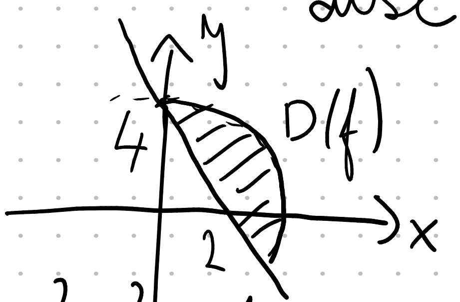
d) $2x + y - 4 \geq 0 \quad \wedge \quad 16 - x^2 - y^2 \geq 0$

$y \geq 4 - 2x \quad \wedge \quad x^2 + y^2 \leq 16$

disc

$\partial: \; y = 4 - 2x$

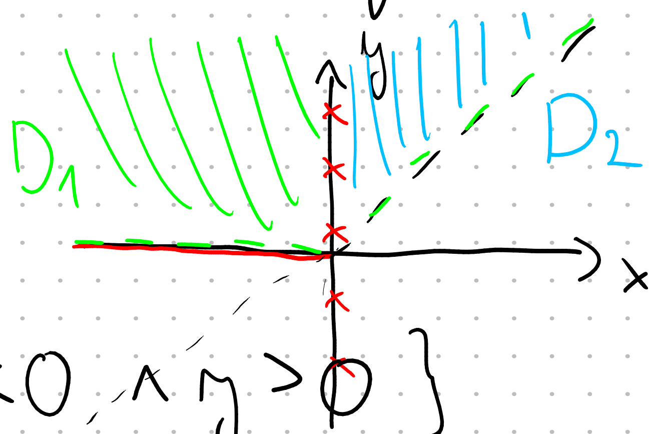
--- line



$D(f) = \{ [x,y] \in \mathbb{R}^2 ;\; x^2 + y^2 \leq 16 \wedge y \geq 4 - 2x \}$

e) 1. $x^2 y > 0$ 2. $y - x > 0$

$x \neq 0 \vee y > 0 \quad \wedge \quad y > x$



$D(f) = D_1 \cup D_2$

$D_1 = \{ [x,y] \in \mathbb{R}^2 ;\; x < 0 \wedge y > 0 \}$

$D_2 = \{ \text{—}\,||\,\text{—} ;\; x > 0 \wedge y > x \}$

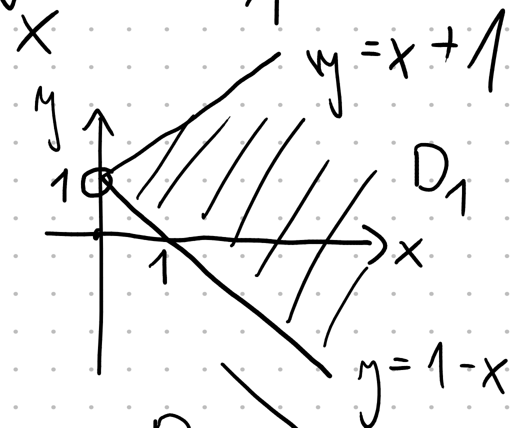
$D(f) = \{ [x,y] \in \mathbb{R}^2 ;\; x \neq 0 \wedge y > 0 \wedge y > x \}$

f) $f(x,y) = \arcsin g \qquad -1 \le g \le 1 \qquad \wedge \ \boxed{x \neq 0}$

$g = \frac{y-1}{x} \qquad -1 \le \frac{y-1}{x} \le 1$

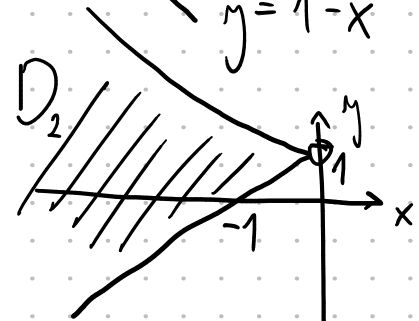
$\boxed{x>0}: \quad -x \le y-1 \le x$

$1-x \le y \le x+1$



$\boxed{x<0}: \quad -x \ge y-1 \ge x$

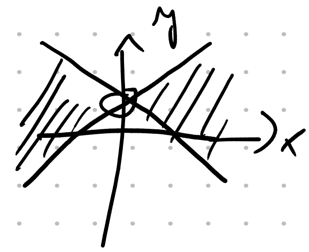
$1-x \ge y \ge 1+x$



$D_1 = \{ [x,y] \in \mathbb{R}^2 ; 1-x \le y \le x+1 \ \wedge \ x>0 \}$

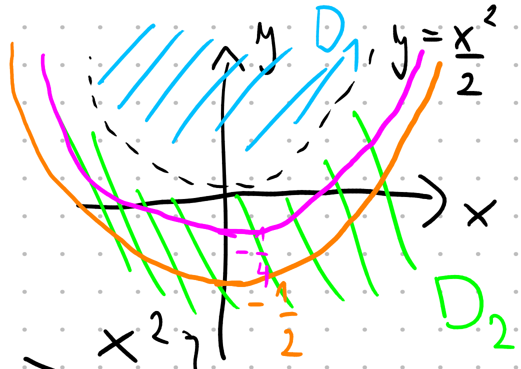
$D_2 = \{ \text{—}\|\text{—} ; 1-x \ge y \ge x+1 \ \wedge \ x<0 \}$

$$D(f) = D_1 \cup D_2$$



3a) $x^2 - 2y \neq 0$

$$y \neq \frac{x^2}{2}$$



$$D_1 = \{[x,y] \in \mathbb{R}^2 ; y > \frac{x^2}{2}\}$$

$$D_2 = \{ -\|- ; y < \frac{x^2}{2}\}$$

$$D(f) = D_1 \cup D_2$$

Iso-curve $f(x,y) = 1$ $z = 1$

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

$$1 = x^2 - 2y$$

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

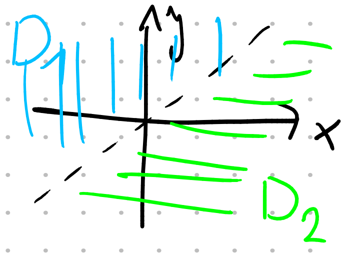
$K = 2$: $f(x,y) = 2$

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

$$1 = 2x^2 - 4y$$

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

3b) $f(x,y) = e^{1/(x-y)}$

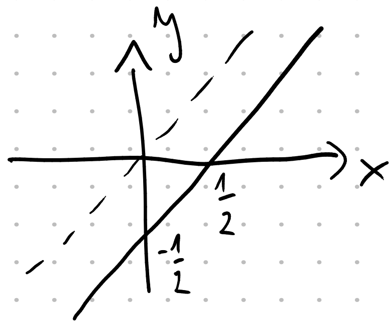


$x - y \neq 0 \Rightarrow x \neq y$

$D(f) = \{[x,y] \in \mathbb{R}^2; x \neq y\} = D_1 \cup D_1$

Iso-curve: $f(x,y) = e^2$

$e^{1/(x-y)} = e^2$

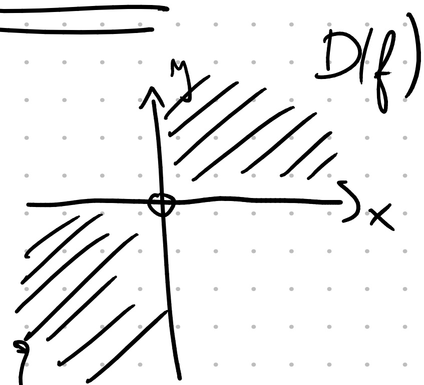


$\frac{1}{x-y} = 2$

$\frac{1}{2} = x - y \Rightarrow \underline{\underline{y = x - \frac{1}{2}}}$

c) $xy > 0$

$x > 0 \wedge y > 0$ $\quad$ $x < 0 \wedge y < 0$



$D_1 = \{[x,y] \in \mathbb{R}^2; x > 0 \wedge y > 0\}$

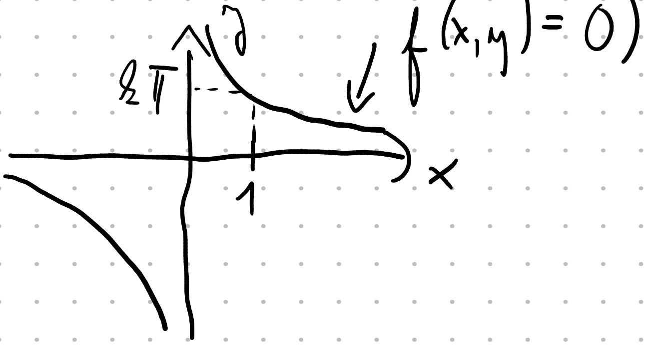
$D_2 = \{ - " - ; x < 0 \wedge y < 0\}$

$D(f) = D_1 \cup D_2$

iso-curve: $f(x,y) = 0$

$\frac{\sin xy}{\sqrt{xy}} = 0 \Rightarrow \sin xy = 0$

$xy = k\pi \; ; \forall k \in \mathbb{Z}^+$



$\underline{\underline{y = \frac{k\pi}{x}}}$