11. Calcúlese un vector fijo [illegible]

$$T = \begin{pmatrix} 2/3 & 1/6 & 1/6 \\ 1/4 & 1/2 & 1/4 \\ 0 & 0 & 1 \end{pmatrix}$$

De modo que $t(x\ y\ z) = tT = (x\ y\ z)\begin{pmatrix} 2/3 & 1/6 & 1/6 \\ 1/4 & 1/2 & 1/4 \\ 0 & 0 & 1 \end{pmatrix}$

o bien $(x\ y\ z) = (2/3x + 1/4y + 0 \quad 1/6x + 1/2y + 0 \quad 1/6x + 1/4y + z)$ y así

$$\begin{aligned} 2/3x + 1/4y + 0 &= x \\ 1/6x + 1/2y + 0 &= y \\ 1/6x + 1/4y + z &= z \end{aligned}$$

Entonces, junto con la condición $x+y+z=1$, llegamos al sistema

$$\begin{aligned} x + y + z &= 1 \\ -1/3x + 1/2y &= 0 \\ 1/6x - 1/2y &= 0 \\ 1/6x + 1/4y &= 0 \end{aligned}$$

Ahora haremos reducción por renglones

$$\left(\begin{array}{ccc|c} 1 & 1 & 1 & 1 \\ -1/3 & 1/2 & 0 & 0 \\ 1/6 & -1/2 & 0 & 0 \\ 1/6 & 1/4 & 0 & 0 \end{array}\right) \xrightarrow[A_{1,4}(-1/6)]{A_{1,2}(1/3),\ A_{1,3}(-1/6)} \left(\begin{array}{ccc|c} 1 & 1 & 1 & 1 \\ 0 & 5/6 & 1/3 & 1/3 \\ 0 & -2/3 & -1/6 & -1/6 \\ 0 & 7/12 & -1/6 & -1/6 \end{array}\right)$$

$$\xrightarrow{M_2(6/5)} \left(\begin{array}{ccc|c} 1 & 1 & 1 & 1 \\ 0 & 1 & 6/15 & 6/15 \\ 0 & -2/3 & -1/6 & -1/6 \\ 0 & 1/12 & -1/6 & -1/6 \end{array}\right)$$

$$\xrightarrow{A_{2,1}(-1),\ A_{2,3}(2/3),\ A_{2,4}(-1/12)} \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 6/15 & 6/15 \\ 0 & 0 & 1/2 & 1/2 \\ 0 & 0 & -1/4 & -1/4 \end{array}\right)$$

$$\xrightarrow{A_{3,4}(1/4),\ M_3(2),\ A_{3,2}(-6/15)} \left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ [illegible] & [illegible] & 1 & 1 \end{array}\right)$$

Así que

$x = 0$

$y = 0$

$z = 1$

y $t = (0\ 0\ 1)$