CSCI 510, Fall 2016, Homework # 4

YOUR NAME HERE

Due date: Wednesday, November 2, Midnight

1. Let A be a Turing-recognizable language consisting of Turing machines, $\{\langle M_1\rangle, \langle M_2\rangle, \ldots\}$, where every M_i is a decider. Prove that some decidable language D is not decided by any decider M_i whose description appears in A.

2. Let $A = \{\langle R\rangle |\ R$ is a regular expression describing a language containing at least one string w that has 111 as a substring (*i.e.* $w = x111y$ for some x and y $\}$. Show that A is decidable.

3. Let $A = \{\langle R, S\rangle |\ R$ and S are regular expressions and $L(R) \subseteq L(S)\}$. Show that A is decidable.