TP2

(2) (a) $f(x,y) = \sqrt{y-x-2}$

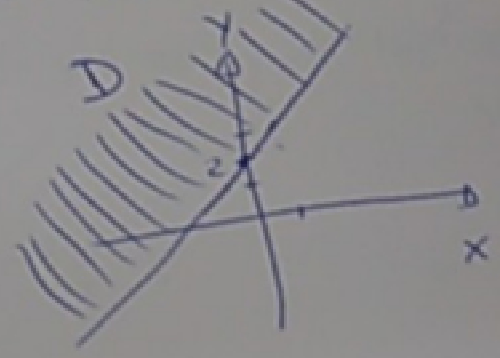
$D = \{(x,y) : (x,y) \in \mathbb{R}^2 ;\ y-x-2 \geq 0\}$.

$y-x-2 \geq 0$

$y \geq x+2$

$0 \geq 0+2$?

✗.



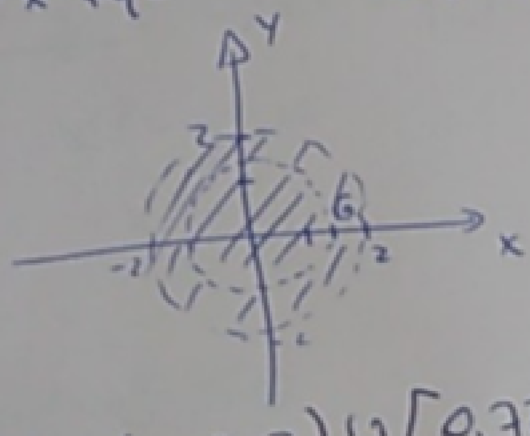
$I = [0, \infty)$

(b) $f(x,y) = \dfrac{1}{\ln(4-x^2-y^2)}$

$D = \{(x,y) : (x,y) \in \mathbb{R}^2 ;\ 4-x^2-y^2 > 0 ;\ 4-x^2-y^2 \neq 1\}$

$4-x^2-y^2 > 0 \quad \wedge \quad 4-x^2-y^2 \neq 1$

$4 > x^2+y^2 \qquad 3 \neq x^2+y^2$

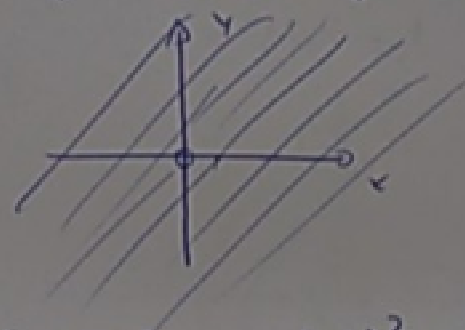


$I = (-\infty, 0) \cup [0,72 ; \infty)$.

TP2 3

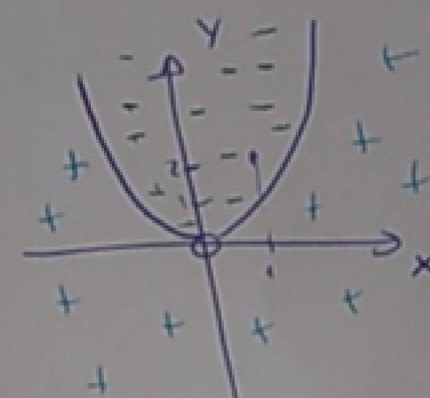
$$f(x,y) = \frac{x^2-y}{x^4+y^2}$$

a) $D = \{(x,y) : (x,y) \in \mathbb{R}^2 ; x^4+y^2 \neq 0\} = \mathbb{R}^2 - \{(0,0)\}$



b) $f(-1,2) = \frac{(-1)^2-2}{(-1)^4+(2)^2} = \frac{-1}{5} = \boxed{-\frac{1}{5}}$

c) $f(x,y) = 0$



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

$$x^2-y = 0 \cdot (x^4+y^2)$$

$$x^2-y=0$$

$$x^2 = y$$

d) $f(x,y) > 0$

$\frac{x^2-y}{x^4+y^2} > 0 \begin{cases} +/+ \\ -/- \end{cases}$

pero $x^4+y^2>0$

$x^2-y>0$

$x^2>y$

prueba $(1,2)$

$1^2 \not> 2$?

$f(x,y) < 0$

$\frac{x^2-y}{x^4+y^2} < 0 \begin{cases} +/- \\ -/+ \end{cases}$

pero $x^4+y^2>0$

$x^2-y<0$

$x^2<y$

punto $(1,2)$

$1^2<2$ ✓

TP2

4

a) $f(x,y) = x^2+y^2$

C.N $c = 0, 1, 4, 9, 16.$

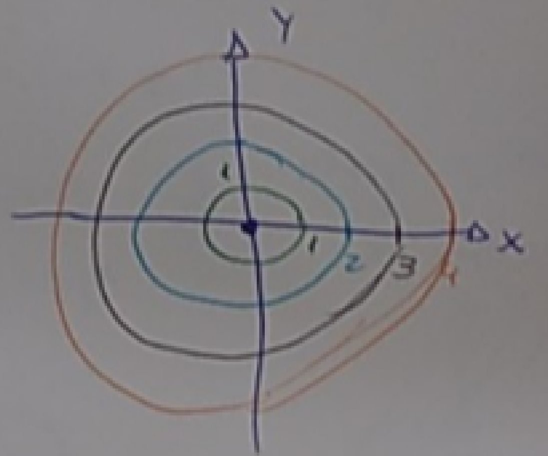
$c=0$
$x^2+y^2=0$
$(0,0)$

$c=1$
$x^2+y^2=1$

$c=4$
$x^2+y^2=4$

$c=9$
$x^2+y^2=9$

$c=16$
$x^2+y^2=16$



b) $f(x,y) = xy$ $\quad c = -4, -1, 0, 1, 4$

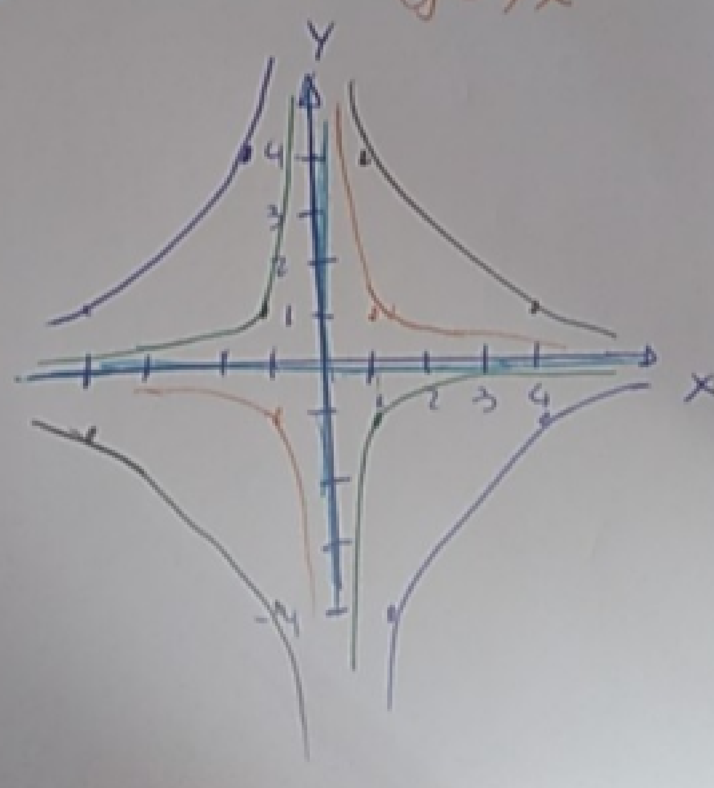
$c=-4$ $\quad xy=-4$
$y = -4/x$

$c=-1$ $\quad xy=-1$
$y=-1/x$

$c=0$ $\quad xy=0 \begin{cases} x=0 \\ o \\ y=0. \end{cases}$

$c=1$
$xy=1$
$y=1/x$

$c=4$ $\quad xy=4$
$y=4/x$



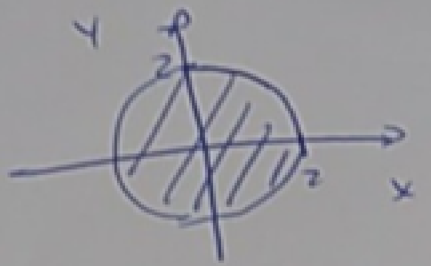
TP2

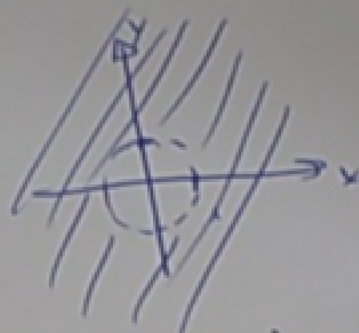
⑥ $f(x,y) = \dfrac{\sqrt{4-x^2-y^2}}{\ln(x^2+y^2-1)}$

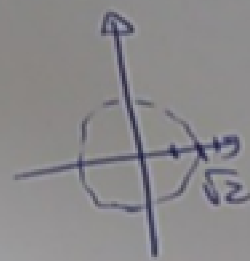
$D = \{ (x,y) : (x,y) \in \mathbb{R}^2 ;\ 4-x^2-y^2 \geq 0 ;\ x^2+y^2-1 > 0 ;\ x^2+y^2-1 \neq 1 \}$

$4-x^2-y^2 \geq 0$ y $x^2+y^2-1>0$ y $x^2+y^2-1 \neq 1$

$4 \geq x^2+y^2$ $\qquad x^2+y^2>1$ $\qquad x^2+y^2 \neq 2$







La intersección: