

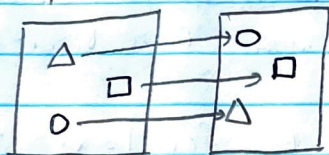
2.1 Define permutations σ_1, σ_2 on $\{\Delta, \square, \circ\}$

by:

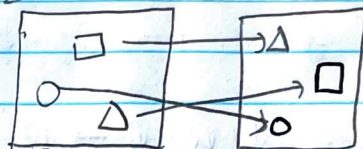
$$\sigma_1(\Delta) = \circ \quad \sigma_1(\square) = \square \quad \sigma_1(\circ) = \Delta$$

$$\sigma_2(\Delta) = \square \quad \sigma_2(\square) = \Delta \quad \sigma_2(\circ) = \circ$$

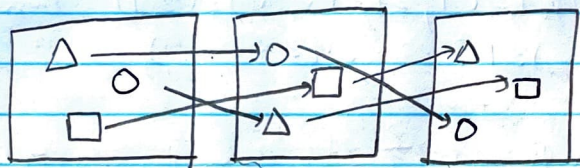
a) σ_1 :



σ_2 :



b)

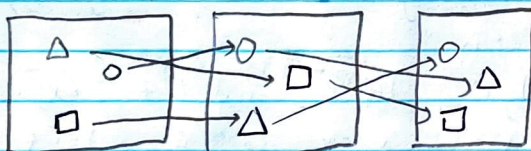


$$\sigma_2 \circ \sigma_1$$

First do σ_1 . Then σ_2 .

$$\sigma_2 \circ \sigma_1(\Delta) = \circ \quad \sigma_2 \circ \sigma_1(\square) = \Delta \quad \sigma_2 \circ \sigma_1(\circ) = \square$$

c)

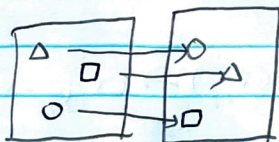


$$\sigma_1 \circ \sigma_2$$

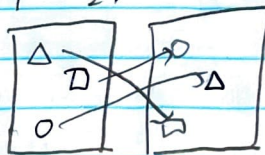
First do σ_2 . Then σ_1 .

$$\sigma_1 \circ \sigma_2(\Delta) = \square \quad \sigma_1 \circ \sigma_2(\square) = \circ \quad \sigma_1 \circ \sigma_2(\circ) = \Delta$$

d) $\sigma_2 \circ \sigma_1$:



$\sigma_1 \circ \sigma_2$:



No, $\sigma_2 \circ \sigma_1 \neq \sigma_1 \circ \sigma_2$.

2.4) Fill in the blanks,

