

LGIC 010 & PHIL 005 Problem Set 7 Spring Term, 2011

Taking the universe of discourse to be the set of positive integers  $\{1, 2, \dots\}$  and using the dyadic predicate letter “ $P$ ” to express the relation  $\boxed{2}$  is divisible  $\boxed{1}$  and the triadic predicate letter “ $R$ ” to express the relation  $\boxed{1}$  is the sum of  $\boxed{2}$  and  $\boxed{3}$  express the following statements in quantificational notation. (The boxed numerals indicate the order of argument places to the predicate letters.) You may need to use the symbol for identity in your paraphrases.

1. (20 points)  $x = y + 1$ .

2. (20 points)  $x$  is odd.

3. (20 points)  $x < y$ .

4. (20 points)  $x$  is a prime number. (Recall that the primes are  $2, 3, 5, 7, 11, \dots$ )

5. (20 points)  $x$  is a power of three. (Recall that the powers of three are  $1, 3, 9, 27, 81, \dots$ )