Zadatak 58. Jedno sjecište kružnice $(x+2)^2+(y-1)^2=5$ s osi apscisa je tjeme, a drugo žarište parabole. Kako glasi jednadžba parabole?

Rješenje.

$$\begin{aligned} k &\ \ldots\ (x+2)^2+(y-1)^2=5\\ p &\ \ldots\ y=0\\ k\cap p &\ \ldots\ (x+2)^2+(0-1)^2=5\\ &\quad (x+2)^2=4\\ &\quad x+2=\pm 2\\ &\quad x+2=-2,\ \ x=-4 \implies A_1(-4,0)\\ &\quad x+2=2,\ \ x=0 \implies A_2(0,0) \end{aligned}$$

Imamo dva slučaja kada je A_1 tjeme, A_2 žarište i kada je A_2 tjeme a A_1 žarište:

bf 1)
$$\begin{aligned} &T(-4,0)\\ &\underline{F(0,0)}\\ &\frac{p}{2}=x_F-x_T=0+4=4 \implies \boxed{p=8} \end{aligned}$$

$$\begin{aligned} H\ \ &\ldots\ (y-y_0)^2=2p(x-x_0)\\ &(y-0)^2=2\cdot 8(x+4)\\ &\boxed{y^2=16(x+4)} \end{aligned}$$

bf 2)
$$\begin{aligned} &T(0,0)\\ &\underline{F(-4,0)}\\ &\frac{p}{2}=x_F-x_T=-4-0=-4 \implies \boxed{p=-8} \end{aligned}$$

$$\begin{aligned} H\ \ &\ldots\ (y-y_0)^2=2p(x-x_0)\\ &(y-0)^2=2\cdot(-8)(x-0)\\ &\boxed{y^2=-16x} \end{aligned}$$