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M2 Tarea

Ejercicio 1

$Q = (\bar{P}' = \bar{P})(\bar{V}) = (P_x), (V_x), P_y$

A → Traslación

$\bar{P} = (2, 1, 3)$ $\bar{V} = (1.43, 1.43, 1.43)$

$\bar{P}' = (2*1.43, 1*1.43, 3*1.43) =$

$\bar{P}' = (2.86, 1.43, 4.29)$

$Q = \bar{P}' = \bar{P} + \bar{V}$

$\bar{P} = (2.86, 1.43, 4.29)$ $\bar{V} = (4, 3, 1)$

$\bar{P}' = (2.86 + 4, 1.43 + 3, 4.29 + 1)$

$Q = (6.86, 4.43, 5.29)$

Rotación

$\bar{P}' = \bar{P} + \bar{V}$ $\bar{P} = (3, 2, 4)$

$\bar{V} = (-6.86, -4.43, -5.29)$

$\bar{P}' = (-3.86, -2.43, -1.29)$

$R_v(45°) \rightarrow \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & \cos & \text{sen} & 0 \\ 0 & \text{sen} & \cos & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \\ 1 \end{bmatrix} = \begin{matrix} x \\ y\cos(45°) - y\text{sen}(45) \\ z\,\text{sen}(45) - z\cos(45 \\ 1 \end{matrix}$

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$\therefore \bar{P}' = \bar{P} + \bar{v} = (-3.86, -0.178, -2.745)$

$+ 6.86, 4.43, 5.295) = (3, 4.251, 2.544)$

Ejercicio 2

lado $a = 3.3$

altura $h = a\sqrt{\frac{2}{3}}$

base pirámide

punto $C = (-1.812, -6.824, 5.247)$

$\frac{2}{3}(2.857) = 1.905$

$\frac{1}{3}(2.857) = 0.9526$

$x = -1.812 + \alpha$

$z = 5.247 + \alpha$

$V_1' = (-1.812, 5.247) + (0.1, 9.05) = (-1.812, 7.152)$

$V_2' = (-1.812, 5.247) + (1.65, -0.952) = (-0.162, 4.294)$

$V_3' = (-1.812, 5.247) + (1.65, -0.952) = (-3.462, 4.294)$

$V_1 = (-1.812, -6.824, 7.152)$

$V_2 = (-0.162, -6.824, 4.294)$

$V_3 = (-3.462, -6.824, 4.294)$

$V_4 = (-1.812, -4.1295, 5.247)$

$\bar{P} = (-1.812, -6.156, 5.247)$

$\bar{p} = \left(\frac{\Sigma V_{x\,1-4}}{4}, \frac{\Sigma V_{y\,1-4}}{4}, \frac{\Sigma V_{z\,1-4}}{4}\right)$ Fórmula de la clase

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Rota.cs:

$P_0 = (-1.812, -6.150, 5.247)$

$\bar{P} + \bar{v} = (-1.812, -6.824, 7.152) + (1.812, 6.150, -5.247) = (0, -0.674, 1.905)$

(Rota-15)

$$R_y(-15) = \begin{bmatrix} \cos\theta & 0 & \text{sen}\theta & 0 \\ 0 & 1 & 0 & 0 \\ -\text{sen}\theta & 0 & \cos\theta & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} 0 \\ -0.674 \\ 1.905 \\ 1 \end{bmatrix} = \begin{matrix} = -1.238 \\ = -0.674 \\ = -1.447 \\ = \end{matrix}$$

$(-0.162, -6.824, 4.294) + (1.812, 6.150, -5.247) =$

$(1.65, -0.674, -0.952) \rightarrow \begin{bmatrix} 1.65 \\ -0.674 \\ -0.952 \\ 1 \end{bmatrix} \begin{matrix} = -0.634 \\ = -0.674 \\ = 1.766 \\ = 1 \end{matrix}$

$(-3.462, -6.824, 4.294) + (1.812, 6.150, -5.247) =$

$(1.65, -0.674, -0.952) \rightarrow \begin{bmatrix} -1.65 \\ -0.674 \\ -0.952 \\ 1 \end{bmatrix} \begin{matrix} = 1.872 \\ = -0.674 \\ = -0.349 \\ = 1 \end{matrix}$

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$(-1.812, -4.129, 5.247) + (1.812, 6.150, -5.247) = (0, 2.020, 0) + \begin{bmatrix} 0 \\ 2.020 \\ 0 \\ 1 \end{bmatrix} = \begin{matrix} 0 \\ 2.020 \\ 0 \\ 1 \end{matrix}$

$V'1 = (-1.798, -0.674, -1.447) + (-18.12, -6.150, 5.247) = (-3.65, -6.824, 3.799)$

$V'2 = (-0.634, -0.674, 1.796) + (-1.812, -6.150, 5.247) = (-2.446, -6.824, 7.043)$

$V'3 = (1.877, -0.674, -0.349) + (1.812, -6.150, 5.247) = (0.060, -6.824, 4.897)$

$V'4 = (0, 2.020, 0) + (-1.812, -6.150, 5.247) = (-1.812, -4.129, 5.247)$