CSC544 Assignment #6

due Tuesday 3/6 in class

version 1.0

Problems

1. Let $T = \{\langle M \rangle | M$ is a TM that accepts w^R whenever it accepts $w\}$. Show that T is undecidable.

2. Consider the problem of determining whether a single-tape TM ever writes a blank symbol over a nonblank symbol during the course of its computation on any input string. Formulate this problem as a language and show that it is undecidable.

3. Let $g(x) = x^2$ and $h(x, y, z) = x + y + z$ and let $f(x, y)$ be the function define from g and h by primitive recursion. Compute the values $f(1, 0), f(1, 1), f(1, 2)$, and $f(5, 0), f(5, 1), f(5, 2)$.

4. The functions below were defined in Table 13.1. Explicitly give the functions g and h that make the definitions legal definitions as given in the definition for primitive recursive functions.

   (a) sg

   (b) sub

   (c) exp