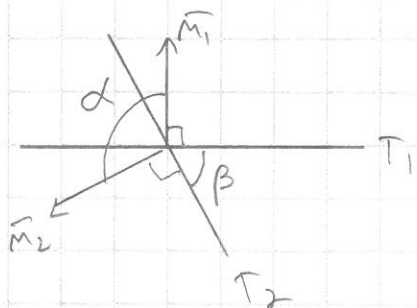


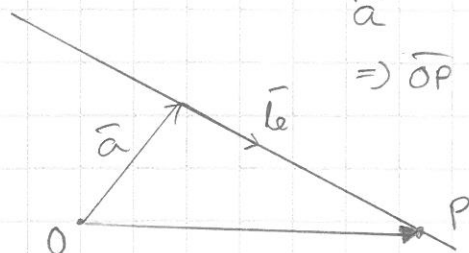
9.6 $T_1: x - 2y + 4z + 3 = 0 \Rightarrow \vec{m}_1 = \vec{i} - 2\vec{j} + 4\vec{k}$ (Torsen normalenvektor)
 $T_2: 7x - 2y - 4z - 35 = 0 \Rightarrow \vec{m}_2 = 7\vec{i} - 2\vec{j} - 4\vec{k}$

$$\cos(\vec{m}_1, \vec{m}_2) = \frac{\vec{m}_1 \cdot \vec{m}_2}{|\vec{m}_1| |\vec{m}_2|} = \frac{1 \cdot 7 + (-2) \cdot (-2) + 4 \cdot (-4)}{\sqrt{1^2 + (-2)^2 + 4^2} \cdot \sqrt{7^2 + (-2)^2 + (-4)^2}} = \frac{-5}{\sqrt{21} \sqrt{69}}$$

$$\Rightarrow \angle(\vec{m}_1, \vec{m}_2) \approx 97,548^\circ \approx 97,5^\circ = \alpha$$



9.7 $\vec{OP} = \underbrace{3\vec{i} + \vec{j} - 9\vec{k}}_{\vec{a}} + t \underbrace{(-\vec{i} + 2\vec{j} + \vec{k})}_{\vec{b}}, t \in \mathbb{R}$



$$\Rightarrow \vec{OP} = (3-t)\vec{i} + (1+2t)\vec{j} + (-9+t)\vec{k} \Rightarrow P = (3-t, 1+2t, -9+t)$$

a) $2x - 3y + 8z + 5 = 0$

$$\Rightarrow \text{Einsetzung: } 2(3-t) - 3(1+2t) + 8(-9+t) + 5 = 0$$

$$\Leftrightarrow -67 = 0 \quad \downarrow \quad \Rightarrow \text{keine Lösung}$$

Γ Torsen normalenvektor $\vec{n} = 2\vec{i} - 3\vec{j} + 8\vec{k}$

$$\vec{b} \cdot \vec{n} = -1 \cdot 2 + 2 \cdot (-3) + 1 \cdot 8 = 0 \Rightarrow \vec{b} \perp \vec{n}$$

$$\Rightarrow \text{keine Lösung}$$

b) $x + y + z + 3 = 0$

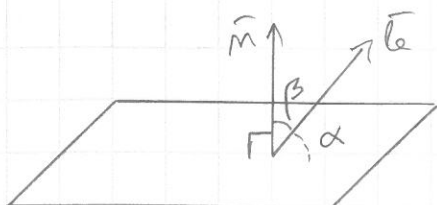
$$\Rightarrow \text{Einsetzung: } (3-t) + (1+2t) + (-9+t) + 3 = 0$$

$$\Leftrightarrow 2t - 2 = 0 \Leftrightarrow t = 1 \Rightarrow \text{Lösung}$$

Γ Punkte: $P = (3-1, 1+2 \cdot 1, -9+1) = (2, 3, -8)$

9.8 more: $\vec{OP} = \underbrace{(3\vec{i} + 4\vec{j} + 2\vec{k})}_{\vec{a}} + t \underbrace{(\vec{i} + 5\vec{j} - 3\vec{k})}_{\vec{b}}$

$$\Rightarrow \text{more normalenvektor: } \vec{b} = \vec{i} + 5\vec{j} - 3\vec{k}$$



more: $3x - 2y + z - 4 = 0$

$$\Rightarrow \text{normalenvektor: } \vec{n} = 3\vec{i} - 2\vec{j} + \vec{k}$$