$$\boxed{x^y = e^{y \ln x}} \qquad x > 0$$

$$(-1)^2 = 1 \qquad \sqrt[3]{-2}$$

- $$f(x,y) = \left| e^{x^2 y} - \frac{\ln(\boxed{1 + x^4 y^2})}{\boxed{1 + x^4 y^2}} \right|$$

$f(x,y) = x$ spoj. $\qquad D_f = \{x,y\} \subset \mathbb{R}^2$:-)

$f(x,y) = y$

$1 + x^4 y^2 = 1 + x \cdot x \cdot x \cdot x \cdot y \cdot y$ součet součin spoj.

slož. $\ln(\cdot)$ spoj.

$\ln(1 + x^4 y^2)$ složení $\rightarrow$ spoj.

$e^{\cdot}$ spoj.

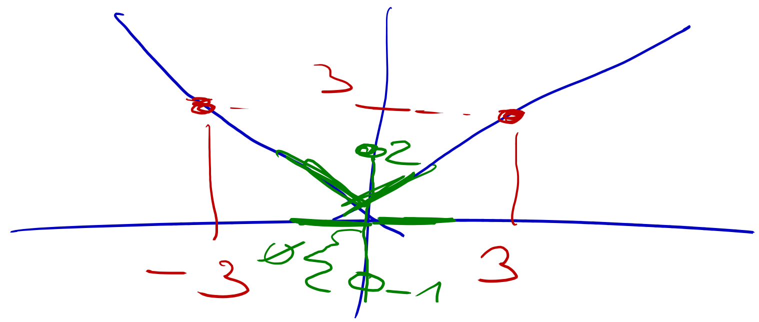
$x^2 y$ spoj. součin $\qquad$ ∃ slož. $\rightarrow$ spoj.

$$e^{x^2 y} - \frac{\ln(1 + x^4 y^2)}{1 + x^4 y^2}$$ rozdíl a podíl (pozor na 0)

$|\cdot|$ spoj.

$\left| e^{x^2 y} - \frac{\ln}{\quad} \right|$ slož. $\rightarrow$ spoj.

$|x|$



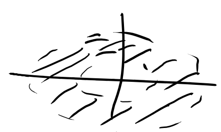
$$f^{-1}(\{3\}) = \{3,-3\}$$

$$f^{-1}((-1,2]) = [-2,2]$$

$x,y \in \mathbb{R}^2$:

$$\{1 < e^{x^2 y} < 2\}$$

$$\cancel{1 < x^2+y^2 < 2\}}$$



od?:

$$f(x,y) = e^{x^2 y} \quad \text{spoj.}$$

$(1,2)$ ot.

$f^{-1}((1,2))$ od.

protože vzor ot. pri spoj. zobr.

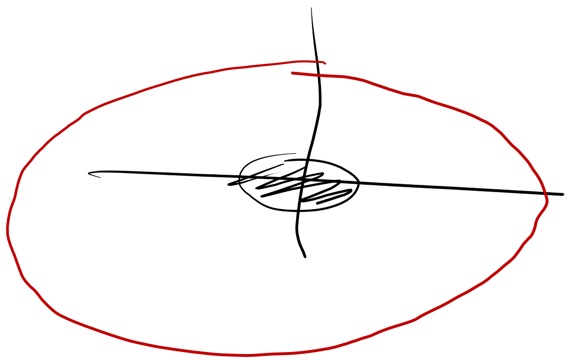
✓

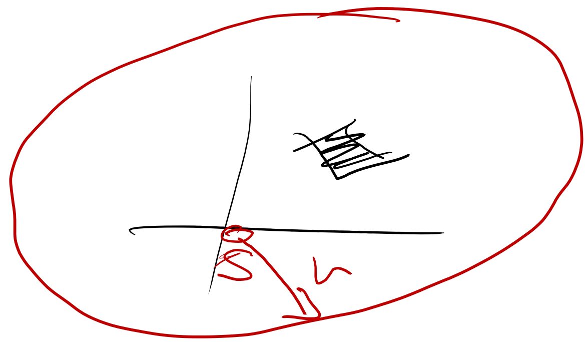
R^2

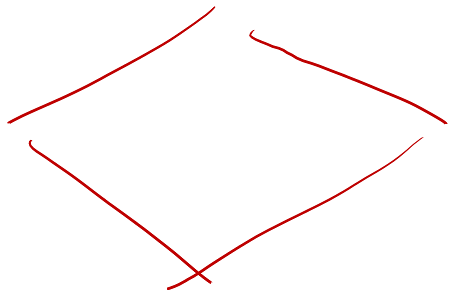
$\sqrt{x^2+y^2} < R$

$|x|+|y| < R$

$\max |x|, |y| < R$







(X, ρ) $\quad$ M je hustá

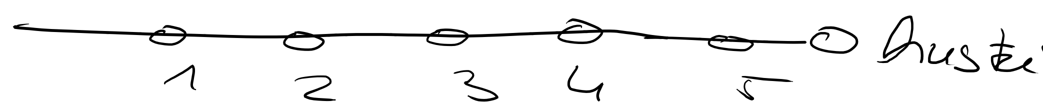
$\overline{M} = X$ $\quad$ $\overline{M}$ lze dokonvergovat

$\mathbb{Q}$ v $\mathbb{R}, \rho_e$ $\quad$ $\overline{\mathbb{Q}} = \mathbb{R}$ $\quad$ $\mathbb{Q}$ je hustá

M řídká

$X \setminus \overline{M}$ hustá

$\mathbb{N}$ v $\mathbb{R}$ řídká $\quad$ $\overline{\mathbb{N}} = \mathbb{N}$ $\quad$ $\mathbb{R} \setminus \overline{\mathbb{N}} = \mathbb{R} \setminus \mathbb{N}$



$\mathbb{Q}$

---

počet

$\# \mathbb{N}$ $\quad$ spočetně ∞

$\# \mathbb{R}$ $\quad$ nespočetně ∞

$\forall \varepsilon > 0 \quad \exists n_0 \quad \forall m,n \geq n_0 \quad \rho(x_m, x_n) < \varepsilon$

$|x_m - x_n| < \varepsilon$

úplný c. posl mají lim.

---

kompakt.

posl vybrat konv. podp.

$\mathbb{R}^1$

posl. omez. → lze vybrat

$\mathbb{R}^n$: kpt $\iff$ (uz. & om.)

---

uz. mny $\quad x_n \in F \xrightarrow{\text{konv.}} x \in F$

$x_n = \frac{1}{n}$ $\qquad (0, 1]$

$\frac{1}{n} \longrightarrow 0$