

## Exercises

E11.0.11 [OYZ] Prerequisites: [ON1]. Let  $K \subseteq X$  compact; fix  $\alpha > 1$ ; define  $\tilde{d}(x, y) = \sqrt[\alpha]{d(x, y)}$ . We know from [ON1] that it is a distance. Show that

$$\alpha \dim(K, d) = \dim(K, \tilde{d}) .$$

In particular  $K = [0, 1]$  (the interval  $K \subseteq X = \mathbb{R}$ ) with the distance  $\tilde{d}(x, y) = \sqrt[\alpha]{|x - y|}$  has dimension  $\alpha$ .

**Solution 1.** [OZO]