

$$① \quad x^2 + cy^2 + Dx + Ey + F = 0$$

$$(1,3) \quad 1 + 9C + D + 3E + F = 0 \quad (1)$$

$$(1,4) \quad 1 + 16C - D + 4E + F = 0 \quad (2)$$

$$(1,3) \quad 9 + 9C - 3D + 3E + F = 0 \quad (3)$$

$$(2, \frac{3\sqrt{3}}{2}) \quad (3 - \frac{\sqrt{3}}{2})^2 C + (3 - \frac{\sqrt{3}}{2})E + F = 0$$

$$(\frac{39}{4} - 3\sqrt{3})C + (3 - \frac{\sqrt{3}}{2})E + F = 0 \quad (4)$$

(1) & (2)

$$\begin{array}{r} + 1 + 9C + D + 3E + F = 0 \\ - 1 + 16C - D + 4E + F = 0 \\ \hline 2 + 25C + 7E + 2F = 0 \end{array}$$

1 y 3

$$\begin{array}{r} - 1 + 9C + D + 3E + F = 0 \\ - 9 + 9C - 3D + 3E + F = 0 \\ \hline -8 + 4D = 0 \end{array}$$

$$4D = 8$$

$$D = 2 \quad \text{2P.}$$

(2) y (3)

$$\begin{array}{r} - 1 + 16C - D + 4E + F = 0 \\ - 9 + 9C - 3D + 3E + F = 0 \\ \hline -8 + 7C + 2D + E = 0 \end{array}$$

$$D = 2$$

$$-8 + 7C + 4 + E = 0$$

$$-4 + 7C + E = 0$$

$$E = 4 - 7C$$

$$(3 - \frac{\sqrt{3}}{2})$$

$$9 - 2 \cdot 3 \cdot \frac{\sqrt{3}}{2} + \frac{3}{4}$$

$$9 - 3\sqrt{3} + \frac{3}{4}$$

$$\frac{36+3}{4} - 3\sqrt{3}$$

$$\frac{39}{4} - 3\sqrt{3}$$

$$E = 4 - 7C$$

$$E = 4 - 7 \cdot 4$$

$$E = -24 \quad \text{2P.}$$

$$2 + 25C + 7E + 2F = 0$$

$$2 + 25 \cdot 4 + 7 \cdot (-24) + 2F = 0$$

$$F = \frac{-2 - 100 + 168}{2}$$

$$F = \frac{66}{2}$$

$$F = 33 \quad \text{2P.}$$

Ec. de la ellipse

$$\Delta P. \quad x^2 + 4y^2 + 2x - 24y + 33 = 0$$

$$2 + 25C + 7E + 2F = 0$$

$$(\frac{39}{2} - 6\sqrt{3})C + (3 - \sqrt{3})E + 2F = 0$$

$$2 + (25 - \frac{39}{2} + 6\sqrt{3})C + (7 - 6 + \sqrt{3})E = 0$$

$$2 + (\frac{11}{2} + 6\sqrt{3})C + (1 + \sqrt{3})E = 0$$

$$2 + (\frac{11}{2} + 6\sqrt{3})C + (1 + \sqrt{3})(4 - 7C) = 0$$

$$4 + \frac{11C}{2} + \frac{12\sqrt{3}C}{2} + 8 - 14C + 8\sqrt{3} - 14\sqrt{3}C = 0$$

$$C(11 + 12\sqrt{3} - 14 - 14\sqrt{3}) = -4 - 8 - 8\sqrt{3}$$

$$C = \frac{-12 - 8\sqrt{3}}{-3 - 2\sqrt{3}}$$

$$C = 4 \quad \text{2P.}$$

2)

Ⓐ L.R.?

$$\frac{x^2}{4} + \frac{9y^2}{4} + 8x - \frac{9y}{2} + \frac{37}{4} = 0$$

Ⓑ Eje menor?
Ⓒ Eje mayor?

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

Ⓓ e

$$x^2 + 32x + 9y^2 - 18y = -37 + 256 + 9$$

$$x^2 + 32x + 256 + 9(y^2 - 2y + 1) = 228$$

$$(x+16)^2 + 9(y-1)^2 = 228 \quad | : 9$$

$$\frac{(x+16)^2}{9} + (y-1)^2 = \frac{228}{9} \quad | \cdot \frac{9}{228}$$

$$\frac{(x+16)^2}{9} \cdot \frac{9}{228} + (y-1)^2 \frac{9}{228} = 1$$

$$3P \quad \frac{(x+16)^2}{\frac{228}{9} a^2} + \frac{(y-1)^2}{\frac{228}{9} b^2} = 1$$

$$a = \sqrt{228} \sim 15,09 \quad \downarrow \sim 253$$

$$b = \sqrt{\frac{228}{9}} \sim 5,003$$

$$LR = \frac{2b^2}{a}$$

$$2P \quad \text{Eje menor} = \frac{2\sqrt{228}}{3} \sim 10,06$$

$$LR = 2 \cdot \frac{228}{9}$$

$$2P \quad \text{Eje mayor} = \frac{2\sqrt{228}}{4\sqrt{3}} \sim 30,19$$

$$\text{Ⓒ } 2P \rightarrow LR = \frac{456}{9\sqrt{228}} \sim 3,35$$

$$\frac{253 - 25}{9}$$

$$228 = \frac{228}{9} + c^2$$

$$a^2 - b^2 = c^2$$

$$\frac{228}{9} - \frac{228}{9} = c^2$$

$$c = \sqrt{\frac{228 \cdot 9 - 228}{9}} \rightarrow \sqrt{\frac{1824}{9}} \sim 14,23$$

$$e = \frac{c}{a} = \frac{\sqrt{1824}}{\sqrt{9 \cdot 228}} \sim 0,94$$

Ⓓ 1P. $\sim 0,94$

$$e = \frac{2\sqrt{2}}{3}$$

$$\textcircled{3} \textcircled{a} 12x^2 - 27y^2 = 108 \quad | :3$$

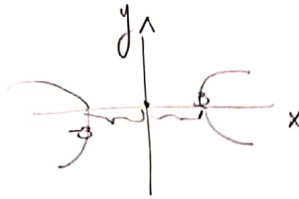
$$4x^2 - 9y^2 = 36 \quad | :4 \cdot 9$$

$$\frac{4x^2}{4 \cdot 9} - \frac{9y^2}{4 \cdot 9} = \frac{36}{4 \cdot 9}$$

$$\text{IP. } \frac{x^2}{\textcircled{9}} - \frac{y^2}{\textcircled{4}} = 1$$

$$a = 3$$

$$b = 2$$



$$\text{IP Eje transverso} = 2a = 6$$

$$\text{IP Eje conjugado} = 2 \cdot b = 4$$

$$\Delta P \text{ Vertices } (-3,0) \quad (3,0)$$

$$\Delta P. \text{ Focos } = (\sqrt{13},0) \quad (-\sqrt{13},0)$$

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

$$c = \sqrt{9+4}$$

$$c = \sqrt{13}$$

$$\textcircled{b} 5x^2 - 20y^2 = 20 \quad | : (5 \cdot 4)$$

$$\frac{5x^2}{5 \cdot 4} - \frac{20y^2}{5 \cdot 4} = \frac{20}{5 \cdot 4}$$

$$\text{IP } \frac{x^2}{4} - \frac{y^2}{1} = 1$$

$$a = 2 \rightarrow \text{Eje Transverso} = 2 \cdot a = 4 \quad \text{LP}$$

$$b = 1 \rightarrow \text{Eje conjugado} = 2 \cdot b = 2 \quad \text{LP}$$

$$c^2 = 4 + 1$$

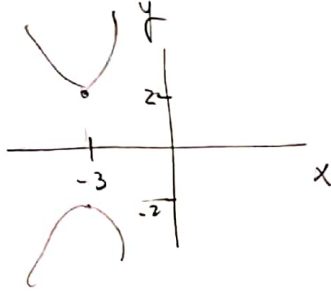
$$c = \sqrt{5}$$

$$\text{Vertices: } (2,0); (-2,0) \quad \text{IP}$$

$$\text{focos: } (\sqrt{5},0); (-\sqrt{5},0) \quad \text{LP}$$

- Vértices
- Focos
- longitud del eje transverso
- conjugado

4) Vértices $(-3, 2)$ $(-3, -2)$
Eje conjugado b .



(a) $\rightarrow EC$

(b) $\rightarrow e = c/a$

(c) $\rightarrow LR$

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

Eje conjugado $= 2b = b$ $\boxed{b=3}$
 $a = 2$.

C $(3, 0)$

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

4P (a) $\boxed{\frac{y^2}{4} - \frac{(x+3)^2}{9} = 1}$

$$c = \sqrt{4+9}$$

$$c = \sqrt{13}$$

3P (b) $\boxed{e = \frac{\sqrt{13}}{2}} \sim 1,802$

$$LR = \frac{2b^2}{a} = \frac{2 \cdot 9}{2} = 9$$

$\boxed{LR=9}$ (c) 3P.

5)

$$4x^2 - 7x + 53 = y$$

$$4x^2 - 7x + 53 - y = 0$$

$$x^2 - \frac{7x}{4} + \frac{53}{4} - \frac{y}{4} = 0$$

$$\left(\frac{7}{4} : 2\right)^2 = \left(\frac{7}{8}\right)^2 = \frac{49}{64}$$

$$x^2 - \frac{7}{4}x + \frac{49}{64} = \frac{-53}{4} \cdot \frac{16}{4} + \frac{49}{64}$$

$$\left(x - \frac{7}{8}\right)^2 = \frac{y}{4} - \frac{848}{64} + \frac{49}{64}$$

$$\left(x - \frac{7}{8}\right)^2 = \frac{y}{4} - \frac{799}{64}$$

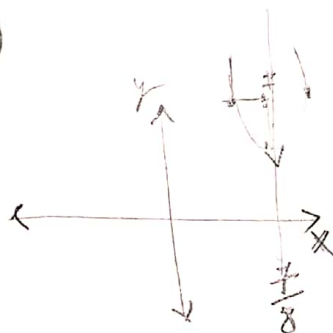
$$\begin{array}{r} \frac{16 \cdot 4}{64} \\ - \frac{53 \cdot 16}{64} \\ \hline - \frac{318}{64} \\ \hline - \frac{799}{64} \end{array}$$

$$\left(x - \frac{7}{8}\right)^2 = \frac{1}{4} \left(y - \frac{799}{16}\right) \quad \text{a) 2P.}$$

$$\checkmark \left(\frac{7}{8}, \frac{799}{16}\right)$$

$$4p = \frac{1}{4}$$

$$p = \frac{1}{16}$$



$$\text{Focus: } \left(\frac{7}{8}, \frac{800}{16}\right)$$

$$\left(\frac{7}{8}, 50\right) \quad \text{b) 2P.}$$

$$\text{c) } LR = 4p = 4 \cdot \frac{1}{16} = \frac{1}{4} \quad 2P$$

$$\text{d) } 2p = \frac{1}{8}$$

$$p = \frac{1}{16}$$

$$\text{Focus: } \left(\frac{7}{8}, 50\right)$$

$$\left(\frac{7}{8} - \frac{1}{8}, 50\right) \rightarrow \left(\frac{6}{8}, 50\right)$$

$$\left(\frac{7}{8} + \frac{1}{8}, 50\right) \rightarrow \left(\frac{8}{8}, 50\right)$$

2P.

$$\text{e) } x = \frac{7}{8} \quad 2P$$

a) ordinaria

b) Foco

c) LR

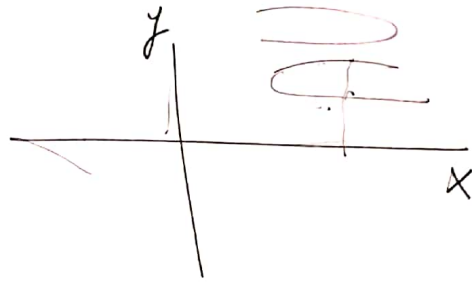
d) Ptos extremas lado Recto

e) Ec. eq. parabola.

6)

1 a x

(0,0) (8,-4) (3,1)



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

$$y^2 + Dx + Ey + F = 0.$$

(0,0) $F=0.$

(8,-4) $16 + 8D - 4E + F = 0$

$F=0.$

$16 + 8D - 4E = 0$

(3,1) $1 + 3D + E + F = 0.$

$1 + 3D + E = 0$

$$\begin{array}{r} 16 + 8D - 4E = 0 \\ 4 + 2D + 4E = 0 \\ \hline 2D + 20E = 0 \end{array}$$

$$D = \frac{-20E}{20}$$

$$2D | D = -1$$

$$1 + 3D + E = 0.$$

$$E = -1 + 3$$

$$2D | E = 2$$

$$\boxed{y^2 - x + 2y = 0} \quad 3P$$