

$$\mathbb{C} = \mathbb{R} + i\mathbb{R}$$

\mathfrak{e} diff

$$\mathbb{C}^\times = \mathbb{R}_{>} \mathbb{T}$$

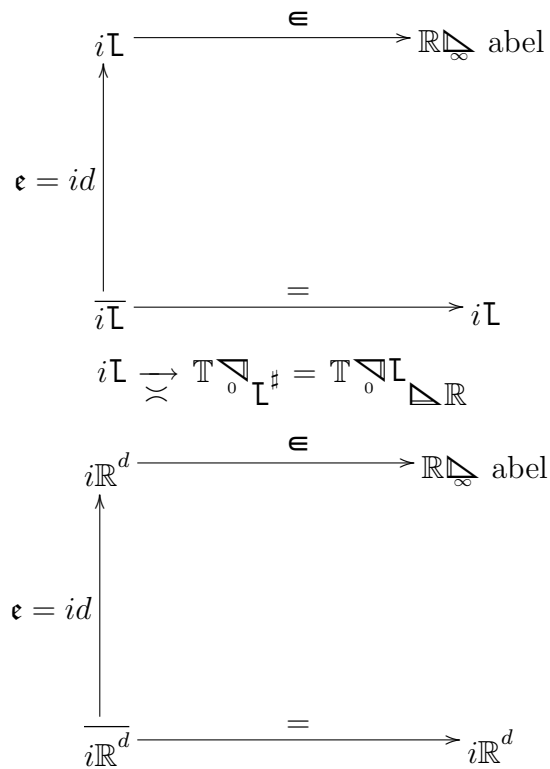
$$r + is \mathfrak{e} = r e^{is \mathfrak{e}} = r e^{(s \mathfrak{c} + i s \mathfrak{s})}$$

$$\text{Ker}(\mathfrak{e}) = 2i\pi\mathbb{Z} = \frac{2\pi in}{\mathbb{Z} \ni n}$$

$$t = r + is \in \text{Ker}(\mathfrak{e}) \Rightarrow 1 = t \mathfrak{e} \Rightarrow \overline{t} \mathfrak{e} = \Re t \mathfrak{e} = r e \Rightarrow r = 0$$

$$1 = is \mathfrak{e} = s \mathfrak{c} + i s \mathfrak{s} \Rightarrow \begin{cases} 1 = s \mathfrak{c} \\ 0 = s \mathfrak{s} \end{cases} \Rightarrow s = 2in\pi$$

$$n \in \mathbb{Z}$$



$$\nu_{i\mathbb{L}} = \frac{dL^1 \cdots dL^d}{(2\pi)^d} = \frac{dL^1}{2\pi} \cdots \frac{dL^d}{2\pi}$$

$$i\mathbb{R}^d \xrightarrow{\sim} T_{\mathbb{R}}^{\triangleright} \mathbb{R}^d = T_{\mathbb{R}}^{\triangleright} \overbrace{\mathbb{R}^d}^{\triangleright \mathbb{R}}$$

$$\mathbb{L} \xrightarrow{\zeta} e^{\mathbb{L}} \zeta \mathbb{L}$$

$$\nu_{\mathbb{L}} = dL^1 \cdots dL^d \in \mathbb{R}_{+0}^{\triangleright} \mathbb{R}^d$$

$$\mathbb{R}^d \xrightarrow{\sim} T_{\mathbb{R}}^{\triangleright} \mathbb{R}^d$$

$$\mathbb{L} \xrightarrow{\zeta} e^{2\pi i \mathbb{L} \log \cdot} \zeta \mathbb{L}$$

$$i\mathbb{Q}_p^d \xrightarrow{\sim} T_{\mathbb{Q}_p}^{\triangleright} \mathbb{Q}_p^d$$

$$\mathbb{L} \xrightarrow{\zeta} e^{2\pi i \text{tr}_p \mathbb{L}} \zeta \mathbb{L}$$

$$\begin{array}{c}
 i\mathbb{R}^d \\
 \downarrow \text{diff} \\
 \mathbb{T}^d
 \end{array}$$

$${}^{is}\mathbf{e} = {}^{is}e = {}^s\mathbf{c} + i {}^s\mathbf{s}$$

$$\text{Ker}(\mathbf{e}) = 2i\pi \mathbb{Z}^d = \frac{2\pi in}{\mathbb{Z}^d} \in$$

$$is \in \text{Ker}(\mathbf{e}) \Rightarrow 1 = {}^{is}\mathbf{e} = {}^s\mathbf{c} + i {}^s\mathbf{s} \Rightarrow 1 = {}^s\mathbf{c}$$

$$0 = {}^s\mathbf{s} \Rightarrow s = 2in\pi$$

$$n \in \mathbb{Z}^d$$