$$\mathbb{Q} \qquad \underset{\text{fin}}{\sqsubset} \qquad Q \text{ number field}$$

$$\mathbb{Z} \qquad \underset{\text{fin}}{\sqsubset} \qquad Z \text{ number ring}$$

$$\begin{array}{ccccc} \mathbb{Q} & \subset & Q & \xrightarrow{p} & \mathbb{R}^{d_1} \times \mathbb{C}^{d_2} \\ \cup & & \cup & & \cup \\ \mathbb{Z} & \subset & Z & \xrightarrow{\asymp} & \mathbb{Z}^{d_1+d_2} \end{array}$$

$$\overset{s}{_P}Q^{-1} = 1 - \overset{-s}{\overline{Z \sqsubset P}}$$

$$\overset{s}{_8}Q = \prod_{P \lhd Z} \overset{s}{_{\mathfrak{p}}}Q = \prod_{P \lhd Z} \frac{1}{1 - \overline{Z \sqsubset P}^{-s}} = \sum_{N \lhd Z} \frac{1}{\overline{Z \sqsubset N}^{s}}$$

$$\overset{s}{_\infty}Q = \frac{\Gamma_{s/2}^{r_1} \Gamma_s^{r_2}}{\pi^{r_1 s/2} (2\pi)^{r_2 s} |D|^{s/2}}$$

$$\overset{s}{}Q = \overset{s}{_\infty}Q \, \overset{s}{_8}Q = \overset{1-s}{}Q$$

$$\overbrace{c\tau + d}^{-1} \underbrace{a\tau + b} \mathsf{\eta} = \overbrace{c\tau + d}^{k} \, {}^{\tau}\mathsf{\eta}$$

$$\left.\begin{array}{c|c} a & b \\ \hline c & d \end{array}\right. \in {}^{2}Z_2^{\complement}$$

$${}^{2}\bar{Q}_2^{\complement} \ltimes {}^{2}Q_2^{\complement} \neg {}^{2}\bar{Q}_2^{\complement} \overset{2}{_\omega}\!\!\diagdown\!\!\!\diagup \mathbb{C}$$

$$D = \det\left(\omega_i^p\right)$$

$$N \lhd Z \Longrightarrow N = P_1 \cap \cdots \cap P_k$$

$Z \sqsubset P$ finite field

$$ {}^{s}\zeta_{P} = \varepsilon_{P}\, q^{(2-2g)\,s}\, q^{g-1}\, {}^{1-s}\zeta_{P} $$

$$ \begin{array}{ccccc} \mathbb{Q} & \subset & Q & \longrightarrow & \mathbb{C}^{2} \\ \cup & & \cup & & \cup \\ \mathbb{Z} & \subset & Z & \longrightarrow & \underset{\sim}{\mathbb{Z}} < 1 \pm \sqrt{-m} > \end{array} $$

$$ D = \det\left(\omega_{i}^{p}\right) $$