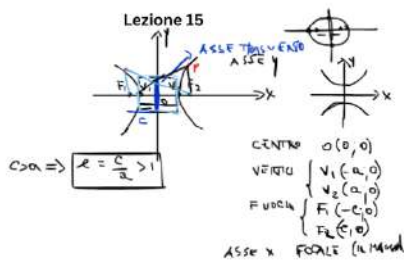


Lezione 15



$$|PF_1 - PF_2| = 2a$$

$$PF_1 - PF_2 = \pm 2a$$

Luogo geometrico dell'iperbole  
 $(x, y)$

$$\begin{aligned} \sqrt{(x+c)^2 + y^2} - \sqrt{(x-c)^2 + y^2} &= \pm 2a \\ \sqrt{(x+c)^2 + y^2} &= \pm 2a + \sqrt{(x-c)^2 + y^2} \\ (x+c)^2 + y^2 &= 4a^2 + (x-c)^2 + y^2 \pm 4a\sqrt{(x-c)^2 + y^2} \\ 4cx + 2cy &= 4a^2 + x^2 - 2cx + y^2 - 4a\sqrt{(x-c)^2 + y^2} \\ 4cx - 4a^2 &= 4a\sqrt{(x-c)^2 + y^2} \\ cx - a^2 &= a\sqrt{(x-c)^2 + y^2} \\ c^2x^2 + a^4 - 2a^2cx &= a^2(x^2 - 2cx + y^2) \\ c^2x^2 + a^4 - 2a^2cx &= a^2x^2 - 2a^2cx + a^2y^2 \\ \frac{c^2x^2 + a^4 - 2a^2cx}{(c^2 - a^2)x^2 - a^2y^2} &= \frac{a^2x^2 - 2a^2cx + a^2y^2}{a^2(c^2 - a^2)} \end{aligned}$$

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

Equazione dell'iperbole in forma canonica