Homework 4
Connor Baker, February 2017

1. Prove that if R is a partial order on a set A, then R^{-1} (the inverse relation) is also a partial order on A.

Proof. $\square$

2. Let R be a relation on the set A. Prove that if S is a symmetric relation on A, and $R \subseteq S$, then $R^{-1} \subseteq S$.

Proof. $\square$

3. Let R be an antisymmetric relation on the nonempty set A. Prove that if R is symmetric and $\mathrm{dom}(R) = A$, then $R = I_A$ (the identity relation on A).

Proof. $\square$

4. Prove that the subset of every well-ordered set is well ordered.

Proof. □

5. Prove that R is transitive on a set A if and only if $R \circ R \subseteq R$.

Proof. $\square$