1. Prove or disprove: the language $\text{Max}(L) = \{w \in L \mid wu \notin L \text{ for any } u \neq \epsilon\}$ is regular for every regular language $L$.

2. Write regular expressions for the following languages:
   (a) $\{w \in \{0,1,2\}^* \mid w \text{ contains the substring 101}\}$.  
   (b) $\{w \in \{0,1,2\}^* \mid w \text{ does not contain the substring 10}\}$.  
   (c) $\{w \in \{0,1,2\}^* \mid w \text{ contains the substring 10 and is of even length}\}$.  
   (d) $\{w \in \{0,1,2\}^* \mid w \text{ does not contain the substring 10 or is of even length}\}$.  

3. Use the pumping lemma to prove in detail that the language $\{a^n b^m c^p \mid n, m, p \geq 0, m > p\}$ is not regular.