EQUAZIONE DELL'IPERBOLE

M3042

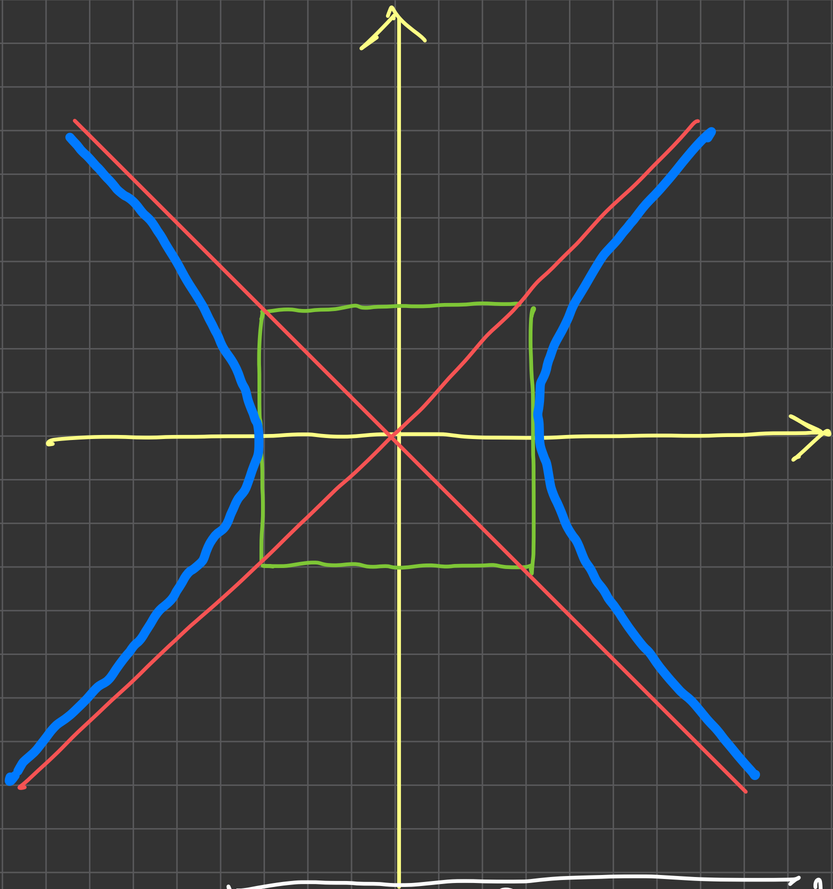
IPERBOLE EQUILATERA

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

$$a = b$$

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

$$\boxed{x^2 - y^2 = a^2}$$



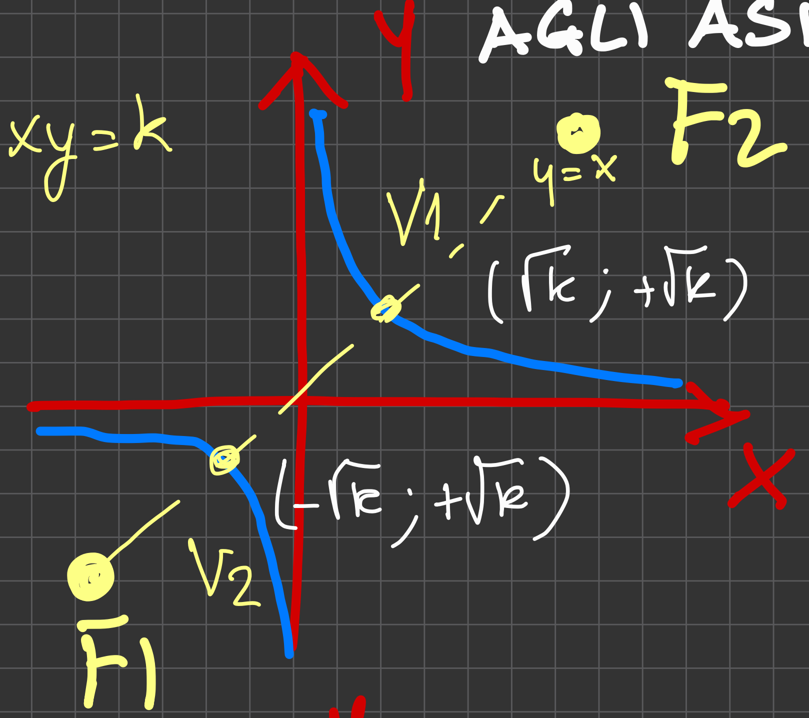
oppure $\boxed{x^2 - y^2 = -a^2}$

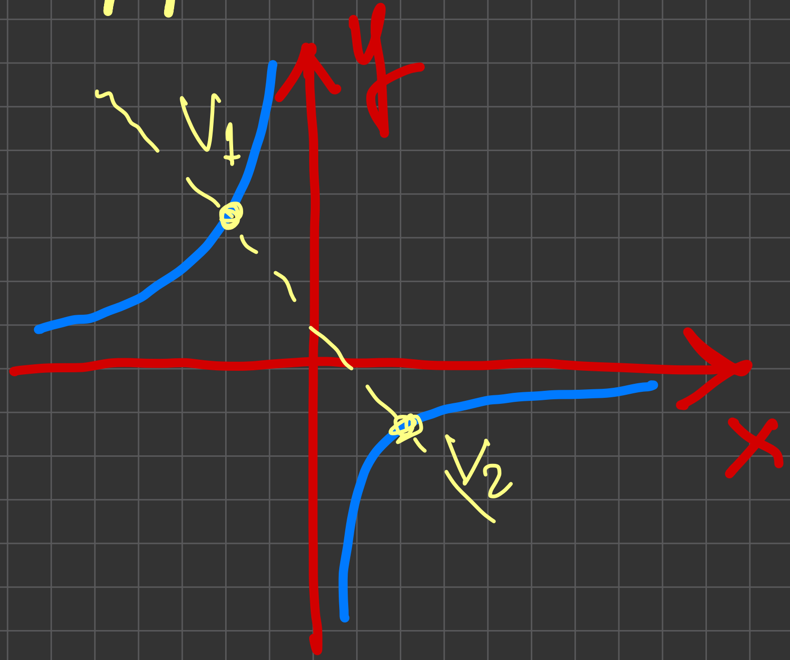
$$c = \sqrt{a^2 + b^2} \longrightarrow c = \sqrt{a^2 + a^2} = \sqrt{2a^2} = a\sqrt{2}$$

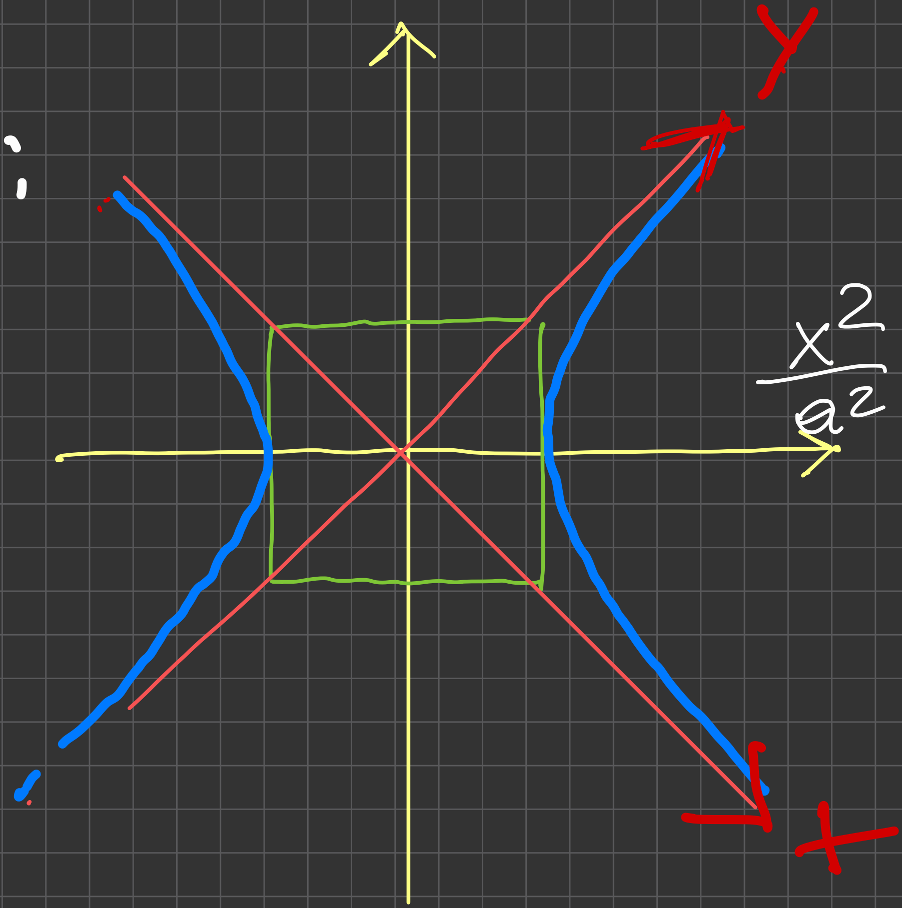
$$e = \frac{\text{dist.}}{\text{asse}} = \frac{c}{a} = \frac{\cancel{a}\sqrt{2}}{\cancel{a}} = \sqrt{2}$$

RIFERITA AGLI ASINTOTI;

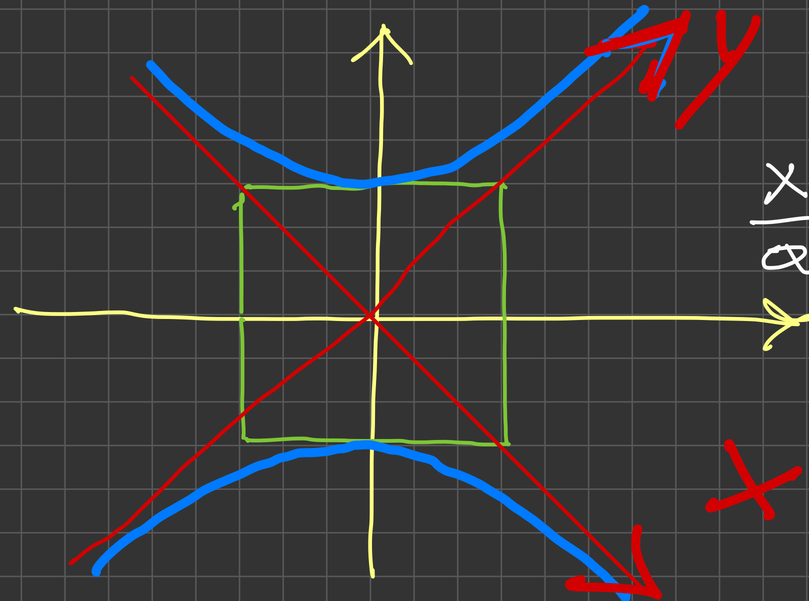
$xy = k$







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



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

QUAL È L'EQUAZIONE DELL'IPERBOLE EQUILATERA RIFERITA AGLI ASINTOTI?

$xy = k$ $\quad xy = -k$ $\quad$ con $k = \frac{a^2}{2}$

COORDINATE DEI VERTICI REALI

$\begin{cases} xy = k \\ y = x \end{cases}$ iperbole

bis. I e III

CASO $xy = k$

$x^2 = k$ $\quad x_1 = \sqrt{k}$; $x_2 = -\sqrt{k}$ $\quad V_1(\sqrt{k}; \sqrt{k})$

$y_1 = \sqrt{k}$; $y_2 = -\sqrt{k}$ $\quad V_2(-\sqrt{k}; -\sqrt{k})$

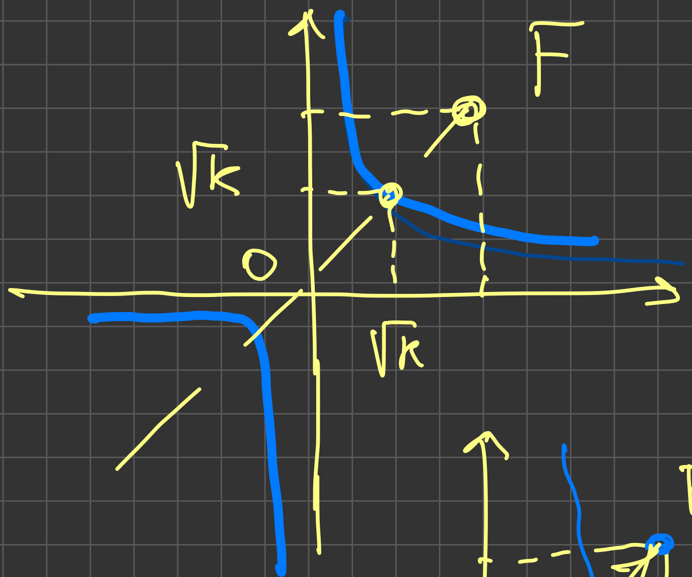
COORDINATE FUOCHI

$$xy = 8 \qquad 8 = \frac{a^2}{2} \qquad a = \sqrt{2 \cdot 8} = 4$$

il vertice $V_1(\sqrt{8}\,;\ \sqrt{8})$; $V_2(-\sqrt{8}\,;\ \sqrt{8})$

$$a^2 = (\sqrt{k})^2 + (\sqrt{k})^2 = 2k$$

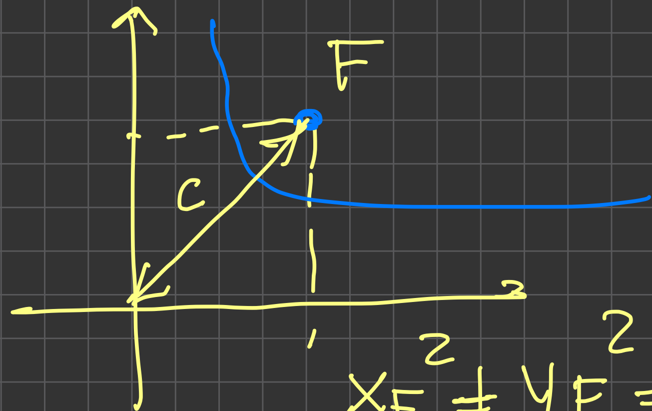
$$\to k = \frac{a^2}{2}$$



$$c = \overline{OF} = \sqrt{a^2 + a^2} =$$

$$a\sqrt{2} = \sqrt{2k} \cdot \sqrt{2}$$

c = é la diagonale del quadrato, le coordinate



$$x_F^2 + y_F^2 = c^2$$

$$x_F = y_F \rightarrow 2x_F^2 = c^2 \rightarrow x_F = \frac{c}{\sqrt{2}} \rightarrow$$

$$x_F = \frac{\sqrt{2k} \cdot \cancel{\sqrt{2}}}{\cancel{\sqrt{2}}} = \sqrt{2k}$$

$$\boxed{F_1\left(\sqrt{2k}\,;\sqrt{2k}\right) \qquad F_2\left(-\sqrt{2k}\,;-\sqrt{2k}\right)}$$

Nell'esempio $k = 8$ $\qquad F_1 = (4\,;+4) \quad F_2(-4\,;-4)$