Assignment 2.2.

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$E = \{ B \subseteq A \mid |B| \text{ is even} \}$.

E is a poset because for each $x, y, z \in E$. it satisfies

① $x \leq x$,

② if $x \subseteq y$. and $y \subseteq x$ then $x = y$

③ if $x \subseteq y$, and $y \subseteq z$ then $x \subseteq z$.

Then for a poset. if it's a lattice.
For each pair elements in this poset should have. supremum and infimum.

For $\bar{E}$, it's obvious that:
for each pair of $E_1, E_2 \in \bar{E}$.

It has $E_1 \cap E_2$ as supremum and
$E_1 \cup E_2$ as infimum

So E is lattice.