Re: infinity

Source: http://sci.tech−archive.net/Archive/sci.math/2005−10/msg00652.html

- *From*: Tony Orlow <aeo6@xxxxxxxxxxx>
- *Date*: Fri, 7 Oct 2005 10:20:54 −0400

David R Tribble said:
> Ross A. Finlayson wrote:
> >> So: well−order the reals.
> >
>
> Jonathan Hoyle wrote:
> > Sigh. Didn't I do this one already? Here it is again <grin>:
> >
> > Take any arbitrary 1−1 mapping F from the reals R to the power set of
> > natural numbers P(N). By the Axiom of Choice, we know we can
> > well−order P(N), so take any such well−ordering, <=. Define a <=
> > operation (obviously different from the standard one) on R such that
> > for a,b in R, a <= b whenever F(a) <= F(b). You have now well−ordered
> > R. Creating F and well ordering P(N) are left as exercises. :−)
>
> To well−order P(N), we can define a '<' relation between members
> of P(N):
>
> a. {} < {i, ...} for all i in N;
> The empty set is less than any set with one or more members.
>
> b. {i, ...} < {j, ...} if i < j for all i,j in N;
> Any set with a least element i is less than any other set with a
> least element j if i < j.
>
> c. {i, j, ...} < {i, k, ...} if {j, ...} < {k, ...}
> for all i,j,k in N and i < j and i < k;
> For two sets both having a least member i, the first set is less
> than the second if the set formed by removing i from the first set
> is less than the set formed by removing i from the second set
> (this is a recursive definition that makes use of the previous rules).
>
> So all the the members of P(N) can be ordered using the '<' relation
> defined above.
>
>

Isn't this essentially the same as using binary strings to denote memebrship in
each element of P(N), and ordering them in the natural way, as they are for the
elements of N? It seems that if a set can be enumerated in a linear fashion,

then its power set can also.
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Smiles,

Tony
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- ***References***:
  - ***Re: infinity***
    - *From:* Jonathan Hoyle
  - ***Re: infinity***
    - *From:* Ross A. Finlayson
  - ***Re: infinity***
    - *From:* Jonathan Hoyle
  - ***Re: infinity***
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    - *From:* Ross A. Finlayson
  - ***Re: infinity***
    - *From:* Jonathan Hoyle
  - ***Re: infinity***
    - *From:* David R Tribble

- Prev by Date: ***Question on integral extensions,,***
- Next by Date: ***Re: " Wanted the r iterated of f(x) = 2*x/(1−x^2) , f^[r](x) "***
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