

Exercises

E10.4 [021] Topics: norm. Prerequisites: [109].

Let K be a compact in \mathbb{R}^n ; we write $\dim(K, |\cdot|)$ to denote the limit that defines the dimension, using the balls of the Euclidean norm. Given a norm ϕ we can define the distance $d(x, y) = \phi(x - y)$, and with this calculate the dimension $\dim(K, \phi)$. Show that $\dim(K, |\cdot|) = \dim(K, \phi)$, in the sense that, if one limit exists, then the other limit exists, and they are equal.

Solution 1. [022]