Problem Set 1 for MATH 71200 - Set Theory and Logic Spring 2019

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Problem 1:
Show that if $\langle u, v\rangle = \langle x, y\rangle$, then $u = x$ and $v = y$.

Problem 2:
Let R be a binary relation, and assume that every $u \in A$ is R-closed. Show that $\bigcap A$ and $\bigcup A$ are R-closed.

Problem 3:
Recall that a set u is transitive if whenever $y \in u$ and $x \in y$, it follows that $x \in u$. Show that the following statements are equivalent.

1. u is transitive
2. $u \subseteq \mathcal{P}(u)$
3. $\cup u \subseteq u$
4. $\in \cap\, u^2 = \in\restriction u$

Please submit your solutions, preferably written in LaTeX, via email by February 10, 2019.