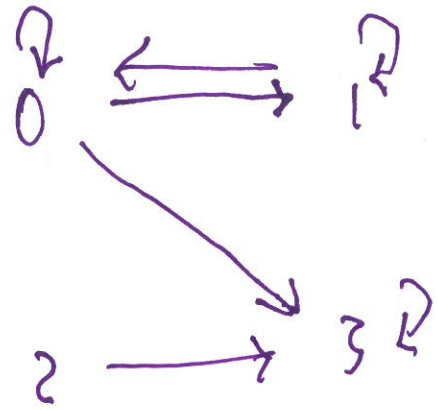
1.



reflexive? no (2,2) missing

symmetric? no (3,2) missing

transitive? no

$(1,0) \in A$ $(0,3) \in A$ but $(1,3) \notin A$

II. $x \mathrel{D} y \iff xy \geq 0$

reflexive? yes $x \mathrel{D} x$ $x^2 \geq 0$? $\forall x \in \mathbb{R}$

symmetric? yes If $x \mathrel{D} y$ then $xy \geq 0$

$yx \geq 0$ commutative prop of mult

$\therefore y \mathrel{D} x$

transitive? no Consider $(1,0)$ and $(0,-1)$

$x \quad y \qquad y \quad z$

$xz = -1 \not\geq 0$

20. reflexive?

$A = \{a, b\}$

$A \in A$?

yes $\forall A \in P(X) \quad |A| = |A|$

$A = \{a\} \quad B = \{b\}$

symmetric?

$A \in B$

$B \in A$?

yes $\forall A, B \in P(X)$,

if $|A| = |B|$ then $|B| = |A|$

$C = \{c\}$

transitive?

if $A \in B$ and $B \in C$, can we conclude $A \in C$

if $|A| = |B|$ and $|B| = |C|$, it must be $|A| = |C|$

$\forall A, B, C \in P(X)$, if $|A| = |B|$ and $|B| = |C|$,

then $|A| = |C|$

51.