

$$\begin{array}{ccc}
 (1, 2, \dots, n) & & (1, 2, \dots, m) \\
 \downarrow & & \downarrow \\
 (\sigma(1), \sigma(2), \dots, \sigma(n)) & & (\tau(1), \tau(2), \dots, \tau(m))
 \end{array}$$