$\sum a_n$

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

1 $\quad \frac{3}{2} \quad \frac{7}{8}$

$\lim_{n\to\infty} = \ell \quad \ell$

$\sum 1 \quad = \pm\infty \quad D$

$\sum (-1)^n \quad D$ oscilacja

$$\sum \frac{n^2-1}{n^3+n^2+4}$$

NP $\quad \sum a_n \qquad \sum n^2 \; D$

$\lim a_n = 0 \qquad \lim n^2 = \infty \neq 0$

SL $\quad \sum a_n \qquad \sum b_n \qquad a_n, b_n \geq 0$

$a_n \leq b_n$

$\sum a_n \; \ell \; \Leftarrow \; \sum b_n \; \ell$

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

$$\sum \frac{|\sin n|}{2^n} \; \ell \; \Leftarrow \; \sum \frac{1}{2^n} \; \ell$$

$\geq 0 \qquad \frac{|\sin n|}{2^n} \leq \frac{1}{2^n} \qquad \geq 0$

$$\sum n^\alpha \begin{cases} \ell & \alpha < -1 \\ D & \alpha \geq -1 \end{cases} \qquad \sum \frac{1}{n} \; D$$

$$\sum \frac{n^2+3n}{\underbrace{n^5-n^4+2}_{a_n}}$$

$a_n \geq 0$

$$\frac{n^2}{n^5} = \underbrace{\frac{1}{n^3}}_{b_n} \qquad \sum \underbrace{\frac{1}{n^3}}_{\geq 0} \; k$$

LSK

$$\lim_{n\to\infty} \frac{a_n}{b_n} = \lim_{n\to\infty} \frac{\frac{n^2+3n}{n^5-n^4+2}}{\frac{1}{n^3}} =$$

$$= \lim \frac{n^5+3n^4}{n^5-n^4+2} = \lim \frac{n^5}{n^5} \cdot \frac{1+\frac{3}{n}}{1-\frac{1}{n}+\frac{2}{n^5}} = 1 \in (0,\infty)$$

$\sum a_n \; k \iff \sum b_n \; k$

závěr $\sum a_n \; k$

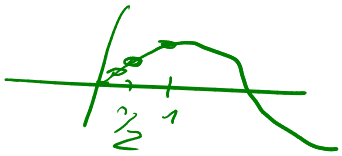
$$\sum -\frac{n^2+3n}{n^5-n^4+2} \qquad -\sum \frac{n^2+3n}{n^5-n^4+2} \; k$$

$$\sum \left| (-1)^n \frac{n^2+3n}{n^5-n^4+2} \right|$$

$$\sum |a_n| \; k \Rightarrow \sum a_n \; k$$

$$\sum \sin\left(\frac{1}{n}\right)\left(1-\cos\left(\frac{1}{n^2}\right)\right)\operatorname{arccot}(-n)$$

$\sin\left(\frac{1}{n}\right) \geq 0$ $\left(1-\cos\left(\frac{1}{n^2}\right)\right) \geq 0$ $\operatorname{arccot}(-n) \geq 0$



≥ 0

$\sum$ konv. $\Leftrightarrow$ $b_n \frac{\pi}{n^5}$ $\sum \frac{\pi}{n^5}$ konv.

$$\lim_{n\to\infty} \frac{\sin\frac{1}{n}}{\frac{1}{n}} \cdot \frac{\left(1-\cos\frac{1}{n^2}\right)}{\frac{1}{n^4}} \cdot \frac{\operatorname{arccot}(-n)}{\pi}$$

$\to 1$ $\to \frac{1}{2}$ $\to 1$

$= \frac{1}{2} \in (0,\infty)$

$\lim_{y\to 0} \frac{\sin y}{y} = 1$ $\lim_{x\to 0} \frac{1-\cos x}{x^2} = \frac{1}{2}$ $\lim_{n\to\infty} \operatorname{arccot}(-n) = \pi$

Závěr: $\sum a_n$ konv.

Heine $x_n =$

VOLSE (P)