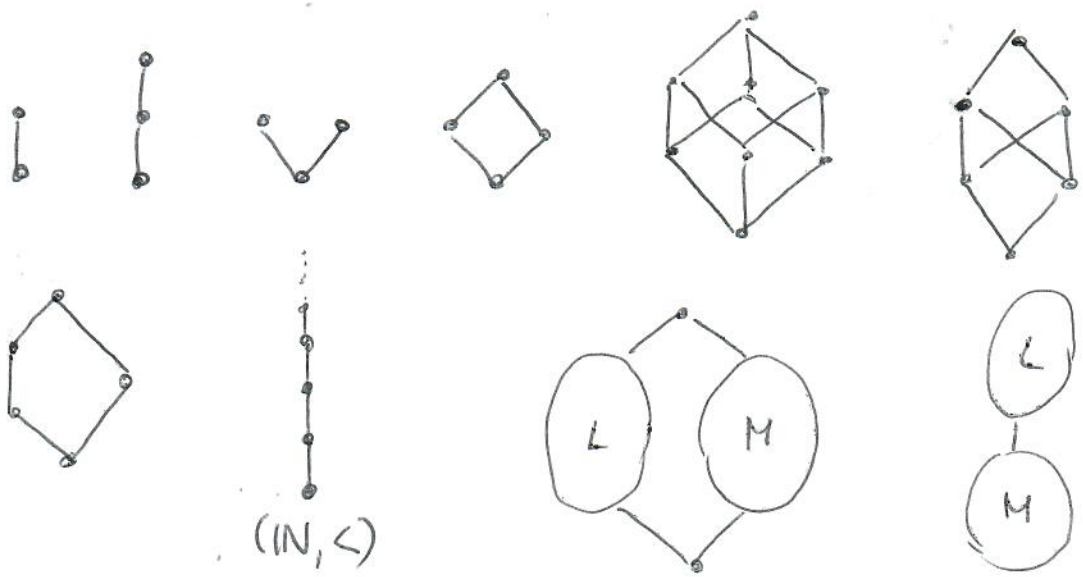
06.10.23
UAI
Practicals 1

1) Which of the following Hasse diagrams represent a lattice (ordered set)?



for lattices L, M

2) - Recall the definition of <u>semilattices</u> $S = (S, \wedge)$ and <u>semilattice ordered sets</u> $(S, \leq)$
   - For a given semilattice $(S, \wedge)$ find a natural definition of a semilattice order $\leq$ on S, and vice-versa.
   - Conclude that there is a 1-to-1 correspondence between semilattices and semilattice ordered sets.

3) Similarly to 2) prove a 1-to-1 correspondence between <u>lattices</u> $L = (L, \wedge, \vee)$ and <u>lattice ordered sets</u> $(L, \leq)$.

4) Which of the following algebras are isomorphic?
   a) $(\mathbb{Q}, +, 0)$, $(\mathbb{R}, +, 0)$
   b) $(\mathbb{C}, +)$, $(\mathbb{R}^2, +)$
   c) $(\mathbb{C}, \cdot)$, $(\mathbb{R}^2, \cdot)$
   d) $(\mathbb{N}, \cdot)$, $(2\mathbb{N}, \cdot)$, $(3\mathbb{N}, \cdot)$, $(2\mathbb{N}+1, \cdot)$
   e)* $(a\mathbb{N}, \cdot)$, $(b\mathbb{N}, \cdot)$ for $a, b \in \mathbb{N}$