

# Re: Logarithm of transfinite numbers

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- *From:* "David R Tribble" <[david@xxxxxxxxxxx](mailto:david@xxxxxxxxxxx)>
  - *Date:* 24 Mar 2006 11:31:58 -0800
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Tony Orlow wrote:

Listen, Dude. You ain't got no element you added to your set where it ever got infinite, Pardner! I'm a startin' ta think yer set o' naturals ain't even big as Texas.

Matt Gutting said:

No, it doesn't "get" infinite. It starts out infinite, by the axiom of induction.

Tony Orlow wrote:

What is the underlying justification for the axiom of induction? Please!

Axioms don't need any justification. They only need consistency with the other axioms in the system.

And speaking as a Texan, yes, Texas is quite big, but it takes less than 80 bits to number every molecule in the state. Compare that to the  $2^{1100}$  or so bits needed to denumerate all the naturals up to a googplex. And compare that to all the naturals countable with a googplex bits. Yet we're still a long way from exhausting the naturals, of course, which requires a set size larger than any natural.

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