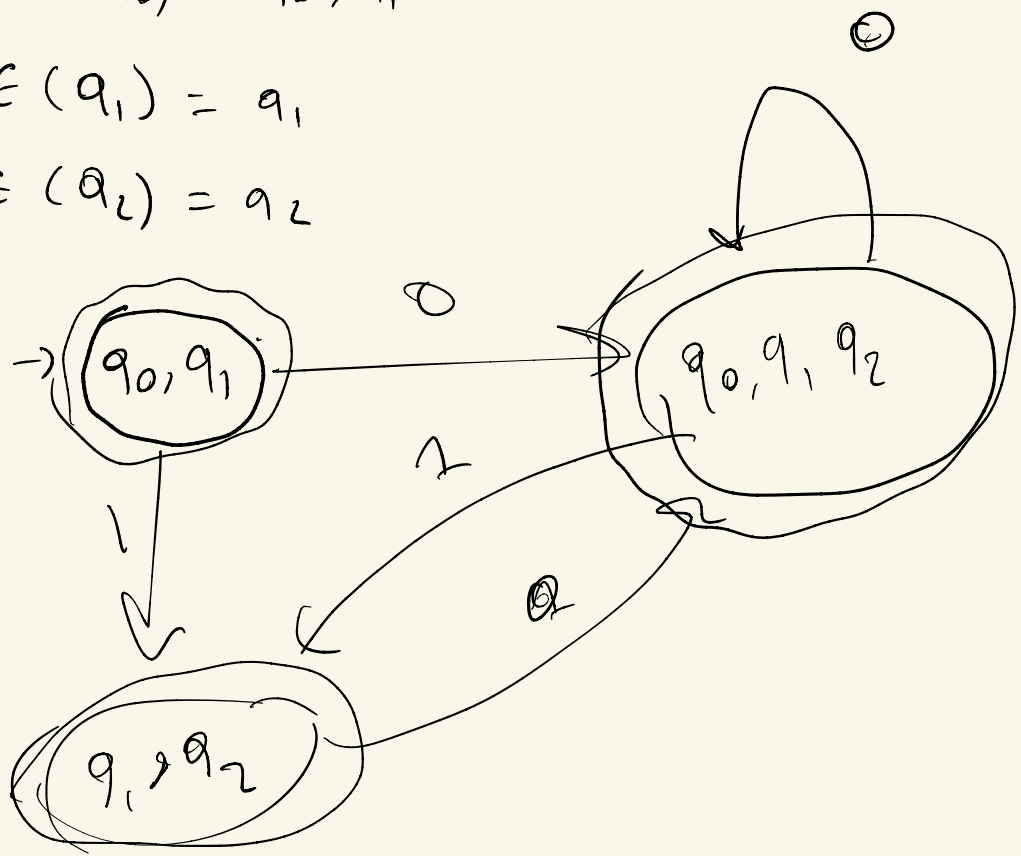HW 2

1) $\epsilon(q_0) = q_0, q_1$

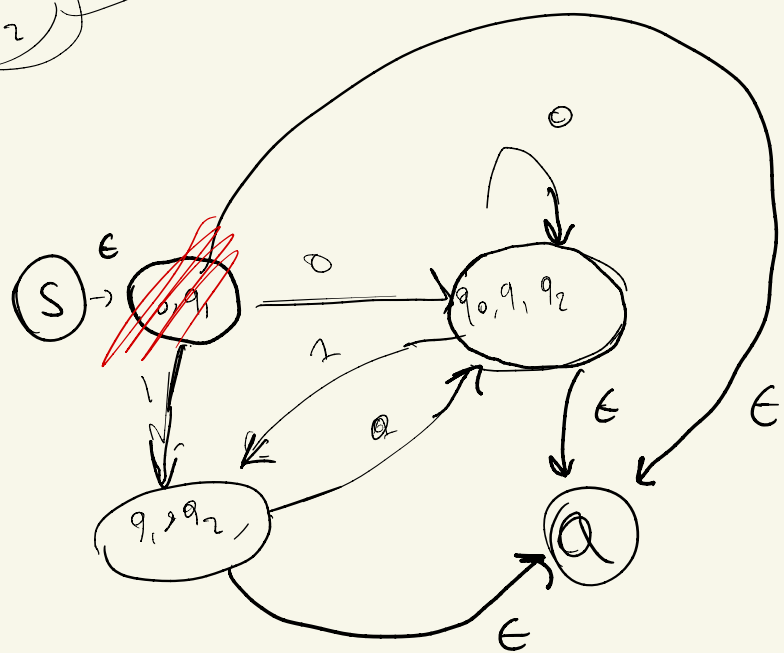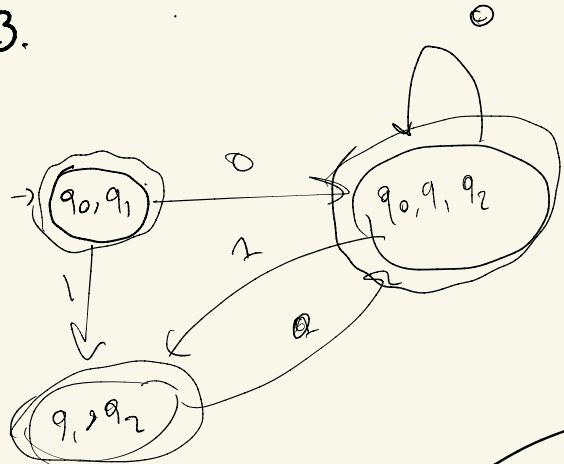$\epsilon(q_1) = q_1$

$\epsilon(q_2) = q_2$

2. $((\mathbf{\varepsilon}+0)(1+10)*)+((1+01)*(00)(1+10)*)$

3.

First automaton (top):

- $\to q_0, q_1$
- q_0, q_1, q_2
- q_1, q_2

Transitions labeled: 0, 1, 0, 0, $\emptyset$

Second automaton (bottom):

- S — ϵ →
- q_0, q_1 (crossed out in red)
- q_0, q_1, q_2
- q_1, q_2
- a

Transitions labeled: 0, 1, 0, $\emptyset$, 1, ϵ, ϵ, ϵ, ϵ, 0

$$\left(\left(1\epsilon+0\right)\left(1+\left(0+1\right)0^*1\right)^*0\right)^*\left(\epsilon+0\right)\left(1+\left(0+1\right)0^*1\right)^*$$