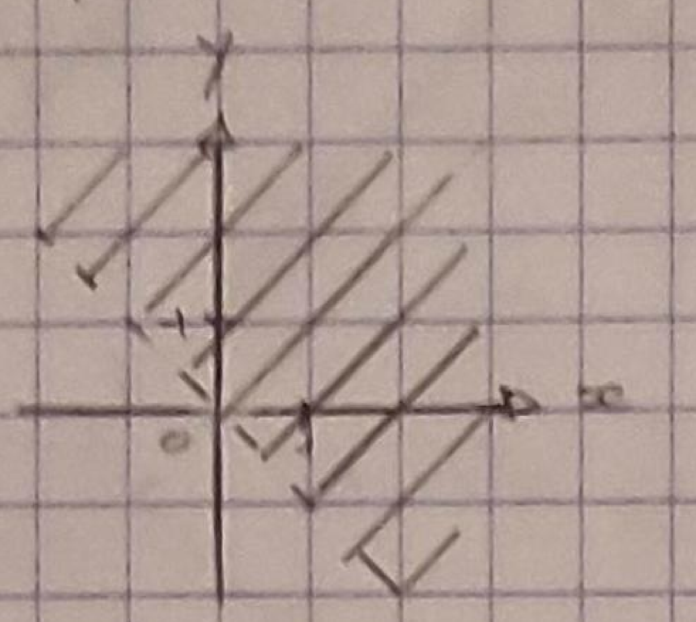
29/09/2022

2 - Fonctions de plusieurs variables, limite et continuité

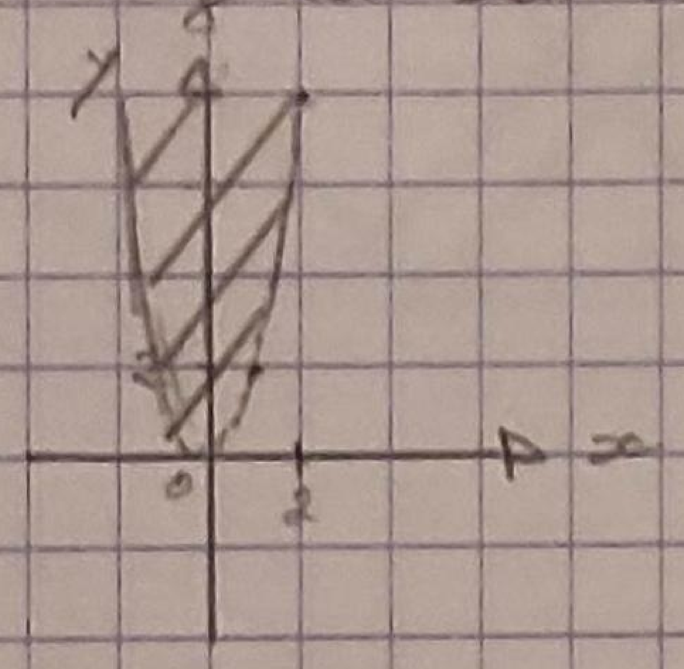
- Exercice 1 :

- $f(x,y) = \ln(x+y)$ f est bien définie si $x+y>0$, i.e. $y>-x$



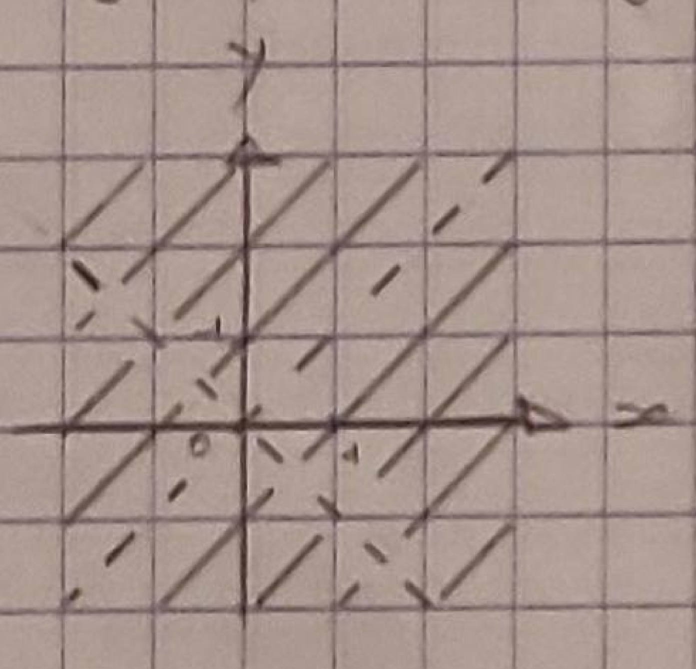
$$\boxed{D = \{(x,y) \in \mathbb{R}^2 : y > -x\}}$$

- $f(x,y) = \sqrt{y-2x^2}$ f est bien définie si $y-2x^2 \geq 0$, i.e. $2x^2 \leq y$



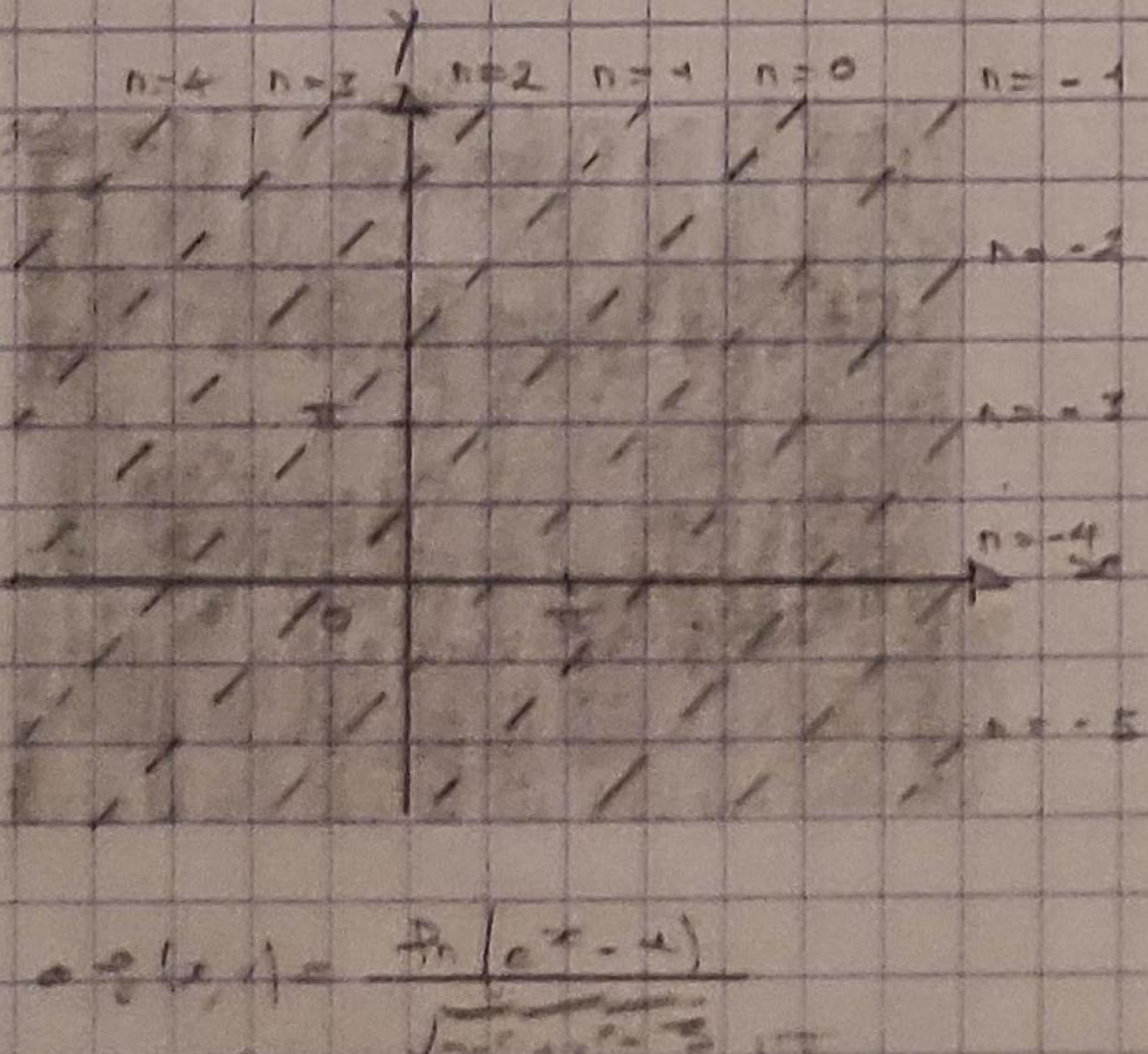
$$\boxed{D = \{(x,y) \in \mathbb{R}^2 : 2x^2 \leq y\}}$$

- $f(x,y) = \dfrac{x}{x^2-y^2}$ f est bien définie si $x^2-y^2 \neq 0$, i.e. $(x+y)(x-y) \neq 0$



$$\boxed{D = \{(x,y) \in \mathbb{R}^2 : x \neq y,\ x \neq -y\}}$$

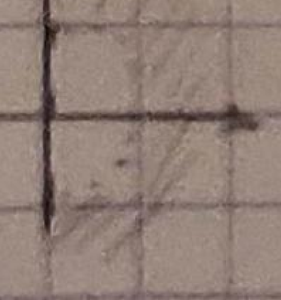
- $f(x,y) = \dfrac{1}{\cos(x-y)}$ f est bien définie si $\cos(x-y) \neq 0$, i.e. $x-y \neq \dfrac{\pi}{2} + n\pi$, $n \in \mathbb{Z}$



$$\boxed{D = \{(x,y) \in \mathbb{R}^2 : y \neq x + \frac{\pi}{2} + n\pi,\ n \in \mathbb{Z}\}}$$

$y = x + \dfrac{\pi}{2} + n\pi$

- $f(x,y) = \dfrac{\ln(e^x - 1)}{\sqrt{x^2+y^2-3}}$



- $f(x,y) = \dfrac{\ln(y-x^2)}{\sqrt{xy}}$