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THE CONSTRUCTION OF A CONVEX PEANO CURVE

Abstract

We present the following unexpected result. Let t be any convex, closed and bounded subset of \mathbb{R}^2 with the bound ∂t . Let moreover the curvature $\varrho_{\partial t}(\mathbf{x})$ of the bound be defined in any $\mathbf{x} \in \partial t$ and $\varrho_{\partial t}(\mathbf{x}) \in (\varepsilon, \frac{1}{\varepsilon})$ for a fixed $\varepsilon > 0$. Then there exists a continuous function $f : [0, 1] \rightarrow t$ satisfying $f([0, 1]) = t$ and such that $f(I)$ is a convex set for any convex $I \subset [0, 1]$ (ie. $I = [a, b]$, $[a, b)$, $(a, b]$ or (a, b)).