

Zadatak 36. Kolika je duljina luka kružnice $x^2 + y^2 = 4$ koji leži unutar parabole $y^2 = 3x$?

Rješenje.

$$k \dots x^2 + y^2 = 4$$

$$P \dots y^2 = 3x$$

$$k \cap P \dots x^2 + 3x = 4$$

$$x^2 + 3x - 4 = 0$$

$$x_{1,2} = \frac{-3 \pm \sqrt{9 + 16}}{2} = \frac{-3 \pm 5}{2}$$

$$x_1 = -4 \text{ (nije rješenje)}$$

$$x_2 = 1$$

$$y^2 = 3, \quad y = \pm\sqrt{3} \implies T_{1,2}(1, \pm\sqrt{3})$$

$$\operatorname{tg} \varphi = \frac{\sqrt{3}}{1} = \sqrt{3} \implies \varphi = 60^\circ$$

$$l = \frac{2r\pi \cdot 2\varphi}{360^\circ} = \frac{2\pi \cdot 60^\circ}{90^\circ} = \frac{4\pi}{3}$$

