$\sum a_n$

$$\sum_{n=0}^{\infty} \left(\frac{1}{2}\right)^n = \underbrace{\underbrace{\underbrace{1}_{1} + \frac{1}{2}}_{\frac{3}{2}} + \frac{1}{4}}_{\frac{7}{4}} + \frac{1}{8} + \dots$$

s_n

$$\lim_{n\to\infty} s_n = 2$$

$$\overline{\sum (-1)^n} = 1 - 1 + 1 - 1$$

$$1 \quad 0 \quad 1 \quad 0 \quad \dots$$

$$\sum n = \infty$$

$$\sum_{n=1}^{\infty} n^{\alpha} \begin{cases} \alpha \geq -1 & D \quad (\infty) \\ \alpha < -1 & k \end{cases}$$

$$\sum \underbrace{\frac{n^2}{n^4+3n-1}}_{a_n \geq 0}$$

$$\frac{n^2}{n^4} = \underbrace{\frac{1}{n^2}}_{b_n \geq 0} \qquad \alpha = -2 \qquad \underline{\sum \frac{1}{n^2} \ k}$$

LSK

$$\lim_{n\to\infty} \frac{a_n}{b_n} = \lim \frac{\frac{n^2}{n^4+3n-1}}{\frac{1}{n^2}} = \lim \frac{n^4}{n^4+3n-1}$$

$$= \lim \frac{n^4}{n^4} \cdot \frac{1}{1+\frac{3}{n^3}-\frac{1}{n^4}} = 1 \in (0,\infty)$$

$$\sum \frac{1}{n^2} \ k \quad \Rightarrow \quad \underline{\sum \frac{n^2}{n^4+3n-1} \ k}$$

$$\sum \frac{-n^2}{n^4+3n-1} = -\sum \underbrace{\frac{n^2}{n^4+3n-1}}_{\geq 0}$$

$$\sum \left| \frac{(-1)^n n^2}{n^4+3n-1} \right|$$

$\sum |a_n| \; K \Rightarrow \sum a_n \; K$

SK $\qquad \sum a_n \qquad \sum b_n$

$a_n, b_n > 0$

$a_n \leq b_n$

$\sum a_n \; K \Leftarrow \sum b_n \; K$

$\sum a_n \; D \Rightarrow \sum b_n \; D$

$$\sum \frac{|\sin n^2|}{n^3} \qquad \sum \frac{1}{n^3} \; K$$

$$\leq \frac{1}{n^3}$$

$$\Rightarrow \quad \sum \frac{|\sin n^2|}{n^3}$$

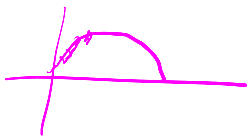
$\sum (\ln n)^n \qquad \lim_{n \to \infty} (\ln n)^n = \infty \neq 0$

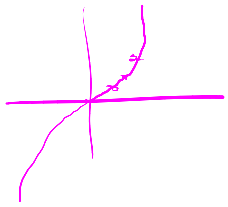
nesplňuje NP konv.

$$\sum \underbrace{\sin\left(\tfrac{1}{n^2}\right)\cdot \tan\left(\tfrac{1}{n}\right)\cdot \operatorname{arctan}(n)}_{a_n \geq 0}$$

LSK

$$b_n = \frac{\pi/2}{n^3}$$





$$\lim_{n\to\infty} \frac{a_n}{b_n} = \lim \frac{\sin\frac{1}{n^2}}{\frac{1}{n^2}} \cdot \frac{\tan\frac{1}{n}}{\frac{1}{n}} \cdot \frac{\overset{\nearrow \pi/2}{\operatorname{arctan} n}}{\underbrace{\pi/2}_{1}}$$

$$= 1\cdot 1\cdot 1 = 1 \in (0,\infty)$$

$$\lim_{x\to 0} \frac{\sin x}{x} \quad 1 \qquad \lim_{x\to 0} \frac{\tan x}{x}$$

$$\sum a_n \; K \iff \sum \frac{\pi}{2}\cdot \frac{1}{n^3} \; K$$

Závěr: $\sum a_n$ K :)

Heine $x_n = \frac{1}{n^2}$