

Homework Assignment #8
Due: November 17, 2016 at 4:00 p.m.

1. For this question, assume that the input alphabet of all the Turing machines discussed is $\Sigma = \{0, 1\}$. Let $L = \{\langle M_1, M_2 \rangle : M_1 \text{ and } M_2 \text{ are TMs and there is a binary string that neither of them accepts}\}$.
 - (a) If $\langle M_1, M_2 \rangle \in \overline{L}$, what is $L(M_1) \cup L(M_2)$?
 - (b) Is L recognizable? Prove your answer is correct.
 - (c) Is \overline{L} recognizable? Prove your answer is correct.
 - (d) Is L decidable? Prove your answer is correct.