



flexible algebra

Canonical name	FlexibleAlgebra
Date of creation	2013-03-22 14:43:30
Last modified on	2013-03-22 14:43:30
Owner	CWoo (3771)
Last modified by	CWoo (3771)
Numerical id	11
Author	CWoo (3771)
Entry type	Definition
Classification	msc 17A20
Related topic	Associator
Related topic	AlternativeAlgebra
Defines	left power
Defines	right power
Defines	flexible

A non-associative algebra A is *flexible* if $[a, b, a] = 0$ for all $a, b \in A$, where $[, ,]$ is the associator on A . In other words, we have $(ab)a = a(ba)$ for all $a, b \in A$. Any associative algebra is clearly flexible. Furthermore, any alternative algebra with characteristic $\neq 2$ is flexible.

Given an element a in a flexible algebra A , define the *left power* of a iteratively as follows:

1. $L^1(a) = a$,
2. $L^n(a) = a \cdot L^{n-1}(a)$.

Similarly, we can define the *right power* of a as:

1. $R^1(a) = a$,
2. $R^n(a) = R^{n-1}(a) \cdot a$.

Then, we can show that $L^n(a) = R^n(a)$ for all positive integers n . As a result, in a flexible algebra, one can define the (multiplicative) power of an element a as a^n unambiguously.