

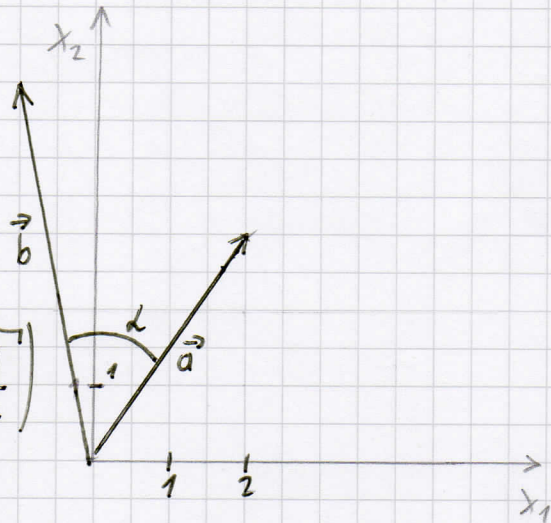
S 294 Nr. 4

$$\vec{a} = \begin{pmatrix} 2 \\ 3 \end{pmatrix}; \vec{b} = \begin{pmatrix} -1 \\ 5 \end{pmatrix}$$

$$\cos d = \frac{\begin{pmatrix} 2 \\ 3 \end{pmatrix} \cdot \begin{pmatrix} -1 \\ 5 \end{pmatrix}}{\sqrt{13} \cdot \sqrt{26}} = \frac{13}{\sqrt{13} \cdot \sqrt{26}}$$

$$d = \arccos \left(\frac{\sqrt{13} \cdot \sqrt{13}}{\sqrt{13} \cdot \sqrt{26}} \right) = \arccos \left(\sqrt{\frac{1}{2}} \right)$$

$$\underline{d = 45^\circ}$$

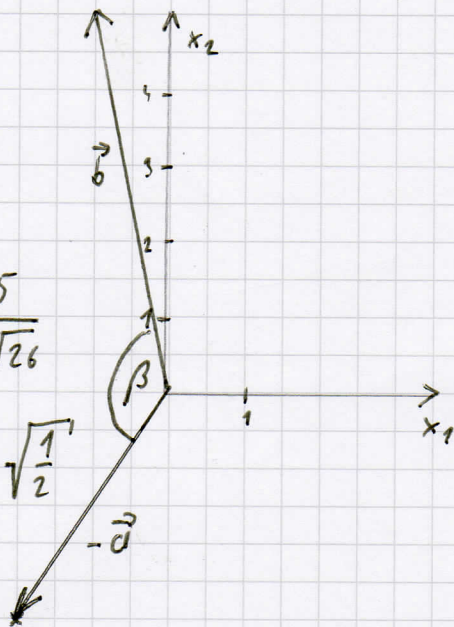


$$-\vec{a} = \begin{pmatrix} -2 \\ -3 \end{pmatrix}; \vec{b} = \begin{pmatrix} -1 \\ 5 \end{pmatrix}$$

$$\cos \beta = \frac{\begin{pmatrix} -2 \\ -3 \end{pmatrix} \cdot \begin{pmatrix} -1 \\ 5 \end{pmatrix}}{\sqrt{13} \cdot \sqrt{26}} = \frac{2 - 15}{\sqrt{13} \cdot \sqrt{26}}$$

$$\cos \beta = \frac{-13}{\sqrt{13} \cdot \sqrt{26}} = \frac{-1 \cdot \sqrt{13} \cdot \sqrt{13}}{\sqrt{13} \cdot \sqrt{26}} = -\sqrt{\frac{1}{2}}$$

$$\beta = \arccos \left(-\sqrt{\frac{1}{2}} \right) = \underline{135^\circ}$$



Löse und zeichne ebenso!

$$\Rightarrow \gamma = \sphericalangle(\vec{a}; -\vec{b}) = \underline{135^\circ}$$

$$\delta = \sphericalangle(-\vec{a}; -\vec{b}) = \underline{45^\circ}$$