

# Re: How Do I Invert These Two Functions

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- *From:* quasi <quasi@xxxxxxxx>
  - *Date:* Wed, 28 Nov 2007 18:47:41 -0500
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On Wed, 28 Nov 2007 18:35:14 -0500, quasi <quasi@xxxxxxxx> wrote:

On Wed, 28 Nov 2007 23:23:02 GMT, John Schutkeker <jschutkeker@xxxxxxxxxxxxxxxxxxxxxxxx> wrote:

If I define  $u_1(r_1, r_2) = (1/r_1) + (1/r_2)$  and  $u_2(r_1, r_2) = 1/(r_2 - r_1)$ . How would I go about solving these two equations for  $r_1(u_1, u_2)$  and  $r_2(u_1, u_2)$ , which would constitute "inverting the functions"? Thanks In Advance!

Elementary algebra! Try it before giving up.

Write down 2 equations:

$$u_1 = (1/r_1) + (1/r_2)$$

$$u_2 = 1/(r_2 - r_1)$$

Viewing  $r_1, r_2$  as the unknowns, you have 2 equations in 2 unknowns.

How hard can it be?

Of course, there are always tricks, but before looking for tricks, how about trying the most basic method (from elementary algebra):

Choose one equation and solve that equation for one of the unknowns in terms of the other. Then use the result as a replacement for that unknown in the other equation, thus yielding one equation in one unknown. You should be able to figure out the rest.

You try it.

Also, for a function to be invertible, it has to be one-to-one. But as you'll see when you solve algebraically, your function is mostly two-to-one (on  $\mathbb{R}^2$ ).

quasi

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