



Math for the people, by the people.

## sequential characterization of boundedness

Canonical name	SequentialCharacterizationOfBoundedness
Date of creation	2013-03-22 13:48:17
Last modified on	2013-03-22 13:48:17
Owner	bwebste (988)
Last modified by	bwebste (988)
Numerical id	8
Author	bwebste (988)
Entry type	Theorem
Classification	msc 46-00

**Theorem** [?, ?] A set  $B$  in a real (or possibly complex) topological vector space  $V$  is <http://planetmath.org/BoundedSetInATopologicalVectorSpacebounded> if and only if the following condition holds:

If  $\{z_i\}_{i=1}^{\infty}$  is a sequence in  $B$ , and  $\{\lambda_i\}_{i=1}^{\infty}$  is a sequence of scalars (in  $\mathbb{R}$  or  $\mathbb{C}$ ), such that  $\lambda_i \rightarrow 0$ , then  $\lambda_i z_i \rightarrow 0$  in  $V$ .

## References

- [1] W. Rudin, *Functional Analysis*, McGraw-Hill Book Company, 1973.
- [2] R. Cristescu, *Topological vector spaces*, Noordhoff International Publishing, 1977.