Definition 9.136. [oxo] *Let I be a non-empty set, with at least two elements. Let $X = \{f : \mathbb{N} \to I\} = I^{\mathbb{N}}$ be the space of sequences. Let $x, y \in X$. If $x = y$ then we set $d(x, y) = 0$.* [a] *If $x \neq y$, we set*

$$c(x, y) = \min\{n \geq 0, x(n) \neq y(n)\} \tag{9.137}$$

to be the first index where the sequences are different; then we define $d(x, y) = 2^{-c(x,y)}$.

---

[a] This can also be achieved by defining $c(x, x) = \infty$