$$\mathbb{R}_+ = \begin{cases} u \in \mathbb{R} \\ u \geqslant 0 \end{cases}$$

$$\mathbb{R}_+ \xrightarrow[\text{streng isoton}]{()^n} \mathbb{R}_+$$

$$n = 1: \quad ()^1 = \text{ id } \text{ streng isoton}$$

$$1 \leqslant n \curvearrowright n+1: \quad ()^n \text{ streng isoton}$$

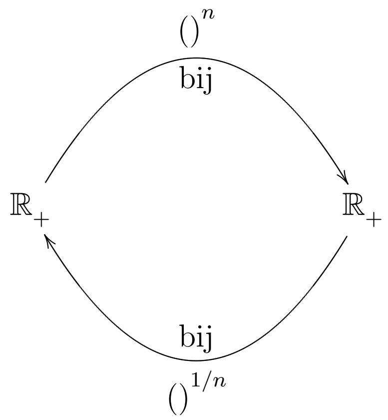
$$0 \leqslant u < y \underset{\text{ind}}{\Longrightarrow} 0 \leqslant u^n < y^n$$

$$\Longrightarrow u^{n+1} = u \cdot u^n < u \cdot y^n < y \cdot y^n = y^{n+1} \text{ auch } u = 0 \Longrightarrow ()^{n+1} \text{ streng isoton}$$

$$\mathbb{R}_+ \xrightarrow[\text{stet}]{()^n} \mathbb{R}_+$$

$$n = 1: \quad ()^1 = \text{ id } \text{ stet}$$

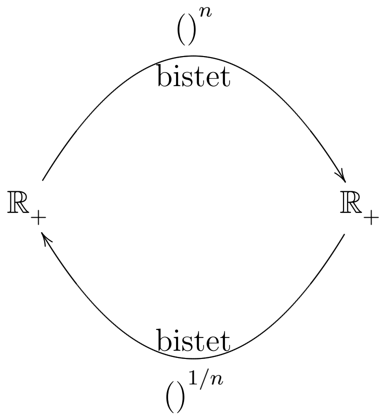
$$1 \leqslant n \curvearrowright n+1: \quad ()^n \text{ stet} \underset{\text{prod rule}}{\Longrightarrow} ()^{n+1} = ()^1 \, ()^n \text{ stet}$$



$$()^n \text{ streng isoton } \Longrightarrow ()^n \text{ inj}$$

$$()^n \text{ stet } \Longrightarrow \left(\mathbb{R}_+\right)^n \text{ intervall}$$

$$y > 0 \underset{\text{Arch}}{\Longrightarrow} \bigvee_{m > y}^{\mathbb{N}} \Longrightarrow 0^n = 0 < y < m \underset{1 \leqslant m}{\leqslant} \underbrace{m \cdot\cdot m}_{n \text{ mal}} = m^n \underset{\text{interval}}{\Longrightarrow} y \in \left(\mathbb{R}_+\right)^n \Longrightarrow \left(\mathbb{R}_+\right)^n = \mathbb{R}_+ \text{ surj}$$



$$b \in \mathbb{R}_+ \underset{\text{surj}}{\Longrightarrow} \bigvee_{a}^{\mathbb{R}_+} a^n = b$$

$$\Longrightarrow \text{ cpt } \overline{0|a{+}1} \xrightarrow[\text{bij stet}]{()^n} \overline{0|(a{+}1)^n} \underset{\text{Umkehrsatz}}{\Longrightarrow} \overline{0|(a{+}1)^n} \xrightarrow[\text{bij stet}]{()^{1/n}} \overline{0|a{+}1}$$

$$\Longrightarrow b \in \underline{0|(a{+}1)^n} \xrightarrow[\text{bij stet}]{()^{1/n}} \underline{0|a{+}1} \Longrightarrow ()^{1/n} \text{ stet in } b$$

$$\mathbb{R} \supset \mathbb{R}^{\times} \xrightarrow[\text{stet}]{\text{inv}} \mathbb{R}^{\times}$$

$$y \neq 0 \mapsto \overline{u - y} \leqslant \frac{\overline{y}}{2} \Longrightarrow \overline{u} \geqslant \frac{\overline{y}}{2}$$

$$\overline{\frac{1}{u} - \frac{1}{y}} = \frac{\overline{y-u}}{\overline{u}\,\overline{y}} \leqslant 2\frac{\overline{y-u}}{\overline{y^2}} \text{ stet}$$

$$\mathbb{R} \supset \mathbb{R}^{\times} \xrightarrow[\text{diff}]{\text{inv}} \mathbb{R}^{\times}$$

$$\partial_u \ \text{inv} \ = \frac{-1}{u^2}$$

$$\mathbb{R}_{>} \ = \begin{cases} u \in \mathbb{R} \\ u > 0 \end{cases}$$

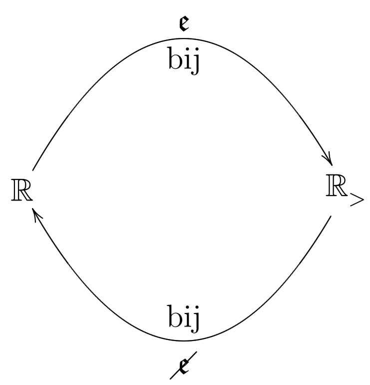
$$\mathbb{R} \xrightarrow[\text{streng isoton}]{\mathfrak{e}} \mathbb{R}_{>}$$

$$u > 0 \Longrightarrow e^u = \sum_{m}^{\mathbb{N}} u^{\cancel{m}} = 1 + \sum_{m>0} u^{\cancel{m}} > 1$$

$$a < b \Longrightarrow b - a > 0 \Longrightarrow e^b = e^{a+(b-a)} = e^a \underbrace{e^{b-a}}_{>1} > e^a$$

$$\mathbb{R} \xrightarrow[\text{stet}]{\mathfrak{e}} \mathbb{R}_{>}: \quad \text{not glm stet}$$

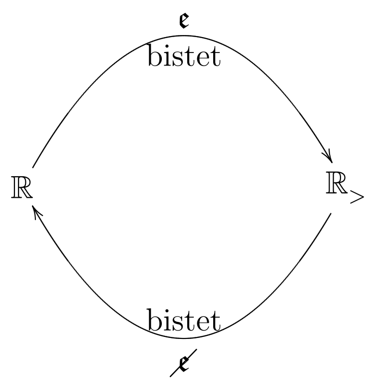
$$o \in \mathbb{R} \Longrightarrow e^u \underset{o\text{-}1|o\text{+}1}{\Leftarrow} \sum_{m}^{n} u^{\cancel{m}} \Longrightarrow \mathfrak{e} \text{ stet auf } \overline{o\text{-}1|o\text{+}1} \supset \underline{o\text{-}1|o\text{+}1} \ni o \Longrightarrow \mathfrak{e} \text{ stet in } o$$



$\mathfrak{e}$ streng isoton $\Longrightarrow \mathfrak{e}$ inj

$\mathfrak{e}$ stet $\Longrightarrow {}^{\mathbb{R}}\mathfrak{e}$ intervall

$$y > 0 \underset{\text{Arch}}{\Longrightarrow} \begin{cases} \bigvee\limits_{m > y}^{\mathbb{N}} & \Longrightarrow y < m \leqslant e^m \\ \bigvee\limits_{n > 1/y}^{\mathbb{N}} & \Longrightarrow e^{-n} = \dfrac{1}{e^n} \leqslant \dfrac{1}{n} < y \end{cases} \underset{\text{interval}}{\Longrightarrow} y \in {}^{\mathbb{R}}\mathfrak{e} \Longrightarrow {}^{\mathbb{R}}\mathfrak{e} = \mathbb{R}_> \text{ surj}$$



$$b \in \mathbb{R}_> \underset{\text{surj}}{\Longrightarrow} \bigvee\limits_{a}^{\mathbb{R}} e^a = b \Longrightarrow \text{ cpt } \overline{-a-1|a+1} \xrightarrow[\text{bij stet}]{\mathfrak{e}} \overline{e^{-a-1}|e^{a+1}}$$

$$\underset{\text{Umkehrsatz}}{\Longrightarrow} \overline{e^{-a-1}|e^{a+1}} \xrightarrow[\text{bij stet}]{\not\mathfrak{e}} \overline{-a-1|a+1} \Longrightarrow b \in \underline{e^{-a-1}|e^{a+1}} \xrightarrow[\text{bij stet}]{\not\mathfrak{e}} \underline{-a-1|a+1} \Longrightarrow \not\mathfrak{e} \text{ stet in } b$$

Potenzreihe $\Longrightarrow \not\mathfrak{e}$ stet auf $\underline{0|2}$