

TITLE:

DATE:

Algebra

① $\pi: 2x - y + z - 6 = 0$

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

$$P(9, \frac{16}{3}, -\frac{20}{3})$$

$$\pi: 2(9) - \frac{16}{3} + (-\frac{20}{3}) - 6 = 0$$

$$18 - \frac{36}{3} - 6 = 0$$

$$12 - 12 = 0$$

$$0 = 0$$

$$\begin{cases} x = -1 + 3\lambda \\ y = 2 + \lambda \\ z = 0 + (-2)\lambda \end{cases} \begin{cases} 2(-1+3\lambda) - (2+\lambda) + (0-2\lambda) - 6 = 0 \\ -2 + 6\lambda - 2 - \lambda - 2\lambda - 6 = 0 \\ -10 + 3\lambda = 0 \\ 3\lambda = 10 \\ \lambda = \frac{10}{3} \end{cases}$$

$$\begin{cases} x = -1 + 3(\frac{10}{3}) = -1 + 10 = 9 \\ y = 2 + 1(\frac{10}{3}) = 2 + \frac{10}{3} = \frac{16}{3} \\ z = 0 - 2(\frac{10}{3}) = -\frac{20}{3} \end{cases}$$

② $\pi: x - 2y + 2z + 4 = 0$

$$Ax + By + Cz + D = 0$$

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

$$\text{sen } \alpha = \frac{1-4+4}{\sqrt{1^2+(-2)^2+2^2} \cdot \sqrt{1^2+(-2)^2+2^2}} = \frac{1}{3 \cdot 3} = \frac{1}{9}$$

$$\vec{d} = (1, 2, 2)$$

$$\vec{h} = (1, -2, 2)$$

$$\alpha = \arcsen(1/9) \approx 6,38^\circ$$

③ $\pi: 3x + y - 2z - 1 = 0$

recta con $\vec{d}(m, 6, 4)$

Cond: $\text{coñ} \parallel r \vee \pi: \vec{d} \cdot \vec{h} = 0$ $\vec{h} = (3, 1, -2)$

Cond: $\text{coñ} \perp r \vee \pi: \vec{d} = \lambda \vec{h}$

$$\parallel \vec{d} \cdot \vec{h} = 0 \rightarrow (m, 6, 4) \cdot (3, 1, -2) = 0 \rightarrow 3m + 6 - 8 = 0 \rightarrow m = 2/3$$

$$\perp \vec{d} = \lambda \vec{h} \rightarrow (m, 6, 4) = \lambda(3, 1, -2) \rightarrow \begin{cases} m = 3\lambda \\ 6 = \lambda \cdot 1 \rightarrow 6 \\ 4 = \lambda(-2) = -12 \text{ Absurdo matemático} \end{cases}$$

④ $r = \frac{x-2}{4} = \frac{y+1}{-3} = \frac{z-5}{1}$

$$\parallel \text{Eje } z = \frac{x-2}{4} = \frac{y+1}{-3} \rightarrow 3x + 4y - 2 = 0$$

$$\parallel \text{Eje } y = \frac{x-2}{4} = \frac{z-5}{1} \rightarrow x - 4z - 18 = 0$$

$$\parallel \text{Eje } x = \frac{y+1}{-3} = \frac{z-5}{1} \rightarrow y + 3z - 14 = 0$$