Assignment 9

(1) For the exercises below, define the relation $\preceq$ on a Boolean algebra by $x \preceq y$ if and only if $x + y = y$.

    (a) Draw the Hasse diagram for the poset $(\mathcal{P}(A), \preceq)$ where $A = \{a, b, c, d\}$ and $\mathcal{P}(A)$ is the power set of A.

    (b) Draw the Hasse diagram for the poset $(B^4, \preceq)$ where $B^4 = \{(x_1, x_2, x_3, x_4) | x_i \in \{0, 1\}\}$.

(2) Let $\mathcal{B}$ be a Boolean algebra and $x, y \in \mathcal{B}$. Prove $x + y = y$ if and only if $x \cdot y = x$.