

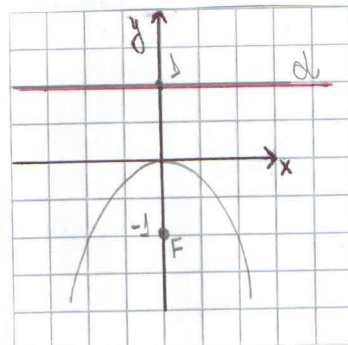
Cap. 08 - Parábola
Pp. 172 a 175

1. $x^2 = -4y$ eixo dos y
Equação: $x^2 = 2py$
 $\frac{x^2}{y} = 2p$

$2p = -4$
 $p = -2$
 $\frac{p}{2} = -1$

Foco: $F(0, -1)$
Diretriz: $y = 1$

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

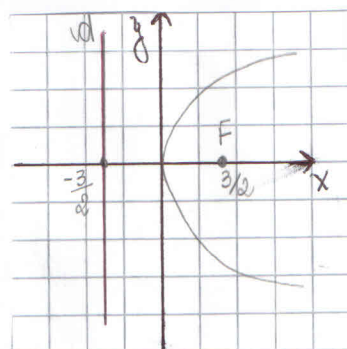


2. $y^2 = 6x$ eixo dos x
Equação: $y^2 = 2px$
 $\frac{y^2}{x} = 2p$

$2p = 6$
 $p = 3$
 $\frac{p}{2} = \frac{3}{2}$

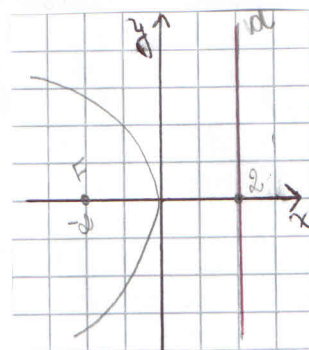
Foco: $F(\frac{3}{2}, 0)$
Diretriz: $x = -\frac{3}{2}$
 $2x = -3$
 $2x + 3 = 0$

$y^2 = 6x$
 $\frac{y^2}{x} = 6$



3. $y^2 = -8x$ eixo dos x
 $2p = -8$
 $p = -4$
 $\frac{p}{2} = -2$

Foco: $F(-2, 0)$
Diretriz: $x = 2$

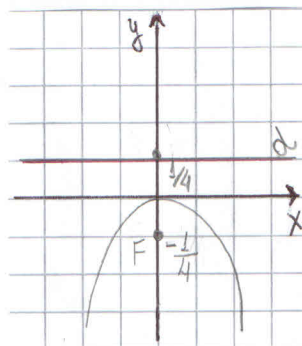


4. $x^2 + y = 0$ eixo dos y
 $x^2 = -y$

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

$\frac{p}{2} = -\frac{1}{4}$

Foco: $(0, -1/4)$
Diretriz: $y = 1/4$
 $4y = 1$
 $4y - 1 = 0$



5. $y^2 - x = 0$ linha des x

$$y^2 = x$$

$$2p = 1$$

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

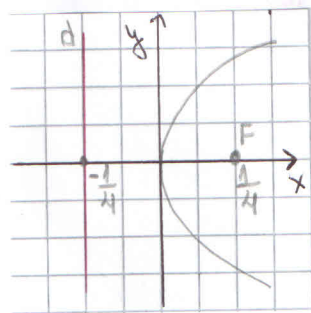
$$\frac{p}{2} = \frac{1}{4}$$

Foco: $F(1/4, 0)$

diretriz: $x = -1/4$

$$4x = -1$$

$$4x + 1 = 0$$



6. $y^2 + 3x = 0$ linha des x

$$y^2 = -3x$$

$$2p = -3$$

$$p = -\frac{3}{2}$$

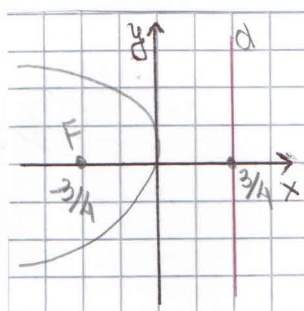
$$\frac{p}{2} = -\frac{3}{4}$$

Foco: $(-3/4, 0)$

diretriz: $x = 3/4$

$$4x = 3$$

$$4x - 3 = 0$$



7. $x^2 - 10y = 0$ linha des y

$$x^2 = 10y$$

$$2p = 10$$

$$p = 5$$

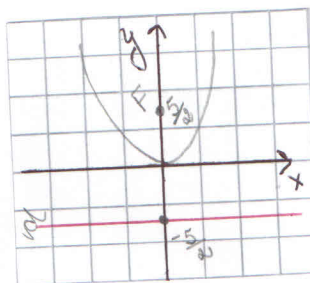
$$\frac{p}{2} = \frac{5}{2}$$

Foco: $F(0, 5/2)$

diretriz: $y = -5/2$

$$2y = -5$$

$$2y + 5 = 0$$



8. $2y^2 - 9x = 0$ linha des x

$$2y^2 = 9x$$

$$y^2 = \frac{9}{2}x$$

$$2p = \frac{9}{2}$$

$$p = \frac{9}{4}$$

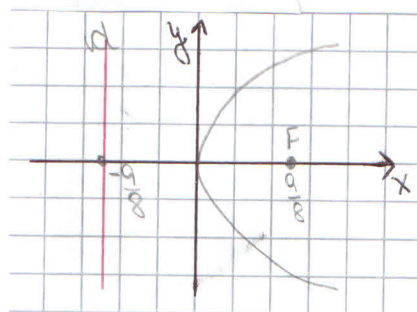
$$\frac{p}{2} = \frac{9}{8}$$

Foco: $F(9/8, 0)$

diretriz: $x = -9/8$

$$8x = -9$$

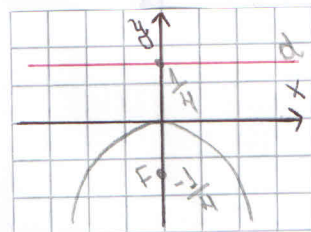
$$8x + 9 = 0$$



15. Foco: $F(0, -\frac{1}{4})$
 Diretriz: $4y - 1 = 0$

linha des y : $x^2 = 2py$
 $\frac{p}{2} = -\frac{1}{4} \Rightarrow p = -\frac{1}{2}$

Equação: $x^2 = 2 \cdot \left(-\frac{1}{2}\right) y$
 $x^2 = -y$



16. Vértice: $V(0,0)$

passa em vulgares os eixos des y linha des y
 $P(2, -3)$

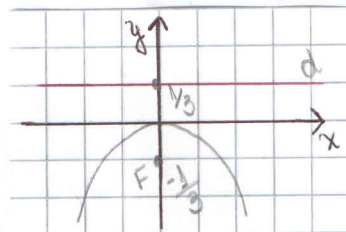
$x^2 = 2py$
 $2^2 = 2p(-3)$
 $\frac{4}{-6} = p$

Equação: $x^2 = 2 \cdot \left(-\frac{2}{3}\right) y$

$x^2 = -\frac{4}{3} y$
 $3x^2 = -4y$
 $3x^2 + 4y = 0$

$-\frac{1}{3} = \frac{p}{2} \Rightarrow p = -\frac{2}{3}$

$F(0, -\frac{1}{3})$
 $d: y = \frac{1}{3}$



17. Vértice: $V(0,0)$

Curva: $y = 0$ linha des x
 $P(4,5)$

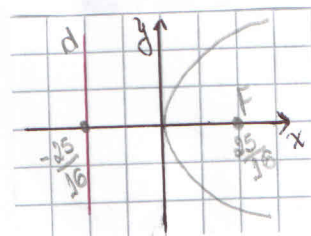
$y^2 = 2px$
 $5^2 = 2 \cdot p \cdot 4$
 $\frac{25}{8} = p$

Equação: $y^2 = 2 \cdot \frac{25}{8} x$

$y^2 = \frac{25}{4} x$
 $4y^2 = 25x$
 $4y^2 - 25x = 0$

$\frac{25}{16} = \frac{p}{2}$

$F(\frac{25}{16}, 0)$
 $d: x = -\frac{25}{16}$



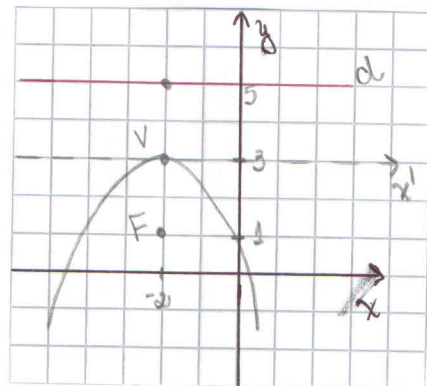
18. Vértice: $V(-2,3)$

Foco: $F(-2,1)$

linha des y

$\frac{p}{2} = -2$
 $p = -4$

Equação: $(x-h)^2 = 2p(y-k)$
 $(x+2)^2 = 2(-4)(y-3)$
 $x^2 + 4x + 4 = -8y + 24$
 $x^2 + 4x + 8y - 20 = 0$



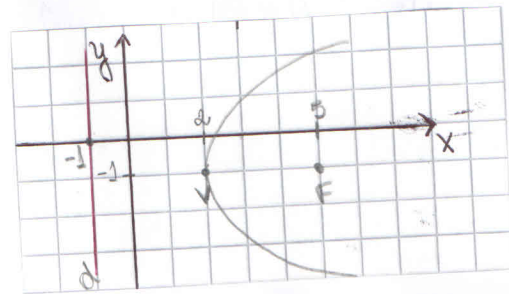
19. Vértice: $V(2, -1)$ eixo dos x

Foco: $F(5, -1)$

$$\frac{p}{2} = 3 \Rightarrow p = 6$$

$$d: x = -1$$

Equação: $(y-k)^2 = 2p(x-h)$
 $(y+1)^2 = 2 \cdot 6(x-2)$
 $y^2 + 2y + 1 = 12x - 24$
 $y^2 + 2y - 12x + 25 = 0$



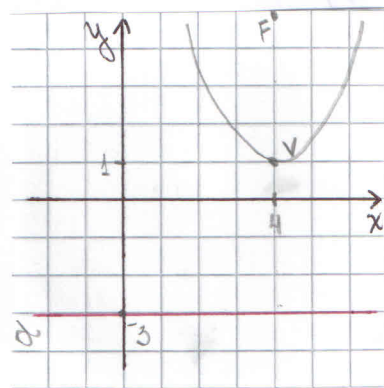
20. Vértice: $V(4, 1)$ eixo dos y

diretriz: $y + 3 = 0$

$F(4, 5)$

$$\frac{p}{2} = 4 \Rightarrow p = 8$$

Equação: $(x-h)^2 = 2p(y-k)$
 $(x-4)^2 = 2 \cdot 8(y-1)$
 $x^2 - 8x + 16 = 16y - 16$
 $x^2 - 8x - 16y + 32 = 0$



21. Vértice: $V(0, -2)$ eixo dos x

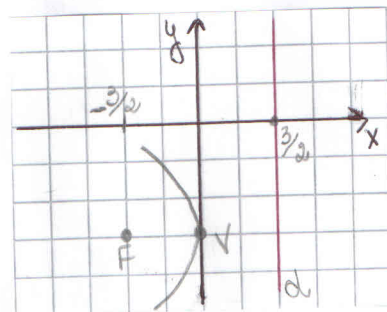
diretriz: $2x - 3 = 0$

$$2x = 3$$

$$x = \frac{3}{2}$$

$$\frac{p}{2} = -\frac{3}{2} \Rightarrow p = -3$$

Equação: $(y-k)^2 = 2p(x-h)$
 $(y+2)^2 = 2(-3)(x-0)$
 $y^2 + 4y + 4 = -6x$
 $y^2 + 4y + 6x + 4 = 0$



22. Foco: $F(4, -5)$ eixo dos y

diretriz: $y = 1$

$$d(F, V) = 6$$

$$\frac{p}{2} = \frac{-6}{2} = -3$$

$$p = -6$$

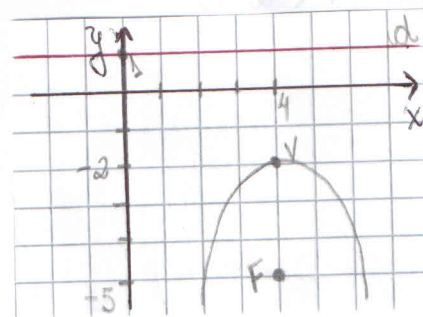
$$V(4, -2)$$

Equação: $(x-h)^2 = 2p(y-k)$

$$(x-4)^2 = 2 \cdot (-6)(y+2)$$

$$(x^2 - 8x + 16) = -12y - 24$$

$$x^2 - 8x + 12y + 40 = 0$$



23. Foco: $F(-7,3)$

linha des x

diretriz: $x+3=0$

$$x = -3$$

$$d(F, d) = -4 = p$$

$$\frac{p}{2} = \frac{-4}{2} = -2$$

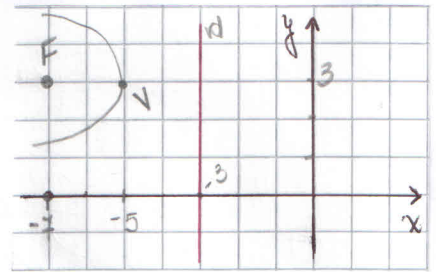
$$V(-5,3)$$

$$\text{Equação: } (y-k)^2 = 2p(x-h)$$

$$(y-3)^2 = 2(4)(x+5)$$

$$y^2 - 6y + 9 = -8x - 40$$

$$y^2 - 6y + 9 = -8x - 40$$



24. Foco: $F(3,-1)$

linha des x

diretriz: $2x-1=0$

$$2x = 1$$

$$x = 1/2$$

$$d(F, d) = 2,5 = \frac{5}{2} = p$$

$$\frac{p}{2} = \frac{5}{4}$$

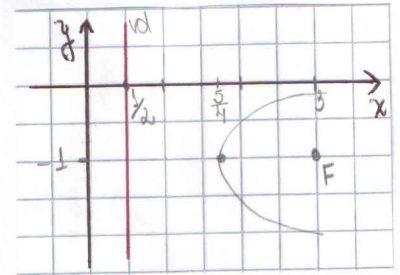
$$V(5/4, -1)$$

$$\text{Equação: } (y-k)^2 = 2p(x-h)$$

$$(y+1)^2 = 2 \cdot \frac{5}{2} \left(x - \frac{5}{4}\right)$$

$$y^2 + 2y + 1 = 5x - \frac{25}{4}$$

$$4y^2 + 8y - 20x + 29 = 0$$



25. Vértice: $V(4,-3)$

linha des x

linha paralela ao eixo des x

$P(2,1)$

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

$$(1+3)^2 = 2p(2-4)$$

$$16 = -4p$$

$$p = -4$$

$$\frac{p}{2} = -2$$

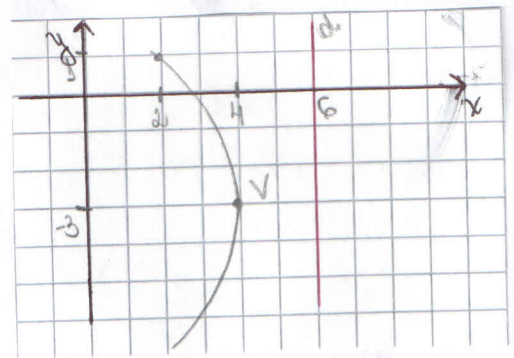
$$2$$

diretriz: $x=6$

$$\text{Equação: } (y+3)^2 = 2(-4)(x-4)$$

$$y^2 + 6y + 9 = -8x + 32$$

$$y^2 + 6y + 8x - 23 = 0$$



26. Vértice: $V(-2,3)$

linha des y

linha: $x+2=0$ $x = -2$

$P(2,0)$

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

$$(2+2)^2 = 2p(0-3)$$

$$16 = 2p(-3)$$

$$p = \frac{16}{-6} = -\frac{8}{3}$$

$$\frac{p}{2} = -\frac{8}{6}$$

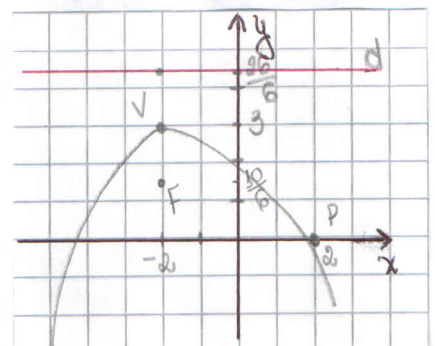
$$F(-2, \frac{10}{6})$$

diretriz:

$$\text{Equação: } (x+2)^2 = 2\left(-\frac{8}{3}\right)(y-3)$$

$$x^2 + 4x + 4 = -\frac{16}{3}y + 16$$

$$3x^2 + 12x + 16y - 36 = 0$$



27. $x^2 + 4x + 8y + 12 = 0$ eixo dos y
 $(x^2 + 4x) = -12 - 8y$ $p = -4$
 $(x^2 + 4x + 4) = -12 - 8y + 4$ $\frac{p}{2} = -2$
 $(x+2)^2 = -8(y+1)$
 $(x-(-2))^2 = 2 \cdot (-4) (y-(-1))$

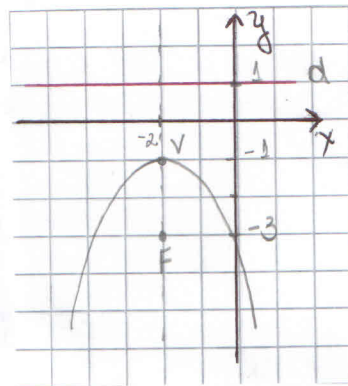
Equação reduzida: $x'^2 = -8y'$

Vértice: $V(-2, -1)$

Foco: $F(-2, -3)$

diretriz: $y = 1$

Equação do eixo: $x = -2$



28. $x^2 - 2x - 20y - 39 = 0$ eixo dos y

$(x^2 - 2x) = 39 + 20y$ $p = 10$

$(x^2 - 2x + 1) = 39 + 20y + 1$ $\frac{p}{2} = 5$

$(x-1)^2 = 20(y+2)$

$(x-1)^2 = 2 \cdot 10 (y-(-2))$

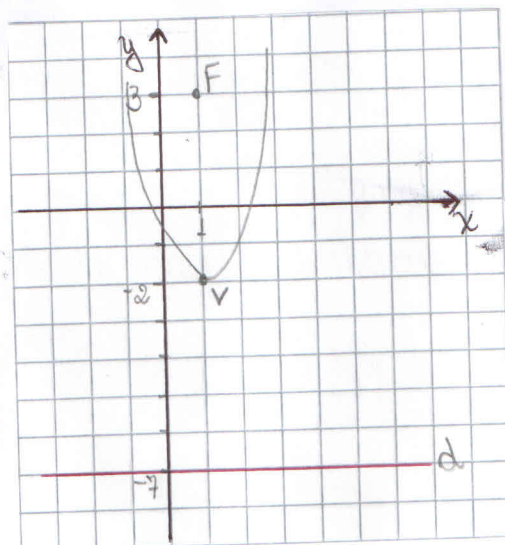
Equação reduzida: $x'^2 = 20y'$

Vértice: $V(1, -2)$

Foco: $F(1, 3)$

diretriz: $y = -7$

Equação do eixo: $x = 1$



29. $y^2 + 4y + 16x - 44 = 0$ eixo dos x

$(y^2 + 4y) = 44 - 16x$ $p = -8$

$(y^2 + 4y + 4) = 44 - 16x + 4$ $\frac{p}{2} = -4$

$(y+2)^2 = -16(x-3)$

$(y-(-2))^2 = 2(-8)(x-3)$

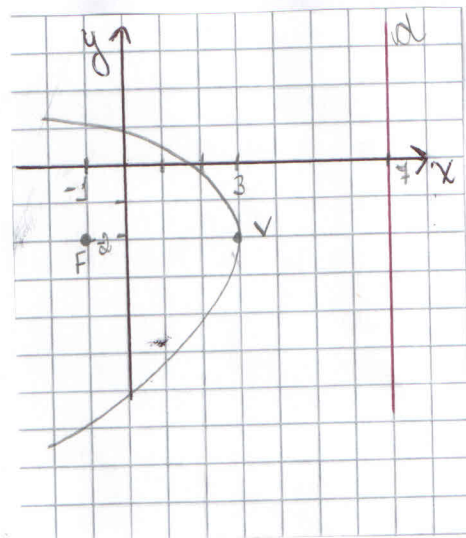
Equação reduzida: $y'^2 = -16x'$

Vértice: $V(3, -2)$

Foco: $F(-1, -2)$

diretriz: $x = 7$

Equação do eixo: $y = -2$



30. $y^2 - 16x + 2y + 49 = 0$ eixo das x

$$(y + 2y) = 16x - 49$$

$$(y + 2y + 1) = 16x - 49 + 1$$

$$(y + 1)^2 = 16(x - 3)$$

$$(y - (-1))^2 = 2 \cdot 8(x - 3)$$

Equação reduzida: $y'^2 = 16x'$

Vértice: $V(3, -1)$

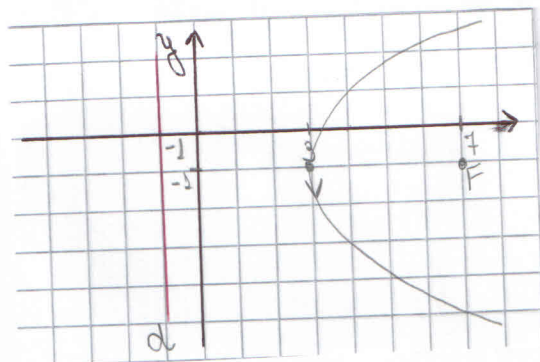
Foco: $F(7, -1)$

diretriz: $x = -1$

Equação do eixo: $y = -1$

$$p = 8$$

$$\frac{p}{2} = 4$$



31. $y = \frac{x^2}{4} - 2x - 1$ eixo das y

$$4y = x^2 - 8x - 4$$

$$4y + 4 = (x^2 - 8x)$$

$$16 + 4y + 4 = (x^2 - 8x + 16)$$

$$20 + 4y = (x - 4)^2$$

$$(x - 4)^2 = 4(y + 5)$$

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

Equação reduzida: $x'^2 = 4y'$

Vértice: $V(4, -5)$

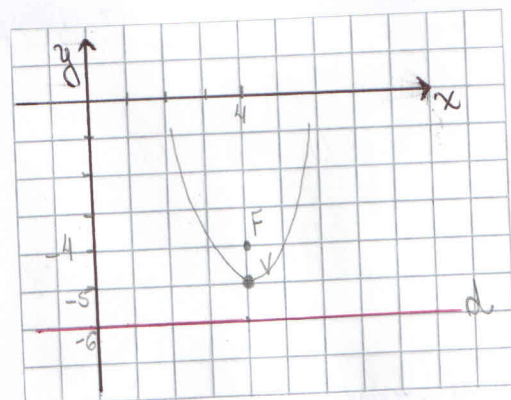
Foco: $F(4, -4)$

diretriz: $y = -6$

Equação do eixo: $x = 4$

$$p = 2$$

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



32. $x^2 - 12y + 72 = 0$ eixo das y

$$x^2 = 12y - 72$$

$$x^2 = 12(y - 6)$$

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

Equação reduzida: $x'^2 = 12y'$

Vértice: $V(0, 6)$

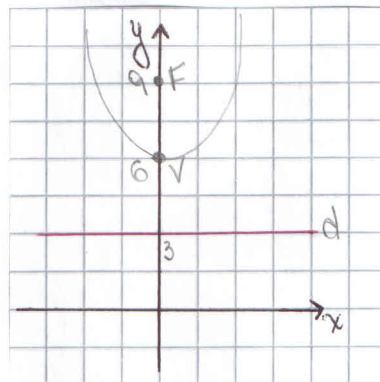
Foco: $F(0, 9)$

diretriz: $y = 3$

Equação do eixo: $x = 0$

$$p = 6$$

$$\frac{p}{2} = 3$$



33. $y = x^2 - 4x + 2$ eixo dos y
 $y - 2 = x^2 - 4x$ $p = \frac{1}{2}$
 $4 + y - 2 = (x^2 - 4x + 4)$ $\frac{p}{2} = \frac{1}{4}$
 $2 + y = (x - 2)^2$
 $(x - 2)^2 = 2 \cdot \frac{1}{2} (y - (-2))$

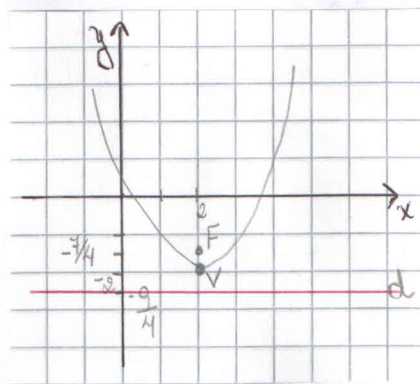
Equação reduzida: $x'^2 = y'$

Vértice: $V(2, -2)$

Foco: $F(2, -\frac{7}{4})$

diretriz: $y = -\frac{9}{4}$

Equação do eixo: $x = 2$



34. $y = 4x - x^2$ eixo dos y
 $x^2 - 4x = -y$ $p = -\frac{1}{2}$
 $x^2 - 4x + 4 = -y + 4$ $\frac{p}{2} = -\frac{1}{4}$
 $(x - 2)^2 = (-1)(y - 4)$
 $(x - 2)^2 = 2 \cdot (-\frac{1}{2})(y - 4)$

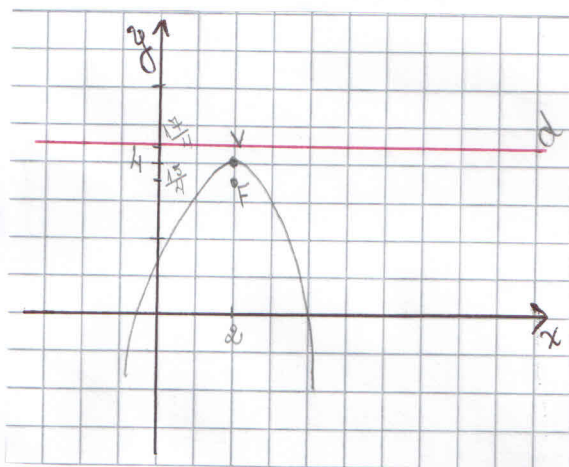
Equação reduzida: $x'^2 = -y'$

Vértice: $V(2, 4)$

Foco: $F(2, \frac{15}{4})$

diretriz: $y = \frac{17}{4}$

Equação do eixo: $x = 2$



35. $y^2 - 12x - 12 = 0$ eixo dos x
 $y^2 = 12x + 12$ $p = 6$
 $y^2 = 12(x + 1)$ $\frac{p}{2} = 3$
 $(y - 0)^2 = 2 \cdot 6(x - (-1))$

Equação reduzida: $y'^2 = 12x'$

Vértice: $V(-1, 0)$

Foco: $F(2, 0)$

diretriz: $x = -4$

Equação do eixo: $y = 0$

