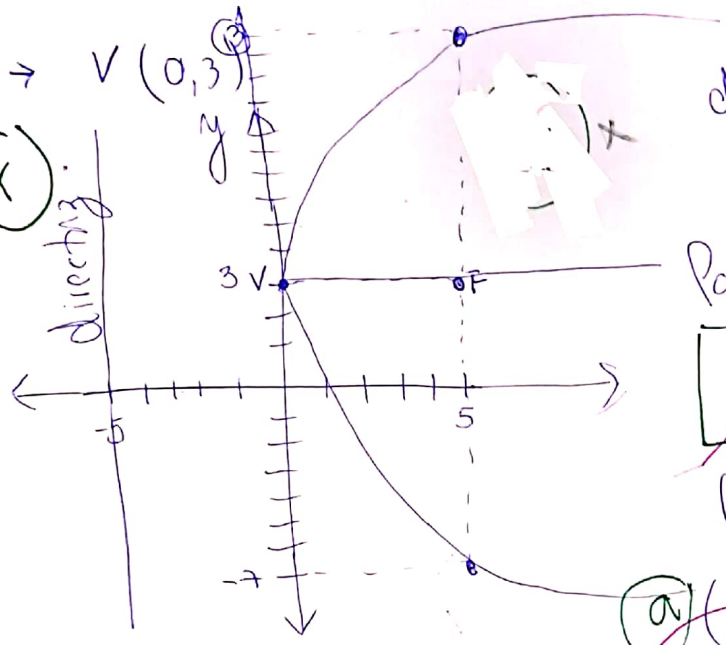
N) Ejercicio 1

→ $x+5=0 \rightarrow x=-5$

→ $V(0,3)$



distancia $\overline{\text{directriz}-V} = |P|$

$p = 5$ | |

Parábola se abre hacia la derecha $p > 0$.

$$(y-k)^2 = 4p(x-h)$$

$(y-3)^2 = 4 \cdot 5\, x$

a) $(y-3)^2 = 20x$. (3p)

b) Foco $(5,3)$ (2p)

c) Lado recto $= |4 \cdot 5| = 20$ unidades (2p)

→ coordenadas de los puntos extremos del lado recto:

$\frac{LR}{2} = \frac{20}{2} = 10$ u. Foco $(5,3)$

Extremo superior $(5, 3+10) \rightarrow (5, 13)$ (1p)

" inferior $(5, 3-10) \rightarrow (5, -7)$ (1p)

d)

e) Ec. eje parábola: $y = 3$ (1p)

Ejercicio 2

$4x^2 + 9y^2 + 32x - 18y + 37 = 0$.

$4x^2 + 32x + 9y^2 - 18y = -37 \quad / \cdot \frac{1}{4}$

$x^2 + 8x + \frac{9}{4}y^2 - \frac{18}{4}y = \frac{-37}{4} \quad / + \left(\frac{8}{2}\right)^2$

$(x+4)^2 + \frac{9}{4}y^2 - \frac{9}{2}y = \frac{-37}{4} + 16. \quad / \cdot \frac{4}{9}$

$\frac{4(x+4)^2}{9} + y^2 - 2y = \left(\frac{-37+64}{4}\right) \cdot \frac{4}{9} \quad / + \left(\frac{-2}{2}\right)^2$

$\frac{4}{9}(x+4)^2 + (y-1)^2 = 3 + 1 \quad / \cdot \frac{1}{4}$

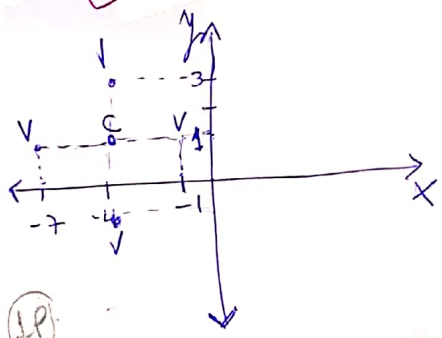
$(x+4)^2$

$(y-1)^2$

FINAL

$$\boxed{\frac{(x+4)^2}{9} + \frac{(y-1)^2}{4} = 1}$$

$$\boxed{\frac{(x+4)^2}{3^2} + \frac{(y-1)^2}{2^2} = 1}$$ (2P) C(-4, 1)



$b = 2$

$a = 3$. (1P)

(a) Eje menor $= 2 \cdot a = 2 \cdot 3 = 6$.

(b) Coordenadas del vértices. $(-7, 1)$ $(-1, 1)$ (1P)

(c) Coordenadas de los extremos del eje menor: $(-4, 3)$ $(-4, -1)$ (1P)

(d) Coordenadas de los focos: $c^2 = 3^2 - 2^2$

$c^2 = 9 - 4$

$\boxed{c = \sqrt{5}}$

$F_1(-4 + \sqrt{5}, 1)$

$F_2(-4 - \sqrt{5}, 1)$ (1)

(e) Coordenadas de los extremos del lado recto. (solo de 1) (2p)

Lado recto $= \frac{2b^2}{a} = \frac{2 \cdot 2^2}{3} = \boxed{\frac{8}{3}}$

$\frac{8}{3} : 2 = \frac{8}{6} = \frac{4}{3}$.

(1) Extremos foco 1. $\left(-4 + \sqrt{5}, 1 + \frac{4}{3}\right)$

1. $\left(-4 + \sqrt{5}, \frac{7}{3}\right)$

$\left(-4 + \sqrt{5}, 1 - \frac{4}{3}\right)$

2. $\left(-4 + \sqrt{5}, -\frac{1}{3}\right)$

(d) $y = 1$ (1P)

(2) Extremos foco 2.

1. $\left(-4 - \sqrt{5}, \frac{7}{3}\right)$

2. $\left(-4 - \sqrt{5}, -\frac{1}{3}\right)$

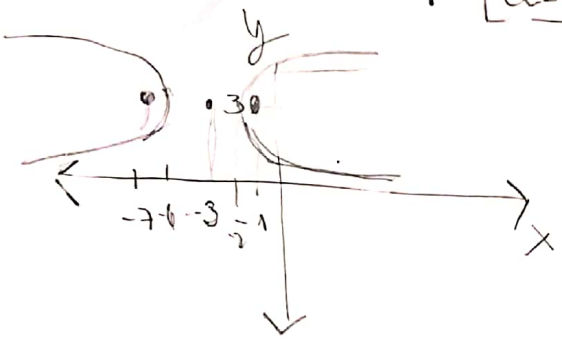
Ejercicio 3

(a)

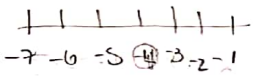
Focos: $(-7,3)$

$(-1,3)$

Eje Transverso = 4 $\boxed{a=2}$



$\overline{FF'} = b$



C: $(-4,3)$ 1p

$\overline{CF} = 3$

$\boxed{c=3}$ 1p

$c^2 = a^2 + b^2$

$9 = 4 + b^2 \rightarrow b = \sqrt{9-4}$ $\boxed{b=\sqrt{5}}$ 1p

$$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$$

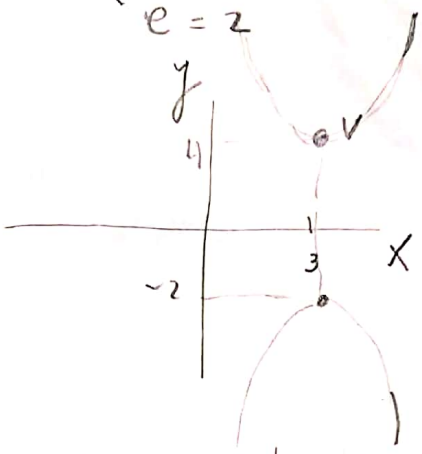
$$\frac{(x+4)^2}{4} - \frac{(y-3)^2}{5} = 1 \quad (2p)$$

(b): Vertices

$(3,4)$

$(3,-2)$

$e = 2$



distancia $VV' = 6$

Eje transverso $= 2a \Rightarrow a = 3$

$e = \frac{c}{a} \qquad 2 = \frac{c}{3}$ $\boxed{c=6}$ 1p

$c^2 = a^2 + b^2$

$6^2 = 3^2 + b^2 \rightarrow b = \sqrt{36-9} \rightarrow b = \sqrt{27}$

$\boxed{b = 3\sqrt{3}}$ 1p

$\boxed{C: (3,1)}$ 1p

$$\frac{(y-k)^2}{a^2} - \frac{(x-h)^2}{b^2} = 1$$

$$\frac{(y-1)^2}{9} - \frac{(x-3)^2}{27} = 1 \quad (2p)$$