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**Introduction to Logic**

**Quiz 4**

1. (3 pts) Symbolize the following claims about natural numbers into logic, or translate back into fluent English expressions of mathematical claims about numbers, using the following symbols and interpretations:

Domain of Discourse: Natural Numbers (0,1,2,…)

E(x): x is even s: successor function 0: zero

O(x): x is odd +: addition function x < y: x is smaller than y

P(x): x is prime ×: multiplication function

1. Three is an odd number
2. ∀x ∀y ((O(x) ∧ O(y)) → O(x × y))
3. The successor of any odd number is even
4. For every number there is a greater number (i.e. there is no greatest number)
5. ∃x (O(x) ∧ x < s(s(0)) ∧ ∀y ((O(y) ∧ y < s(s(0))) → y = x))
6. Every even number greater than 2 is the sum of two prime numbers