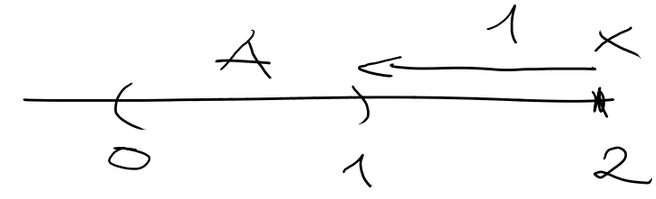
(X, ρ)

mna $\rho(x,y) \to$ cibo $\quad \rho : X \times X \to [0, \infty)$

$y, x \in X$

- $\rho(x,y) = 0 \iff x = y$
- $\rho(x,y) = \rho(x,y)$
- $\rho(x,y) \leq \rho(x,z) + \rho(z,y)$

$\mathbb{R}$, $|\cdot|$ $\quad |x-y|$

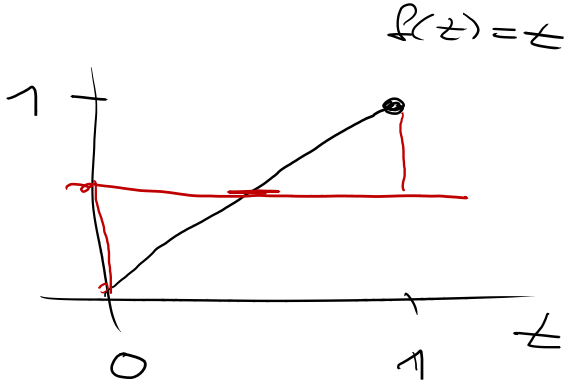


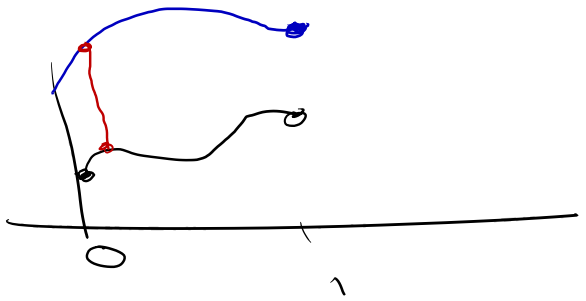
$\rho(x, A) = \inf \{ \rho(x,y) : y \in A \}$

X, ρ_{discr} $\quad \rho(x,y) = \begin{cases} 0 & x = y \\ 1 & x \neq y \end{cases}$

$\mathbb{R}$

Spoj. $[0,1]$





palla $x \in X \quad r > 0$

$$B(x,r) = \{ y \in X : \rho(x,y) < r \}$$

palla chiusa

$$\overline{B}(x,r) = \{ y \in X : \rho(x,y) \le r \}$$

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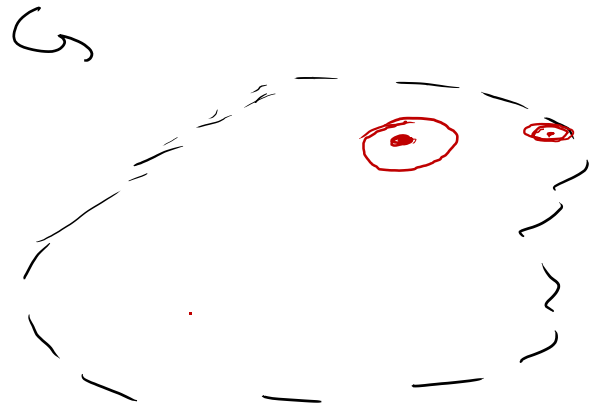
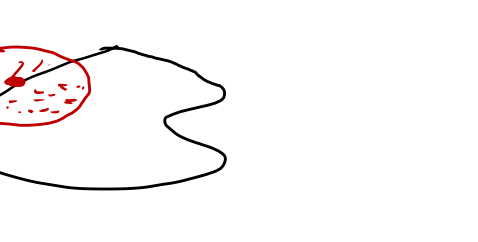
palla aperta



$B(0,2)$

$\overline{B}$



$\{x_n \in X\} \quad x_n \to x \quad \lim_{n\to\infty} \rho(x_n, x) = 0$

$\forall \varepsilon > 0 \quad \exists n_0 : \forall n \ge n_0 \quad x_n \in B(x, \varepsilon)$

---

un insieme F

$x_n \in F$, $x_n \to x$ $\quad$ più lieve: $\quad F$ un: $\quad x \in F$

$F = [0,1] \quad x_n = \frac{1}{n} \to 0 \notin 0$ un F? Anche

$G = (0,1) \quad \to 0 \quad 0 \notin G$ Però

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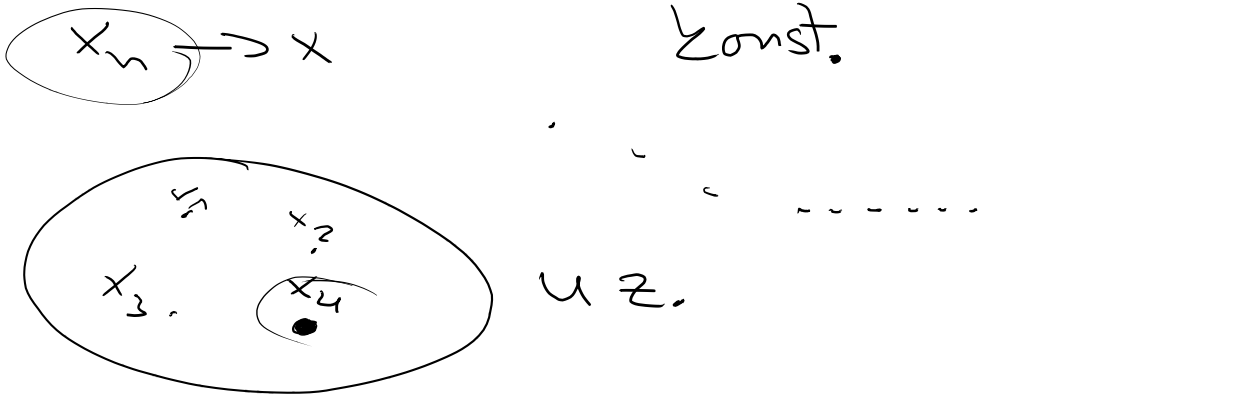
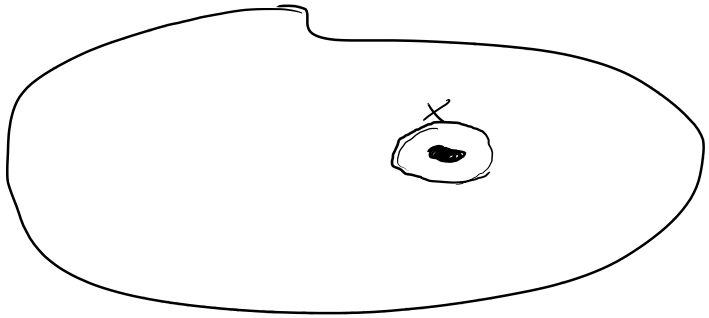
frontiera $\quad \partial A$

$A = (0,1)$ $X = [0,1]$ $\rho_{dist.}$

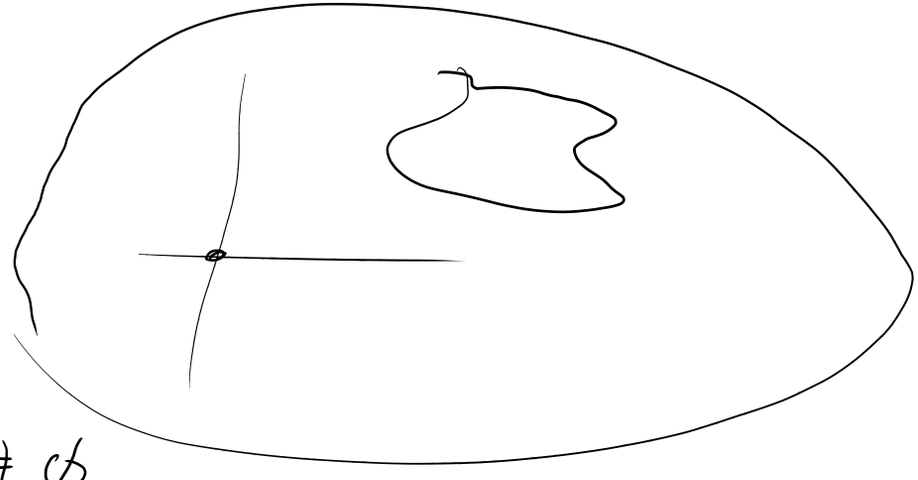
ot. uz.





$(0,1]$ ani jedno

A ow. $\quad \operatorname{diam} A < \frac{1}{2}$



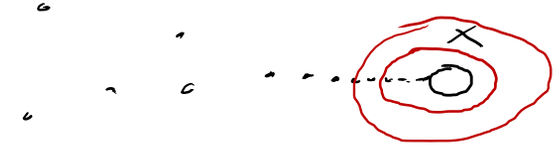
M, $x \in X$

from. bad

$\forall \varepsilon > 0 \quad M \cap B(x, r) \setminus \{x\} \neq \emptyset$

$\in M$

from. $\notin M$



$(0,2) \quad [0,2]$

bol. $\in M$

A $\quad$ diam $= q$ $\quad$ $p \leq q$

diam Int $A = p$ $\quad$ $(0, p)$ $\quad$ $\{q\}$

$2 < xyz < 4$

$x = 1$ $\quad$ y $\quad$ $z = \frac{1}{y} \cdot 3$ $\quad$ $1 \; y \cdot \frac{3}{y}$

$2 < 3 < 4$