

Homework Assignment #9**Due: Thursday, November 20, 2014 at 4:00 p.m.**

You may use the Church-Turing thesis freely on this assignment.

1. Let $DISJOINT = \{\langle M_1, M_2 \rangle : M_1 \text{ and } M_2 \text{ are Turing machines and } L(M_1) \cap L(M_2) = \emptyset\}$.
 - (a) Is $DISJOINT$ decidable? Prove your answer is correct.
 - (b) Is $DISJOINT$ recognizable? Prove your answer is correct.
 - (c) Is $\overline{DISJOINT}$ recognizable? Prove your answer is correct.