$$g_{\mathbb{R}} = \begin{array}{c|c} m & p \\ \hline q & n \end{array} \;\boldsymbol{\in}\; {}^{r}_{2}\mathbb{R}^{\Omega}_{r}$$

$$\text{Ɉ} = \begin{array}{c|c} 0 & 1 \\ \hline -1 & 0 \end{array}$$

$$\overset{*}{g}_{\mathbb{R}} \;\text{Ɉ}\; g_{\mathbb{R}} = \text{Ɉ}$$

$$\begin{array}{c|c} 1 & 1 \\ \hline -1 & 1 \end{array} \; \begin{array}{c|c} m & p \\ \hline q & n \end{array} \; \begin{array}{c|c} 1 & -1 \\ \hline 1 & 1 \end{array} = \begin{array}{c|c} m+n+p+q & n-m+p-q \\ \hline n-m-p+q & m+n-p-q \end{array}$$

$$\gamma_{\mathbb{R}} = \begin{array}{c|c} \alpha & \beta \\ \hline \gamma & \delta \end{array} \;\boldsymbol{\in}\; {}^{r}_{2}\mathbb{R}^{\Omega}_{r}$$

$$\beta = \overset{t}{\beta}: \quad \gamma = \overset{t}{\gamma}: \quad \overset{t}{\alpha} + \delta = 0 = \alpha + \overset{t}{\delta}$$

$$\gamma_{\mathbb{C}} = \copyright\, \gamma_{\mathbb{R}}\, \copyright^{-1} = \begin{array}{c|c} 1 & -i \\ \hline 1 & i \end{array} \; \begin{array}{c|c} \alpha & \beta \\ \hline \gamma & \delta \end{array} \; \begin{array}{c|c} 1 & 1 \\ \hline i & -i \end{array} = \begin{array}{c|c} \overbrace{\alpha+\delta} + i\overbrace{\beta-\gamma} & \overbrace{\alpha-\delta} - i\overbrace{\beta+\gamma} \\ \hline \underbrace{\alpha-\delta} + i\underbrace{\beta+\gamma} & \underbrace{\alpha+\delta} - i\underbrace{\beta-\gamma} \end{array}$$