Homework #9
CSI 2350

due: October 4, 2018

1. Give a recursive definition of
   (a) the set of odd positive numbers
   (b) the set of positive integer powers of 3
   (c) the set of polynomials with integer coefficients

2. Give a recursive definition of a function such that $f(n)$ is the sum of the first $n$ positive numbers

3. Give a recursive algorithm with input $n$, an integer, for finding the sum of the first $n$ integers

4. Let $V = \{0, 1, 2, 3, 4\}$. Let $E = \{(0, 1), (1, 2), (2, 3), (3, 4)\}$. Let $G = \{(v_i, v_j) | v_i, v_j \in V, \exists v_k \in V(v_i, v_k) \in E \land (v_k, v_j) \in E\}$. Produce the elements in $G$.

5. Let $P(n)$ be the statement that a postage of $n$ cents can be formed using just 4-cent stamps and 7-cent stamps. Using strong induction, prove that $P(n)$ is true for all $n \geq 18$. 