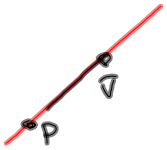
EC. RECTA

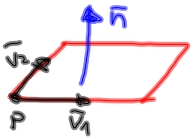
Pto
Vector



EC. PLANO

Pto
$\vec{v}_1$
$\vec{v}_2$

Pto
$\vec{n}$



abr 23-13:13

(7) $A(-3,2,1)$ $B\left(\frac{-5}{2},\frac{3}{2},0\right)$

$$r=\begin{cases}\text{Pto}: A(-3,2,1)\\ \text{Vector}: \overline{AB}=\left(-\frac{5}{2}+3,\frac{3}{2}-2,0-1\right)\\ \left(\frac{1}{2},-\frac{1}{2},-1\right)\parallel(1,-1,-2)\end{cases}$$

Ec. vectorial

$(x,y,z)=(-3,2,1)+t(1,-1,-2)\quad \forall t\in\mathbb{R}$

Ec. param

$$\begin{cases}x=-3+t\\ y=2-t\\ z=1-2t\end{cases}\quad \forall t\in\mathbb{R}$$

Ec. continua

$$\frac{x+3}{1}=\frac{y-2}{-1}=\frac{z-1}{-2}$$

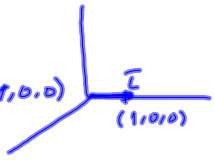
Intersección de 2 planos o implícita

$$\begin{cases}-x-3=y-2\\ -2y+4=-z+1\end{cases}\qquad\begin{cases}x+y+1=0\\ 2y-z-3=0\end{cases}$$

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(6) Ejes coordenados

OX $\begin{cases}P_1(0,0,0)\\ P_2(1,0,0)\end{cases}$ $\vec{v}=\overline{P_1P_2}=(1,0,0)$



$$\begin{cases}x=t\\ y=0\\ z=0\end{cases}\quad \forall t\in\mathbb{R}$$

OY $\begin{cases}x=0\\ y=t\\ z=0\end{cases}\quad \forall t\in\mathbb{R}$

OZ $\begin{cases}x=0\\ y=0\\ z=\alpha\end{cases}\quad \forall \alpha\in\mathbb{R}$

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(8) $r: P(3,1,0)\ Q(0,-5,1)\ R(6,-5,1)$

Ver alineados $\overline{PQ}\parallel\overline{QR}$

$\overline{PQ}=(0-3,-5-1,1-0)=(-3,-6,1)$

$\overline{QR}=(6-0,-5+5,1-1)=(6,0,0)$

$\frac{-3}{6}=\frac{-6}{0}=\frac{1}{0}$ no

Otro modo

- Hallar r: P,Q

$$r\Rightarrow\begin{cases}P=(3,1,0)\\ \vec{v}=\overline{PQ}=(-3,-6,1)\end{cases}\quad\frac{x-3}{-3}=\frac{y-1}{-6}=\frac{z}{1}$$

- Comprobar $R\in r$

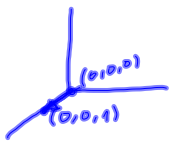
$$\frac{6-3}{-3}=\frac{-5-1}{-6}=\frac{1}{1}$$

$-1=1=1$ NO

abr 23-13:24

(9) $A(-4,2,5) \quad /\!/ OZ$

$r \Rightarrow \begin{cases} Pto \quad A(-4,2,5) \\ \bar{v} = (0,0,1) \end{cases}$



Ec. vect $(x,y,z) = (-4,2,5) + t(0,0,1) \quad \forall t \in \mathbb{R}$

Ec param $\begin{cases} x = -4 \\ y = 2 \\ z = 5+t \end{cases} \quad \forall t \in \mathbb{R}$

Ec cont $\frac{x+4}{0} = \frac{y-2}{0} = \frac{z-5}{1}$

Implicata $\begin{cases} x+4=0 \\ y-2=0 \end{cases}$

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(10) $P(1,-3,0)$

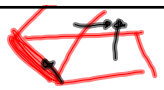
$/\!/ \bar{u} \times \bar{v} \quad \begin{matrix} \bar{u}(1,-1,2) \\ \bar{v}(2,0,0) \end{matrix}$

$r \Rightarrow \begin{cases} Pto \quad P(1,-3,0) \\ Dcha = \bar{u} \times \bar{v} = \begin{vmatrix} \bar{i} & \bar{j} & \bar{k} \\ 1 & -1 & 2 \\ 2 & 0 & 0 \end{vmatrix} = \end{cases}$

$(0,4,2) /\!/ (0,2,1)$

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(11) $\bar{v} \quad \begin{cases} x-y=0 \\ y+z=2 \end{cases}$



Modo 1 $\left(\begin{array}{ccc|c} 1 & -1 & 0 & 0 \\ 0 & 1 & 1 & 2 \end{array}\right) \quad \begin{cases} x-y=0 \\ y+z=2 \end{cases}$

$\begin{cases} x = 2-\alpha \\ y = 2-\alpha \\ z = \alpha \end{cases} \quad \forall \alpha \in \mathbb{R} \quad \bar{v}(-1,-1,1)$

Modo 2 $\begin{cases} \bar{n}_\pi = (1,-1,0) \\ \bar{n}_{\pi'} = (0,1,1) \end{cases}$

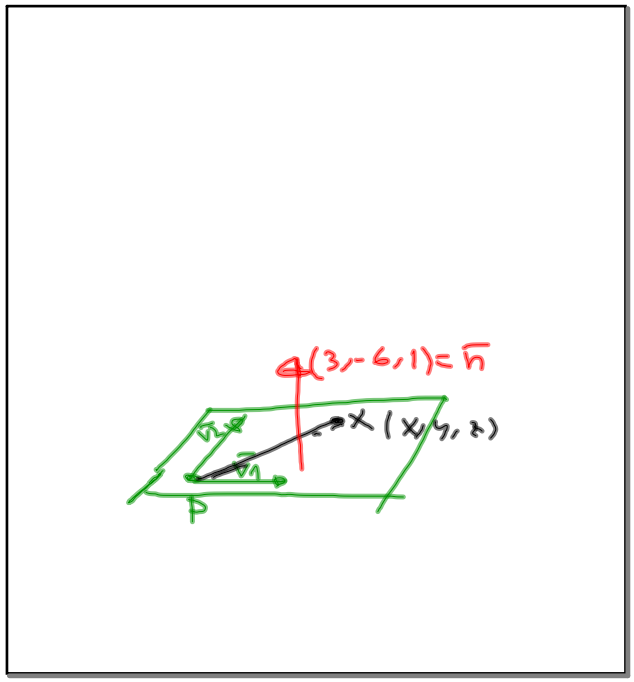
$\bar{v} = \bar{n}_\pi \times \bar{n}_{\pi'} = \begin{vmatrix} \bar{i} & \bar{j} & \bar{k} \\ 1 & -1 & 0 \\ 0 & 1 & 1 \end{vmatrix} = (-1,-1,1)$

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(12) $\frac{x}{2} = \frac{y+1}{-1} = z$

$\begin{cases} -x = 2y+2 \\ y+1 = -z \end{cases} \quad \begin{cases} x+2y+2=0 \\ y+z+1=0 \end{cases}$

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13) a) A(1,-3,2) $\vec{u}(2,1,0)$ $\vec{v}(-1,0,3)$

Ec. vectorial

$(x,y,z) = (1,-3,2) + \alpha(2,1,0) + \beta(-1,0,3)$

$\forall \alpha, \beta \in \mathbb{R}$

Ec. paramétricas

$$\begin{cases} x = 1 + 2\alpha - \beta \\ y = -3 + \alpha \\ z = 2 + 3\beta \end{cases} \quad \forall \alpha, \beta \in \mathbb{R}$$

Ec. general

$$\begin{vmatrix} x-1 & y+3 & z-2 \\ 2 & 1 & 0 \\ -1 & 0 & 3 \end{vmatrix} = 0$$

$(x-1)3 - (y+3)6 + (z-2)1 = 0$

$\boxed{3x - 6y + z - 23 = 0}$

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b) P(2,-3,1) $\vec{n}(5,-3,-4)$

$5x - 3y - 4z + D = 0$

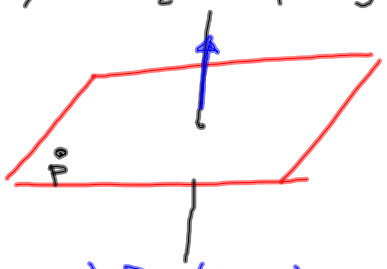
Sustituyo el pto

$10 + 9 - 4 + D = 0 \quad D = -15$

$\boxed{5x - 3y - 4z - 15 = 0}$

abr 23-13:50

c) $r \equiv \frac{x}{2} = \frac{y+1}{-1} = \frac{z}{3}$ P(1,0,1)



$\pi \Rightarrow \begin{cases} P = (1,0,1) \\ \vec{n}_\pi = \vec{v}_r = (2,-1,3) \end{cases}$

$2x - y + 3z + D = 0$

$2 - 0 + 3 + D = 0 \quad D = -5$

$\boxed{2x - y + 3z - 5 = 0}$

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