

Exercises

E10.1.2 [OW9] Prerequisites: [ON1]. Sia $\varphi(t) = t/(1+t)$. Let (X_i, d_i) be metric spaces with $i \in \mathbb{N}$, let $X = \prod_{i \in \mathbb{N}} X_i$, for any $f, g \in X$ we define the distance on X as

$$d(f, g) = \sum_{k=0}^{\infty} 2^{-k} \varphi(d_i(f(k), g(k))) .$$

Prove that d is a distance.