Set Theory
Quiz 2

Name: _____

You have 10 minutes to complete this quiz. 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**. Show your work, and give adequate explanations.

1. How do we define the set of natural numbers?

The set of natural numbers is the intersection of all inductive sets.

2. How many binary relations are there on the set $A = \{0, 1\}$?

A binary relation R on A is a subset of $A \times A$ ($= \{(0,0), (0,1), (1,0), (1,1)\}$). That is, it is an element $R \in \mathcal{P}(A \times A)$. Since $A \times A$ has size 4, the set $\mathcal{P}(A \times A)$ has size $2^4 = 16$, so there are 16 binary relations on A.