

Re: Relative Cardinality

Source: <http://sci.tech-archive.net/Archive/sci.math/2005-07/msg00872.html>

- *From:* mueckenh@xxxxxxxxxxxxxxxxxxxx
 - *Date:* 7 Jul 2005 06:21:37 -0700
-

Proginoskes wrote:

> mueckenh@xxxxxxxxxxxxxxxxxxxx wrote:
>> Randy Poe wrote:
>>> mueck...@xxxxxxxxxxxxxxxxxxxx wrote:
>>>> As this would lead to strange results like $\text{Card}(N) =$
>>>> $\text{Card}(\{\text{Primes}\})$,
>>>>
>>> Of course, $\text{Card}(N)$ does equal $\text{Card}(\text{Primes})$.
>>>
>>> Does WM think there is a natural number n such that the
>>> n -th prime does not exist?
>>>
>> Yes, it is so. I am not sure, whether sequences like 111...111 with n
>> 1's or like $10^{2n} - 10^n + 1$ do ever cease to supply primes now and
>> then.
>>
> That is an irrelevant comment, because there are prime numbers which
> are not of that form (like 2).

It is no irrelevant but you have not yet understood my arguing. I mentioned these numbers because numbers of that form (111...111) definitely do exist. Pot. infiniteley many! If there are always some prime numbers among them, then pot. infinitely many prime numbers can be raised into existence too. Nevertheless we can never count up to $10^{10^{100}}$, and, therefore, we cannot determine the $10^{10^{100}}$ -th prime number – irrespective of how many can be found.

> Er ... Euclid proved that there are an infinite number of primes.

Euclid did not talk of infinity. There are more than any given number, he said.

> What do you find wrong with that proof?

Do you really think it necessary to demonstrate such things here? Recently we had a proof that $\sqrt{2}$ is not rational. We should concentrate on more general problems: It is impossible to label more

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than 10^{100} entities by all particles the universe supplies. Therefore there cannot exist a set with more than 10^{100} elements and we cannot count up to $10^{10^{100}}$.

Regards, WM

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• *Follow-Ups:*

- ◆ **Re: Relative Cardinality**
◇ From: Proginoskes
- ◆ **Re: Relative Cardinality**
◇ From: Virgil
- ◆ **Re: Relative Cardinality**
◇ From: Jiri Lebl
- ◆ **Re: Relative Cardinality**
◇ From: Jiri Lebl

• *References:*

- ◆ **Re: Relative Cardinality**
◇ From: mueckenh
- ◆ **Re: Relative Cardinality**
◇ From: Virgil
- ◆ **Re: Relative Cardinality**
◇ From: mueckenh
- ◆ **Re: Relative Cardinality**
◇ From: Dik T. Winter
- ◆ **Re: Relative Cardinality**
◇ From: mueckenh
- ◆ **Re: Relative Cardinality**
◇ From: Randy Poe
- ◆ **Re: Relative Cardinality**
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◇ From: Proginoskes

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