

Problem Set 10 Foundations Due 4/28/2010

Each problem is worth 5 points. Clear and complete justification is required for full credit. You are welcome to discuss these problems with anyone and everyone, but must write up your own final submission without reference to any sources other than the textbook and instructor. Submissions must be on clean paper with no ragged edges.

1. Write $S(\emptyset)$, $S(S(\emptyset))$, $S(S(S(\emptyset)))$, and $S(S(S(S(\emptyset))))$ explicitly.
2. Given that N is a Peano system, prove $\forall x, y \in N$, with $y \neq 0$, $x \neq x + y$.
3. Show that for any set A , $S(A) \neq \emptyset$.
4. Show that $2 + 2 = 4$.

