

$$\begin{array}{|c|c|} \hline 1 & \\ \hline 1 & \\ \hline \end{array} \rangle \xrightarrow{\quad} e^{\frac{i\pi}{4}} \left| \begin{array}{|c|c|} \hline & 1 \\ \hline & 1 \\ \hline \end{array} \right\rangle, \quad \left| \begin{array}{|c|c|} \hline x & \\ \hline y & \\ \hline \end{array} \right\rangle \xrightarrow{\quad} \left| \begin{array}{|c|c|} \hline & y \\ \hline & x \\ \hline \end{array} \right\rangle, \text{ otherwise}$$