

CSE 6321 - Problem Set 2

Due lecture on February 10th

Collaboration is permitted; looking for solutions from external sources (books, the web, material from previous years, etc.) is prohibited.

1. Prove that the union of countably many countable sets is countable.
2. Let C be a language. Prove that C is Turing-recognizable iff a decidable language D exists such that $C = \{x : \exists y(\langle x, y \rangle \in D)\}$.
3. Let $T = \{\langle M \rangle : M \text{ is a T.M. that accepts } w \text{ reversed whenever it accepts } w.\}$. Show that T is undecidable. Is T recognizable?
4. Show that A is Turing-recognizable iff $A \leq_m A_{TM}$.