

Zadatak 7. Izračunaj točnu vrijednost izraza $\cos 5^\circ \cdot \cos 55^\circ \cdot \cos 65^\circ$.

Rješenje.

$$\begin{aligned}(\cos 5^\circ \cdot \cos 55^\circ) \cdot \cos 65^\circ &= \frac{1}{2}[\cos(5^\circ + 55^\circ) + \cos(5^\circ - 55^\circ)] \cdot \cos 65^\circ \\&= \frac{1}{2}(\cos 60^\circ + \cos 50^\circ) \cdot \cos 65^\circ = \frac{1}{2}\left(\frac{1}{2} + \cos 50^\circ\right) \cdot \cos 65^\circ = \frac{1}{4} \cos 65^\circ + \frac{1}{2} \cos 50^\circ \cos 65^\circ \\&= \frac{1}{4} \cos 65^\circ + \frac{1}{2} \cdot \frac{1}{2}[\cos(50^\circ + 65^\circ) + \cos(50^\circ - 65^\circ)] = \frac{1}{4} \cos 65^\circ + \frac{1}{4}(\cos 115^\circ + \cos 15^\circ) \\&= \frac{1}{4} \cos 65^\circ + \frac{1}{4}(-\cos(180^\circ - 115^\circ)) + \frac{1}{4} \cos 15^\circ = \frac{1}{4} \cos 65^\circ - \frac{1}{4} \cos 65^\circ + \frac{1}{4} \sqrt{\frac{1 + \cos 30^\circ}{2}} \\&= \frac{1}{4} \sqrt{\frac{1 + \frac{\sqrt{3}}{2}}{2}} = \frac{1}{4} \sqrt{\frac{2 + \sqrt{3}}{4}} = \frac{1}{8} \sqrt{2 + \sqrt{3}}\end{aligned}$$