6.045J/18.400J: Automata, Computability and Complexity Nancy Lynch, Nati Srebro

Handout 6: Rice's Theorem

March 15, 2004 *Susan Hohenberger*

This handout will be distributed during Lecture 12 of 6.045 on March 15, 2004. It will not appear on the course website, but students needing a copy may obtain one by contacting the TA. **Students will be responsible for this material** on Quiz 2 and the final exam.

Materials in handout: "Lecture 34" on Rice's Theorem from *Automata and Computability* by Dexter C. Kozen, pages 245-248.

Rice's Theorem: Every nontrivial property of the recognizable languages is undecidable.

The terminology that Kozen uses slightly differs from that of Sipser. Here is a translation guide:

Kozen Says:	**Sipser Says:**
r.e.	recursively enumerable (i.e., recognizable)
sets	languages (recall that all languages are sets of strings)
HP	$HALT_{TM}$ (i.e, the halting problem)
semidecidable	recognizable (i.e., "good at accepting")