Problem 1

Prove that the following language is regular by constructing either a DFA or an NFA to recognize it. Then prove the same language is regular by constructing a regular expression for it.

\[ L = \{ x \in \{a, b, c\}^* \mid \text{the last 3 characters of } x \text{ are not } a\text{’s} \} \]

Problem 2

Show by giving an example that, if \( M \) is an NFA that recognizes language \( C \), swapping the accept and non-accept states in \( M \) does not necessarily yield a new NFA that recognizes the complement of \( C \). Is the class of languages recognized by NFAs closed under complement? Why or why not?