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$$-x_1 + 7x_2 - x_3 = -4$$

$$-3x_1 + 5x_2 + 10x_3 = -8$$

$$10x_1 + 10x_2 - 5x_3 = -2$$

$$A = \begin{bmatrix} -1 & 7 & -1 \\ -3 & 5 & 10 \\ 10 & 10 & -5 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} -4 \\ -8 \\ -2 \end{bmatrix}$$

Dispositivo prática,

L		matriz			operação	P
1	$m_{11} = -0.1$	-1	7	-1		1
2	$m_{21} = -0.3$	-3	5	10		2
3		<u>10</u>	10	-5		<u>3</u>
4		0	8	-1,5	$-m_{11}L_3 + L_1$	1
5	$m_{12} = 1$	0	<u>8</u>	8,5	$-m_{21}L_3 + L_2$	<u>2</u>
6		0	0	<u>-10</u>	$-1L_4 + L_5$	<u>1</u>

$$U = \begin{bmatrix} 10 & 10 & -5 \\ 0 & 8 & 8,5 \\ 0 & 0 & -10 \end{bmatrix} \quad P = \begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix} \quad L = \begin{bmatrix} 1 & 0 & 0 \\ -0,3 & 1 & 0 \\ -0,1 & 1 & 1 \end{bmatrix} \quad b = \begin{bmatrix} -4 \\ -8 \\ -2 \end{bmatrix}$$

$$Pb = \begin{bmatrix} -2 \\ -8 \\ -4 \end{bmatrix}$$

$$Ly = Pb$$

$$\begin{bmatrix} 1 & 0 & 0 \\ -0,3 & 1 & 0 \\ -0,1 & 1 & 1 \end{bmatrix} \begin{bmatrix} y_1 \\ y_2 \\ y_3 \end{bmatrix} = \begin{bmatrix} -2 \\ -8 \\ -4 \end{bmatrix}$$

$$y_1 = -2$$

$$-0,3y_1 + y_2 = -8$$

$$y_2 = -8 + 0,3(-2)$$

$$y_2 = -8,6$$

$$-0,1y_1 + y_2 + y_3 = -4 \Rightarrow y_3 = -4 + 0,1(-2) - (-8,6) = 4,4$$

$$y = \begin{bmatrix} -2 \\ -8,6 \\ 4,4 \end{bmatrix}$$

$$Ux = y$$

$$\begin{bmatrix} 10 & 10 & 5 \\ 0 & 8 & 8,5 \\ 0 & 0 & -10 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} -2 \\ -8,6 \\ 4,4 \end{bmatrix}$$

$$x_3 = -0,44$$

$$x_2 = \frac{-8,6 - 8,5(-0,44)}{8} = -0,6075$$

$$x_1 = \frac{-2 - 10(-0,6075) + 5(-0,44)}{10} = 0,1875$$

Solução,

$$x = \begin{bmatrix} 0,1875 \\ -0,6075 \\ -0,44 \end{bmatrix}$$