

Lösung zu L.S. S.96/20

$$\overrightarrow{AG} = \vec{a} + \vec{b} + \vec{c}$$

$$\overrightarrow{BH} = -\vec{a} + \vec{b} + \vec{c}$$

$$\overrightarrow{AG} \circ \overrightarrow{BH} = (\vec{a} + \vec{b} + \vec{c}) \circ (-\vec{a} + \vec{b} + \vec{c})$$

$$= -\vec{a} \circ \vec{a} + \underbrace{\vec{a} \circ \vec{b}}_0 + \underbrace{\vec{a} \circ \vec{c}}_0 - \underbrace{\vec{b} \circ \vec{a}}_0 + \vec{b} \circ \vec{b} + \underbrace{\vec{b} \circ \vec{c}}_0 + \underbrace{\vec{c} \circ \vec{a}}_0 + \underbrace{\vec{c} \circ \vec{b}}_0 + \vec{c} \circ \vec{c}$$

$$= \vec{c} \circ \vec{c} + \vec{b} \circ \vec{b} - \vec{a} \circ \vec{a} = 0 \quad (\text{sollen orthogonal sein!})$$

$$|\vec{a}|^2 = |\vec{b}|^2 + |\vec{c}|^2 = |\vec{a} + \vec{b}|^2$$

$$\Rightarrow |\vec{a}| = |\vec{a} + \vec{b}|$$