

Review problems for final.

- 1) **Let G be the grammar**
$$S \rightarrow aS \mid aA \mid a$$
$$A \rightarrow aAb \mid ab$$
Give a concise description of $L(G)$ and a PDA to accept $L(G)$.

- 2) **Show that the C programming language is not a context free language.**

- 3) **Consider the language $A = \{ a^i b^j a^m b^n \mid i + j \leq m + n \}$. Is A regular? Is A context free?**

- 4) **Let $A = \{ \langle R, S \rangle \mid R \text{ and } S \text{ are regular expressions and } L(R) \subseteq L(S) \}$ Show that A is decidable.**

- 5) **Let $S = \{ \langle M \rangle \mid M \text{ is a DFA that accepts } w^R \text{ whenever } M \text{ accepts } w \}$. Show that S is decidable.**