

CS5000: Assignment 7  
Due: Oct. 20, 2008 by 11:59pm

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**Problem 1: 1 point**

Let  $f(x)$  be a partially computable function which is not total. Let  $M$  be a finite set of numbers such that  $f(x) \uparrow$  for  $x \in M$ . Let  $g(x)$  be a partially computable function. Show that

$$h(x) = \begin{cases} g(x) & \text{if } x \in M \\ f(x) & \text{otherwise} \end{cases}$$

is partially computable.

**Problem 2: 1 point**

Let  $L^+$  be a programming language that extends  $L$  by permitting instructions of the form  $V \leftarrow k$ , for  $k \geq 0$ . Show that a function is partially computable by some  $L^+$  program if and only if it is partially computable.