

Lösungen zu 2:

4e)

$$\begin{aligned}(\vec{2a} + 3\vec{b} - \vec{c}) \circ (\vec{a} - \vec{b}) &= 2\vec{a}^{\circ 2} - 2\vec{a} \circ \vec{b} + 3\vec{b} \circ \vec{a} - 3\vec{b}^{\circ 2} - \vec{c} \circ \vec{a} + \vec{c} \circ \vec{b} \\ &= 2\vec{a}^{\circ 2} - 2\vec{a} \circ \vec{b} + 3\vec{a} \circ \vec{b} - 3\vec{b}^{\circ 2} - \vec{c} \circ \vec{a} + \vec{c} \circ \vec{b} \\ &= 2\vec{a}^{\circ 2} + \vec{a} \circ \vec{b} - 3\vec{b}^{\circ 2} - \vec{c} \circ \vec{a} + \vec{c} \circ \vec{b}\end{aligned}$$

5d)

$$\vec{a}^{\circ} \circ (\vec{a}^{\circ} + \vec{a}^{\circ}) = \left(\vec{a}^{\circ}\right)^2 + \left(\vec{a}^{\circ}\right)^2 = 2\left(\vec{a}^{\circ}\right)^2 = 2\left|\vec{a}^{\circ}\right|^2 = 2 \cdot 1^2 = 2;$$

6b)

$$\vec{a}^{\circ} \circ (\vec{a}^{\circ} + \vec{b}^{\circ}) = \left(\vec{a}^{\circ}\right)^2 + \underbrace{\vec{a}^{\circ} \circ \vec{b}^{\circ}}_0 = \left|\vec{a}^{\circ}\right|^2 = 1^2 = 1;$$

7b)

$$\left(\vec{a}^{\circ} \circ \vec{a}^{\circ}\right)^{\circ} = \left|\vec{a}^{\circ}\right|^2 \vec{a}^{\circ} = 1^2 \vec{a}^{\circ} = \vec{a}^{\circ};$$