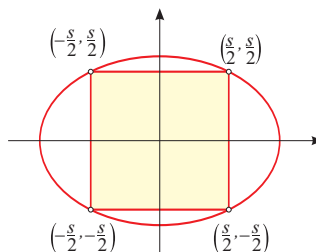


Zadatak 19. Elipsi $b^2x^2 + a^2y^2 = a^2b^2$ upisan je kvadrat površine 64. Udaljenost žarišta elipse jednaka je $4\sqrt{15}$. Kako glasi jednačba elipse?

Rješenje.

Označimo stranicu kvadrata sa s tada imamo:



$$P = 64$$

$$2e = d(F_1, F_2) = 4\sqrt{15}$$

$$P = 64$$

$$s^2 = 64 \implies s = 8 \implies T(4, 4) \in E$$

$$b^2x^2 + a^2y^2 = a^2b^2$$

$$16b^2 + 16a^2 = a^2b^2$$

$$16(a^2 + b^2) = a^2b^2 \quad (*)$$

$$2e = 4\sqrt{15} \implies e = 2\sqrt{15}$$

$$e^2 = a^2 - b^2$$

$$60 = a^2 - b^2 \implies a^2 = b^2 + 60$$

uvrstimo u (*) ... $16(b^2 + 60 + b^2) = (b^2 + 60) \cdot b^2$

$$32b^2 + 960 - b^4 - 60b^2 = 0$$

$$b^4 + 28b^2 - 960 = 0$$

$$(b^2)_{1,2} = \frac{-28 \pm 68}{2} \implies b^2 = 20$$

$$a^2 = 20 + 60 \implies a^2 = 80$$

$$20x^2 + 80y^2 = 20 \cdot 80 \quad / : 20$$

$$x^2 + 4y^2 = 80$$