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Title: Approximately convex functions on topological vector spaces

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Let X be a real topological vector space, let D be a subset of X and let $\alpha : X \rightarrow [0, \infty)$ be an even function locally bounded at zero.

A function $f : D \rightarrow R$ is called (α, t) -preconvex (where $t \in (0, 1)$ is fixed), if

$$f(tx + (1 - t)y) \leq tf(x) + (1 - t)f(y) + \alpha(x - y) \quad \text{for } x, y \in D \text{ such that } [x, y] \subset D.$$

We prove the Bernstein–Doetsch type theorem for (α, t) -preconvex functions.

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