CS 240: Logic and Discrete Math, Fall 2014
Homework 5

This homework is due, Thursday October 16 in class. Accepted until 5pm in the mailbox labelled Pless in Bryan 509.

Problems to Turn In:

1. Define the set $S$ as follows:
   (a) $1 \in S$
   (b) $n \in S \rightarrow 5n \in S$
   (c) $n \in S \rightarrow n^2 \in S$
   (d) no other elements are in $S$.

   Given these definitions:
   (a) What are the 5 smallest elements of this set?
   (b) Prove that every element of set $S$ can be written as $4k+1$ for some integer $k$.

2. Define $G_i$ recursively as follows:

   $G_0 = 0$
   $G_1 = 1$
   $G_n = G_{n-1} + G_{n-2}$, for $n > 1$

   Prove, for $n > 0$, $\sum_{i=0}^{n} G_i = G_{n+2} - 1$. 