Philosophy 142: Set Theory Exercises

September 2, 2008

1. Prove $x \subseteq x \cup y$

2. Prove $x \cup (y \cup z) = (x \cup y) \cup z$

3. Is $\in$ reflexive? symmetric? transitive?

4. Is $\subseteq$ reflexive? symmetric? transitive?

5*. Is $R : \{\langle x, y\rangle | x, y \in \mathbb{N} \wedge (\exists z \in \mathbb{N})(|x - y|/2 = z)\}$ an equivalence relation? If so, describe its equivalence classes.

• Exercises marked with * are more difficult.