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A Note on the Extension of Continuous Convex Functions from Subspaces

Let Y be a subspace of a real normed space X. We say that the couple (X, Y) has the CE-*property* ("convex extension property") if each continuous convex function on Y admits a continuous convex extension defined on X. By using techniques of Johnson and Zippin, we prove the following results about the CE-property: if X is the $c_0(\Gamma)$-sum or the $\ell_p(\Gamma)$-sum $(1 < p < \infty)$ of separable normed spaces, then the couple (X, Y) has the CE-property, for each subspace Y of X. Another similar result concerns weak*-closed subspaces Y of $X = \ell_1(\Gamma) = c_0(\Gamma)^*$.

Keywords: Convex function, extension, normed linear space.

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