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Compactness and weak compactness of gradient maps. (English) Zbl 0619.47050
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Let X be a real normed space $E \subset X$ a subset of X . A mapping $F : E \rightarrow X^*$ is said to be a gradient map if there exists a functional $f : E \rightarrow R$ having the Gâteaux (or Fréchet) derivative f' on E such that $F(u) = f'(u)$ for each $u \in E$. Using the *R. C. James* [*Isr. J. Math.* 2, 101-119 (1964; [Zbl 0127.325](#))] deep criteria of the compactness of the sets and the results from the theory of locally convex spaces, we establish some further results concerning the compactness and weak compactness of gradient maps.

MSC:

[47H99](#) Nonlinear operators and their properties
[46G05](#) Derivatives of functions in infinite-dimensional spaces

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