

Re: Is "infinite processes" allowed in algorithm for construction?

Source: <http://sci.tech-archive.net/Archive/sci.math/2004-07/4175.html>

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In article <4TGJc.28230\$RD4.1822336@news20.bellglobal.com>, "Michael N. Christoff" <mchristoff@sympatico.caREMOVETHIS> writes:

>
> *"H. Shinya"* <erdosfan@yahoo.com> wrote in message
> *news:200407151637.i6FGblR14486@proapp.mathforum.org...*
>> *Is it allowed that in algorithm for constructing something (any
> geometrical objects, for example) one includes "do --- indefinitely"?*
>>
>> *H. Shinya*
>>
>
> *By definition, a formal algorithm must complete in a finite amount of time
> (steps). However, many common computer applications are not technically
> algorithms because they often a) are long lived processes (ie: may 'run
> indefinitely' like http server daemons), b) they interact with the external
> environment after they have started (ie: word processor).*

There is also a standard notion of a "probabilistic algorithm" which does not fit the formal definition of an algorithm, because typically a probabilistic algorithm iterates continually and has a known (or bounded below) probability $p > 0$ of returning an answer on each iteration. (Alternatively, it may be guaranteed to return an answer within a finite time, but the answer might be wrong.)

Derek Holt.