

Zadatak 15. Ako je $\operatorname{tg} x + \operatorname{ctg} x = 3$, koliko je $\frac{1}{\sin^2 x} + \frac{1}{\cos^2 x}$?

Rješenje.

$$\begin{aligned}\operatorname{tg} x + \operatorname{ctg} x &= \frac{\sin x}{\cos x} + \frac{\cos x}{\sin x} = \frac{\sin^2 x + \cos^2 x}{\sin x \cdot \cos x} = \frac{1}{\sin x \cdot \cos x} = 3 \\ &\implies \sin x \cdot \cos x = \frac{1}{3} \\ \frac{1}{\sin^2 x} + \frac{1}{\cos^2 x} &= \frac{\cos^2 x + \sin^2 x}{\sin^2 x \cdot \cos^2 x} = \frac{1}{(\sin x \cdot \cos x)^2} = \frac{1}{\left(\frac{1}{3}\right)^2} = \frac{1}{\frac{1}{9}} = 9\end{aligned}$$