$\sum x_n \qquad x_n \in \mathbb{C} \qquad \sum x_n \text{ k} \iff (\sum a_n \text{ k} \ \& \ \sum b_n \text{ k})$

$x_n = a_n + i b_n \qquad \sum a_n + i \sum b_n$

- $\sum_{n=1}^{\infty} \frac{1}{n^2+2i} = \sum \frac{1}{n^2+2i} \cdot \frac{n^2-2i}{n^2-2i} = \sum \frac{n^2-2i}{n^4-4i^2} = \sum \frac{n^2-2i}{n^4+4}$

$\underbrace{\sum \frac{n^2}{n^4+4}}_{\text{LSK } \frac{1}{n^2} \text{ k}} \qquad \underbrace{\sum \frac{-2}{n^4+4}}_{\text{LSK } \frac{1}{n^4} \text{ k}} \, i$

Závěr: $\sum_{n=1}^{\infty} \frac{1}{n^2+2i}$ k :)

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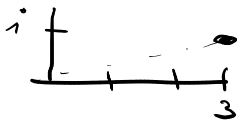
$\sum |x_n| \text{ k} \implies \sum x_n \text{ k}$




$\sum \frac{(i+3)^n}{20^n} \qquad \sum \left| \frac{(i+3)^n}{20^n} \right| = \sum \frac{|i+3|^n}{20^n} = \sum \frac{(\sqrt{10})^n}{20^n} \text{ k}$

Závěr: $\sum \frac{(i+3)^n}{20^n}$ k (AK)

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$\sum \frac{e^{in\varphi}}{n} \qquad \varphi \in \mathbb{R} \qquad r e^{i\alpha} = r(\cos\alpha + i \sin\alpha)$

$\cos(n\varphi) + i \sin(n\varphi)$

- $\sum \frac{|e^{in\varphi}|}{n} = \sum \frac{1}{n}$ :(

$\sum \frac{\cos(n\varphi)}{n} + i \frac{\sin(n\varphi)}{n}$

$\sum \frac{\cos(n\varphi)}{n} \qquad \sum \frac{\sin n\varphi}{n} \text{ k}$

Dirichlet k $\quad \varphi \neq 0 + 2k\pi \qquad k \in \mathbb{Z}$

$\frac{1}{n} \searrow 0$

Závěr: $\sum \frac{e^{in\varphi}}{n}$ k $\iff \varphi \neq 2k\pi, \quad k \in \mathbb{Z}$

$\int$ , DF

$f$ — $\boxed{\frac{d}{dx}\downarrow}$ — $f'$

$x^2 \downarrow 2x$

$2x$ — $\int$ — $\downarrow$ ? $x^2$

$x^2 - \pi$

$x^2$

$x^2 + 1$

$$\int \frac{1}{1+x^2}\,dx = \arctan x + C, \quad x \in \mathbb{R}$$

$$\int \sqrt[3]{x}\,dx = \int x^{1/3}\,dx \overset{C}{=} \frac{x^{1+1/3}}{1+1/3} = \frac{x^{4/3}}{4/3} = 3\frac{\sqrt[3]{x^4}}{4}$$

$C \in \mathbb{R}$

$x \in \mathbb{R}$

$$\rightarrow \int \frac{1}{\sqrt{1-x^2}} = \arcsin x + C$$

$- \arccos x$

$(-1,1)$ $[-1,1]$ $x \in (-1,1)$

$$\int \cos x + \frac{1}{x}\,dx = \int \cos x\,dx + \int \frac{1}{x}\,dx$$

$$= + \sin x + \ln|x| + C$$

$x \neq 0$

$$\int \frac{2}{1+x^2}\,dx = 2\int \frac{1}{1+x^2}\,dx = 2\arctan x$$

Pisemka | Ct 8.4, $\Sigma$ AK, $\Sigma$ o AK, $\int$ PP, Subst, 30 min, Open book

Moodle

$$\int \sin(-3x+4)\,dx \overset{c}{=} -\cos(-3x+4)\cdot\frac{1}{-3}$$

↓ de

$$\cdot\frac{1}{-3}\cdot -(-\sin(-3x+4))\cdot(-3)$$

$ax+b$

$-x$ ✓

$3x+\pi$ ✓

$2x^2+7$ ✗

$$\int e^{-x}\,dx = -e^{-x}+c$$