

DISCRETE MATH
QUIZ 6

Name: _____

You have 10 minutes for this exam. If you have a question, raise your hand and remain seated. In order to receive full credit your answer must be **complete**, **legible** and **correct**.

1. Write a proof of the contrapositive of “if $A \subseteq B$, then $\mathcal{P}(A) \subseteq \mathcal{P}(B)$ ”.

If $\mathcal{P}(A) \not\subseteq \mathcal{P}(B)$, then there is some $X \in \mathcal{P}(A)$ such that $X \notin \mathcal{P}(B)$. This means that $X \subseteq A$ and $X \not\subseteq B$. The fact $X \not\subseteq B$ implies that there is some $t \in X$ such that $t \notin B$, while the fact $X \subseteq A$ together with $t \in X$ implies that $t \in A$. Since $t \in A$ and $t \notin B$, we conclude that $A \not\subseteq B$.