

Re: Relative Cardinality

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- *From:* mueckenh@xxxxxxxxxxxxxxxxxxxxx
 - *Date:* 5 Jul 2005 11:58:36 -0700
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Dik T. Winter wrote:

>> It is a very fine criterion! Would Kronecker already have seen it,
>> nobody knew set theory today.
>
> Ok, let's see how your criterion helps you. Consider two sets. Set A
> contains the natural numbers, set B the negative even numbers. Consider
> the following relative ordering of the elements of sets A and B in their
> union:
>

Thanks for your construction, but is not necessary. If there is a bijection possible between two well-ordered sets A and B, then the elements of the two sets can be put in a single well-order such that there is always one $a \in A$ between two $b \in B$ and vice versa (+/-1). Then we find that $\text{Card}(A) = \leq \text{Card}(B)$ and $\text{Card}(B) = \leq \text{Card}(A)$. A conclusion can be drawn if the actual existence of A and B is assumed, namely $\text{Card}(A) = \text{Card}(B)$. As this would lead to strange results like $\text{Card}(\mathbb{N}) = \text{Card}(\{\text{Primes}\})$, I doubt the actual existence of such sets. This solves the problem. Something not completely existing cannot be equal to some other existing or not existing object. The property of being not larger, however, remains meaningful even for potentially infinite and necessarily incomplete sets.

Regards, WM

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 ◇ *From:* David Kastrup
 - ◆ ***Re: Relative Cardinality***
 ◇ *From:* Virgil
 - ◆ ***Re: Relative Cardinality***
 ◇ *From:* Randy Poe

- *References:*
 - ◆ **Re: Relative Cardinality**
 - ◇ *From:* mueckenh
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