Assignment 8
Computer Science 235

Reading. Sections 5.1 and 5.3

1) Show that $EQ_{CFG}$ is undecidable.

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

3) If $A \leq_m B$ and $B$ is a regular language, does that imply that $A$ is a regular language? Why or why not?

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

5) 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.

6) 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.