

Re: $x^{(x^{(x^{(x^{x^{\dots}})} \dots)})} = 2$

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if series doesn't blow up, then series will have a limit point as it is monotone sequence.
So say series has limit y

I should not have used word series
as series has different meaning than sequence.
So please consider the word series in above
as sequence. (i.e. $x_n = x^{(x_{n-1})}$ $x_0 = 1$)

then $x^y = y$
or $x = y^{(1/y)}$ ie. if at all the series converges,

series should be sequence

we should be able to write x as $y^{(1/y)}$.

As Jonathan Hoyle posted,
(<http://mathforum.org/kb/message.jspa?messageID=6220683&tstart=0>)
 x is always between $[0, 1.4446\dots]$
Surely that doesn't mean for all x the series may

again series should be sequence

converge.

Then answer to your question would be $<1.4446\dots$
Still it is not answered as converse may not true.

But my doubt is how to differentiate function
 $y^{(1/y)}$?
As I want to find maximum, I am have to find its

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first derivative and second derivative.

I have plotted the graph for function $y^{(1/y)}$ using matlab. (granularity 0.0025, attached here in y.jpg).

So, I just could check Jonathan Hoyle's statement by matlab, but how should find the maximum in general of $y^{(1/y)}$? without help of computer?

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