Anwesenheitsaufgabe — Wintersemester 2023/24, Blatt 11

Dr. Christian Ketterer — 7. Januar 2024

Problem

Let A and B be subsets of a metric space X and $r > 0$. Let d_H be the Hausdorff distance in X. Prove that

(a) $d_H(A, B) = \max\{\sup_{a\in A} d(a, B), \sup_{b\in B} d(b, A)\}$.

(b) $d_H(A, B) \leq r$ if and only if $d(a, B) \leq r\ \forall a \in A$ and $d(b, A) \leq r\ \forall b \in B$. This fails if one replaces $\leq$ with $<$.