

# Re: A Basic Theorem

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*Source:* <http://sci.tech-archive.net/Archive/sci.math/2006-01/msg04419.html>

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- *From:* [gerben47@xxxxxxxxxxxx](mailto:gerben47@xxxxxxxxxxxx)
  - *Date:* 27 Jan 2006 06:25:34 -0800
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TheNakedOne schrieb:

- > .3 repeated =  $1/3$
- >  $3(.3 \text{ repeated}) = 1$
- >  $3(.333 \text{ repeated}) = 1$
- > .999 repeated = 1
- > .9 repeated = 1
- > Q.E.D.
- > Hey everyone, I'm new to sci.math, and this is a proof I gave to many
- > teachers at my school, yet none of them could give me a clear enough
- > reason as to why this was incorrect. My personal belief is that because
- > the repeated (sorry, I couldn't find a superline key) sign means the
- > task is being done an infinite number of times, then it actually
- > reaches the number which can not be reached in decimal form. I wanted
- > to know your thoughts.
- >
- > Matt

You are correct. To see that the numbers are the same consider  $x$  to be the difference between  $0.9999\dots$  and  $1$ . If two numbers are different there is a finite difference between them. In this case, whatever positive value of  $x$  you choose, the difference between  $0.999\dots$  and  $1$  will be smaller.

Conclusion: They are the same number!

Gerben

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- *References:*
  - ◆ ***A Basic Theorem***
    - ◇ *From:* TheNakedOne
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