



Zadatak 32. Koliko rješenja ima jednačba $(f \circ f)(x) = 0$, gdje je $f(x) = |x + a|$, $a \in \mathbf{R}$?

Rješenje. $f(x) = |x + a|$, $a \in \mathbf{R}$

$$\begin{aligned}(f \circ f)(x) &= ||x + a| + a| \\ &= \begin{cases} |-x - a + a|, & x < -a \\ |x + a + a|, & x \geq -a \end{cases} \\ &= \begin{cases} |-x|, & x < -a \\ |x + 2a|, & x \geq -a \end{cases}\end{aligned}$$

$$|-x| = 0 \implies x = 0, x < -a$$

$$|x + 2a| = 0 \implies x = -2a, x \geq -a$$

$$a > 0 \implies \text{nema rješenja}$$

$$a = 0 \implies x = 0 \text{ jedino rješenje}$$

$$a < 0 \implies x_1 = -2a, x_2 = 0$$