Review

Refl, symm, tras. $\Longleftrightarrow$ {

$\cup, \cap, \circ, -$

[ ] $\Longleftrightarrow$

ε | v $\rightarrow$ graph

$\longleftrightarrow$

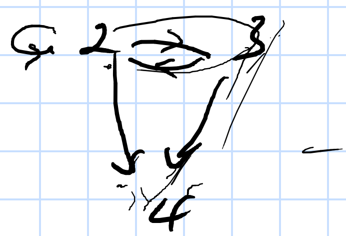
$\{(2,2),(2,3),(2,4),(3,2),(3,3),(3,4)\}$

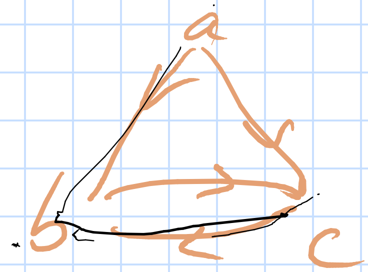
$\{1,2,3,4\}$

It's not reflexive, (1,1) is not included

It's not symmetric, since (2,4) included but (4,2) is not.

It's transitive





It's not reflexive : since $(a,a) \notin$

it's not symmetric (a,c) included but not (c,a)

it's transitive

$R_1 = \{(a,b) \in \mathbb{R}^2 \mid a > b\}$

$R_2 = \{ \quad \text{—} \quad \mid a \geq b\}$

$R_3 = \{ \quad \text{"} \quad \mid a < b\}$

$R_1 \cup R_2 = \{(a,b) \in \mathbb{R}^2 \mid a \geq b\}$

$R_1 \cap R_2 = \{(a,b) \in \mathbb{R}^2 \mid a > b\}$

$R_1 \cap R_3 = \{\emptyset\}$

$R_1 \cup R_3 = \{(a,b) \in \mathbb{R}^2 \mid a \neq b\}$

$R_1 - R_2 = \emptyset$

$R_2 - R_1 = \{(a,b) \in \mathbb{R}^2 \mid a = b\}$

$R_1 \circ R_2 = \{(a,b) \in R_1$ and $(b,c) \in R_2\}$

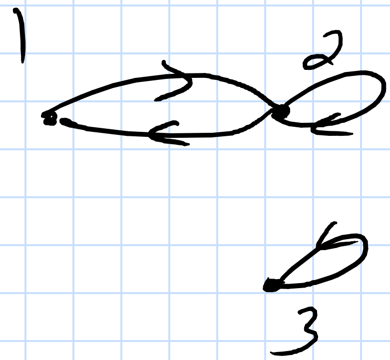
$a > b \quad \& \quad b \geq c$

R_2

$\{1, 2, 3\}$

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

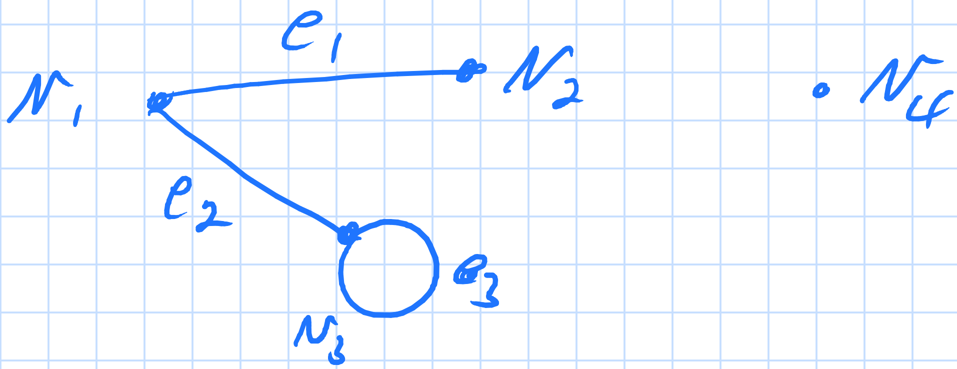
$$\begin{array}{c|ccc} & 1 & 2 & 3 \\ \hline 1 & & & \\ 2 & & \begin{bmatrix} 0 & 1 & 0 \\ 1 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} & \\ 3 & & & \end{array}$$



$$\begin{array}{c|cccc} & 1 & 2 & 3 & 4 \\ \hline 1 \to & 1 & 1 & 0 & 1 \\ 2 \to & 1 & 0 & 1 & 0 \\ 3 \to & 0 & 1 & 1 & 1 \\ 4 \to & 1 & 0 & 1 & 1 \end{array}$$

$\{1, 2, 3, 4\}$

$\{(1,1), (1,2), (1,4), (2,1), (2,3), (3,2), (3,3), (3,4), (4,1), (4,3), (4,4)\}$



vertex: $\{N_1, N_2, N_3, N_4\}$

Edge : $\{e_1, e_2, e_3\}$

Edge	Endpoints
e_1	$\{N_1, N_2\}$
e_2	$\{N_1, N_3\}$
e_3	$\{N_3\}$

$\{N_1, N_2, N_3, N_4, N_5\}$

$\{e_1, e_2, e_3, e_4\}$

edge	End
e_1	$\{N_1\}$
e_2	$\{N_2, N_3\}$
e_3	$\{N_2, N_3\}$
e_4	$\{N_1, N_5\}$