

**Zadatak 19.** Ako je  $\sin \frac{x}{2} + \cos \frac{x}{2} = \frac{1}{5}$ ,  $\pi < x < \frac{3\pi}{2}$ , izračunaj  $\operatorname{tg} 2x$ .

**Rješenje.**  $\pi < x < \frac{3\pi}{2} \implies \cos x < 0$

$$\left(\cos \frac{x}{2} + \sin \frac{x}{2}\right)^2 = \cos^2 \frac{x}{2} + 2 \cos \frac{x}{2} \sin \frac{x}{2} + \sin^2 \frac{x}{2} = 1 + \sin x = \frac{1}{25} \implies \sin x = -\frac{24}{25}$$

$$\cos x = -\sqrt{1 - \sin^2 x} = -\sqrt{1 - \frac{576}{625}} = -\frac{7}{25}$$

$$\operatorname{tg} x = \frac{\sin x}{\cos x} = \frac{-\frac{24}{25}}{-\frac{7}{25}} = \frac{24}{7}$$

$$\operatorname{tg} 2x = \frac{2 \operatorname{tg} x}{1 - \operatorname{tg}^2 x} = \frac{2 \cdot \frac{24}{7}}{1 - \frac{576}{49}} = \frac{\frac{48}{7}}{-\frac{527}{49}} = -\frac{336}{527}$$