

# Re: Computability

---

*Source:* <http://sci.tech-archive.net/Archive/sci.math/2008-01/msg02186.html>

---

- *From:* quasi <quasi@xxxxxxxx>
  - *Date:* Tue, 15 Jan 2008 03:26:43 -0500
- 

On Mon, 14 Jan 2008 23:54:08 -0800 (PST), The Dougster 22044 <DGoncz@xxxxxxxxxxxx> wrote:

On Jan 14, 8:39 pm, quasi <qu...@xxxxxxxx> wrote:

On Mon, 14 Jan 2008 16:42:38 -0800 (PST), The Dougster 22044 <DGo...@xxxxxxxxxxxx> wrote:

On Jan 14, 4:46 am, quasi <qu...@xxxxxxxx> wrote:

On Mon, 14 Jan 2008 04:14:39 -0500, quasi <qu...@xxxxxxxx> wrote:

On Sun, 13 Jan 2008  
20:02:36 -0800 (PST), The  
Dougster 22044  
<DGo...@xxxxxxxxxxxx>  
wrote:

Well, it appears that your conjecture fails.

Here's a counterexample:

$$(x,y,z) = (43, 638, 659)$$

with  $p = 7$ .

Well, I wrote a `check(x,y,z)` function just for this

## Re: Computability

counterexample,  
and no, it doesn't check out. I am flagging five conditions:

PASS:  $x < y < z < x+y$

PASS:  $(x,y) = (y,z) = (z,x) = 1$

PASS:  $(o(x/y,z), o(z/x,y), o(z/y,x)) = (2p, p, p)$

PASS:  $(x/y)^p \bmod z == -1$

FAIL:  $x + y - z = 0$  (because  $x == y == z \bmod p$  here)

Well that's the `_new_` condition.

That condition was added after I posted the counterexample.

Hey, I am sorry if my difficulties with exposition led you to believe I was jerking you around by either inventing or adding to this thread conditions I have known for some time. I never intended to do that; what I was trying to do, and what we have done, is to `_gradually_` introduced everything relevant to the problem that I know, find more of relevance, and stimulate interest.

No problem.

And the conjecture `_is_` interesting.

My point was simply that there's a good chance the conjecture is false, even with the added conditions. However each new condition makes it harder to find a counterexample, to the point of making a brute force search computationally infeasible.

On the other hand, if the conjecture is true, a failed search proves nothing, and finding an actual proof is almost certainly out of range of elementary math..

So we can certainly drop this if you feel that way, and try again some day with us, with Chip, and with anyone else interested.

I'm not saying that you have to drop it, just that if the problem fascinates you, it makes sense to defer it, instead prioritizing further study of more advanced levels of math, especially in the areas of number theory, abstract algebra, and algebraic geometry.

On the other hand, if the problem won't let you shelve it, then, as a test case, try to prove that  $p = 3$  is impossible

## Re: Computability

I want you to know that I really appreciate the help you have given freely to me in exposition, quasi, and that I feel like I made more progress in this thread than any other.

Cool.

I think the Bayesian approach I discuss in the new thread will help sort the conditions we have here and any new conditions into order of probability and that that order will be the order of exposition next time around.

Probabilistic approaches are definitely interesting. Which properties are independent, which are correlated? These are good questions. However, while such investigations can potentially lead to a proof, they usually just provide a "degree of belief".

I am even working on a proposal for the workgroup I volunteer with to fund a Bayesian Therapy experiment using assistive technology with adults living with and recovering from a mental illness, who have symptoms like disorganized thinking and living situations, problems remembering to take their medications, and are at a power disadvantage in today's society without at least a PDA/phone and a support hotline and a few accounts for various things like email and faxing. The PDAs would share survey software that would link client cognitions in a pattern of correlations like "when client rides the bus, client's mood drops by one rating point; when client spends time with family client's hallucinations abate from 5 to 2 per hour..." stuff like that. It's phase space, I think.

Well that suggests you should also prioritize further study of probability and statistics.

So thanks for the participation, all.

Doug

quasi

.