Assignment 8
Computer Science 235

Reading. Sections 5.1 and 5.3

1) Show that EQ_{CFG} is undecidable. (*Hint*: Use the fact that ALL_{CFG} is undecidable as indicated in Theorem 5.13 on page 225.)

2) Show that EQ_{CFG} is co-Turing-recognizable.

3) Let $T = \{ <M> \mid M$ is a TM that accepts w^R whenever it accepts $w\}$. Show that T is undecidable.

4) Consider the problem of determining whether a single-tape Turing machine ever writes a blank symbol over a nonblank symbol during the course of its computation on any input string. Formulate this problem as a language and show that it is undecidable.

5) Consider the problem of determining whether a Turing machine M on an input w ever attempts to move its head left when its head is on the left-most tape cell. Formulate this problem as a language and show that it is undecidable.