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A. First Author*, B. Second Author† and C. Third Author*

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Some theorem-like environments are available. Here are some instances.

DEFINITION 1 Let $1 \leq p \leq +\infty$ and $\Omega \subset \mathbb{R}^N$ an open set. The first order Sobolev space, denoted by $W^{1,p}(\Omega)$, is defined by

$$W^{1,p}(\Omega) = \{v \in L^p(\Omega) \,/\, \nabla v \in L^p(\Omega)^N\}. \tag{1}$$

For $1 \leq p < +\infty$ and $v \in W^{1,p}(\Omega)$ we put

$$\|v\|_{1,p} = \left(\int_\Omega |v|^p + \int_\Omega |\nabla v|^p \right)^{1/p}, \tag{2}$$

and also

$$\|v\|_{1,\infty} = \|v\|_\infty + \|\nabla v\|_\infty, \tag{3}$$

The following results are well known.

THEOREM 2 *Let $1 \leq p \leq +\infty$. Then $\|\cdot\|_{1,p}$ is a complete norm in $W^{1,p}(\Omega)$.*

THEOREM 3 *Let $1 \leq p < +\infty$. Then $W^{1,p}(\Omega)$ is separable.*

THEOREM 4 *Let $1 < p < +\infty$. Then $W^{1,p}(\Omega)$ is reflexive.*

REMARK 5 The case $p = 2$ is a very special case. The next result tells us that $W^{1,2}(\Omega)$ is more than a Banach space.

COROLLARY 6 *$W^{1,2}(\Omega)$ is a Hilbert space.*

From now on, we will write $H^1(\Omega)$ instead of $W^{1,2}(\Omega)$.

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*Departamento de Matemáticas, Universidad de Tartessos, Campus de Amílcar, 12345 Población (SPAIN). Email: first.author@utar.es, third.author@utar.es
†Department of Applied Mathematics, University of Palo Corto, 99, Ave. Palisades, 98765 Town (USA). Email: second.author@upl.us