Logic in Computer Science – due October 20, 2003

1. Show that the addition relation, \( \{(m, n, p) \mid p = m + n\} \), is not definable in \((\mathbb{N}, \times)\). Hint: Consider an automorphism of \((\mathbb{N}, \times)\) which switches two primes.

2. Let \( \mathcal{A} \) be a model and \( g \) a one-to-one function whose domain is \( \text{dom}(\mathcal{A}) \). Show that there is a unique model \( \mathcal{B} \) such that \( g \) is an isomorphism of \( \mathcal{A} \) onto \( \mathcal{B} \).