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subdifferentiable mapping

Canonical name	SubdifferentiableMapping
Date of creation	2013-03-22 14:31:19
Last modified on	2013-03-22 14:31:19
Owner	matte (1858)
Last modified by	matte (1858)
Numerical id	13
Author	matte (1858)
Entry type	Definition
Classification	msc 39B62
Classification	msc 52-00

Let X be a Banach space, and let X^* be the dual space of X . For a function $f: X \rightarrow \mathbb{R}$, and $x \in X$, let us define

$$\partial f(x) = \{r^* \in X^* : f(x) - f(y) \leq r^*(x - y) \text{ for all } y \in X\}.$$

If $\partial f(x)$ is non-empty, then f is *subdifferentiable* at $x \in X$, and if $\partial f(x)$ is non-empty for all x , then f is *subdifferentiable* [?, ?].

References

- [1] C. Zalinescu, *Convex Analysis in General Vector Spaces*, World Scientific Publishing Company, 2002.
- [2] R.T. Rockafellar, *Convex Analysis*, Princeton University Press, 1996.