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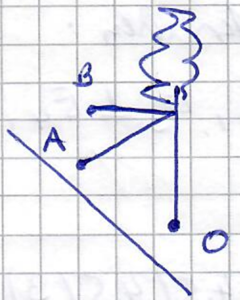
geg.:



$A(3|-4|2)$; $B(-5|-2|1)$, $1 = 1m$

$P(0|0|5)$

ges.: $\sphericalangle(g(AP); E_{ABO})$ und $\sphericalangle(g(B,P); E_{ABO})$

Lös.:

$$E(ABO): \quad \vec{x} = \begin{pmatrix}0\\0\\0\end{pmatrix} + r\begin{pmatrix}3\\-4\\2\end{pmatrix} + s\begin{pmatrix}-5\\-2\\1\end{pmatrix}$$

$$CP: \quad \underline{y + 2z = 0}$$

$$g(A,P): \quad \vec{x} = \begin{pmatrix}3\\-4\\2\end{pmatrix} + t\begin{pmatrix}-3\\4\\3\end{pmatrix}$$

$$g(B,P): \quad \vec{x} = \begin{pmatrix}-5\\-2\\1\end{pmatrix} + u\begin{pmatrix}5\\2\\4\end{pmatrix}$$

$$\sin\sphericalangle(g(A,P); E) = \frac{\left|\begin{pmatrix}-3\\4\\3\end{pmatrix} \circ \begin{pmatrix}0\\1\\2\end{pmatrix}\right|}{\sqrt{9+16+9}\cdot\sqrt{1+4}} = \frac{10}{\sqrt{34}\cdot\sqrt{5}} \approx 0{,}767$$

$$\sphericalangle(g(A,P), E) \approx \underline{50^\circ}$$

$$\sin\sphericalangle(g(B,P), E) = \frac{\left|\begin{pmatrix}5\\2\\4\end{pmatrix} \circ \begin{pmatrix}0\\1\\2\end{pmatrix}\right|}{\sqrt{25+4+16}\cdot\sqrt{1+4}} = \frac{10}{\sqrt{45}\cdot\sqrt{5}} \approx 0{,}\overline{6}$$

$$\sphericalangle(g(B,P), E) \approx \underline{41{,}8^\circ}$$