1. [20 marks] For each of the following languages, state whether or not they are CFL’s. If so, provide a grammar generating the language (no formal proof necessary, but explain your construction in a few English sentences). If not, provide a proof using the pumping lemma.

   (a) [10 marks] \( \{a^i b^j c^k : 0 \leq i < j < k\} \)

   (b) [10 marks] \( \{a^i b^j : i, j \geq 0 \text{ and } i \neq j \text{ and } i \neq 2j\} \)

2. [10 marks] Prove that if \( L \) is a CFL, then so is \( L^R = \{x : x^R \in L\} \). Hint: take a grammar for \( L \) and modify it to generate \( L^R \).