5. For each of the following statements answer whether or not it is true: [15 Points]

(a) \((L^*)^* = L^*\) \textbf{True}

(b) The language \(L\) represented by the regular expression \((ab)^*a(ba)^*\) can be defined recursively as \(a \in L\); for every \(x \in L\), \(abx \in L\), \(xba \in L\), \(xaa \in L\); usual extremal clause. \textbf{False}

(c) \(b^*aab^*\) represents the language of all strings over \(\{a,b\}\) containing exactly two \(a\)'s. \textbf{False}

(d) For an NFA-\(\Lambda\), \(\delta^*(q, xa) = \delta(\delta^*(q, x), a)\) \textbf{False}

(e) For sets of states \(S\) and \(T\) of an NFA-\(\Lambda\), \(\Lambda(\Lambda(S \cap T)) \subseteq \Lambda(S) \cap \Lambda(T)\). \textbf{True}

6. For the following NFA-\(\Lambda\), answer the questions below:

The arrow between 1 and 3 goes only from 1 to 3

\(\Lambda\)