Assignment 6

1. Prove that the following decision problem is undecidable by reducing it to a known unsolvable problem. Be sure to *clearly define your reduction.* It should be written like a pseudocode program that is straightfoward to implement. Two different TAs reading it should have the same understanding of how your reduction works.

   (a) Given a TM T and a word w, does T accept w in an even number of moves?

   (b) Given a TM T, a word w, and a state q such that $q \neq h_a$ and $q \neq h_r$, does T ever enter q when processing w.

   (c) Given a TM T, and two words w and x, does T accept either wx or xw?