

Re: sin x / x tends to 1...

Source: <http://sci.tech-archive.net/Archive/sci.math/2005-09/msg00685.html>

- *From:* Darren J Wilkinson <d.j.wilkinson@xxxxxxxxxx>
 - *Date:* Sat, 3 Sep 2005 21:17:29 +0000 (UTC)
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David C. Ullrich <ullrich@xxxxxxxxxxxxxxxxxxxx> wrote:

> > Now, if I understood it correctly, you showed that $\sin x / x$ tended to
> > one when x was measured in "aradians".
>
> You might note that there was a factor of $1/2$ missing in my
> definition of "aradian", which was cancelled by the missing
> $1/2$ in the formula I was using for the area of a triangle.
> (Details... heh.)

Yes, of course – easily fixed.

> > Is there an easy way to show that
> > aradians and radians are the same?
>
> In the sense in which I would use the word "show",
> I doubt it – I don't think that we can even give an
> easy definition of area, much less arc length.

That's what I thought... As I said in my original post, I'm quite happy using the area argument to establish the existence of a limit on $[0,1]$, but I'd like to know that it is 1... ;–)

OK, so I'm starting to give up on a neat proof for a bright 15 year old. So, how about one for someone with a degree in mathematics and a PhD in theoretical statistics... ;–) Assuming a power series definition of $\sin x$, that we can call $\text{psin } x$, the limit is (of course) obvious. Is it very easy to show that $\text{psin } x = \sin x$, where $\sin x$ is the usual geometric definition (with regular radians)?

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- *Follow-Ups:*
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Re: $\sin x / x$ tends to 1...

◇ *From:* bill

◆ **[Re: \$\sin x / x\$ tends to 1...](#)**

◇ *From:* David C . Ullrich

• **References:**

◆ **[sin x / x tends to 1...](#)**

◇ *From:* Darren J Wilkinson

◆ **[Re: sin x / x tends to 1...](#)**

◇ *From:* David C . Ullrich

◆ **[Re: sin x / x tends to 1...](#)**

◇ *From:* Darren J Wilkinson

◆ **[Re: sin x / x tends to 1...](#)**

◇ *From:* David C . Ullrich

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