CSCI-2400 Models of Computation

Homework 5

Submission

Submit your individual solution at the beginning of the class on Tuesday, November 13.

Problems

1. Show that the following language on $\Sigma = \{a, b, c\}$ is not context-free.
   $L = \{a^n b^j c^k : k = jn\}$.

2. Show that the following language on $\Sigma = \{a, b, c\}$ is not context-free.
   $L = \{w \in \{a, b, c\}^* : n_a(w) + n_b(w) = 2n_c(w)\}$

3. Show that the following language on $\Sigma = \{a, b\}$ is not context-free.
   $L = \{ ww^R a^{|w|} : w \in \{a, b\}^*\}$

4. Construct a Turing machine to compute the function $f(w) = w^R$,
   where $w \in \{0, 1\}^+$.

5. Construct Turing machine that will accept the following language.
   $L = \{a^n b^m : n \geq 1, n \neq m\}$.

Good luck!