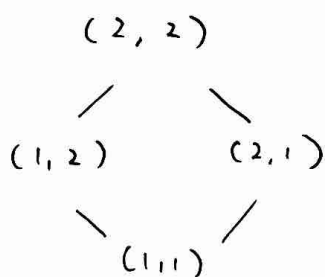


6.035 Spring 2016 Test III

I) 1. A) Yes.



B) Yes.

2. A) No.

Not antisymmetric :  $(1, 2) \preceq (2, 1)$   
 $(2, 1) \preceq (1, 2)$   
 $(1, 2) \neq (2, 1)$

Not transitive :  $(2, 2) \preceq (1, 2)$  and  $(1, 2) \preceq (1, 1)$   
 $(2, 2) \not\preceq (1, 1)$

B) No, not partial order.

3. A) No, not reflexive :  $(2, 2) \not\preceq (2, 2)$

B) No, not partial order

II) 4. 1, 3. T, T

5. Yes, any subset  $S \subseteq P$  has  $\vee S$  and  $\wedge S$ .

6. c

$$7. \begin{cases} 2e, & e \in \mathbb{Z} \\ e, & \text{otherwise} \end{cases}$$

$$8. \begin{cases} e^2, & e \in \mathbb{Z} \\ e, & \text{otherwise} \end{cases}$$

9. A) T

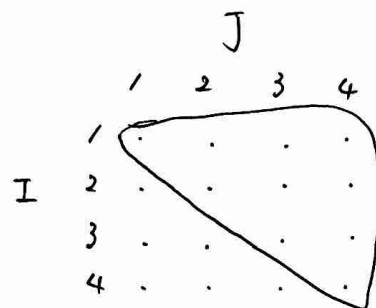
B) T

10. A) T

B) 1

11. Yes: ascending chain property for the lattice  
monotone transfer function

III) (2. A)



$$B) \begin{bmatrix} 1 \\ 2 \end{bmatrix}$$

c) Yes, J.

13. A)

$$\begin{cases} i_w \leq 5 \\ i_r \leq 5 \\ i_w \neq i_r \\ i_w = 2i_r - 1 \end{cases}$$

$$B) \begin{cases} i_r = 2 \\ i_w = 3 \end{cases} \quad \begin{cases} i_r = 3 \\ i_w = 5 \end{cases}$$

c) No, dependencies in (B).