1. 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 FA for $L$. 
2. Give an RE for the set of all binary strings of odd length whose first and last bits are the same.

\[ 0\Sigma(\Sigma\Sigma)^*0 + 1\Sigma(\Sigma\Sigma)^*1 + 0 + 1 \]

3. Give an RE for the complement of the language defined by the following RE: \((01)^*\)

\[ 1\Sigma^* + \Sigma^*0 + \Sigma^*00\Sigma^* + \Sigma^*11\Sigma^* \]

4. Consider the following FA.

(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.

Alphabet = \(\{a, b\}\)

Must start with a and except for last symbol must alternate.