

Lösungen zu Aufgaben zu Winkel zwischen Vektoren (1)

Winkel Berechnung

a)

$$\vec{a} \circ \vec{b} = \begin{pmatrix} \frac{\sqrt{3}}{2} \\ \frac{1}{2} \end{pmatrix} \circ \begin{pmatrix} 1 \\ 0 \end{pmatrix} = \frac{\sqrt{3}}{2}$$

$$\alpha = \arccos\left(\frac{\sqrt{3}}{2}\right) = 30^\circ$$

b)

$$\vec{a} \circ \vec{b} = \begin{pmatrix} -\frac{1}{2} \\ \frac{\sqrt{3}}{2} \end{pmatrix} \circ \begin{pmatrix} 1 \\ 0 \end{pmatrix} = -\frac{1}{2}$$

$$\alpha = \arccos\left(-\frac{1}{2}\right) = 120^\circ$$

c)

$$\vec{a} \circ \vec{b} = \begin{pmatrix} 0,75 \\ 0,66 \end{pmatrix} \circ \begin{pmatrix} 1 \\ 0 \end{pmatrix} = 0,75$$

$$\alpha = \arccos(0,75) \approx 41,4^\circ$$

d)

$$\vec{a} \circ \vec{b} = \frac{1}{4} \cdot \begin{pmatrix} \sqrt{6} + \sqrt{2} \\ \sqrt{6} - \sqrt{2} \end{pmatrix} \circ \begin{pmatrix} 1 \\ 0 \end{pmatrix} = \frac{\sqrt{6} + \sqrt{2}}{4}$$

$$\alpha = \arccos\left(\frac{\sqrt{6} + \sqrt{2}}{4}\right) = 15^\circ$$

Winkel identifizieren

a) α

c) β

a) α

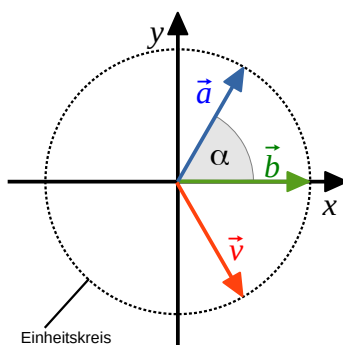
b) α

d) β

b) β

Wie viele Vektoren gibt es

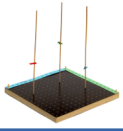
a)



b)

$$\vec{v} = \begin{pmatrix} a_1 \\ -a_2 \end{pmatrix}$$





Vektoren Bestimmen

$$\text{a) } \vec{a} = \begin{pmatrix} \frac{\sqrt{2}}{2} \\ \pm \frac{\sqrt{2}}{2} \end{pmatrix}$$

$$\text{b) } \vec{a} \approx \begin{pmatrix} 0,95 \\ \pm 0,31 \end{pmatrix}$$

$$\text{c) } \vec{a} = \begin{pmatrix} -\frac{\sqrt{2}}{2} \\ \pm \frac{\sqrt{2}}{2} \end{pmatrix}$$

$$\text{d) } \vec{a} = \begin{pmatrix} -\frac{\sqrt{3}}{2} \\ \pm \frac{1}{2} \end{pmatrix}$$

$$\text{e) } \vec{a} \approx \begin{pmatrix} 0,64 \\ \pm 0,77 \end{pmatrix}$$

$$\text{f) } \vec{a} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

