1. Consider the following FA.

\[ \text{All strings of } a, b \]
\[ \text{whose last two symbols are different} \]
\[ \text{AND} \]
\[ \varepsilon, a \]

(a) Give two strings of length 4 accepted by the FA.
(b) Give two strings of length 4 NOT accepted by the FA.
(c) Describe in succinct-ish English the language of this FA. Be precise.

2. Draw a deterministic FA for the set of all binary strings with the property that:
they contain at least one pair of 1s that are separated by an odd number of 0s.
For example, 1010, 100101, and 00110001 should be accepted, but not 10010011.

3. For the alphabet \( \{x, y, z\} \),
let \( L \) be the language of nonempty strings \( w \) such that
\( w \) starts with the symbol \( x \) and contains exactly one \( y \), or
\( w \) starts with the symbol \( y \) and ends with the symbol \( z \), or
\( w \) starts with the symbol \( z \) and the total length is odd.
Give an RE for \( L \).