

Zadatak 4. Provjeri jesu li neke od danih funkcija parne ili neparne:

$$1) f(x) = \frac{1}{\sin x + \cos x};$$

$$2) \frac{\operatorname{tg} x + \operatorname{ctg} x}{\operatorname{tg} x - \operatorname{ctg} x};$$

$$3) \frac{\sin x - \cos x}{\operatorname{tg} x};$$

$$4) f(x) = \sin^3 x - \cos^3 x.$$

Rješenje.

$$1) f(-x) = \frac{1}{\sin(-x) + \cos(-x)} = \frac{1}{-\sin x + \cos x} \quad (\text{ni parna ni neparna});$$

$$2) f(-x) = \frac{\operatorname{tg}(-x) + \operatorname{ctg}(-x)}{\operatorname{tg}(-x) - \operatorname{ctg}(-x)} = \frac{-\operatorname{tg} x - \operatorname{ctg} x}{-\operatorname{tg} x + \operatorname{ctg} x} = \frac{-(\operatorname{tg} x + \operatorname{ctg} x)}{-(\operatorname{tg} x - \operatorname{ctg} x)} = \frac{\operatorname{tg} x + \operatorname{ctg} x}{\operatorname{tg} x - \operatorname{ctg} x} = f(x) \quad (\text{parna});$$

$$3) f(-x) = \frac{\sin(-x) - \cos(-x)}{\operatorname{tg}(-x)} = \frac{-\sin x - \cos x}{-\operatorname{tg} x} = \frac{-(\sin x + \cos x)}{-\operatorname{tg} x} = \frac{\sin x + \cos x}{\operatorname{tg} x} \quad (\text{ni parna ni neparna});$$

$$4) f(-x) = \sin^3(-x) - \cos^3(-x) = (\sin(-x))^3 - (\cos(-x))^3 = (-\sin x)^3 - (\cos x)^3 = -\sin^3 x - \cos^3 x \quad (\text{ni parna ni neparna}).$$