

Last Name _____ First Name _____

Prove that the language $L(G)$ is not regular where G is the following context free grammar: $G = (\{S, A, B\}, \{b, c\}, \{S \rightarrow Ac \mid bB, A \rightarrow bS, B \rightarrow e\}, S)$. You must first determine $L(G)$.

Eliminate all ϵ -productions in the following CFG $G = (\{S, A, B\}, \{a, b, c\}, \{S \rightarrow AaA \mid bB, A \rightarrow bS \mid e, B \rightarrow cS \mid e\}, S)$

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Define an equivalent PDA for $G = (\{S, A, B\}, \{b, c\}, \{S \rightarrow Ac \mid bB, A \rightarrow bS, B \rightarrow e\}, S)$.

Give PDA state diagrams for L_1 and L_2 , where $L_1 = \{w \mid \text{the length of } w \text{ is odd and its middle symbol is a } 0\}$, and L_2 is the complement of the language $\{a^n b^n \mid n \geq 0\}$