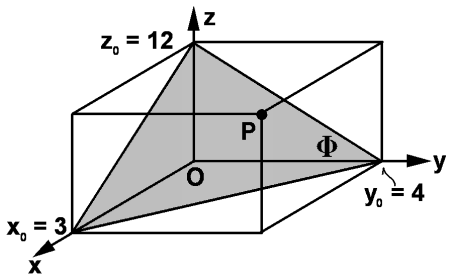
Übungen in AlgGeo ◇ Exercices en AlgGéo ◇ T. B1 ◇ II / 8a

Probl. 1



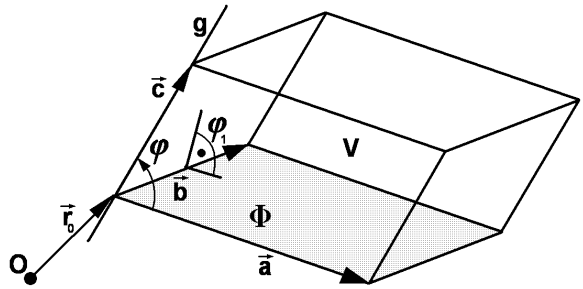
$\Phi = \Phi(x_0, y_0, z_0)$

$\Phi:\ A\,x + B\,y + C\,z + D = 0,$
$D = -144,\ \ A, B, C = ?$

Distanz Φ von $O = ?$ • *Distance* Φ *de* $O = ?$

Distanz Φ von $P = ?$ • *Distance* Φ *de* $P = ?$

Probl. 2



$\Phi:\ \vec{r}_\Phi = \vec{r}_0 + \lambda\,\vec{a} + \mu\,\vec{b}$

$g:\ \vec{r}_g = \vec{r}_0 + t\,\vec{c}$

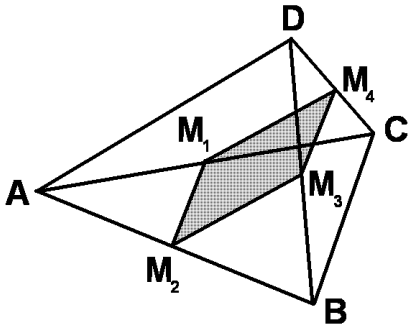
$V = ?$

$\varphi = ?$

$\varphi_1 = ?$

φ_1 = Winkel zwischen den Ebenen.
• φ_1 = *Angle entre les plans.*

Probl. 3



$A(-2/0/0), C(4/2/0),$
$C(6/-1/1), D(3/1/6)$
M = Mitte • M = *milieu*

(a) Volumeninhalt $(ABCD) = ?$.
• *Volume* $(ABCD) = ?$.

(b) Flächeninhalt $(M_1M_2M_3M_4) = ?$.
• *Surface* $(M_1M_2M_3M_4) = ?$.

Probl. 4

$$\Phi_1:\ \vec{x} = \begin{pmatrix}2\\1\\3\end{pmatrix} + \lambda\begin{pmatrix}1\\0\\1\end{pmatrix} + \mu\begin{pmatrix}1\\1\\0\end{pmatrix}$$

$$\Phi_2:\ \vec{x} = \begin{pmatrix}-2\\2\\2\end{pmatrix} + \lambda\begin{pmatrix}-1\\2\\0\end{pmatrix} + \mu\begin{pmatrix}0\\0\\2\end{pmatrix}$$

(a) $s = \Phi_1 \cap \Phi_2 \rightsquigarrow\ \vec{x} = ?$

(b) Für welche $P \in s$ ist $|\overrightarrow{OP}|$ minimal? • *Pour quel* $P \in s$, $|\overrightarrow{OP}|$ *est minimale?*

Hinweis: Normalenvektoren! • *Indication: Vecteurs orthogonals!*

Probl. 5 $h_1: \vec{x} = \begin{pmatrix} 2 \\ 1 \\ 0 \end{pmatrix} + t\begin{pmatrix} 1 \\ 1 \end{pmatrix}1 \qquad h_2: \vec{x} = \begin{pmatrix} 2 \\ 2 \\ 2 \end{pmatrix} + \lambda\begin{pmatrix} -5 \\ -4 \end{pmatrix}6$

Distanz zwischen h_1 und $h_2 = ?$ • *Distance entre* h_1 *et* $h_2 = ?$