

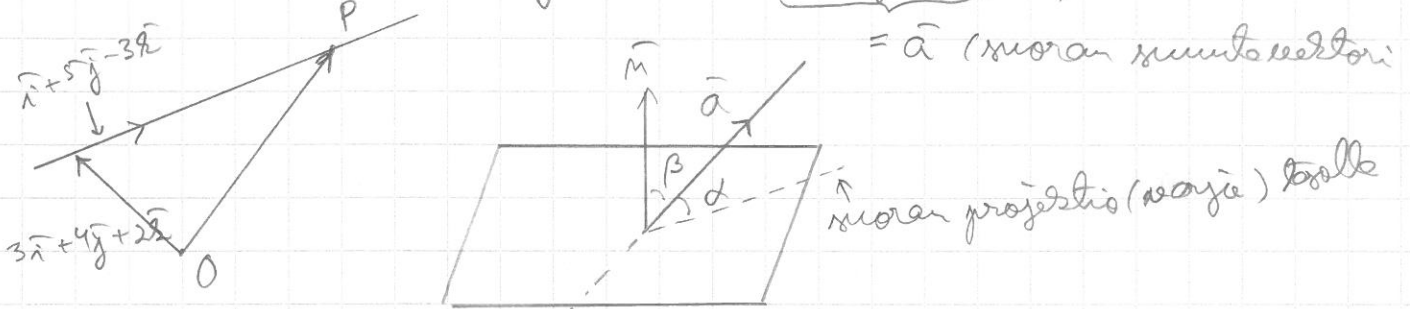
b) P on tasolle $x+y+z+3=0$

$(\Rightarrow) (3-t) + (1+2t) + (-9+t) + 3 = 0$

$(\Rightarrow) 2t - 2 = 0 \Rightarrow t = 1$

\Rightarrow leikkaus (pisteesse $P = (3-1, 1+2 \cdot 1, -9+1) = (2, 3, -8)$)

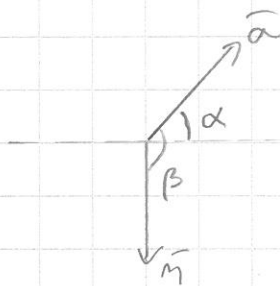
9.8 suor: $\vec{OP} = 3\vec{i} + 4\vec{j} + 2\vec{k} + t(\vec{i} + 5\vec{j} - 3\vec{k})$, $t \in \mathbb{R}$



tasoo: $3x - 2y + z - 4 = 0 \Rightarrow \vec{m} = 3\vec{i} - 2\vec{j} + \vec{k}$

$\cos(\vec{m}, \vec{a}) = \frac{\vec{m} \cdot \vec{a}}{|\vec{m}| |\vec{a}|} = \frac{3 \cdot 1 + (-2) \cdot 5 + 1 \cdot (-3)}{\sqrt{3^2 + (-2)^2 + 1^2} \sqrt{1^2 + 5^2 + (-3)^2}}$

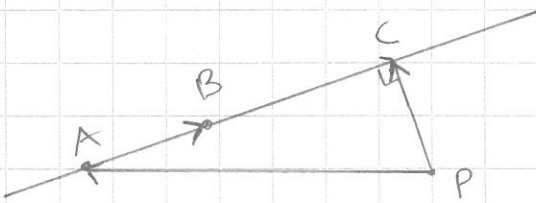
$\Rightarrow \angle(\vec{m}, \vec{a}) = \beta = 116,86^\circ \approx 117^\circ$



Suoran ja tason välinen kulma:

$\alpha = \beta - 90^\circ = 27^\circ$

10. Pisteen etäisyys suorasta

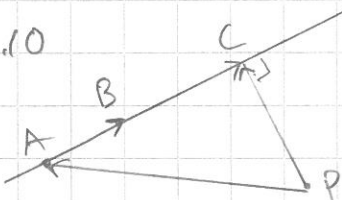


$\vec{PC} = \vec{PA} + \vec{AC} = \vec{PA} + t\vec{AB}$

$\vec{PC} \perp \vec{AB} \Rightarrow \vec{PC} \cdot \vec{AB} = 0 \Rightarrow t = \dots$

$\Rightarrow C = (\dots, \dots, \dots)$

10.10



$A = (1, -4, 3)$, $B = (-1, -7, 2)$

$P = (-1, 2, 3)$

$\vec{PC} = \vec{PA} + \vec{AC} = \vec{PA} + t\vec{AB}$

$= (2\vec{i} - 6\vec{j}) + t(-2\vec{i} - 3\vec{j} - \vec{k})$

$= (2 - 2t)\vec{i} + (-6 - 3t)\vec{j} - t\vec{k}$