

**Zadatak 32.** Kolika je udaljenost ortogonalnih projekcija žarišta hiperbole  $x^2 - 3y^2 = 3$  na pravac  $x - y = 0$ ?

*Rješenje.*

$$H \dots x^2 - 3y^2 = 3 \quad / : 3$$

$$\frac{x^2}{3} - y^2 = 1$$

$$e^2 = a^2 + b^2 = 3 + 1 = 4 \implies e = 2$$

$$F_{1,2}(\pm e, 0) \implies F_{1,2}(\pm 2, 0)$$

$$p \dots x - y = 0, \quad y = x$$

$$s_1 \perp p, \{F_1\} \in s_1 \implies y - 0 = -\frac{1}{1}(x - 2)$$

$$y = -x + 2$$

$$s_1 \cap p \implies x = -x + 2$$

$$2x = 2$$

$$x = 1, y = 1 \implies T_1(1, 1)$$

$$s_2 \perp p, \{F_2\} \in s_2 \implies y - 0 = -\frac{1}{1}(x + 2)$$

$$y = -x - 2$$

$$s_2 \cap p \implies x = -x - 2$$

$$2x = -2$$

$$x = -1, y = -1 \implies T_2(-1, -1)$$

$$d(T_1, T_2) = \sqrt{(1 + 1)^2 + (1 + 1)^2} = \sqrt{8}$$

$$\implies d(T_1, T_2) = 2\sqrt{2}$$