Re: uniform convergence?

Source: http://sci.tech−archive.net/Archive/sci.math/2006−01/msg03887.html

- *From*: mskirvin@xxxxxxxxx
- *Date*: 24 Jan 2006 10:26:15 −0800

damage wrote:
> i know the function f_n:[−1,1]−−>reals where f_n(x)=x^(1/(2*n−1)) converges
> pointwisesly to −1 (for −1</= x <0) and 1 for x>/= 0
> what i want to know is when should a cts function converge to a limit which
> is cts, is my thinking right when i say.
> the reason this does not converge to a cts function (every though it is a
> family of cts fctns) is due to the fact that the derivative tends to
> infinity (f '_n(x)).
> my question is ..does uniform convergence => derivatives converge? if so
> could someone point out a theorem? (web search didnt come up with anything
> helpful)
> if this is not the case, is there a counter example (i dont believe this
> case actually exists though!)
>
> Many thanks

Rudin's analysis book Prinicples of Mathematical Analysis has a chapter
(chapter 7) devoted to series and sequences of functions. He answers
the kind of the questions you're asking, as well as many others. It's
a little expensive to buy, but might be worth checking out from the
library.

Anyway, to answer one of your questions, a uniformly convergent
sequence of continuous functions converges to a continuous function.
In your case, f_n(x) does converge uniformly if restricted to certain
intervals, but does not converge uniformly on [−1, 1].

I could quote you more results from Rudin about sequences of functions,
but if you're interested I would suggest just checking it out.

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- ***References***:
  - ***uniform convergence?***
    - *From:* damage

- Prev by Date: ***Re: a prime number question***
- Next by Date: ***Re: algorithm to identify number from 0−16384 having at most 4 1s in its binary number***
- Previous by thread: ***Re: uniform convergence?***
- Next by thread: ***JSH is a virgin microbe that penetrates with the insistence of air into all the spaces that reason has not been able to fill with words or conventions.***
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