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SEG TER QUA QUI SEX SÁB DOM

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$$\begin{pmatrix} 1 & 2 & 4 \\ 2 & 8 & 10 \\ 4 & 10 & 26 \end{pmatrix} = \begin{pmatrix} r_{11} & 0 & 0 \\ r_{12} & r_{22} & 0 \\ r_{13} & r_{23} & r_{33} \end{pmatrix} \cdot \begin{pmatrix} r_{11} & r_{12} & r_{13} \\ 0 & r_{22} & r_{23} \\ 0 & 0 & r_{33} \end{pmatrix}$$

$A_{11} \Rightarrow 1 = r_{11}^2 \therefore r_{11} = \sqrt{1} = 1$

$A_{12} \Rightarrow 2 = r_{11} \cdot r_{12} \therefore r_{12} = 2$

$A_{13} \Rightarrow 4 = 1 \cdot r_{13} \therefore r_{13} = 4$

$$R = \begin{pmatrix} 1 & 2 & 4 \\ 0 & 2 & 1 \\ 0 & 0 & 3 \end{pmatrix}$$

$A_{22} \Rightarrow 8 = 2^2 + r_{22}^2 \therefore r_{22} = \sqrt{8-4} = 2$

$A_{23} \Rightarrow 10 = 2.4 + 2 r_{23} \therefore r_{23} = (10-8)/2 = 1$

$A_{33} \Rightarrow 26 = 4^2 + 1^2 + r_{33}^2 \therefore r_{33} = \sqrt{26-17} = 3$

$$R^t = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 2 & 0 \\ 4 & 1 & 3 \end{pmatrix}$$

$R^t . y = b$

$$\begin{pmatrix} 1 & 0 & 0 \\ 2 & 2 & 0 \\ 4 & 1 & 3 \end{pmatrix} \cdot \begin{pmatrix} y_1 \\ y_2 \\ y_3 \end{pmatrix} = \begin{pmatrix} 1 \\ -4 \\ 10 \end{pmatrix}$$

$y_1 = 1$

$2.1 + 2y_2 = -4$

$4.1 + y_2 + 3y_3 = 10$

$2y_2 = -2 - 4 \therefore y_2 = \frac{-6}{2} = -3$

$4 + (-3) + 3y_3 = 10 \therefore y_3 = \frac{9}{3} = 3$

$R . x = y$

$$\begin{pmatrix} 1 & 2 & 4 \\ 0 & 2 & 1 \\ 0 & 0 & 3 \end{pmatrix} \cdot \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = \begin{pmatrix} 1 \\ -3 \\ 3 \end{pmatrix}$$

$x_3 = \frac{3}{3} = 1$

$2x_2 - 1 = -3 \therefore x_2 = \frac{-4}{2} = -2$

$x_1 + 2x_2 + 4x_3 = 1$

$x_1 + (-4) + 4 = 1 \therefore x_1 = 1$

$X = \{1, -2, 1\}$