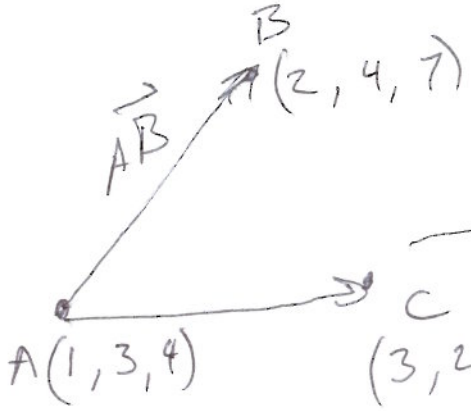


$\vec{AB} = (2-1, 4-3, 7-4)$

$(1, 1, 3)$

$\vec{AC}$ $(3-1, 2-3, 1-4)$

$(2, -1, -3)$

$\vec{AB} \times \vec{AC} = \begin{matrix} i & j & k \\ 1 & 1 & 3 \\ 2 & -1 & -3 \end{matrix}$

$-3+3, 6+3, -1-2$

$\vec{N}_{ormal} = [0 \quad 9 \quad -3]$

$a \quad b \quad c$

$ax + by + cz + D = 0$

$0x + 9y - 3z + D = 0$

$9y - 3z + D = 0$ ← subst. $(3, 2, 1)$

$9 \cdot 2 - 3 \cdot 1 + D = 0$

Pt C

$18 - 3 = -D$

$15 = -D$

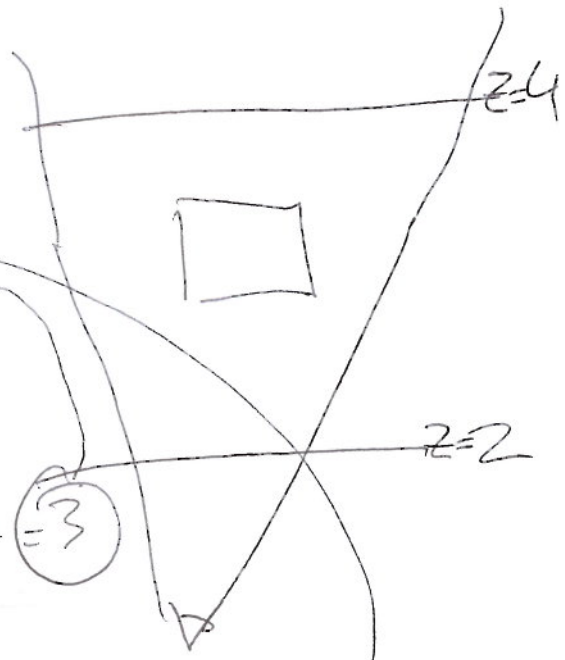
$-15 = D$

$$9y - 3z - 15 = 0$$

$(x_0, y_0, z_0)\,t + (x_1, y_1, z_1)(1-t)$

$(x_0, y_0, z_0) + (\Delta x, \Delta y, \Delta z)\,t$

$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & \alpha & \beta \\ 0 & 0 & -1 & 0 \end{bmatrix}$$



$$\alpha = \frac{z_{near} + z_{far}}{z_{far} - z_{near}} = \frac{2+4}{4-2} = \frac{6}{2} = 3$$

$$\beta = \frac{2 z_{near} \times z_{far}}{z_{near} - z_{far}} = \frac{2 \cdot 2 \cdot 4}{2-4} = \frac{16}{-2} = -8$$

$$x' = x\left(\frac{d}{z+d}\right)$$

$$y' = y\left(\frac{d}{z+d}\right)$$

$$d=0 \Rightarrow \quad x' = \frac{x}{z}$$

$$y' = \frac{y}{z}$$