

# Re: Computability

---

*Source:* <http://sci.tech-archive.net/Archive/sci.math/2008-01/msg01933.html>

---

- *From:* The Dougster 22044 <DGoncz@xxxxxxxxxxxxx>
  - *Date:* Sun, 13 Jan 2008 20:02:36 -0800 (PST)
- 

On Jan 13, 7:34 pm, The Dougster 22044 <DGo...@xxxxxxxxxxxxx> wrote:

On Jan 10, 11:16 am, quasi <qu...@xxxxxxxxx> wrote:

You claimed to have checked it up to  $z = 256$ , but apparently you missed the following counterexample:

$(x,y,z) = (74,129,143)$  which has signature  $(6,3,3)$ .

$(x/y)^p \equiv 143 - 105 \equiv -38$ , not  $-1$  which would be  $142 \pmod{143}$

Naw, that is wrong. I wrote it wrong, but we are missing the point.

If  $(x/y)^p \equiv -1$  then  $(x/y)^{2p} \equiv 1$  and  $o(x/y,z) = 2p$   
But we lose information when we write  $o(x/y,z) = 2p$ . That doesn't specify that  $(x/y)^p \equiv -1$ .  $(x/y)^p$  could be congruent to  $x$  for all we know! It just doesn't say.

Now from  $(x/y)^p \equiv -1 \pmod{z}$  I think there is a new characteristic combination of  $x$  and  $y \pmod{z}$  that has an order of  $p$  or of  $2p$ . Let's see...

$$\begin{aligned}
 x^p + y^p &= z^p \\
 x^p + y^p &\equiv 0 \pmod{z} \\
 x^p &\equiv -(y^p) \pmod{z} \\
 x^p / -(y^p) &\equiv 1 \pmod{z} \\
 1/(-1) * (x/y)^p &\equiv 1 \pmod{z} \dots
 \end{aligned}$$

These are calculations in abstract algebra, I think. I'd better ask for help here, but you see the point? There would be only the inequality, without loss of generality, and the signature, but the signature would have four parts, not just three. The part about coprimality might be implied by the existence of the various

## Re: Computability

signatures.

So it would really boil down to just the signature.

Aside: I am looking at the conjoint and disjoint probabilities of the inequality, the coprimality, and the signature, applying Bayesian statistics. It's not going well because I only have had stats I, and we just brushed by Bayes.

Doug

.