

**Zadatak 12.** Kolika je duljina vektora  $\vec{v} = 3\vec{a} + 2\vec{b}$  ako je  $|\vec{a}| = 2$ ,  $|\vec{b}| = \sqrt{2}$  te  $\sphericalangle(\vec{a}, \vec{b}) = \frac{3\pi}{4}$ ?

*Rješenje.*

$$\begin{aligned} |\vec{v}|^2 &= (3\vec{a} + 2\vec{b})^2 \\ &= 9\vec{a}^2 + 12\vec{a} \cdot \vec{b} + 4\vec{b}^2 \\ &= 9|\vec{a}|^2 + 12|\vec{a}| \cdot |\vec{b}| \cos \frac{3\pi}{4} + 4|\vec{b}|^2 \\ &= 9 \cdot 4 + 12 \cdot 2 \cdot \sqrt{2} \cdot \left(-\frac{\sqrt{2}}{2}\right) + 4 \cdot \sqrt{2}^2 \\ &= 36 - 24 + 8 = 20 \\ |\vec{v}| &= \sqrt{20} = 2\sqrt{5} \end{aligned}$$