Zadatak 38. Koliku površinu s osi Ox zatvaraju radijvektori one točke elipse $4x^2+9y^2=36$ iz koje se dužina koja spaja žarišta vidi pod pravim kutom?

Rješenje. $4x^2+9y^2=36$

Točke koje tražimo su sjecišta elipse i kružnice s promjerom $\overline{F_1F_2}$ (Talesov poučak o obodnom kutu nad promjerom kružnice)

$$\frac{x^2}{9}+\frac{y^2}{4}=1$$

$$e^2=a^2-b^2=9-4=5 \implies e=\sqrt{5}$$

$$F_1(-\sqrt{5},0),\quad F_2(\sqrt{5},0)$$

$$k \ \dots\ x^2+y^2=5$$

$$k\cap E \ \dots\ x^2+y^2=5 \quad /\cdot(-4)$$

$$4x^2+9y^2=36$$

$$-4x^2-4y^2=-20$$

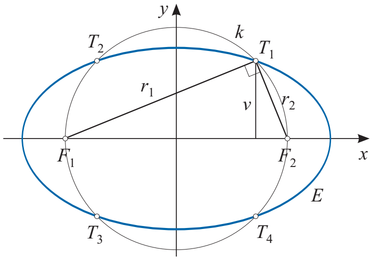
$$4x^2+9y^2=36$$

$$5y^2=16$$

$$y^2=\frac{16}{5} \implies y=\pm\frac{4}{\sqrt{5}}$$

$$x^2+\frac{16}{5}=5$$

$$x^2=\frac{9}{5} \implies x=\pm\frac{3}{\sqrt{5}} \implies T\left(\pm\frac{3}{\sqrt{5}},\pm\frac{4}{\sqrt{5}}\right)$$



$$P=\frac{2e\cdot v}{2}=e\cdot v=\sqrt{5}\cdot\frac{4}{\sqrt{5}}=4$$