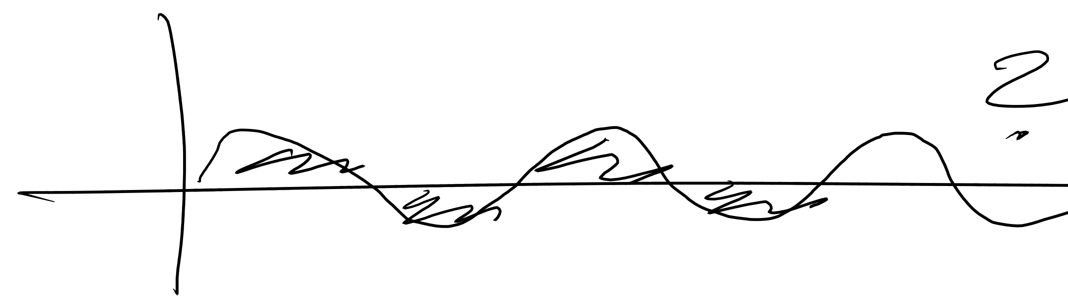
$$\int_0^1 \left| \frac{e^x - 1}{x^2} (\ln(x+1)) \right| dx$$

$$\frac{x}{x^2} x = 1$$

$$\int_a^b |f| \, dx$$



$$\sum \frac{1}{n} \infty \qquad \sum \frac{1}{n^2} < \sum \frac{1}{n^2 \ln n} <$$

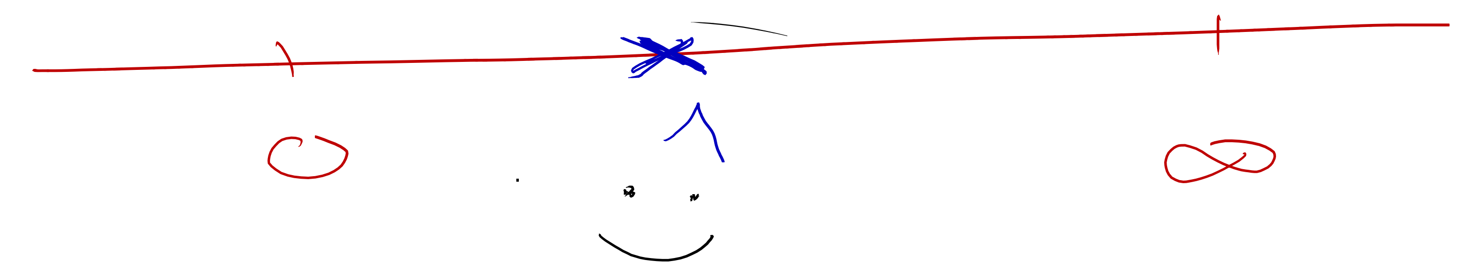
$$\int_0^1 \frac{1}{x} dx = \left[\ln|x|\right]_0^1 = 0 - \lim_{x \to 0^+} \ln x$$

$$= -(-\infty) = \underline{\underline{\infty}}$$

$$\int_0^1 \frac{1}{\sqrt{x}} dx = \left[2\sqrt{x}\right]_0^1 = 2 - 0 = \underline{\underline{2}}$$

$$\int_0^\infty \frac{1}{1+x^2}\,dx = [\arctan x]_0^\infty = \frac{\pi}{2} - 0 = \frac{\pi}{2}$$

spoj na $(0,\infty)$



$$\int_0^1 \frac{1}{1+x^2}\,dx \qquad \int_1^\infty \frac{1}{1+x^2}\,dx$$

f spoj na $[0,1]$?

Ano :)

om fce na om. intervalu

$\longrightarrow$ $\int_0^1 \frac{1}{1+x^2}\,dx$ AK

$$\int_1^\infty \underbrace{\frac{1}{1+x^2}}_{f}\,dx$$

$[a,b)$

$[1,\infty)$ f spoj na $[1,\infty)$

$0 \le f \le g$

$\frac{1}{1+x^2} \le \frac{1}{x^2}$ ✓ $\qquad \int_1^\infty \frac{1}{x^2}\,dx$ AK :)

SK $\Longrightarrow$ $\int_1^\infty \frac{1}{1+x^2}\,dx$ AK

$$\underbrace{\int_0^1 \text{ AK} \qquad \int_1^\infty \text{ AK}}_{\int_0^\infty \text{ AK}}$$

$$\int_1^\infty \underbrace{\frac{1}{1+x^2}}_{f}\,dx \qquad \sum \frac{1}{1+n^2} \qquad \sum \frac{1}{n^2}$$

LSK $\int_1^\infty \underbrace{\frac{1}{x^2}}_{g>0}\,dx$ $\qquad$ f, g spoj na $[1,\infty)$

$$\lim_{x\to\infty} \frac{f(x)}{g(x)} = \lim_{x\to\infty} \frac{\frac{1}{1+x^2}}{\frac{1}{x^2}} = 1 \in (0,\infty)$$

$\int_1^\infty f$ AK $\Longleftrightarrow$ $\int_1^\infty \frac{1}{x^2}\,dx$ $\to$ K :)

LSK: $\int_1^\infty f$ AK :)

Nápad

$\int_0^\infty \frac{1}{1+x^2}$ $\qquad$ f spoj $[0,\infty)$

LSK $\lim_{x\to\infty} \frac{\frac{1}{1+x^2}}{\frac{1}{x^2}} = 1 \in (0,\infty)$

$\int_1^\infty \frac{1}{x^2}$ K $\qquad \int_0^\infty \frac{1}{1+x^2}\,dx$

1 $\quad$ g $\qquad \int_0^\infty \frac{1}{x^2}$ D

$$\int_1^\infty \frac{|\sin x|}{x^2}\,dx$$

$$\frac{|\sin x|}{x^2} \le \frac{1}{x^2}$$

ב

LSZ $g = \frac{1}{x^2}$

$$\lim_{x\to\infty} \frac{\frac{|\sin x|}{x^2}}{\frac{1}{x^2}} = \lim_{x\to\infty} |\sin x|$$

$$\int_0^1 \frac{e^x-1}{x^2}\ln(x+1)\,dx$$

0 ——— $\frac{1}{2}$ ——— 1 spoj.

$$\int_0^{1/2} \frac{e^x-1}{x^2}\boxed{\ln(x+1)}\,dx$$

$$g(x) = \frac{x \cdot x}{x^2} = 1$$

$$\lim_{x \to 0-} \frac{f}{g} = 1 \quad :)$$

$$\int_0^{1/2} f \ \ k \iff \int_0^{1/2} g \ \ k$$

$$\longrightarrow \int f \ k \quad :)$$

$$\lim_{x\to 0-} \frac{\frac{(e^x-1)\ln(x+1)}{x^2}}{1}$$

$$= \lim \frac{e^x-1}{x}\cdot\frac{\ln(x+1)}{x} = 1\cdot 1$$

$$1 - x^3 = \underbrace{(1-x)}(1+x+x^2)$$

$$\frac{1}{(1-x)\,2} \qquad \frac{1}{(1-x)\,x}$$

$$\leq \frac{1}{1-x}$$

~~lim~~ $0 \leq \frac{1}{1-x^3} \not\leq \frac{1}{-x^3}$

$$\frac{-x^3}{1-x^3} \geq 1$$

$$-x^3 \geq 1-x^3$$

$$\int_0^1 \frac{1}{1-x}\,dx$$