Re: circle homeomorphism

Source: http://sci.tech−archive.net/Archive/sci.math/2005−10/msg01803.html

- *From*: David C. Ullrich <ullrich@xxxxxxxxxxxxxxx>
- *Date*: Mon, 17 Oct 2005 11:59:52 −0500

On Sun, 16 Oct 2005 20:53:50 +0100, "Thomas Novascott"
<Thomas.novascott@xxxxxxxxxxxxxxxxx> wrote:

>
>"David C. Ullrich" <ullrich@xxxxxxxxxxxxxxx> wrote in message
>news:ft65l1tc7gd90vvjt159t7a12ebo5fi7ea@xxxxxxxxxx
>> On Sun, 16 Oct 2005 11:46:21 +0100, "Thomas Novascott"
>> <Thomas.novascott@xxxxxxxxxxxxxxxxx> wrote:
>>
>>>> It seems we have an increasing homeomorphism F of R,
>>>> with period 2\pi, such that
>>>>
>>>> f(eit(t)) = eit(F(t))
>>>>
>>>> (writing eit(t) = exp(2 Pi i t)); F is a "lift"
>>>> of f (ie a lifting of f to R wrt the covering
>>>> map eit:R −> S^1.)
>>>>
>>>> and the rotation number is the limit of
>>>>
>>>> (*) (F^n(t) − t)/n,
>>>>
>>>> (where F^n denotes iterated composition).
>>>>
>>>> It follows that
>>>>
>>>> eit(F(F(t)) = f(eit(F(t)) = f(f(eit(t));
>>>>
>>>> that is, F^2 is a lift of f^2. If we're willing
>>>> to believe that the limit (*) exists the result
>>>> you ask about follows easily...
>Thank you for your indepth explanation,
>i think i should have made it clearer, but i dont see how
>eit(F(F(t)) = f(eit(F(t)) = f(f(eit(t));
>
>proves p(f^n)=n.p(f)
>(sorry for not making this clearer)

It proves it for n = 2. Since F^2 is a lift

of f^2 it follows that

p(f^2) = lim ((F^2)^n(t) − t)/n

= lim (F^(2n)(t) − t)/n

= 2 lim (F^(2n)(t) − t)/(2n)

= 2 lim (F^n(t) − t)/n,

where the last equality is because if a sequence convergese then any subsequence converges to the same limit.

>Thanks once again for your explanation
>

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David C. Ullrich
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- ***Follow−Ups***:
  - ♦ ***Re: circle homeomorphism***
    - ◊ *From:* Thomas Novascott

- ***References***:
  - ♦ ***circle homeomorphism***
    - ◊ *From:* Dumdum project
  - ♦ ***Re: circle homeomorphism***
    - ◊ *From:* David C . Ullrich
  - ♦ ***Re: circle homeomorphism***
    - ◊ *From:* David C . Ullrich
  - ♦ ***Re: circle homeomorphism***
    - ◊ *From:* Thomas Novascott

- Prev by Date: ***Re: Total number of humans in the past 150,000 years***
- Next by Date: ***Re: Sum of periodic functions with incommensurate periods***
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