

CSC544 Assignment #5

due Thursday 3/5 in class

version 1.0

Problems

1. Let $g(x, y, z)$ be a primitive recursive function. Show that the following functions are primitive recursive,

(a) $f(x, y) = g(x, y, x)$

(b) $f(x, y, z, w) = g(x, y, x)$

(c) $f(x) = g(1, 2, x)$

2. Show that

$$\max(x, y) = \begin{cases} x & \text{if } x \geq y \\ y & \text{otherwise} \end{cases}$$

is primitive recursive.

3. Let $g(x) = x^2$ and $h(x, y, z) = x + y + z$ and let $f(x, y)$ be the function defined 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