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Prima Parcial Punto #1

1. $P_1 = (10,10,0)$, $P_2 = (40,10,0)$, $P_3 = (40,40,0)$, $P = (10,40,0)$

Codigo = 86000375. 10×a = 10×3 = 30 = R_y

a)

$$R_1 = \begin{bmatrix} Cos30 & 0 & Sen30 \\ 0 & 1 & 0 \\ -Sin30 & 0 & Cos30 \end{bmatrix} \cdot \begin{bmatrix} 10 \\ 10 \\ 0 \end{bmatrix} = [8{,}66, 10, -5] = P_1$$

$$R_2 = \begin{bmatrix} Cos30 & 0 & Sen30 \\ 0 & 1 & 0 \\ -Sin30 & 0 & Cos30 \end{bmatrix} \begin{bmatrix} 40 \\ 10 \\ 0 \end{bmatrix} = [34{,}641, 10, -20] = P_2$$

$$R_3 = \begin{bmatrix} Cos30 & 0 & Sen30 \\ 0 & 1 & 0 \\ -Sin30 & 0 & Cos30 \end{bmatrix} \begin{bmatrix} 40 \\ 40 \\ 0 \end{bmatrix} = [34{,}641, 40, -20] = P_3$$

$$R_4 = \begin{bmatrix} Cos30 & 0 & Sen30 \\ 0 & 1 & 0 \\ -Sin & 0 & Cos30 \end{bmatrix} \begin{bmatrix} 10 \\ 40 \\ 0 \end{bmatrix} = [8{,}66, 40, -5] = P_4$$

b) 10 − b → 10 − 7 = 3 = T

$$T_1 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 3 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} 8{,}66 \\ 10 \\ -5 \\ 1 \end{bmatrix} = [8{,}66, 10, -2, 1] = [8{,}66, 10, -2] = P_1$$

$$T_2 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 3 \\ 0 & 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 34{,}641 \\ 10 \\ -20 \\ 1 \end{bmatrix} = [34{,}641, 10, -17, 1] = [34{,}641, 10, -17] = P_2$$

$$T_3 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 3 \\ 0 & 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 34{,}641 \\ 40 \\ -20 \\ 1 \end{bmatrix} = [34{,}641, 40, -17, 1] = [34{,}641, 40, -17] = P_3$$

$$T_4 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 3 \\ 0 & 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 8{,}66 \\ 40 \\ -2 \\ 1 \end{bmatrix} = [8{,}66 \;,\; 40 \;,\; -2 \;,\; 1] = [8{,}66, 40, -2] = P_4$$

c) $10 - C \rightarrow 10 - 8 = S_x = 2$

$$S_{x1} = \begin{bmatrix} 2 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 8{,}66 \\ 10 \\ -2 \\ 1 \end{bmatrix} = [17{,}32 \;,\; 10 \;,\; -2] = P_1$$

$$S_{x2} = \begin{bmatrix} 2 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 39{,}641 \\ 10 \\ -17 \\ 1 \end{bmatrix} = [69{,}282, 10, -17] = P_2$$

$$S_{x3} = \begin{bmatrix} 2 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 39{,}641 \\ 40 \\ -17 \\ 1 \end{bmatrix} = [69{,}282 \;,\; 40 \;,\; -17] = P_3$$

$$S_{x4} = \begin{bmatrix} 2 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 8{,}66 \\ 40 \\ -2 \\ 1 \end{bmatrix} = [17{,}32, 40, -2] = P_4$$