

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

• Exercises marked with \* are more difficult.