

**Zadatak 7.** Koliko je  $\operatorname{tg} \frac{\alpha}{2}$  ako je  $\operatorname{tg} \alpha = -\frac{24}{7}$ ,  $\frac{\pi}{2} < \alpha < \pi$ ?

**Rješenje.**

$$\frac{\pi}{2} < \alpha < \pi \implies \cos \alpha < 0$$

$$\frac{\pi}{4} < \frac{\alpha}{2} < \frac{\pi}{2} \implies \sin \frac{\alpha}{2}, \cos \frac{\alpha}{2}, \operatorname{tg} \frac{\alpha}{2} > 0$$

$$\cos \alpha = -\sqrt{\frac{1}{1 + \operatorname{tg}^2 \alpha}} = -\sqrt{\frac{1}{1 + \frac{576}{49}}} = -\sqrt{\frac{1}{\frac{625}{49}}} = -\sqrt{\frac{49}{625}} = -\frac{7}{25}$$

$$\sin \frac{\alpha}{2} = \sqrt{\frac{1 - \cos \alpha}{2}} = \sqrt{\frac{1 + \frac{7}{25}}{2}} = \sqrt{\frac{\frac{32}{25}}{2}} = \sqrt{\frac{16}{25}} = \frac{4}{5}$$

$$\cos \frac{\alpha}{2} = \sqrt{1 - \sin^2 \frac{\alpha}{2}} = \sqrt{1 - \frac{16}{25}} = \frac{3}{5}$$

$$\operatorname{tg} \frac{\alpha}{2} = \frac{\sin \frac{\alpha}{2}}{\cos \frac{\alpha}{2}} = \frac{\frac{4}{5}}{\frac{3}{5}} = \frac{4}{3}.$$