1. Exhibit two distinct strings over the alphabet \( \{a, b\} \) that do not belong to the language \( b^*(a \cup ba)^*b^* \).

   \[
   abba, \ abbb
   \]

2. Exhibit two distinct strings that will be matched by the extended regular expression \(^(((aa)^+a)b(\{1\}1)^+\).\)

   \[
   a^2ba^6, \ a^2ba^{12}
   \]

3. Exhibit two distinct nonempty strings over the alphabet \( \{a\} \) that will \underline{not} be matched by the extended regular expression \(^((aa)^{2\+}|(aaaa)^*a|aa)^\).\)

   \[
   a^3, \ a^7
   \]