Zadatak 9. Ako je $3\sin^2 x + 3\sin x \cdot \cos x - \cos^2 x = 1$, $x \in [5,6]$, izračunaj $\operatorname{ctg} x$.

Rješenje. $x \in [5,6]$

$$\left.\begin{array}{l} 5\,\text{rad} = 286.48^\circ \\ 6\,\text{rad} = 343.77^\circ \end{array}\right\} \Longrightarrow \text{IV. kvadrant} \Longrightarrow \sin x < 0, \quad \cos x > 0, \quad \operatorname{ctg} x < 0$$

$$3\sin^2 x + 3\sin x \cdot \cos x - \cos^2 x = 1$$

$$3\sin^2 x + 3\sin x \cdot \cos x - \cos^2 x = \sin^2 x + \cos^2 x \quad \Big/ : \sin^2 x$$

$$3 + 3\operatorname{ctg} x - \operatorname{ctg}^2 x = \operatorname{ctg}^2 x + 1$$

$$-2\operatorname{ctg}^2 x + 3\operatorname{ctg} x + 2 = 0$$

$$\operatorname{ctg} x_{1,2} = \frac{3 \pm \sqrt{9+16}}{4} = \frac{3 \pm 5}{4} \Longrightarrow \operatorname{ctg} x_1 = -\frac{1}{2}, \quad \operatorname{ctg} x_2 = 2$$

Kako u IV. kvadrantu $\operatorname{ctg} x < 0$ sljedi da je traženo rješenje

$$\operatorname{ctg} x = -\frac{1}{2}.$$