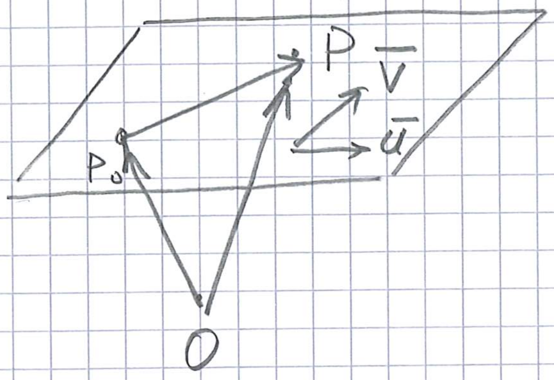
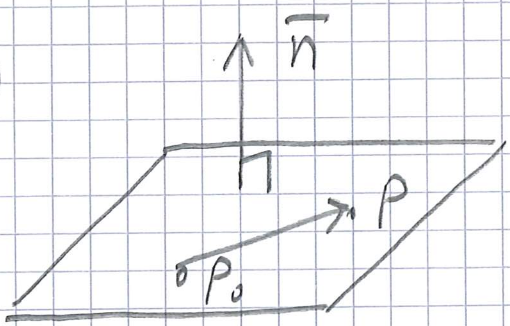
Plan

1



$$\overline{OP} = \overline{OP_0} + t\bar{u} + s\bar{v}$$

2



$$\overline{P_0P} \cdot \bar{n} = 0$$

($\bar{n} = \bar{u} \times \bar{v}$ till ex.)

Inför ett koordinatsystem:

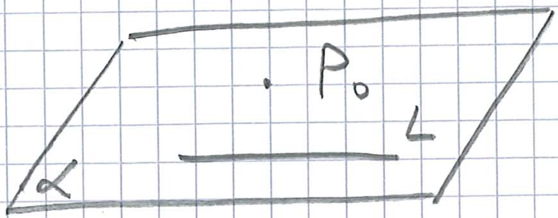
$$\underbrace{\begin{pmatrix} x \\ y \\ z \end{pmatrix}}_{\overline{OP}} = \underbrace{\begin{pmatrix} x_0 \\ y_0 \\ z_0 \end{pmatrix}}_{\overline{OP_0}} + t\begin{pmatrix} a_1 \\ b_1 \\ c_1 \end{pmatrix} + s\begin{pmatrix} a_2 \\ b_2 \\ c_2 \end{pmatrix}, \quad t, s \in R$$

Basen är en ON bas o $\bar{n}(A, B, C)$

$$A(x - x_0) + B(y - y_0) + C(z - z_0) = 0 \quad \text{eller}$$

$$Ax + By + Cz + D = 0, \quad \text{där } D = -Ax_0 - By_0 - Cz_0$$

EX.



$\alpha = ?$

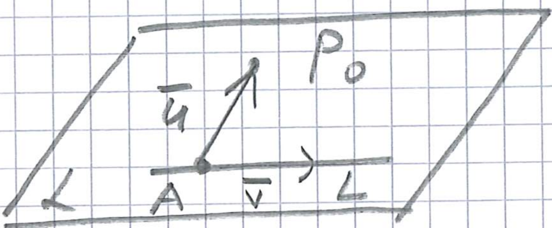
om $P_0(1,2,3)$

o $L: \begin{cases} x = 1+t \\ y = 2+2t \\ z = -1+3t \end{cases}, \quad t \in R$

Obs 1) $P_0 \notin L$

2) $\bar{v}(1,2,3) \parallel L$

3) $A(1,2,-1) \in L$



$\bar{u} = \overline{AP_0} = P_0 - A =$

$= (1,2,3) - (1,2,-1) =$

$= (0,0,4)$

Obs $\bar{u} \nparallel \bar{v}$ o $\bar{u}, \bar{v}$ utgör en bas i α.

$$\alpha: \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} + t \begin{pmatrix} 0 \\ 0 \\ 4 \end{pmatrix} + s \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}, \quad t, s \in R$$

eller $\begin{cases} x = 1+s \\ y = 2+2s \\ z = 3+4t+3s \end{cases}, \quad t, s \in R$

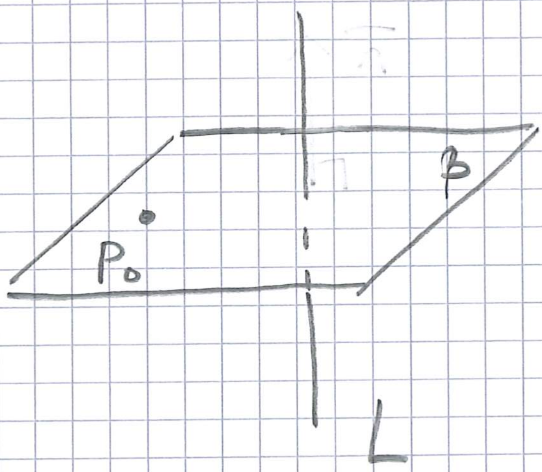
$\bar{n} = \bar{u} \times \bar{v} \perp \alpha$ o

$$\bar{n} = \begin{pmatrix} 0 \\ 0 \\ 4 \end{pmatrix} \times \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} = \begin{pmatrix} -8 \\ 4 \\ 0 \end{pmatrix}$$

$$\Rightarrow \alpha: \quad -8(x-1) + 4(y-2) + 0(z-3) = 0$$

eller $\underline{2x - y = 0}$

Ex.



$\beta = ?$

om $P_0(2, 3, 1)$ o

$$L: \begin{cases} x = 1 + 2t \\ y = -3t \\ z = 4 + t \end{cases}, \quad t \in R$$

Obs $\bar{v}(2, -3, 1) \parallel L$ o $\bar{v} \perp \beta$.

$$\Rightarrow \beta: \quad 2(x-2) - 3(y-3) + 1 \cdot (z-1) = 0$$

eller $\underline{2x - 3y + z + 4 = 0}$

Finn avståndet mellan P_0 o L.