

**Zadatak 5.** Izračunaj:

- 1)  $\sin \frac{\pi}{7} \cdot \cos \frac{8\pi}{7} - \cos \frac{\pi}{7} \cdot \sin \frac{8\pi}{7}$ ;
- 2)  $\sin \frac{\pi}{6} \cdot \cos \frac{\pi}{3} + \cos \frac{\pi}{6} \cdot \sin \frac{\pi}{3}$ ;
- 3)  $\sin \frac{23\pi}{8} \cdot \cos \frac{21\pi}{8} - \cos \frac{9\pi}{8} \cdot \sin \frac{19\pi}{8}$ ;
- 4)  $\cos \frac{17\pi}{9} \cdot \cos \frac{22\pi}{9} + \sin \frac{10\pi}{9} \cdot \sin \frac{13\pi}{9}$ ;
- 5)  $\sin \frac{\pi}{12} \cdot \cos \frac{5\pi}{12} + \cos \frac{11\pi}{12} \cdot \sin \frac{19\pi}{12}$ .

**Rješenje.**

- 1)  $\sin \frac{\pi}{7} \cdot \cos \frac{8\pi}{7} - \cos \frac{\pi}{7} \cdot \sin \frac{8\pi}{7} = \sin\left(\frac{\pi}{7} - \frac{8\pi}{7}\right) = \sin(-\pi) = 0$ ;
- 2)  $\sin \frac{\pi}{6} \cdot \cos \frac{\pi}{3} + \cos \frac{\pi}{6} \cdot \sin \frac{\pi}{3} = \sin\left(\frac{\pi}{6} + \frac{\pi}{3}\right) = \sin \frac{\pi}{2} = 1$ ;
- 3)  $\sin \frac{23\pi}{8} \cdot \cos \frac{21\pi}{8} - \cos \frac{9\pi}{8} \cdot \sin \frac{19\pi}{8} = \sin \frac{7\pi}{8} \cdot \cos \frac{5\pi}{8} + \cos \frac{\pi}{8} \cdot \sin \frac{3\pi}{8}$   
 $= -\sin \frac{\pi}{8} \cdot \cos \frac{3\pi}{8} + \cos \frac{\pi}{8} \cdot \sin \frac{3\pi}{8} = \sin\left(\frac{3\pi}{8} - \frac{\pi}{8}\right) = \sin \frac{\pi}{4} = \frac{\sqrt{2}}{2}$ ;
- 4)  $\cos \frac{17\pi}{9} \cdot \cos \frac{22\pi}{9} + \sin \frac{10\pi}{9} \cdot \sin \frac{13\pi}{9} = \cos\left(-\frac{\pi}{9}\right) \cdot \cos \frac{4\pi}{9} + \sin\left(\pi + \frac{\pi}{9}\right) \cdot \sin\left(\pi + \frac{4\pi}{9}\right) = \cos \frac{\pi}{9} \cdot \cos \frac{4\pi}{9} + \left(-\sin \frac{\pi}{9}\right) \cdot \left(-\sin \frac{4\pi}{9}\right) = \cos \frac{\pi}{9} \cdot \cos \frac{4\pi}{9} + \sin \frac{\pi}{9} \cdot \sin \frac{4\pi}{9} = \cos\left(\frac{4\pi}{9} - \frac{\pi}{9}\right) = \cos \frac{\pi}{3} = \frac{1}{2}$ ;
- 5)  $\sin \frac{\pi}{12} \cdot \cos \frac{5\pi}{12} + \cos \frac{11\pi}{12} \cdot \sin \frac{19\pi}{12} = \sin \frac{\pi}{12} \cdot \cos \frac{5\pi}{12} + \cos\left(\pi - \frac{\pi}{12}\right) \cdot \sin\left(2\pi - \frac{5\pi}{12}\right) = \sin \frac{\pi}{12} \cdot \cos \frac{5\pi}{12} + \left(-\cos \frac{\pi}{12}\right) \cdot \left(-\sin \frac{5\pi}{12}\right) = \sin \frac{\pi}{12} \cdot \cos \frac{5\pi}{12} + \cos \frac{\pi}{12} \cdot \sin \frac{5\pi}{12} = \sin \frac{\pi}{2} = 1$ .