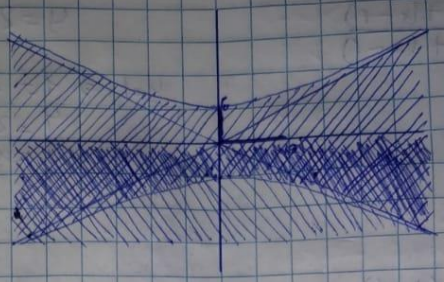
① $4y^2 - x^2 \leq 144$

$\frac{4y^2}{144} - \frac{x^2}{144} \leq 1$

$\frac{y^2}{36} - \frac{x^2}{144} \leq 1$

$\frac{y^2}{6} - \frac{x^2}{12^2} \leq 1$



$(h,k) = (0,0)$

$a = 6$

$b = 12$

$y \leq 0$

$y \geq 0$ F

$\frac{0^2}{6^2} - \frac{0^2}{12^2} \leq 1$ V

$0 \leq 1$

② $\frac{(x-2) + |x-1|}{|x-2| + (x-1)}$

$|x-1| = 0$ $\quad |x-2| = 0$

$x = 1$ $\quad x = 2$

$\langle -\infty, 1\rangle$ $\quad [1, 2\rangle$ $\quad [2, +\infty\rangle$

$\lvert x-1\rvert$	$1 \leftarrow x$	$x-1$	$x-1$
$\lvert x-2\rvert$	$2 \leftarrow x$	$2 \leftarrow x$	$x+2$

$|x+1| \begin{cases} x-1 & x \geq 1 \\ 1 \leftarrow x & x < 1 \end{cases}$

$|x-2| \begin{cases} x-2 & x \geq 2 \\ 2 \leftarrow x & x < 2 \end{cases}$

Para $\langle -\infty, 1\rangle$

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

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

$y = -1$

Para $[1,2>$

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

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

$$y = 2x-3$$

Para $[2,+\infty>$

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

$$y = 1$$

$y = 2x-3$

$y=1 \Rightarrow 1 = 2x-3$

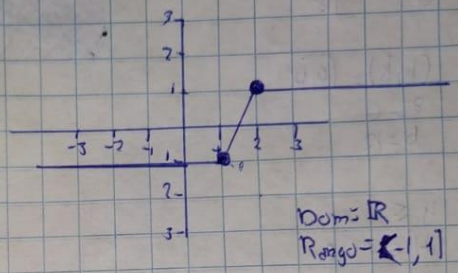
$4 = 2x$

$2 = x$

$y=-1 \Rightarrow -1 = 2x-3$

$2 = 2x$

$1 = x$



Dom: $\mathbb{R}$

Rango: $(-1,1]$

③ $y = \frac{|x-2|}{|x|-2}$

$x-2=0 \quad x=0$

$x=2$

$$|x-2| \begin{cases} x-2 & x \geq 2 \\ 2-x & x<2 \end{cases}$$

$$|x| \begin{cases} x & x \geq 0 \\ -x & x<0 \end{cases}$$

	$<-\infty,0>$	$[0,2>$	$[2,+\infty>$
$\lvert x-2\rvert$	$2-x$	$2-x$	$x-2$
$\lvert x\rvert$	$-x$	x	x

Para $<-\infty,0>$

$$y = \frac{2-x}{-x+2}$$

Para $[2,+\infty>$

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

$$y = 1$$

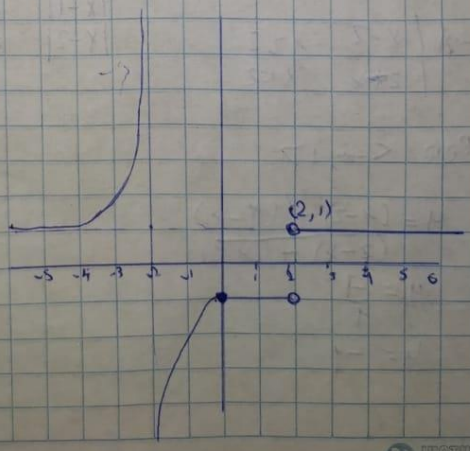
Para $[0,2>$

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

$$y = \frac{-(x-2)}{x-2}$$

$$y = -1$$

x	0	-1	-3	-4
y	-1	-2	5	3



④ $3x - y^2 + 15 < 0$

$3x + 15 < y^2$

$x + 5 < \frac{y^2}{3}$

$x < \frac{y^2}{3} - 5$

$(h,k) = (-5, 0)$

$x = 0$

$0 = \frac{y^2}{3} - 5$

$15 = y^2$

$\pm\sqrt{15} = y$

$0 < \frac{0^2}{3} - 5$

$5 < 0$

$x^2 - (y-1)^2 > 16$

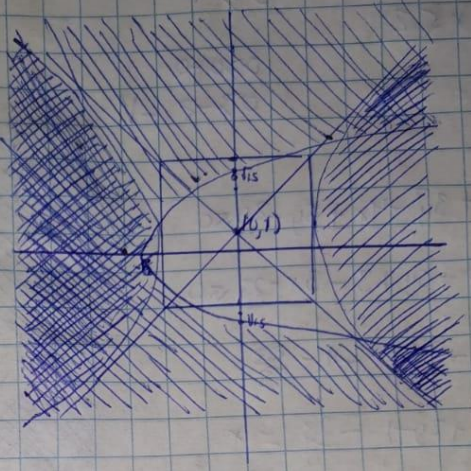
$\frac{x^2}{16} - \frac{(y-1)^2}{16} > 1$

$\frac{x^2}{4^2} - \frac{(y-1)^2}{4^2} > 1$

$(h,k) = (0,1)$

$a = 4$

$b = 4$



⑤ $y \leq -x^2 + 6$

$y \geq x^2 - 6$

$(h,k) = (0,6)$

$0 \geq x^2 - 6$

$\pm\sqrt{6} \geq x$

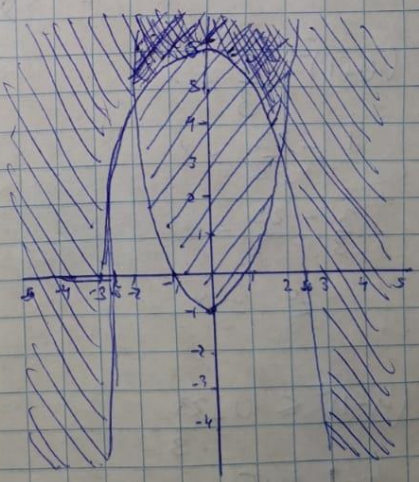
$y \geq x^2 - 1$

$(h,k) = (0,-1)$

$0 \geq x^2 - 1$

$1 \geq x^2$

$\pm 1 \geq x$



6) $y \geq x - 2$

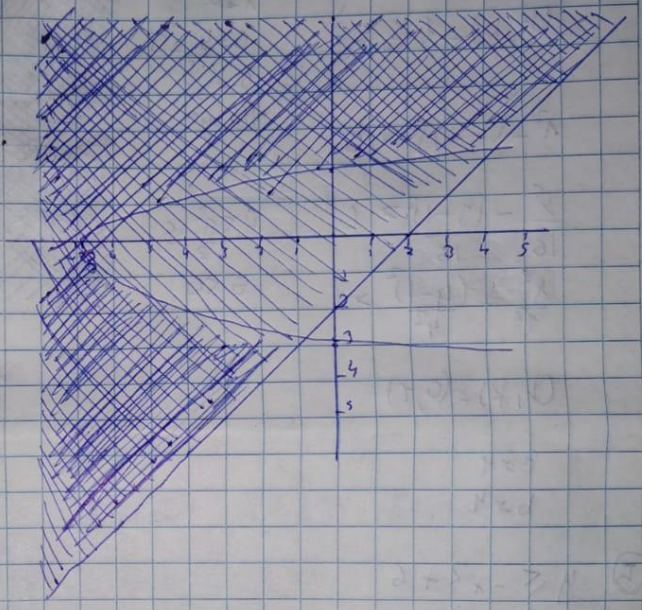
$0 \geq x - 2$ $\quad -2 \geq x + 2$

$2 \geq x$ $\quad 0 \geq x$

$x \leq 2$

$0 \geq 0 - 2$

$0 \geq -2$ ✓



$x + 3y^2 + 4x + 6y - 20 \leq 0$

$3y^2 + 6y + 3 - 3x - 23 \leq 0$

$y^2 + 2y + 1 - x - \frac{23}{3}$

$y^2 + 2y - 1 - \frac{23}{3} = x$

$(y+1)^2 - \frac{23}{3} = x$

$(h, k) = \left(-\frac{23}{3}, -1\right)$

$(0+1)^2 - \frac{23}{3} = x$

$1 - \frac{23}{3} = x$

$\frac{3}{3} - \frac{23}{3} = x$

$\frac{20}{3} = x$

$(y-1)^2 \leq 0 + \frac{23}{3}$

$y - 1 \leq \pm\sqrt{\frac{23}{3}}$

$y \leq \frac{\pm\sqrt{23}}{3} - 1$