Daily Problem Set 3

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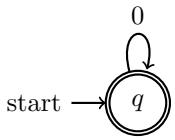
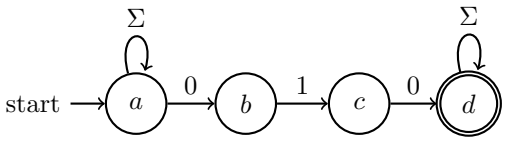
2. DFA transitions are deterministic; there is only ever one transition for a given input. The automaton is only ever in one state at a time. A NFA is non-deterministic; there can be multiple transitions for a given input, leading to multiple simultaneous states.

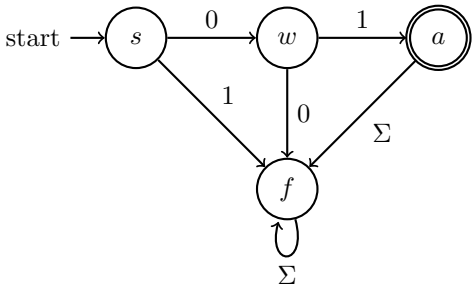
3. (a) L_2 Is accepted by:



   (b) L_3 Is accepted by:



4. N is not closed under subset. Consider the non-regular language $\{0^n1^n | n \in \mathbb{N}\}$, called A. A subset of Q is $\{0, 1\}$, called B. B is accepted by this DFA:



   Therefore, N is not closed under subset, as some subsets are regular.