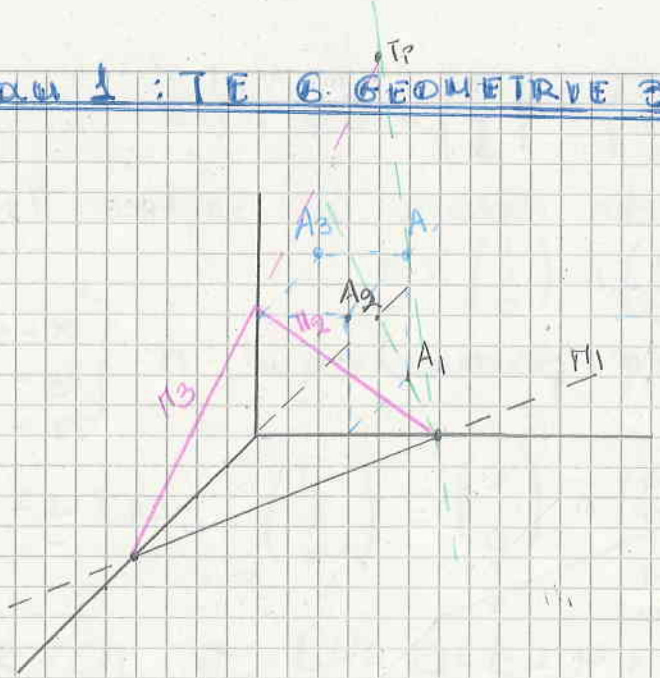
LDDR - Niveau 1 : TE 6 Géométrie 3D

Exercice 1



Exercice 2

$$d_1 : \begin{cases} x = 4 + 2\lambda \\ y = 1 - \lambda \\ z = 3 - \lambda \end{cases} \qquad d_2 : \begin{cases} x = 2 + 3\mu \\ y = 1 + p\mu \\ z = -1 + \mu \end{cases}$$

$4 + 2\lambda = 2 + 3\mu$ ① $2\lambda - 3\mu = -2$

$1 - \lambda = 1 + p\mu$ ② $-\lambda - \mu = -4 \quad * 2$

$3 - \lambda = -1 + \mu$ ③ $\mu = 2$

$-\lambda - 2 = -4 \Rightarrow \lambda = 2$

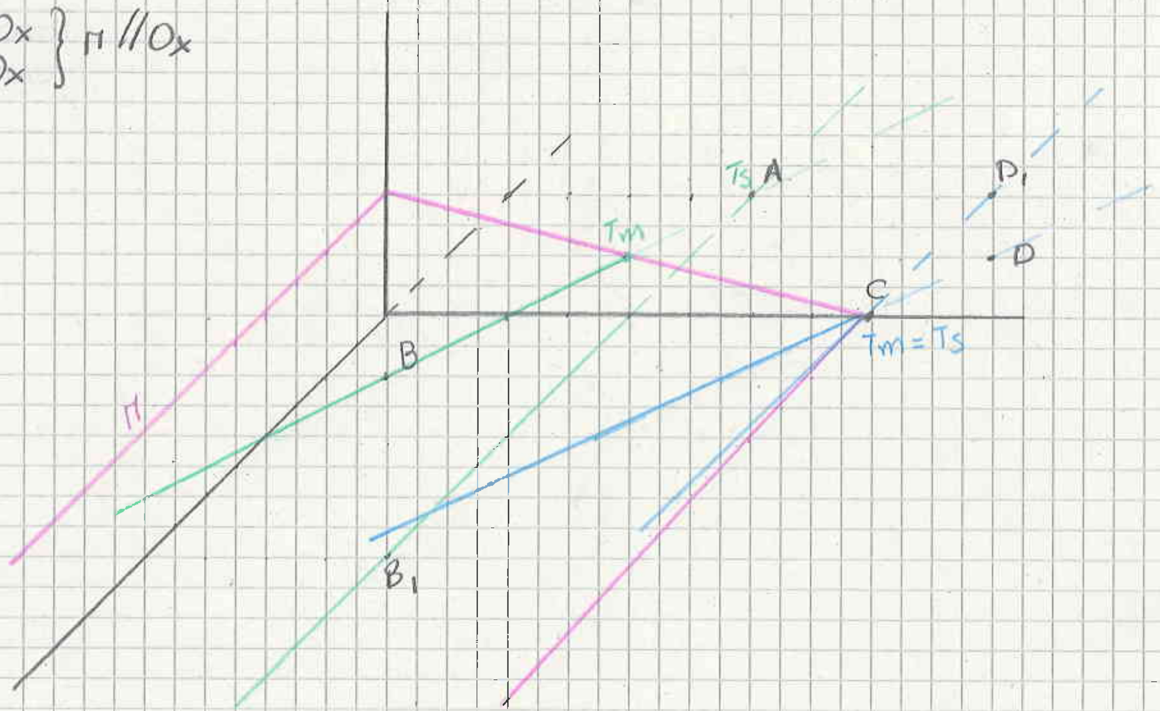
$$+\begin{cases} 2\lambda - 3\mu = -2 \\ -2\lambda - 2\mu = -8 \end{cases}$$
$$-5\mu = -10 \Rightarrow \mu = 2.$$

② $\begin{matrix} \mu = 2 \\ \lambda = 2 \end{matrix}$ $1 - 2 = 1 + p \cdot 2 \Rightarrow 2p = -2 \Rightarrow \boxed{p = -1}$

Exercice 3

$d_1 : A(-4;4;0) \quad B(8;4;3) \quad d_2 : C(0;8;0) \quad D(-4;8;-1)$

$\left.\begin{matrix} d_1 \parallel Ox \\ d_2 \parallel Ox \end{matrix}\right\} \pi \parallel Ox$



c) $\vec{AB} = \begin{pmatrix}12\\0\\3\end{pmatrix} \parallel \begin{pmatrix}4\\0\\1\end{pmatrix} \parallel \vec{CD} \parallel \Pi$

On cherche encore un vecteur $\parallel \Pi$ par exemple

$\vec{AC} = \begin{pmatrix}4\\4\\0\end{pmatrix} \parallel \begin{pmatrix}1\\1\\0\end{pmatrix} \parallel \Pi$

Alors éq paramétrique: $\Pi = \begin{cases} x = -4 + 4\lambda + \mu \\ y = 4 + \mu \\ z = \lambda \end{cases}$

$\vec{n}_\Pi = \begin{pmatrix}4\\0\\1\end{pmatrix} \wedge \begin{pmatrix}1\\1\\0\end{pmatrix} = \begin{pmatrix}-1\\1\\4\end{pmatrix}$ $\quad -x + y + 4z + d = 0$

A : $4 + 4 + d = 0 \Rightarrow d = -8$ $\quad \Pi : -x + y + 4z - 8 = 0$