

Re: Please help, Thanks!

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- *From:* quasi <quasi@xxxxxxxx>
  - *Date:* Tue, 18 Mar 2008 01:43:53 -0500
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On Mon, 17 Mar 2008 18:26:20 -0500, quasi <quasi@xxxxxxxx> wrote:

On Mon, 17 Mar 2008 18:40:58 EDT, steven <chasedtime@xxxxxxxx> wrote:

define a ring  $R=\{0,1,a,b\}$  by taking table below as its multiplication table.

```
* | 0 1 a b
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0 | 0 0 0 0
1 | 0 1 a b
a | 0 a b 1
b | 0 b 1 a
```

To define a ring, you also have to define how elements `_add_`.

So you only have half a ring (just kidding).

prove that as rings,  $R$  is not Isomorphic to  $Z_2 \times Z_2$ .

Hint: Count the number of elements of order 2 (elements  $x$  such that  $x^2=1$ ).

The above hint doesn't work -- sorry.

Here are some corrected hints:

For each ring,

Count the number of units (elements that have multiplicative inverses).

Alternatively, count the number of idempotents (elements  $x$  such that  $x^2 = x$ ).

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quasi

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