Assignment 3
due Feb 10, 2014

Exercise 1 (30 points)**.**
We define the proposition p as follows.

$$p \quad := \quad \forall x{>}0\ \exists y\ (x + y = 0 \wedge \forall z(x + z = 0 \rightarrow y = z)),$$

where the domain for all variables is the set of all integers. Write down the negation $\neg p$ such that no negation symbol $\neg$ appears. To do so, you can make use of the symbol $\neq$.

Exercise 2 (35 points)**.**
Prove or disprove the truth of p from Exercise 1.

Exercise 3 (35 points)**.**
Translate the following mathematical statement into the language of predicate calculus using the predicate $P(x)$ for the statement "x is a prime number".

At least one of two distinct prime numbers is always ≥ 3.