

Math 6010 - Assignment 4

Due February 13, 2019

- (1) Reduce the Halting Problem for Turing machines to the Acceptance Problem to show that the latter is not decidable.

Is the Acceptance Problem reducible to the Halting Problem?

- (2) Show that the problem whether Turing machines M_1, M_2 accept the same language is undecidable.
- (3) Is the set of Turing machines that accept the empty language

$$\{\langle M \rangle \mid L(M) = \emptyset\}$$

recursively enumerable?

- (4) Show that the set of codes for Turing machines that write some nonblank symbol eventually when started with empty input is decidable.

What about machines that write the letter 0 sometime after starting on an empty tape?