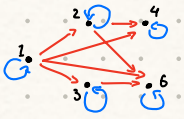
Posets

Posets are sets with a relation R on them that is **Reflexive, Antisymmetric and Transitive**

Is this graph a poset:

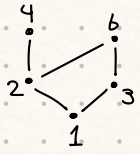


Reflexive: yes, every element is related to itself
Antisymmetric: yes, no elements are related both ways if they are not the same
Transitive: yes, $(1,2) \wedge (2,4) \rightarrow (1,4)$ and $(1,3) \wedge (3,6) \rightarrow (1,6)$

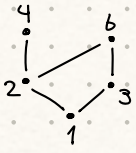
What is the Hasse diagram for it:

If aRb, b is higher than a.

Pairs (removing transitive and reflexive pairs) = $(1,2),(1,3),(2,4),(2,6),(3,6)$



Maxima & Minima



Maximal: elements with none above them 4 and 6
Minimal: elements with none below them 1
Maximum: The single highest element DNE
Minimum: The single lowest element 1
Upper Bound: Elements $\geq \{\cdots\}$ and connected to set
Lower Bound: Elements $\leq \{\cdots\}$ and connected to set
lub: Smallest of all upper bounds
glb: Largest of all lower bounds