

Computing and Software 734
Formalized Mathematics
Fall 2006

Exercise 9

20 pts.

Due 11 December 2006

Assigned: 13 November 2006

Revised: 13 November 2006

This exercise is not required; it is for extra credit.

Part 1

Starting from scratch, create an IMPS theory of Peano arithmetic called `peano2` with the constants `0` and `S` and the following axioms:

1. `0` is not a successor.
2. `S` is injective.
3. Induction.

Part 2

Define `+` and `*` recursively in `peano2` using `def-recursive-constant`.

Part 3

Do parts 2–4 of Exercise 7 using `peano2` in place of `peano1`.