Zadatak 60. Odredi jednadžbu kružnice koja prolazi nultočkama i tjemenom parabole $y=-x^2+1$.

Rješenje.

$$
\begin{aligned}
P \ \ldots\ & y=-x^2+1\\
& x^2=-y+1\\
& x^2=-(y-1) \implies T(0,1) \ \text{(tjeme)}\\
& y=0 \implies x^2=1, \quad x=\pm 1\\
& A(-1,0),\ \ B(1,0) \ \text{(nultočke)}\\
k \ \ldots\ & (x-x_0)^2+(y-y_0)^2=r^2\\
\{T\}\in k \ \ldots\ & (0-x_0)^2+(1-y_0)^2=r^2\\
\{A\}\in k \ \ldots\ & (-1-x_0)^2+(0-y_0)^2=r^2\\
\{B\}\in k \ \ldots\ & \underline{(1-x_0)^2+(0-y_0)^2=r^2}\\
& x_0^2+(1-y_0)^2=r^2 \qquad (1)\\
& (1+x_0)^2+y_0^2=r^2 \qquad (2)\\
& \underline{(1-x_0)^2+y_0^2=r^2} \qquad (3)\\
(2)-(3) \implies & (1+x_0)^2-(1-x_0)^2=0\\
& 1+2x_0+x_0^2-1+2x_0-x_0^2=0\\
& 4x_0=0 \implies \boxed{x_0=0}\\
\text{uvrstimo u prve dvije jednadžbe} \implies & (1-y_0)^2=r^2 \qquad (4)\\
& \underline{(1+0)^2+y_0^2=r^2} \qquad (5)\\
(4)-(5) \implies & (1-y_0)^2-1-y_0^2=0\\
& 1-2y_0+y_0^2-1-y_0^2=0\\
& -2y_0=0 \implies \boxed{y_0=0}\\
\text{dobiveno uvrstimo u (1)} \implies & 0^2+(1-0)^2=r^2\\
& r^2=1\\
& \boxed{k \ \ldots\ x^2+y^2=1}
\end{aligned}
$$