

### Rješenja zadataka 3.3

**Zadatak 1.** Izračunaj:

- 1)  $\sin 15^\circ + \sin 75^\circ$ ;                      2)  $\cos \frac{7\pi}{12} - \cos \frac{\pi}{12}$ ;  
 3)  $\sin \frac{\pi}{12} - \sin \frac{5\pi}{12}$ ;                      4)  $\cos 105^\circ + \cos 75^\circ$ .

*Rješenje.*

1)

$$\begin{aligned} \sin 15^\circ + \sin 75^\circ &= 2 \sin \frac{15^\circ + 75^\circ}{2} \cos \frac{15^\circ - 75^\circ}{2} = 2 \sin 45^\circ \cos(-30^\circ) \\ &= 2 \cdot \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{3}}{2} = \frac{\sqrt{6}}{2} \end{aligned}$$

2)

$$\begin{aligned} \cos \frac{7\pi}{12} - \cos \frac{\pi}{12} &= -2 \sin \frac{\frac{7\pi}{12} + \frac{\pi}{12}}{2} \sin \frac{\frac{7\pi}{12} - \frac{\pi}{12}}{2} = -2 \sin \frac{\pi}{3} \sin \frac{\pi}{4} \\ &= -2 \cdot \frac{\sqrt{3}}{2} \cdot \frac{\sqrt{2}}{2} = -\frac{\sqrt{6}}{2} \end{aligned}$$

3)

$$\begin{aligned} \sin \frac{\pi}{12} - \sin \frac{5\pi}{12} &= 2 \cos \frac{\frac{\pi}{12} + \frac{5\pi}{12}}{2} \sin \frac{\frac{\pi}{12} - \frac{5\pi}{12}}{2} = 2 \cos \frac{\pi}{4} \sin\left(-\frac{\pi}{6}\right) \\ &= -2 \cos \frac{\pi}{4} \sin \frac{\pi}{6} = -2 \cdot \frac{\sqrt{2}}{2} \cdot \frac{1}{2} = -\frac{\sqrt{2}}{2} \end{aligned}$$

4)

$$\cos 105^\circ + \cos 75^\circ = 2 \cos \frac{105^\circ + 75^\circ}{2} \cos \frac{105^\circ - 75^\circ}{2} = 2 \cos 90^\circ \cos 15^\circ = 0$$