

Zadatak 22. Ako je $|\vec{a}| = 5$, $|\vec{a} + \vec{b}| = 13$, $|\vec{a} - \vec{b}| = 9$, kolika je duljina vektora \vec{b} ?

Rješenje.

$$|\vec{a} + \vec{b}|^2 = (\vec{a} + \vec{b})^2 = \vec{a}^2 + 2\vec{a}\vec{b} + \vec{b}^2 = 169,$$

$$|\vec{a} - \vec{b}|^2 = (\vec{a} - \vec{b})^2 = \vec{a}^2 - 2\vec{a}\vec{b} + \vec{b}^2 = 81$$

$$2\vec{a}^2 + 2\vec{b}^2 = 250$$

$$2 \cdot 5^2 + 2\vec{b}^2 = 250$$

$$2\vec{b}^2 = 200$$

$$\vec{b}^2 = 100$$

$$|\vec{b}|^2 = 100$$

$$|\vec{b}| = 10$$