Assignment: RE, NFA, DFA Minimization

1.

   (a) Find all strings in $L((a + b) * b(a + ab) *)$ of length less than four.
   (b) Give a regular expression for all strings with at most two occurrences of the substring 00. ($\Sigma = \{0, 1\}$).
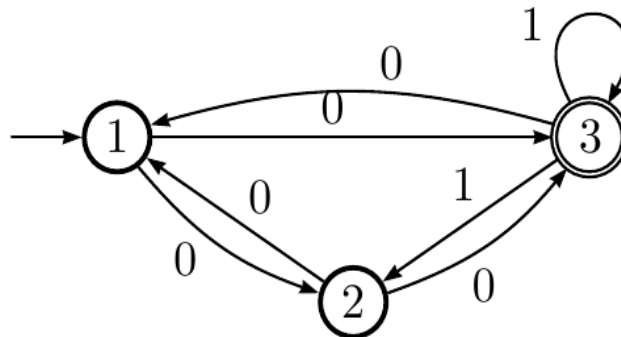
2. Find regular expressions for the following languages on $\{a, b\}$.
   (a) $L = \{a^n b^m : (n + m) \text{ is even}\}$.
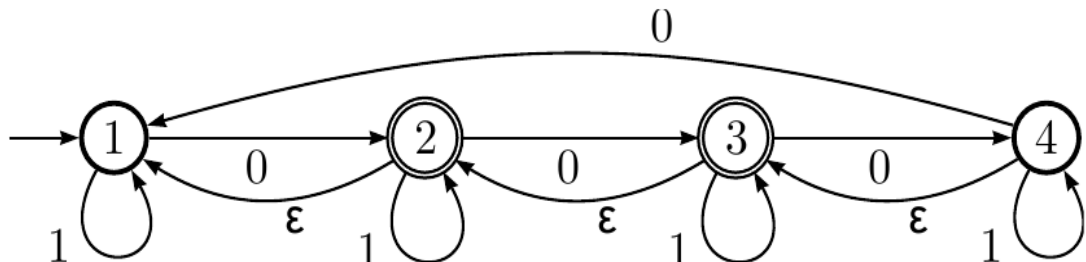   (b) $L = \{a^n b^m : n < 4, m \leq 3\}$.

3. Find an nfa that accepts the language $L (aa^* (a + b))$.

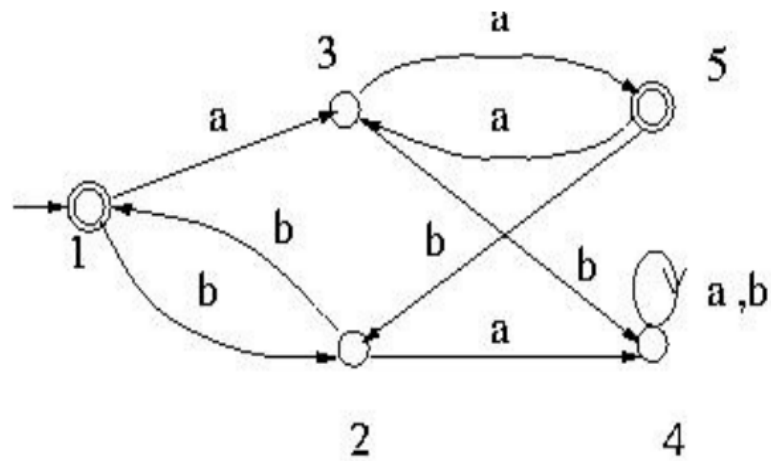4. Convert the following NFAs to DFAs:

(a)

(b)

5. Minimize the number of states of the following DFA.

(a)

(b)