Re: Why is the tetration so much harder to extend than the factorial?

Source: http://sci.tech−archive.net/Archive/sci.math/2009−03/msg00649.html

- *From*: mike3 <mike4ty4@xxxxxxxxx>
- *Date*: Wed, 4 Mar 2009 12:41:52 −0800 (PST)

On Mar 4, 8:06 am, Gottfried Helms <he...@xxxxxxxxxxxxx> wrote:

> Am 04.03.2009 13:48 schrieb G. A. Edgar:> In article
>
> > <dcdc9262−dc9f−4659−af0c−6c2c27aa3...@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>,
> > galathaea <galath...@xxxxxxxxx> wrote:
>
> > gottfried helms has posted plenty of examples
> > where the method gives convergent series
>
> > An I wrong in my belief that he has never provided a proof of
> > convergence?
>
> No, you're right. I was not concerned with proving so far.
>
> To me it seemed, that it is even needed first to find a
> reliable and (maximally) generalizable way to access the
> problem at all, before invest in efforts to set out proofs.
> (if I'd be capable of that at all...).
>
> The matrix−based method for to deal with the formal powerseries
> is good for many cases as shown by Comtet and later Woon, for two
> instances, seems to be good even for series of powertowers.
> But the reason for its failure in fractionally iterating with
> bases b>e^(1/e) (using their complex fixpoints) is not yet
> completely clear to me. So before I see a perspective there
> (or a founded and explicite dismissal of the method for these
> cases) I don't think I'll be sitting much to think about the
> formal whereabouts and proofs...
>
> Moreover, for instance in one aspect (fractional iteration of
> exp(x)−1) divergence was already proved. How should I try to
> prove convergence? What I try to find for these cases is a

> method of summation for such strongly divergent series
> instead of attempting to prove convergence. If I have a promising
> one, valid for a reasonable range of parameters, I think I'll
> try to deduce a proof (but likely I'll fail... :−))
>
> From all discussion that I'm able to follow the impression
> is, that we still are in a highly explorative situation,
> so I think it is much helpful to collect facts, even if
> isolated, from which −hopefully− a/"the" reliable, reasonably
> general, framework can be derived (and be proved)
>
> Currently I'm focused to the idea of iteration−series.
> Maybe this gives such a framework for the whereabouts of
> functional iteration and fractional tetration and can include
> the unfriendly bases too (instead of getting lost in improper
> complex powerseries) At least this had a certain inherent
> logic...

What's "iteration series", anyway?
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