

CSCI 510, Fall 2016, Homework # 2

YOUR NAME HERE

Due date: Friday, October 21, Midnight

1. Let $A/B = \{w|wx \in A \text{ for some } x \in B\}$. Show that if A is context free and B is regular then A/B is regular.
2. For any language A , let $\text{suffix}(A) = \{v|uv \in A \text{ for some string } u\}$. Show that the class of context-free languages is closed under the *suffix* operation.
3. Show that if G is a CFG in Chomsky normal form, then any string $w \in L(G)$ of length $n \geq 1$, exactly $2n - 1$ steps are required for any derivation of w . Give a proof by induction.