

Zadatak 11. Tjemena elipse su vrhovi romba čija je površina 30 kv. jed. Zbroj duljina dijagonala romba jednak je 16. Kako glasi jednadžba elipse?

Rješenje.

$$P = 30 \text{ kv.jed.}$$

$$e + f = 16$$

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

$$e = 2a$$

$$f = 2b$$

$$2a + 2b = 16 \quad / : 2$$

$$a + b = 8 \implies b = 8 - a$$

$$P = 30$$

$$\frac{e \cdot f}{2} = 30$$

$$\frac{2a \cdot 2b}{2} = 30$$

$$2ab = 30$$

$$ab = 15$$

$$a(8 - a) = 15$$

$$-a^2 + 8a - 15 = 0$$

$$a^2 - 8a + 15 = 0$$

$$a_{1,2} = \frac{8 \pm \sqrt{64 - 60}}{2} = \frac{8 \pm 2}{2}$$

$$a_1 = \frac{8+2}{2} = 5 \implies b_1 = 3 \quad \dots \quad \frac{x^2}{25} + \frac{y^2}{9} = 1$$

$$a_2 = \frac{8-2}{2} = 3 \implies b_2 = 5 \quad \dots \quad \frac{x^2}{9} + \frac{y^2}{25} = 1$$