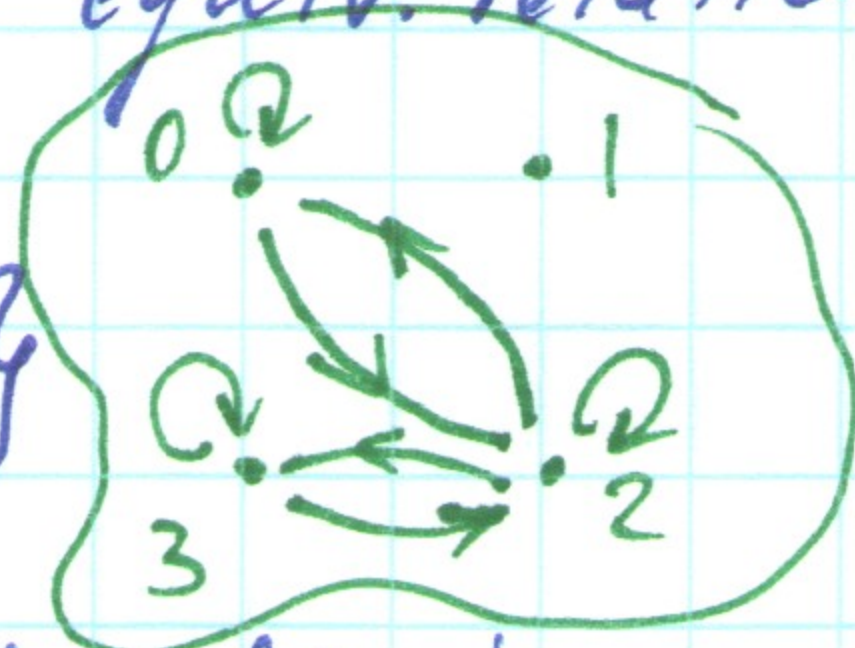


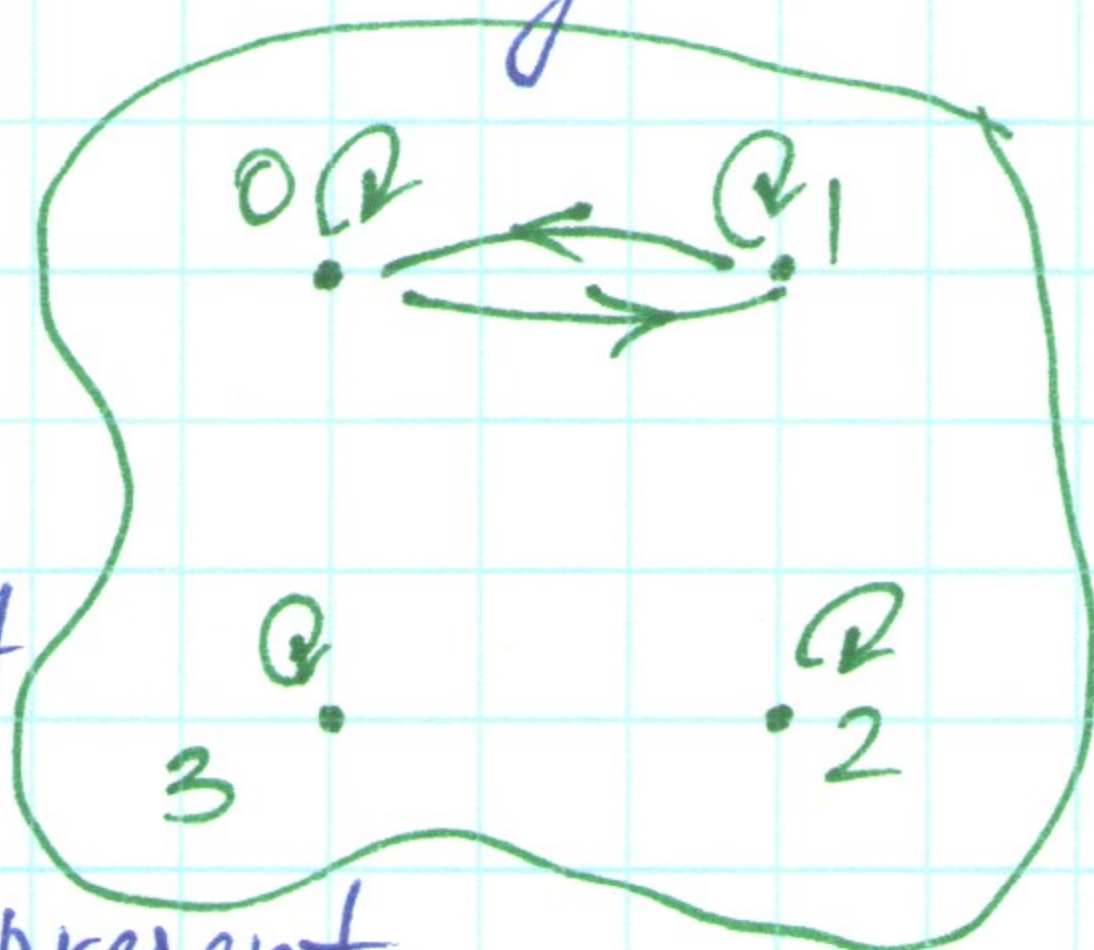
page 615/1 (b, c, d)

 $\{0, 1, 2, 3\}$ 

equiv. relation?

b)  $\{(0,0), (0,2), (2,0), (2,2), (2,3), (3,2), (3,3)\}$ 

- not an equivalence relation because it is not reflexive, nor it is reflexive  $(1,1)$  is missing  
 $(1,1)$  is not listed.

c)  $\{(0,0), (1,1), (1,2), (2,1), (2,2), (3,3)\}$ 

- reflexive, because all  $(x,x)$  are present  
 - symmetric, because  $(1,2)$  and  $(2,1)$  are present  
 - transitive,  $(1,1) \& (1,2) \rightarrow (1,2)$  and so forth.

Therefore, it is an equivalence relation

d)  $\{(0,0), (1,1), (1,3), (2,2), (2,3), (3,1), (3,2), (3,3)\}$ 

- it is not transitive, because

$(1,3)$  and  $(3,2) \in R$ , but  $(1,2) \notin R$

Therefore, it is not an equivalence relation

