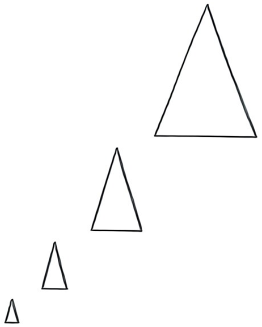
例如

$$u_n(x) = \begin{cases} 2(n+1)(x-\frac{1}{n+1}), & x \in [\frac{1}{n+1}, \frac{1}{2}(\frac{1}{n+1}+\frac{1}{n})] \\ -2(n+1)(x-\frac{1}{n}), & x \in [\frac{1}{2}(\frac{1}{n+1}+\frac{1}{n}), \frac{1}{n}] \\ 0, & x\text{于}[0,1]\text{的其他地方} \end{cases}$$



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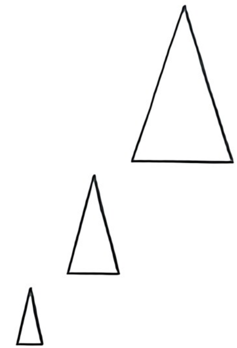
$$u_n(x)=\begin{cases}2(n+1)(x-\frac{1}{n+1}), & x\in[\frac{1}{n+1},\frac{1}{2}(\frac{1}{n+1}+\frac{1}{n})]\\ -2(n+1)(x-\frac{1}{n}), & x\in[\frac{1}{2}(\frac{1}{n+1}+\frac{1}{n}),\frac{1}{n}]\\ 0, & x\text{于}[0,1]\text{的其他地方}\end{cases}$$



这里$u_n(x)\in C[0,1]$，$\max\limits_{x\in[0,1]}u_n(x)=\dfrac{1}{n}=u_n(x_n)$，$x_n=\dfrac{1}{2}(\dfrac{1}{n+1}+\dfrac{1}{n})$，$\forall n\in\mathbb{N}$

所以$\sum\limits_{n=1}^{\infty}u_n(x_n)$发散. 但是, 由于 $\sum\limits_{k=n+1}^{\infty}u_k(x)\le\dfrac{1}{n+1}\to 0\ \ (n\to\infty)$, $\forall x\in[0,1]$.

所以$\sum\limits_{n=1}^{\infty}u_n(x)$ 于$[0,1]$ 一致收敛.

> 所以, 存在$x_n\in I\ \ s.t.\ \sum\limits_{n=1}^{\infty}u_n(x_n)$ 发散并不能导出$\sum\limits_{n=1}^{\infty}u_n(x)$ 于I 不一致收敛.