$$-1 + 1 - 1 + 1$$

$$\left(\frac{-n}{n}\right)^1 + \left(\frac{-n}{n}\right)^2$$

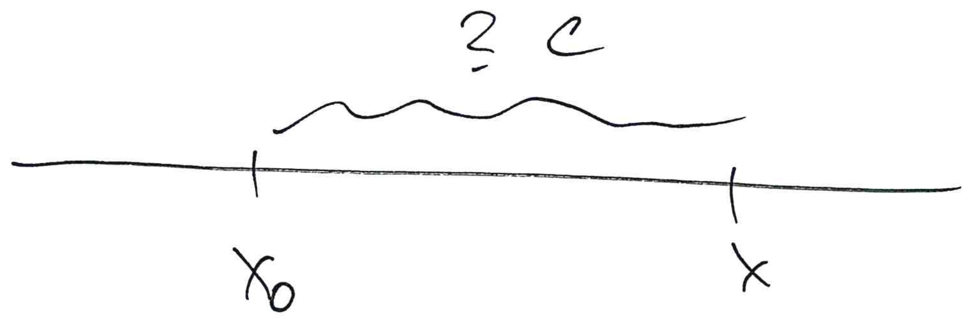
$$\sum_{k=1}^{\infty} \frac{1}{\sqrt{2k+1}} = \frac{1}{\sqrt{3}} + \frac{1}{\sqrt{5}} + \frac{1}{\sqrt{7}} + \dots$$

$$\sum_{k=0}^{\infty} \frac{(-1)^{k}}{1+k} (x-1)^{k+1} =$$

$$\sum_{k=1}^{\infty} \frac{(-1)^{k+1}}{k} (x-1)^{k} =$$

$$R_n(x) = \frac{1}{(n+1)!} f^{(n+1)}(c) (x-x_0)^{n+1} \longrightarrow \underline{\underline{0}}$$

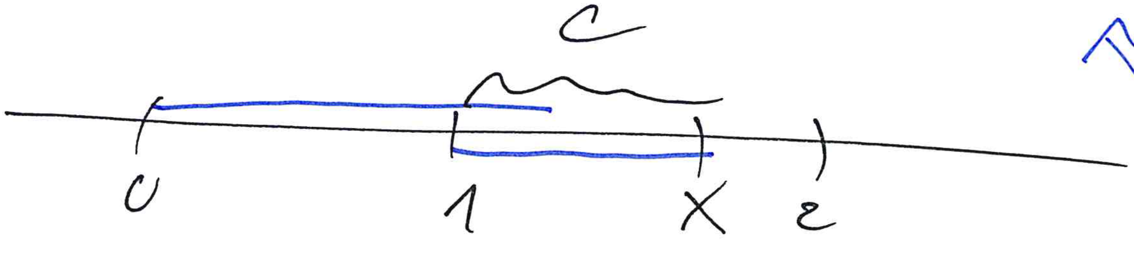
$$\underline{\sum \frac{1}{k!}(x-x_0)^k = \exp(x-x}$$



$$f^{(n+1)}(c) \overset{?}{=} \begin{cases} \pm \sin c \\ \pm \cos c \end{cases} \qquad |\pm \sin c| \leq 1 \qquad |\pm \cos c| \leq 1$$

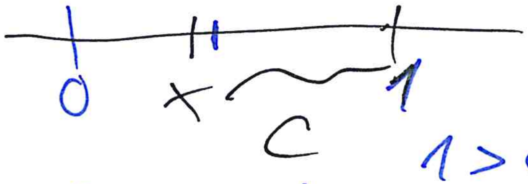
$$R_k(x) = (-1)^{k+1} \frac{1}{k+1} \left(\frac{x-1}{c} \right)^{k+1}$$

$c > 1 \quad x - 1 < 1$



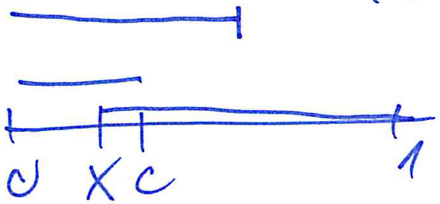
$\left| \frac{x-1}{c} \right| < 1$

$x \in [1, 2)$



$1 > c > x$

$x \in (0, 1)$?



$$\frac{\alpha(\alpha-1)\ldots(\alpha-n)}{n!}$$

$f(x) = x^{\alpha}$

$\alpha = \frac{1}{2}$ $\quad \sqrt{x}$

$\alpha = 5$ $\quad (\alpha \in \mathbb{N})$

$\cancel{(1+(}$

$$x^n = (1+(x-1))^n = \text{binomická věta}$$

$$1^{n-k}(x-1)^k$$

$$\binom{\alpha}{n} = \frac{\alpha(\alpha-1)(\alpha-2)\ldots(\alpha-n+1)}{n!}$$

$n \in \mathbb{N} \cup \{0\}$

$\alpha \in \mathbb{R}$

$\cancel{\left(\frac{1}{2}\right)!}$

$$\left| \frac{\dfrac{\cancel{\alpha(\alpha-1)(\alpha-2)\cdots}(\alpha-k)}{(k+1)\cancel{!}}}{\underbrace{\dfrac{\cancel{\alpha(\alpha-1)(\alpha-2)\cdots(\alpha-k+1)}}{\cancel{k}!}}_{\binom{\alpha}{k}}} \right| = \left| \frac{\alpha-k}{k+1} \right|$$

$n=1$ $\quad (-1)^2 \, (x-1)^1 \, \frac{1}{1! \, 2^1}$

$$\prod_{n=1}^{\infty} (2n-1)$$

$$\frac{1}{2}\left(-\frac{1}{2}\right)\left(-\frac{3}{2}\right)\left(-\frac{5}{2}\right) \cdots$$

$$\prod_{n=1}^{\infty} (2n-1) \longleftrightarrow 1 \cdot \cancel{1} \cdot 3 \cdot 5 \cdot 7$$

$$\prod_{k=1}^{n} (2k-1)$$

$$\boxed{\sum_{n=0}^{\infty} \binom{\frac{1}{2}}{n} (x-1)^n}$$

$$\frac{\frac{1}{2}\left(-\frac{1}{2}\right)\left(-\frac{3}{2}\right) \cdots}{n!}$$