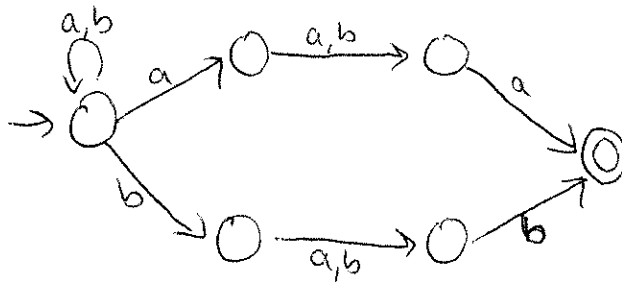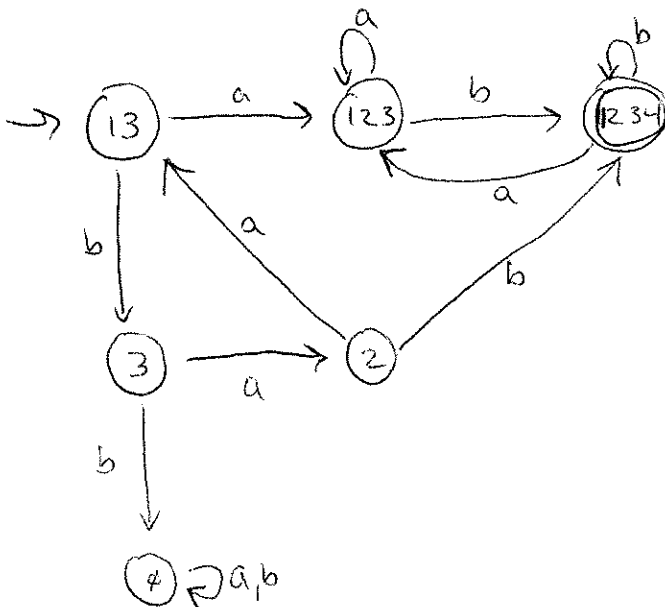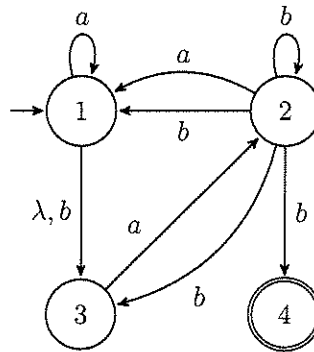Name: _Solutions_

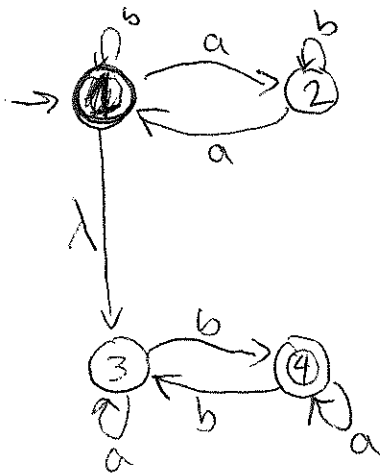**Directions:** Show all work. No credit for answers without work.

1. [**3 points**] Let $\Sigma = \{a, b\}$, and let $A = \{w \mid \text{the third last and last symbols of } w \text{ are the same}\}$. For example, $abab \in A$ but $aaab \notin A$. Give an NFA with at most 6 states that computes A.

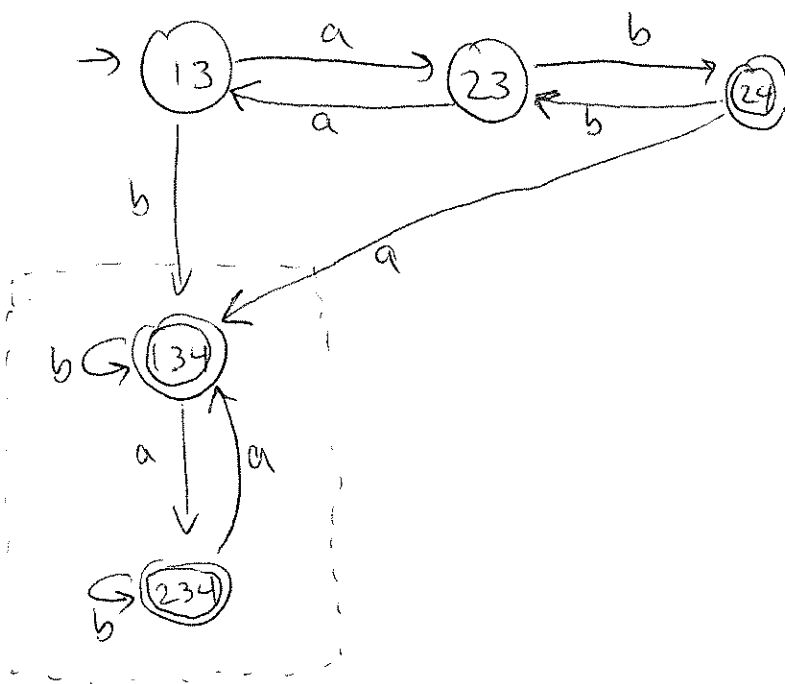2. [**3 points**] Convert the following NFA to a DFA.

3. [**4 points**] Let $\Sigma = \{a, b\}$, let $A = \{w \mid w$ has an even number of a's$\}$, and let $B = \{w \mid w$ has an odd number of b's$\}$. Give a DFA for the language AB.

NFA for AB.

Convert NFA to DFA:

Simplify (optional):