Problem 1 Let $A = \{5, 7\}$. Find $\mathcal{P}(A)$ and $\mathcal{P}(\mathcal{P}(A))$.

Problem 2 Show: If $A \subseteq B$, then $\mathcal{P}(A) \subseteq \mathcal{P}(B)$.

Problem 3 Show: $\mathcal{P}(A) \cup \mathcal{P}(B) \subseteq \mathcal{P}(A \cup B)$.

Problem 4 Is it true that $\mathcal{P}(A) \cup \mathcal{P}(B) = \mathcal{P}(A \cup B)$?

Problem 5 Suppose A is a finite set. Show: If $x \notin A$, then $\mathcal{P}(A \cup \{x\})$ has twice as many elements as $\mathcal{P}(A)$.

Problem 6 If A has n elements, how may elements does $\mathcal{P}(A)$ have?