

**Zadatak 7.** Odredi na brojevnoj kružnici sve točke  $E(t)$  za koje je:

1)  $t = (-1)^n \cdot \frac{\pi}{6} + n\pi, n \in \mathbf{Z};$

2)  $(-1)^{n+1} \frac{\pi}{3} + n\pi, n \in \mathbf{Z};$

3)  $t = (-1)^k \cdot \frac{\pi}{12} + k \cdot \frac{\pi}{2}, k \in \mathbf{Z};$

4)  $(-1)^{k+1} \frac{\pi}{12} + k \cdot \frac{\pi}{3}, k \in \mathbf{Z}.$

**Rješenje.**

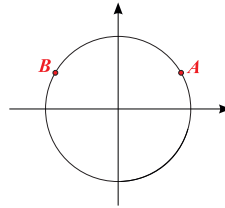
1)

Za  $n = 2k, k \in \mathbf{Z}$  točke su oblika  $t = \left(\frac{\pi}{6} + 2k \cdot \pi\right), k \in \mathbf{Z}$ , tj.

$$t = \left(\frac{\pi}{6} + k \cdot 2\pi\right) \quad k \in \mathbf{Z} \quad \dots \quad A$$

Za  $n = 2k + 1, k \in \mathbf{Z}$  točke su oblika  $t = \left(-\frac{\pi}{6} + (2k + 1) \cdot \pi\right), k \in \mathbf{Z}$ , tj.

$$t = \left(\frac{5\pi}{6} + k \cdot 2\pi\right), \quad k \in \mathbf{Z} \quad \dots \quad B$$



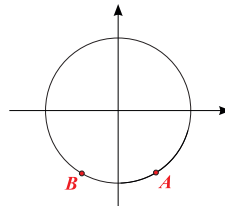
2)

Za  $n = 2k, k \in \mathbf{Z}$  točke su oblika  $t = \left(-\frac{\pi}{3} + 2k \cdot \pi\right), k \in \mathbf{Z}$ , tj.

$$t = \left(\frac{5\pi}{3} + k \cdot 2\pi\right), \quad k \in \mathbf{Z} \quad \dots \quad A$$

Za  $n = 2k + 1, k \in \mathbf{Z}$  točke su oblika  $t = \left(\frac{\pi}{3} + (2k + 1) \cdot \pi\right), k \in \mathbf{Z}$ , tj.

$$t = \left(\frac{4\pi}{3} + k \cdot 2\pi\right), \quad k \in \mathbf{Z} \quad \dots \quad B$$



3)

Za  $k = 2n, n \in \mathbf{Z}$  točke su oblika  $t = \left(\frac{\pi}{12} + 2n \cdot \frac{\pi}{2}\right), n \in \mathbf{Z}$ , tj.

$$t = \left(\frac{\pi}{12} + n\pi\right), \quad n \in \mathbf{Z}.$$

Za  $n = 2m$

$$t = \left(\frac{\pi}{12} + 2m\pi\right), \quad m \in \mathbf{Z} \quad \dots \quad A$$

Za  $n = 2m + 1$

$$t = \left(\frac{13\pi}{12} + 2m\pi\right), \quad m \in \mathbf{Z} \quad \dots \quad B$$

Za  $\underline{k = 2n + 1}$ ,  $n \in \mathbf{Z}$  točke su oblika  $t = \left(-\frac{\pi}{12} + 2n \cdot \frac{\pi}{2} + \frac{\pi}{2}\right)$ ,  $n \in \mathbf{Z}$ , tj.

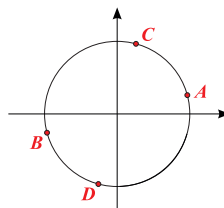
$$t = \left(\frac{5\pi}{12} + n\pi\right), \quad n \in \mathbf{Z}$$

Za  $n = 2m$

$$t = \left(\frac{5\pi}{12} + 2m\pi\right), \quad m \in \mathbf{Z} \quad \dots \quad C$$

Za  $n = 2m + 1$

$$t = \left(\frac{17\pi}{12} + 2m\pi\right), \quad n \in \mathbf{Z} \quad \dots \quad D$$



$$4) \quad t = (-1)^{k+1} \frac{\pi}{12} + k \cdot \frac{\pi}{3}, \quad k \in \mathbf{Z}$$

$$n = 0 \quad t = -\frac{\pi}{12}$$

$$n = 1 \quad t = \frac{\pi}{12} + \frac{\pi}{3} = \frac{5\pi}{12}$$

$$n = 2 \quad t = -\frac{\pi}{12} + \frac{2\pi}{3} = \frac{7\pi}{12}$$

$$n = 3 \quad t = \frac{\pi}{12} + \pi = \frac{13\pi}{12}$$

$$n = 4 \quad t = -\frac{\pi}{12} + \frac{4\pi}{3} = \frac{15\pi}{12} = \frac{5\pi}{4}$$

$$n = 5 \quad t = \frac{\pi}{12} + \frac{5\pi}{3} = \frac{21\pi}{12} = \frac{7\pi}{4}$$

$$n = 6 \quad t = -\frac{\pi}{12} + 2\pi \implies \text{kao } n = 0$$

$$A\left(\frac{5\pi}{12} + k \cdot 2\pi\right), \quad B\left(\frac{7\pi}{12} + k \cdot 2\pi\right), \quad C\left(\frac{13\pi}{12} + k \cdot 2\pi\right), \quad D\left(\frac{5\pi}{4} + k \cdot 2\pi\right), \\ E\left(\frac{7\pi}{4} + k \cdot 2\pi\right), \quad F\left(\frac{23\pi}{12} + k \cdot 2\pi\right), \quad k \in \mathbf{Z}.$$

