

Zadatak 10. Dokaži:

- 1) $\frac{\sin 3x + \sin 5x}{\cos 3x + \cos 5x} = \operatorname{tg} 4x$;
 2) $\frac{\cos x - \cos 3x}{\sin x - \sin 3x} = -\operatorname{tg} 2x$.

Rješenje.

1)

$$\begin{aligned} \frac{\sin 3x + \sin 5x}{\cos 3x + \cos 5x} &= \operatorname{tg} 4x \\ \frac{2 \sin \frac{3x+5x}{2} \cos \frac{3x-5x}{2}}{2 \cos \frac{3x+5x}{2} \cos \frac{3x-5x}{2}} &= \operatorname{tg} 4x \\ \frac{\sin 4x}{\cos 4x} &= \operatorname{tg} 4x \\ \operatorname{tg} 4x &= \operatorname{tg} 4x \end{aligned}$$

2)

$$\begin{aligned} \frac{\cos x - \cos 3x}{\sin x - \sin 3x} &= -\operatorname{tg} 2x \\ \frac{-2 \sin \frac{x+3x}{2} \sin \frac{x-3x}{2}}{2 \cos x + 3x2 \sin \frac{x-3x}{2}} &= -\operatorname{tg} 2x \\ -\frac{\sin 2x}{\cos 2x} &= -\operatorname{tg} 2x \\ -\operatorname{tg} 2x &= -\operatorname{tg} 2x \end{aligned}$$