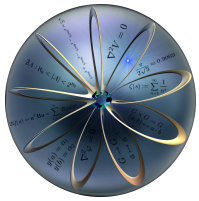

planetmath.org

Math for the people, by the people.

topologically nilpotent

Canonical name	TopologicallyNilpotent
Date of creation	2013-03-22 16:12:04
Last modified on	2013-03-22 16:12:04
Owner	CWoo (3771)
Last modified by	CWoo (3771)
Numerical id	6
Author	CWoo (3771)
Entry type	Definition
Classification	msc 46H05
Synonym	quasinilpotent

An element a in a normed ring A is said to be *topologically nilpotent* if

$$\lim_{n\to\infty} \|a^n\|^{\frac{1}{n}} = 0.$$

Topologically nilpotent elements are also called *quasinilpotent*.
Remarks.

- Any nilpotent element is topologically nilpotent.
- If a and b are topologically nilpotent and $ab = ba$, then ab is topologically nilpotent.
- When A is a unital Banach algebra, an element $a \in A$ is topologically nilpotent iff its spectrum $\sigma(a)$ equals $\{0\}$.