



**planetmath.org**

Math for the people, by the people.

## Koethe conjecture

Canonical name	KoetheConjecture
Date of creation	2013-03-22 13:13:27
Last modified on	2013-03-22 13:13:27
Owner	mclase (549)
Last modified by	mclase (549)
Numerical id	5
Author	mclase (549)
Entry type	Conjecture
Classification	msc 16N40
Related topic	NilAndNilpotentIdeals
Related topic	PropertiesOfNilAndNilpotentIdeals

The Koethe Conjecture is the statement that for any pair of nil right ideals  $A$  and  $B$  in any ring  $R$ , the sum  $A + B$  is also nil.

If either of  $A$  or  $B$  is a two-sided ideal, it is easy to see that  $A + B$  is nil. (See properties of nil and nilpotent ideals.)

In particular, this means that the Koethe conjecture is true for commutative rings.

It has been shown to be true for many classes of rings, but the general statement is still unproven, and no counter example has been found.