Zadatak 10.   Za svaki x iz intervala $\langle -\pi, \pi \rangle$ vrijedi

$$\frac{x}{2} = \sin x - \frac{\sin 2x}{2} + \frac{\sin 3x}{3} - \frac{\sin 4x}{4} + \ldots.$$

Prikaži grafički zbroj prvih četiriju pribrojnika s desne strane.

Rješenje. $f(x) = \sin x - \dfrac{\sin 2x}{2} + \dfrac{\sin 3x}{3} - \dfrac{\sin 4x}{4} = \underbrace{\sin x}_{f_1} \underbrace{-\frac{1}{2}\sin 2x}_{f_2} \underbrace{+\frac{1}{3}\sin 3x}_{f_3} \underbrace{-\frac{1}{4}\sin 4x}_{f_4}$

$f_2 \quad \ldots \quad C = -\dfrac{1}{2}, \ P = \pi, \ N = 0,$

$C < 0 \implies \min : \ \sin 2x = 1, \ 2x = \dfrac{\pi}{2}, \ x = \dfrac{\pi}{4}, \ \max : \ \sin 2x = -1, \ 2x = \dfrac{3\pi}{2}, \ x = \dfrac{3\pi}{4};$

$f_3 \quad \ldots \quad C = \dfrac{1}{3}, \ P = \dfrac{2\pi}{3}, \ N = 0;$

$C > 0 \implies \min : \ \sin 3x = -1, \ 3x = \dfrac{3\pi}{2}, \ x = \dfrac{\pi}{2};$

$f_4 \quad \ldots \quad C = -\dfrac{1}{4}, \ P = \dfrac{\pi}{2}, \ N = 0,$

$C < 0 \implies \min : \ \sin 4x = 1, \ 4x = \dfrac{\pi}{2}, \ x = \dfrac{\pi}{8}, \ \max : \ \sin 4x = -1, \ 4x = \dfrac{3\pi}{2}, \ x = \dfrac{3\pi}{8};$