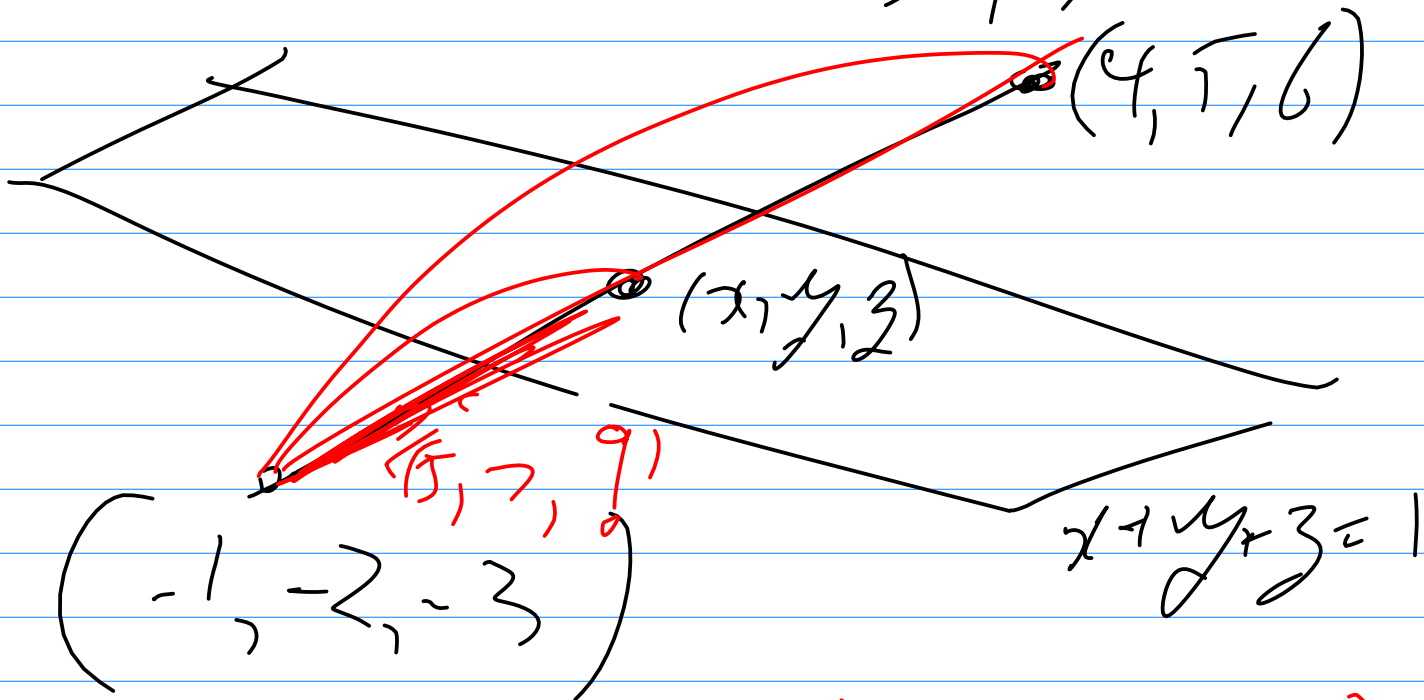


(5/10/20/17 P1)



$$(x, y, z) = (-1, -2, -3) + \alpha (5, 7, 9)$$

CENTER OF  
PROJECTION

$(4, 5, 0)$

POINT TO  
PROJECT

~~$(7, 7, 3) \in (\frac{2}{3}, \frac{1}{3}, 0)$~~

~~$(5, 7, 9) \rightarrow (-1, -2, -3)$~~

$x + y + z = 1$

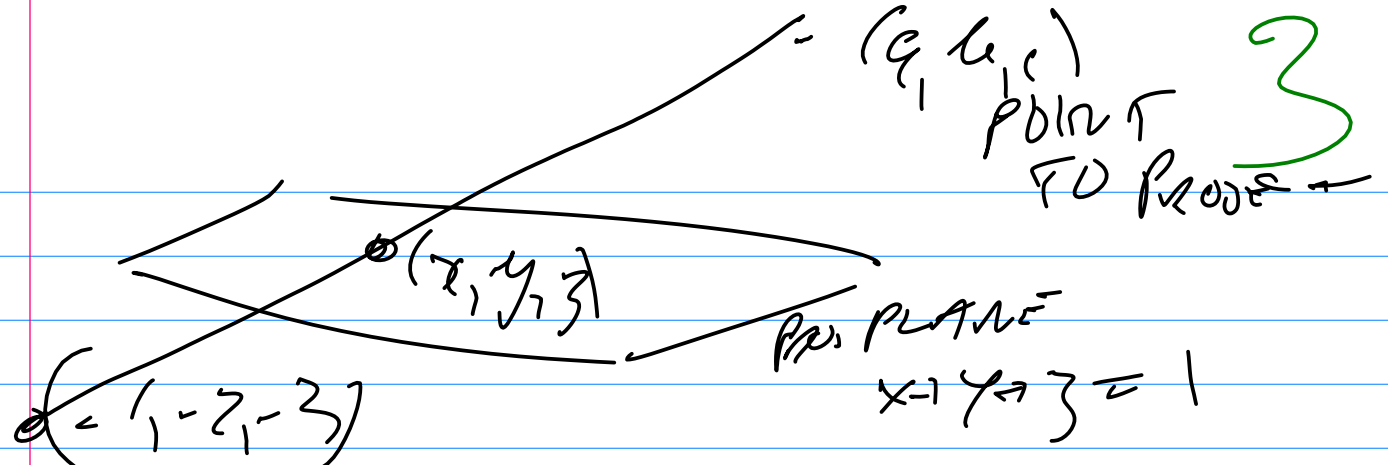
PROJECTION  
PLANE

$$\begin{aligned}x &= -1 + 5\alpha \\y &= -2 + 7\alpha \\z &= -3 + 9\alpha\end{aligned}$$

$(5, 7, 9) = (4, 5, 0) - (1, 2, 3)$   
DIRECTION OF  
PROJECTION  
LINE

$$\begin{aligned}-1 + 5\alpha - 2 + 7\alpha - 3 + 9\alpha &= 1 \\-6 + 21\alpha &\end{aligned}$$

$$\begin{aligned}21\alpha &= 7 \Rightarrow \alpha = \frac{1}{3} \\(5, 7, 9) &= (\frac{2}{3}, \frac{1}{3}, 0)\end{aligned}$$



CVP

DIRECTION VECTOR : (a+1, b+2, c+3)

$$(x, y, z) = (-1, -2, -3) + \alpha (a+1, b+2, c+3)$$

$$-1 + a\alpha - 2 + b\alpha + 2 - 3 + c\alpha + 3\alpha = 1$$

$$-6 + \alpha(a+1+b+2+c+3) = 1$$

$$-6 + \alpha(6+a+b+c) = 1$$

$$\alpha = \frac{7}{6+a+b+c}$$

$$(x, y, z) = (-1, -2, -3) + \frac{7}{6+a+b+c} (a+1, b+2, c+3)$$

$$= \frac{7}{6+a+b+c} (a+1-b-a-b-c, b+2-12-2a-2b-2c, c+3-18-3a-3b-3c)$$

$$= \frac{7}{6+a+b+c} (-5-b-c, -10-2a-b-2c, -15-3a-3b-2c)$$

$$\begin{pmatrix} x \\ y \\ z \\ w \end{pmatrix} = \begin{pmatrix} 0 & -1 & -1 & -5 \\ -2 & -1 & 2 & -10 \\ -3 & 3 & -2 & -15 \\ 0 & 0 & 0 & 7 \end{pmatrix} \begin{pmatrix} a \\ b \\ c \\ 1 \end{pmatrix}$$

MAY BE  
WRONG  
BUT  
GIVES  
THE  
ANS.

