Problem 1 (10 Points) What language is produced by the grammar $G = (\{S\}, \{a, b\}, S, P)$, where P is given by $S \rightarrow aSb$, $S \rightarrow \lambda$?

Problem 2 (10 Points) What language is accepted by the DFA in Figure 1?

Problem 3 (10 Points) What production rules should we add to the following grammar so that it produces the language $L = \{a^n b : n \geq 0\}$? The grammar is $G = (\{S, A\}, \{a, b\}, S, P)$, and the incomplete production rules are: $S \rightarrow Ab$, $A \rightarrow aA$. 

![Figure 1: Deterministic Finite Automata](http://faculty.unlv.edu/pushkin)