

4)

Q5)

$$T: \mathbb{R}^3 \rightarrow \mathbb{R}^3$$

$$v_1 = (1, 0, 1), \quad v_2 = (0, 0, 1), \quad v_3 = (1, 1, 0)$$

$$B = \{v_1, v_2, v_3\}.$$

$$\text{Can} \xrightarrow{M} B$$

$$M = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}$$

$$\text{Seja } A = [T]_{\text{can.}}$$

Então

$$\begin{bmatrix} -1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 0 \end{bmatrix} = M^{-1} A M \Rightarrow A = M \begin{bmatrix} -1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 0 \end{bmatrix} M^{-1}$$

$$\text{Mas } M^{-1} = \begin{bmatrix} 1 & -1 & 0 \\ -1 & 1 & 1 \\ 0 & 1 & 0 \end{bmatrix}$$

$$A = \begin{bmatrix} -1 & 0 & 0 \\ * & * & * \\ * & * & * \end{bmatrix} \begin{bmatrix} 1 & -1 & 0 \\ -1 & 1 & 1 \\ 0 & 1 & 0 \end{bmatrix} = \begin{bmatrix} -1 & 1 & 0 \\ * & * & * \\ * & * & * \end{bmatrix}$$

$$\text{Logo } -1 + 1 = 0 //$$