Zadatak 24. Odredi točku simetričnu točki $T(3,10)$ s obzirom na pravac AB, $A(-6,9)$, $B(4,1)$.

Rješenje.

$$T(3,10)$$
$$p \ \ldots \ p \perp AB, \ \ T \in p$$
$$AB \ \ldots \ A(-6,9), \ \ B(4,1)$$
$$y-9=\frac{1-9}{4+6}(x+6)$$
$$y-9=\frac{-8}{10}(x+6)$$
$$y-9=\frac{-4}{5}x-\frac{24}{5}$$
$$y=\frac{-4}{5}x+\frac{21}{5}$$

$$p \perp AB \implies k_p=-\frac{1}{k_{AB}}=-\frac{1}{-\frac{4}{5}}=\frac{5}{4}$$
$$T \in p$$
$$p \ \ldots \ y-10=\frac{5}{4}(x-3)$$
$$y-10=\frac{5}{4}x-\frac{15}{4}$$
$$y=\frac{5}{4}x+\frac{25}{4}$$
$$\{T'\} \in p \implies T'\left(x, \frac{5}{4}x+\frac{25}{4}\right)$$

Sa C označimo polovište od $\overline{TT'}$. Tada je:

$$\{C\}=AB \cap p \ \ldots \ -\frac{4}{5}x+\frac{21}{5}=\frac{5}{4}x+\frac{25}{4} \quad / \cdot 20$$
$$-16x+84=25x+125$$
$$-41x=41$$
$$\boxed{x=-1}$$
$$y=-\frac{4}{5}\cdot(-1)+\frac{21}{5}$$
$$\boxed{y=5} \implies \boxed{C(-1,5)}=\left(\frac{x_T+x_{T'}}{2}, \frac{y_T+y_{T'}}{2}\right)$$

$$\frac{3+x_{T'}}{2}=-1 \quad / \cdot 2$$
$$3+x_{T'}=-2$$
$$\boxed{x_{T'}=-5}$$

$$y_{T'}=\frac{5}{4}x_{T'}+\frac{25}{4}$$
$$y_{T'}=\frac{5}{4}\cdot(-5)+\frac{25}{4}$$
$$\boxed{y_{T'}=0} \implies \boxed{T'(-5,0)}$$