

Zadatak 56. Parabola prolazi tjemena male osi i jednim žarištem elipse $x^2 + 5y^2 = 20$. Kako glasi njezina jednadžba?

Rješenje.

$$E \dots x^2 + 5y^2 = 20 \quad / : 20$$

$$\frac{x^2}{20} + \frac{y^2}{4} = 1 \implies a = 2\sqrt{5}, \quad b = 2, \quad e = \sqrt{20 - 4} = 4$$

$$H \dots A(0, b) \implies A(0, 2) \in H$$

$$B(0, -b) \implies B(0, -2) \in H$$

$$F_1(-e, 0) = T_1(-e, 0) \implies T_1(-4, 0) \text{ tjeme}$$

$$F_2(e, 0) = T_2(e, 0) \implies T_2(4, 0) \text{ tjeme}$$

$$H_1 \dots A(0, 2)$$

$$B(0, -2)$$

$$\underline{T_1(-4, 0) \text{ (tjeme)}}$$

$$(y - y_0)^2 = 2p(x - x_0)$$

$$y^2 = 2p(x + 4)$$

$$A \in H_1 \implies 4 = 2p(0 + 4)$$

$$4 = 8p$$

$$p = \frac{1}{2}$$

$$H_1 \dots y^2 = x + 4$$

$$H_2 \dots A(0, 2)$$

$$B(0, -2)$$

$$\underline{T_2(4, 0) \text{ (tjeme)}}$$

$$(y - y_0)^2 = 2p(x - x_0)$$

$$y^2 = 2p(x - 4)$$

$$A \in H_1 \implies 4 = 2p(0 - 4)$$

$$4 = -8p$$

$$p = -\frac{1}{2}$$

$$H_2 \dots y^2 = -x + 4$$