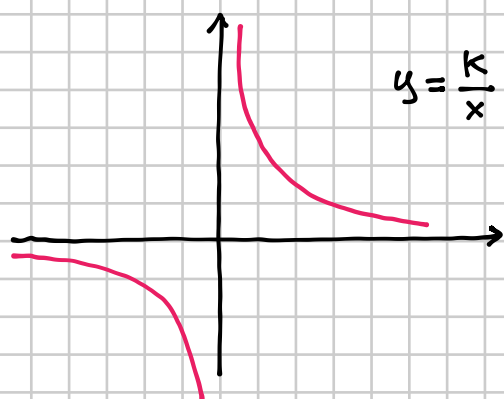
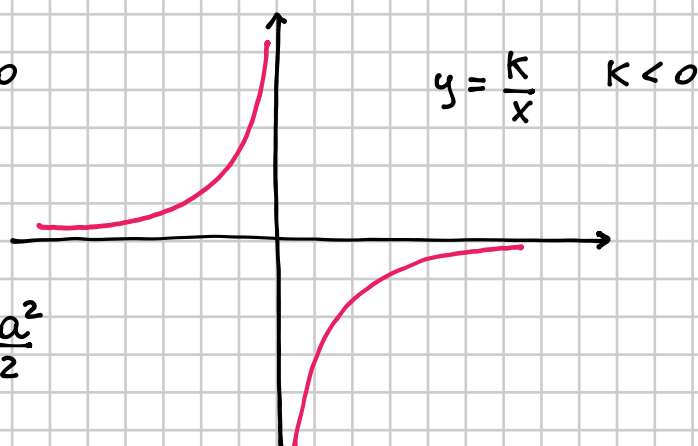


IPERBOLE EQUILATERA (RIFERITA AI SUOI ASINTOTI)



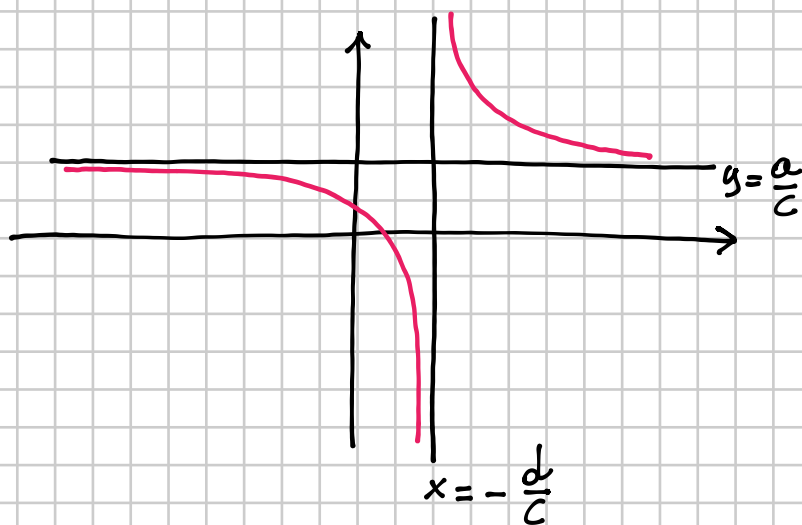
$$y = \frac{k}{x} \quad k > 0$$



$$y = \frac{k}{x} \quad k < 0$$

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

FUNZIONE OMOGRAFICA



$$y = \frac{ax + b}{cx + d}$$

$$c \neq 0$$

$$ad - bc \neq 0$$

MOTIVAZIONE

Se fosse $ad - bc = 0$

$$ad = bc \Rightarrow b = \frac{ad}{c}$$

$$y = \frac{ax + \frac{ad}{c}}{cx + d} = \frac{a(x + \frac{d}{c})}{c(x + \frac{d}{c})}$$

quindi avrei una retta orizzontale

Per $x \rightarrow \pm\infty$ $ax + b \simeq ax$ e $cx + d \simeq cx$

$$y = \frac{ax + b}{cx + d} \simeq \frac{ax}{cx} = \frac{a}{c} \Rightarrow \text{ASINTOTO ORIZZONTALE } y = \frac{a}{c}$$

$x = -\frac{d}{c}$ ASINTOTO VERTICALE (dove la funzione omografica non è definita)

Il DOMINIO della funzione omografica è $\mathbb{R} \setminus \{-\frac{d}{c}\} = (-\infty, -\frac{d}{c}) \cup (-\frac{d}{c}, +\infty)$

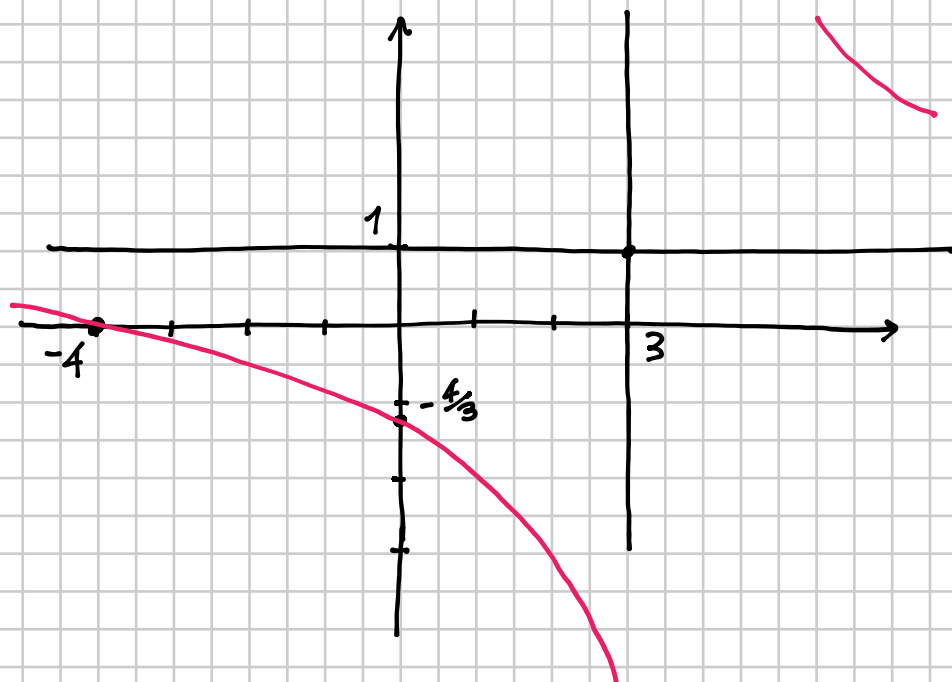
DISEGNARE IL GRAFICO DELLA FUNZIONE OMOGRAFICA

312

$$y = \frac{x+4}{x-3}$$

ASINTOTO ORIZZONTALE $y = 1$

ASINTOTO VERTICALE $x = 3$



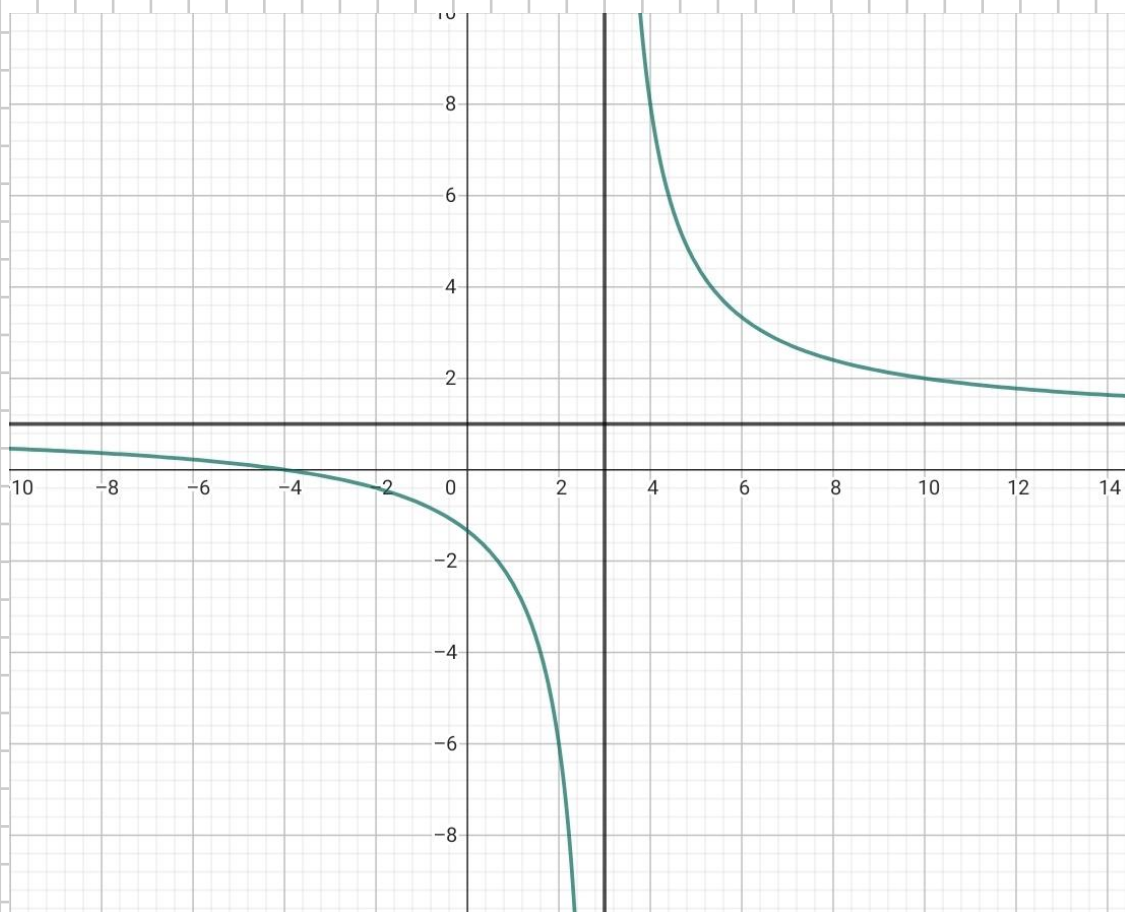
INT. ASSI

$$\begin{cases} y = 0 \\ y = \frac{x+4}{x-3} \end{cases}$$

$$\begin{cases} y = 0 \\ \frac{x+4}{x-3} = 0 \end{cases}$$

$$\begin{cases} x = -4 \\ y = 0 \end{cases}$$

$$\begin{cases} x = 0 \\ y = \frac{x+4}{x-3} \end{cases} \quad \begin{cases} x = 0 \\ y = -\frac{4}{3} \end{cases}$$



DISEGNARE LA FUNZ. GRAFICA

320

$$2xy + x - y + 3 = 0$$

$$y(2x - 1) = -x - 3$$

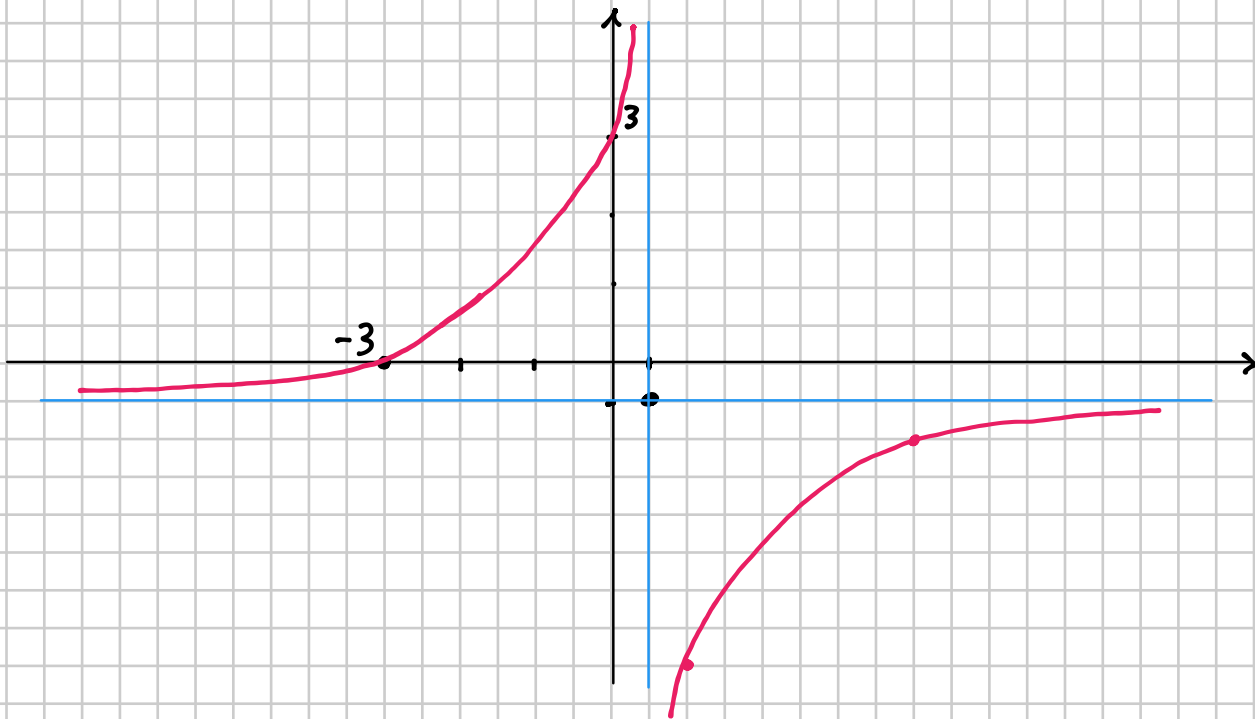
$$y = \frac{-x - 3}{2x - 1}$$

ASINTOTO ORIZZONTALE

$$y = -\frac{1}{2}$$

ASINTOTO VERTICALE

$$x = \frac{1}{2}$$



$$\begin{cases} y = 0 \\ y = \frac{-x - 3}{2x - 1} \end{cases}$$

$$\begin{cases} x = -3 \\ y = 0 \end{cases}$$

$$\begin{cases} x = 0 \\ y = \frac{-x - 3}{2x - 1} \end{cases}$$

$$\begin{cases} x = 0 \\ y = 3 \end{cases}$$