



Zadatak 14. Dokaži da funkcije

1) $f(x) = \cos \sqrt[3]{x}$;

2) $f(x) = \sin |x|$;

3) $f(x) = \sin(x^2)$

nisu periodičke.

Rješenje.

1) $f(x) = \cos x \sqrt[3]{x}$

$$\cos \sqrt[3]{x} = 0 \implies \sqrt[3]{x} = k \cdot \frac{\pi}{2}, k \in \mathbf{Z} \implies x_k = k^3 \frac{\pi^3}{8}, k \in \mathbf{Z}$$

$$\implies x_{k-1} - x_k \neq c = \text{const.}, \forall k \in \mathbf{Z};$$

2) $f(x) = \sin |x|$

$$\left. \begin{array}{l} x > 0 \implies f(x) = \sin x \\ x < 0 \implies f(x) = -\sin x \end{array} \right\} \neq;$$

3) $f(x) = \sin(x^2)$

$$\sin(x^2) = 0 \implies x^2 = k\pi, k \in \mathbf{Z} \implies x_k = \sqrt{k\pi}, k \in \mathbf{Z}$$

$$\implies k_{k+1} - x_k \neq c = \text{const.}, \forall k \in \mathbf{Z}.$$