**Aufgabe 8:**
a) inverse Manöver:
\[
R^{-1}, \quad M_R^{-1}, \quad Z_1^{-1} = R^{-2}M_U^{-1}R^{-2}M_U, \quad Z_2^{-1} = M_U^{-1}M_R^{-1}M_U M_R, \\
Z_3^{-1} = M_U^{-2}R^{-2}M_U^{-2}R^{-2}, \quad Z_4^{-1} = R^{-1}M_U^{-1}.
\]

b) Manöver Ecken Kanten Mittelflächen
\[
egin{array}{cccc}
R & (2 & 6 & 7 & 3) & (2 & 10 & 3 & 6) & \text{id} \\
M_R & \text{id} & (5 & 9 & 11 & 7) & (2 & 1 & 5 & 6) \\
Z_1 & \text{id} & (1 & 2 & 3) & \text{id} \\
Z_2 & \text{id} & \text{id} & (1 & 3 & 5) & (2 & 6 & 4) \\
Z_3 & \text{id} & (1 & 4) & (2 & 3) & \text{id} \\
Z_4 & (2 & 6 & 7 & 3) & (1 & 2 & 10 & 4) & (3 & 6) & (2 & 3 & 5 & 4)
\end{array}
\]

**Aufgabe 9:**
Die inversen Permutationen sind:
\[
Z_4: \quad p_E^{-1} = (3 & 7 & 6 & 2) \quad p_R^{-1} = (4 & 10 & 2 & 1) & (3 & 6) \quad p_F^{-1} = (4 & 5 & 3 & 2)
\]