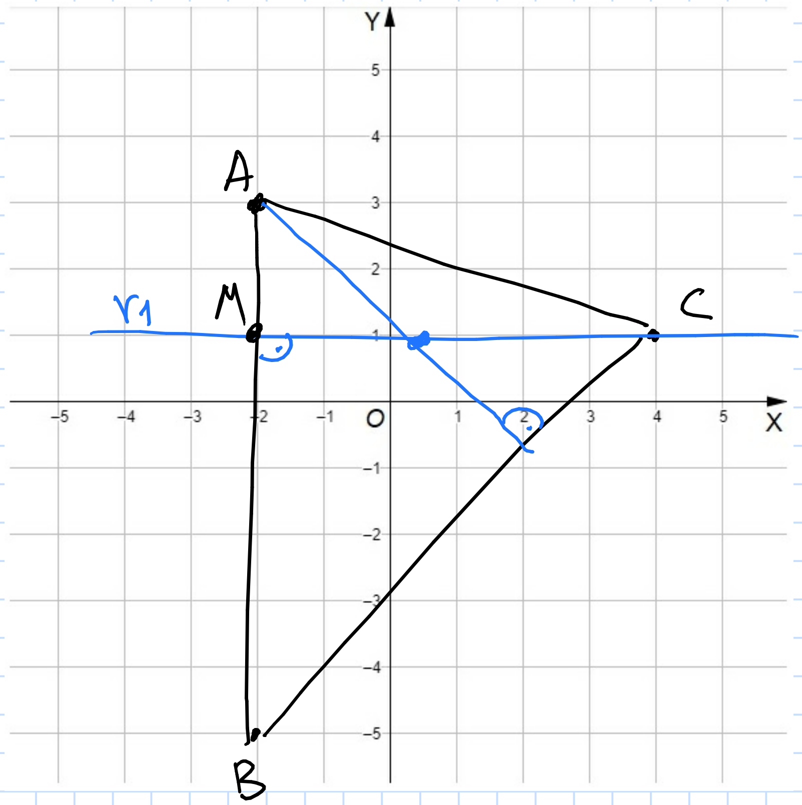
1



a) $r_1 = \begin{cases} C(4,1) \\ m=0 \end{cases}$ $\boxed{r_1 \equiv y=1}$

b) $r_2 = \begin{cases} A(-2,3) \\ \perp \vec{BC} = C-B = (4,1)-(-2,-5) = (6,6) \end{cases}$

$\vec{v} = (6,-6)$ $m=-1$

$r_2 \equiv y-3 = -(x+2)$ $\boxed{r_2 \equiv y=-x+1}$

c) $O \begin{cases} r_1 \equiv y=1 \\ r_2 \equiv y=-x+1 \end{cases}$ $\boxed{O(0,1)}$

d) $h = d(AB, C) = d(M,C) = 6u$

$Base = d(A,B) = 8u$

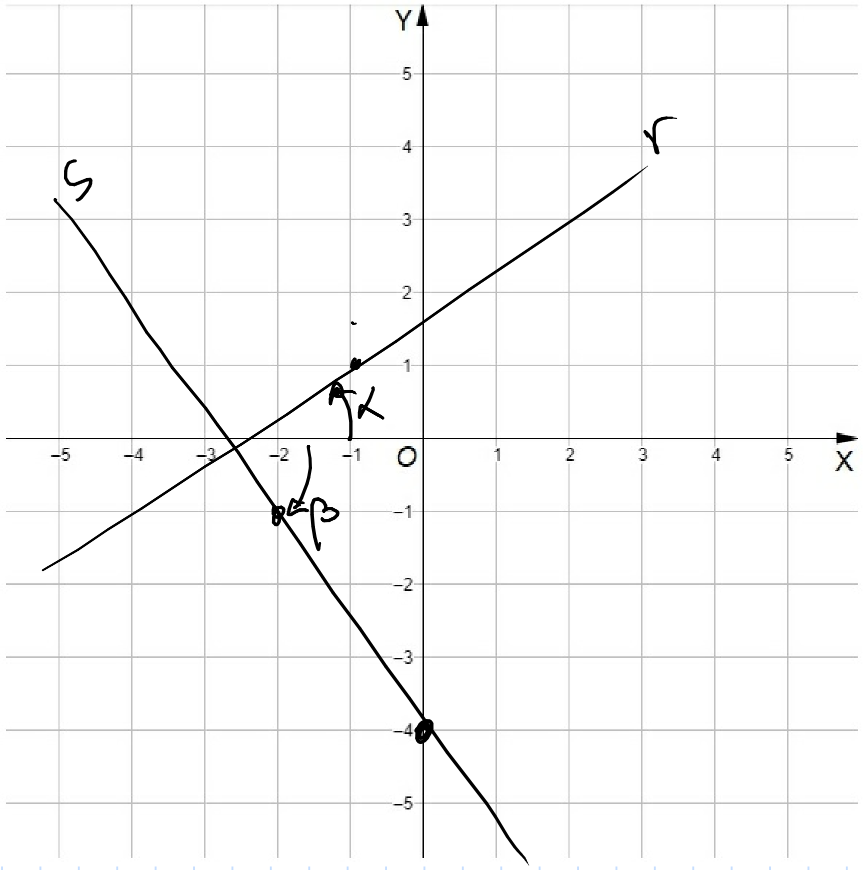
$Area = \frac{b \cdot h}{2} = \frac{6 \cdot 8}{2} = 24u^2$

2)

$r \equiv 2x-3y+5=0 \qquad y=\frac{2}{3}x+\frac{5}{3}$

$s \equiv \begin{cases} \perp r & m=-3/2 \\ (0,-4) & n=-4 \end{cases} \qquad y=-\frac{3}{2}x-4$

Ángulos



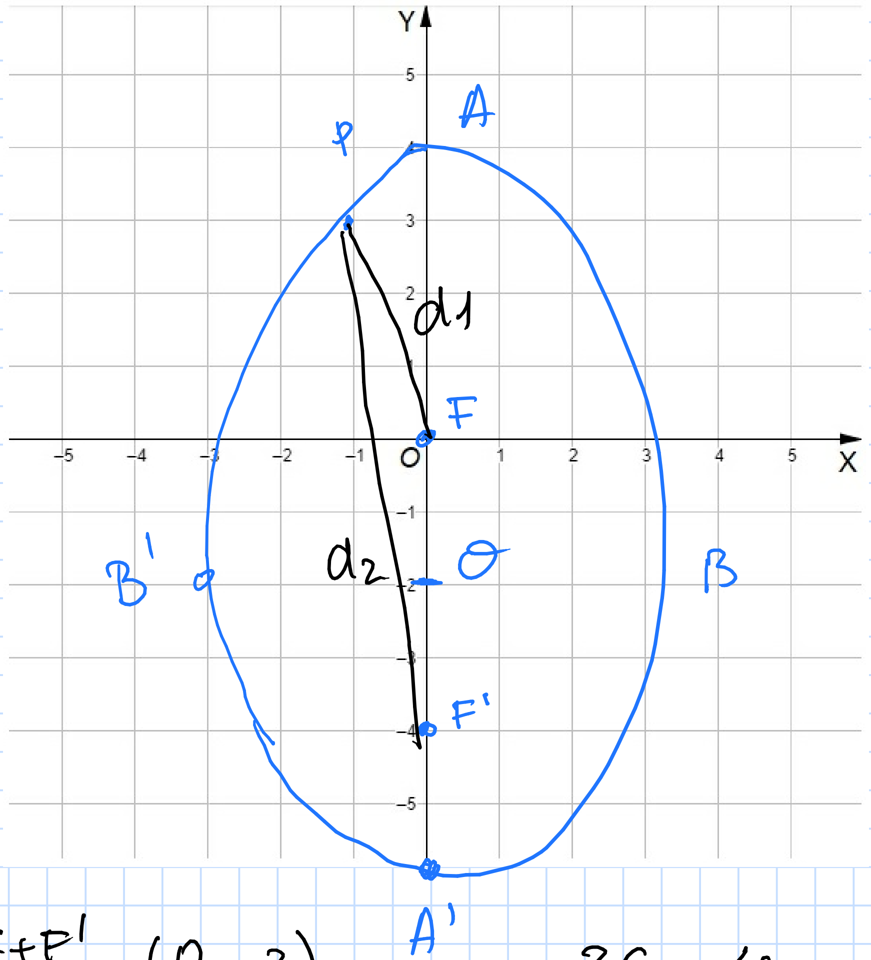
$\alpha =$ angulo $(r, Ox) =$ angulo $(\vec{v_r}=(3,2),\ (1,0))$

$(3,2)\cdot(1,0) = |(3,2)|\cdot 1 \cdot \cos\alpha \qquad \cos\alpha = \frac{3}{\sqrt{13}} \qquad \alpha = 37'7^\circ$

$\beta =$ angulo $(s, Ox) =$ angulo $(\vec{v_s}=(2,-3),\ (1,0))$

$(2,-3)\cdot(1,0) = |(2,3)|\cdot 1\cdot \cos\beta \qquad \cos\beta = \frac{2}{\sqrt{13}} = 56'3^\circ$

3)



$O = \frac{F+F'}{2} = (0,-2)$ $\qquad 2c = 4 \qquad c = 2$

$\vec{F'P} = (-1,3)-(0,-4) =$
$= (-1,7)$

$2a = d_1 + d_2$

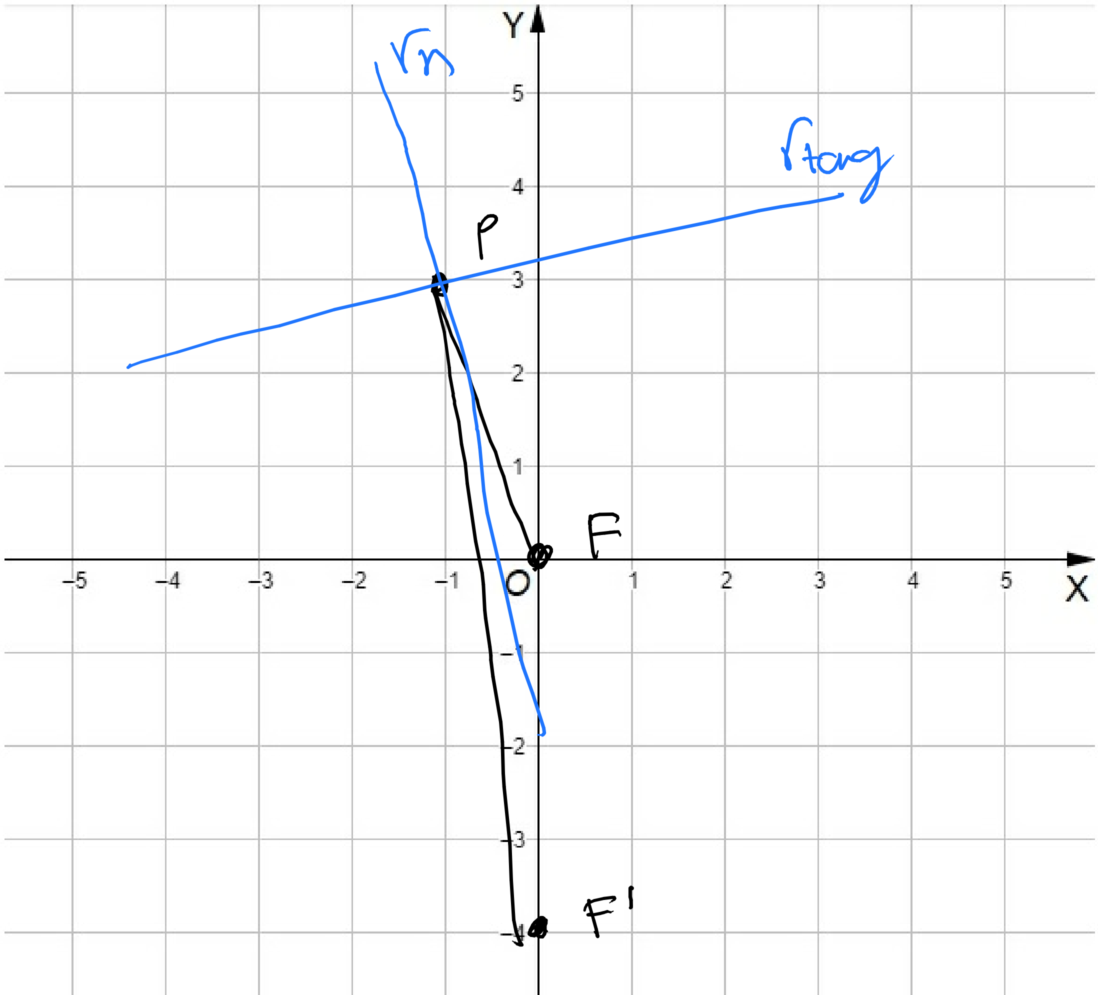
$d_1 = d(F',P) = |\vec{F'P}| = \sqrt{1^2+7^2} = \sqrt{50}\ u \qquad \vec{FP} = (-1,3)$

$d_2 = d(F,P) = |\vec{FP}| = \sqrt{1^2+3^2} = \sqrt{10}\ u$

$a = \frac{\sqrt{10}+\sqrt{50}}{2} \simeq 5'1\ u \qquad b = \sqrt{a^2-c^2} = \sqrt{5'1^2-2^2} \simeq 4'7$

$$\boxed{\frac{(x-0)^2}{4'7^2} + \frac{(y+2)^2}{5'1^2} = 1}$$

Recta tangente y normal → Bisectriz $\begin{cases} FP \\ F'P \end{cases}$



$r_{FP}\begin{cases} 0,0 \\ P(-1,3) \end{cases}$ $\quad V_1 = (-1,3) \quad \frac{x}{-1} = \frac{y}{3} \quad r_1 \equiv 3x+y=0$

T( )

$r_{F'P}\begin{cases} F'(0,-4) \\ P(-1,3) \end{cases}$ $\quad V_2 = (-1,7) \quad \frac{x-0}{-1} = \frac{y+4}{7}$

$V_2 \equiv 7x+y+4=0$

$$\frac{|3x+y|}{\sqrt{10}} = \frac{|7x+y+4|}{\sqrt{50}}$$

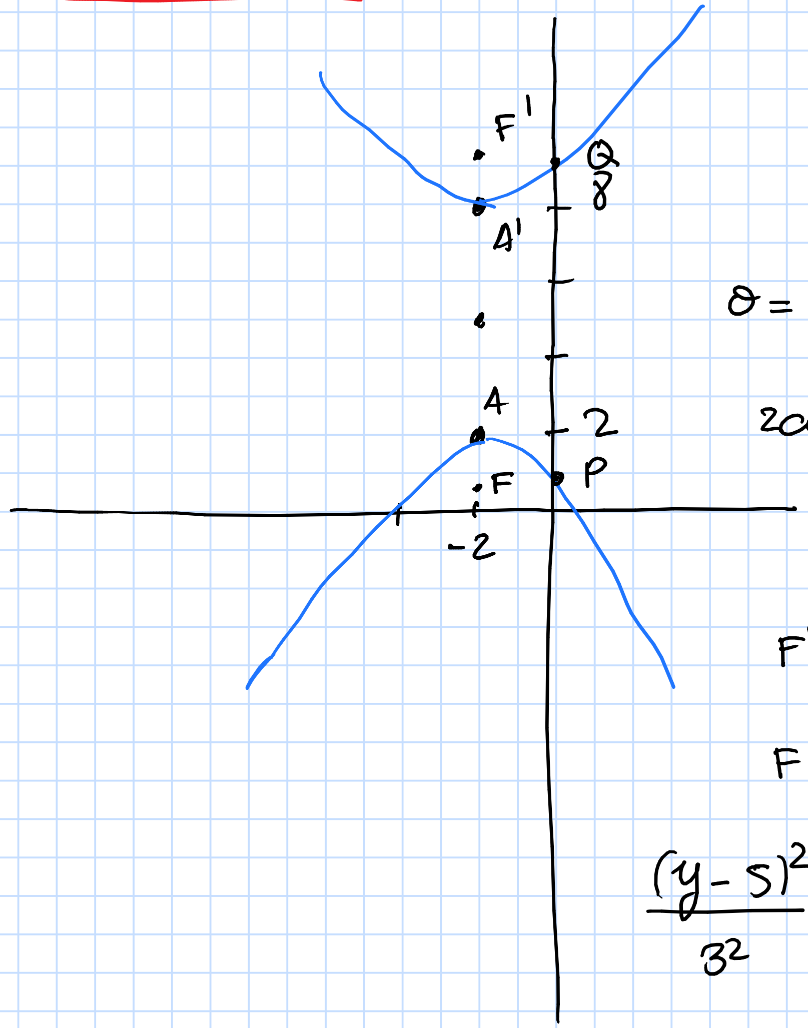
$m>0$ Tangente

→ + $\quad (3x+y)\sqrt{50} = \sqrt{10}(7x+y+4) \quad 0'9x - 3'9y + 12'6 = 0$

$m<0$ Normal

→ − $\quad (3x+y)\sqrt{50} = -\sqrt{10}(7x+y+4) \quad 43'3x + 10'2y - 12'6 = 0$

Problema 4



$$O = \frac{A + A'}{2} = (-2, 5)$$

$2a = 6 \rightarrow a = b = 3$ (Equilátera)

$$c = \sqrt{a^2 + b^2} = \sqrt{18}$$

$$F'(-2, 5+\sqrt{18}) = (-2, 9'2)$$

$$F(-2, 5-\sqrt{18}) = (-2, 0'8)$$

$$\frac{(y-5)^2}{3^2} - \frac{(x+2)^2}{3^2} = 1$$

Dos puntos $\rightarrow$ $x = 0$ $\quad \frac{(y-5)^2}{9} - \frac{4}{9} = 1$

$(y-5)^2 = 9 + 4 \quad (y-5)^2 = 13 \quad y = 5 \pm \sqrt{13}$

$P(0, 5+\sqrt{13}) \simeq (0, 8'6)$

$Q(0, 5-\sqrt{13}) \simeq (0, 1'4)$

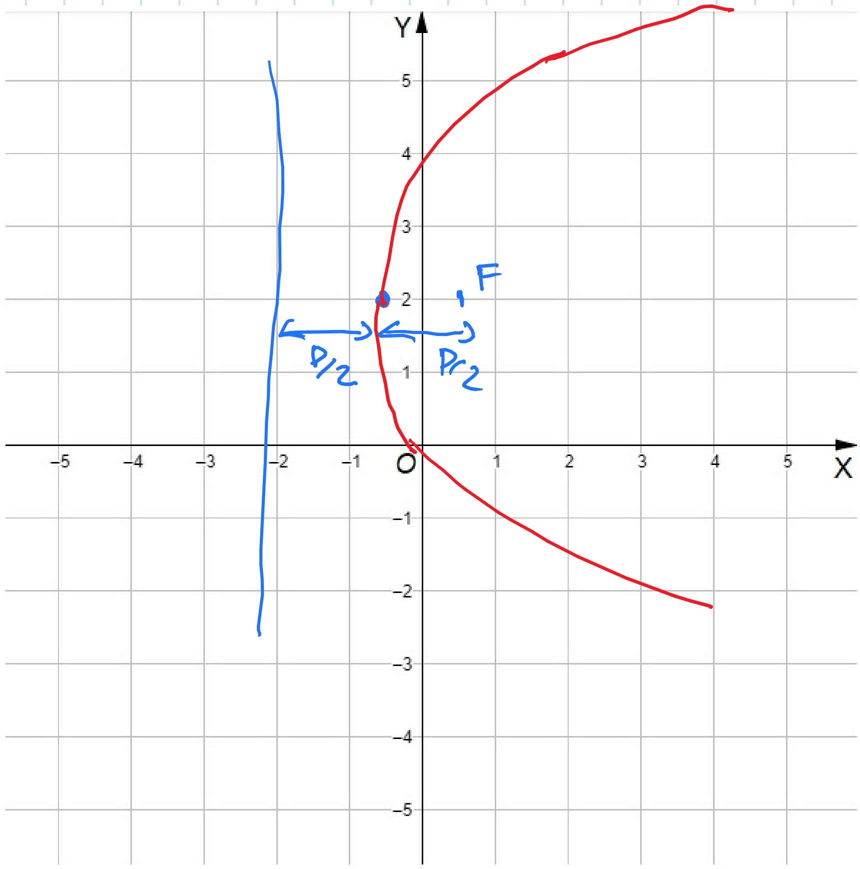
Problemas

$y^2-6x-4y=0 \rightarrow (y-2)^2-6x=4$

$(y-2)^2=4+6x \rightarrow (y-2)=6(x+2/3)$

$(y-y_0)^2=2p(x-x_0)$ $\quad y_0=2 \quad p=3$

$x_0=-2/3$



$F\left(-\frac{2}{3}+1'5,\ 0\right)=\left(\frac{5}{6},\ 0\right)$

$d \rightarrow x=-\frac{2}{3}-1'5 \qquad x=-\frac{13}{6}$