

**Zadatak 34.** Žarišta elipse tjemena su hiperbole  $\frac{x^2}{4} - \frac{y^2}{12} = 1$  a žarišta hiperbole tjemena su elipse. Odredi jednadžbu elipse.

*Rješenje.*

$$H \quad \dots \quad \frac{x^2}{4} - \frac{y^2}{12} = 1$$

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

Tjemena hiperbole  $\dots A'_{1,2}(\pm a_H, 0) = A'_{1,2}(\pm 2, 0) \implies$

Žarišta elipse  $\dots F_{1,2}(\pm 2, 0) \implies e = 2$

$$e_H = a_H^2 + b_H^2 = 4 + 12 = 16 \implies e_H = 4$$

Žarišta hiperbole  $\dots F'_{1,2}(\pm e_H, 0) = F'_{1,2}(\pm 4, 0) \implies$

Tjemena elipse  $\dots A_{1,2}(\pm 4, 0) \implies a = 4$

$$b^2 = a^2 - e^2 = 16 - 4 = 12 \implies b = 2\sqrt{3}$$

$$E \quad \dots \quad \frac{x^2}{16} + \frac{y^2}{12} = 1 \quad / \cdot 48$$

$$3x^2 + 4y^2 = 48$$