

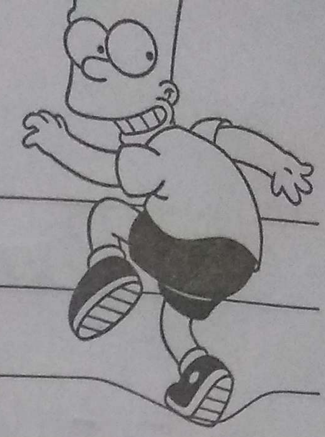
$$b_3 = 4 - 0 = 4$$

$$A^{(3)} = \left[\begin{array}{ccc|c} 3 & 0 & 1 & 1 \\ 0 & 2 & 0 & 0 \\ 0 & 0 & 4 & 4 \end{array}\right]$$

$\boxed{x_3 = 1}$

$\boxed{x_2 = 0}$ $\Rightarrow$ $X^* = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$

$\boxed{x_1 = 0}$



2) $\begin{bmatrix} 1 & 2 & 3 \\ 3 & 1 & 0 \\ 0 & 3 & 4 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 3 \\ 4 \\ 3 \end{bmatrix}$

$A^{(1)} = \left[\begin{array}{ccc|c} 3 & 1 & 0 & 4 \\ 1 & 2 & 3 & 3 \\ 0 & 3 & 4 & 3 \end{array}\right]$

I) Pivô: 3 (a_{11})

• 2ª linha

$m_{21} = \frac{1}{3}$

$a_{21} = 1 - \left(3 \cdot \frac{1}{3}\right) = 0$

$a_{22} = 2 - \left(1 \cdot \frac{1}{3}\right) = \frac{5}{3}$

$a_{23} = 3 - 0 = 3$

$m_{21} = \frac{1}{3}$

$a_{21} = 1 - \left(3 \cdot \frac{1}{3}\right) = 0$

$a_{22} = 2 - \left(1 \cdot \frac{1}{3}\right) = \frac{5}{3}$

$a_{23} = 3 - 0 = 3$

$b_2 = 3 - 4 \cdot \frac{1}{3} = \frac{5}{3}$

- 3ª linha

$m_{31} = 0$

$a_{31} = 0 - \left(3 \cdot \frac{1}{3}\right) = -1$

$a_{32} = 3 - \left(1 \cdot \frac{1}{3}\right) = \frac{8}{3}$

$a_{33} = 4$

$b_3 = 3$

$$A^{(2)} = \left[\begin{array}{ccc|c} 3 & 1 & 0 & 4 \\ 0 & 5/3 & 3 & 5/3 \\ 0 & 3 & 4 & 3 \end{array}\right]$$

$$\Rightarrow A^{(2)} = \left[\begin{array}{ccc|c} 3 & 1 & 0 & 4 \\ 0 & 3 & 4 & 3 \\ 0 & 5/3 & 3 & 5/3 \end{array}\right]$$

II) Pivô: $3\ (a_{22})$

- 3ª linha

$$m_{32} = \frac{(5/3)}{3} = \frac{5}{9}$$

$$a_{32} = \frac{5}{3} - \left(3 \cdot \frac{5}{9}\right) = 0$$

$$a_{33} = 3 - \left(4 \cdot \frac{5}{9}\right) = \frac{7}{9}$$

$$b_3 = \frac{5}{3} - \left(3 \cdot \frac{5}{9}\right) = 0$$

$$a_{32} = \frac{5}{3} - \left(3 \cdot \frac{5}{9}\right) = 0$$

$$a_{33} = 3 - \left(4 \cdot \frac{5}{9}\right) = \frac{7}{9}$$

$$b_3 = \frac{5}{3} - \left(3 \cdot \frac{5}{9}\right) = 0$$

$$A^{(3)} = \left[\begin{array}{ccc|c} 3 & 1 & 0 & 4 \\ 0 & 3 & 4 & 3 \\ 0 & 0 & 7/9 & 0 \end{array}\right]$$

$X_3 = 0$

$X_2 = 1$

$X_1 = 1$

$$\Rightarrow X^* = \begin{bmatrix} 1 \\ 1 \\ 0 \end{bmatrix}$$

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