

Re: Irreducibles (Ring theory)

Source: <http://sci.tech--archive.net/Archive/sci.math/2005-05/msg00767.html>

- *From:* "Nathan" <ntspam2@xxxxxxxxxxxxxx>
 - *Date:* 4 May 2005 15:43:27 -0700
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po wrote:

- > Im trying to understand what an irreducible element is.
- > i have my definition
- > an element (r) is irreducible if
- > it is not equal to 0
- > r is not invertible $r=ab$ a or b is invertible
- >
- > then in a text book i have the irreducibles of the integers are all
- > the prime numbers and their negatives...
- > but what about the other numbers? whats the inverse of 4? (in the
- > integers, it doesnt exist, so why is this not an irreducible?)

Let's check the criteria. In the ring of integers:

- 4 is not equal to 0.
- 4 is not invertible.
- $4 = 2*2$, and 2 is not invertible.

So 4 is not irreducible.

The really important part is that last criterion. It says you can't produce a "nontrivial factorization" of an irreducible.

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