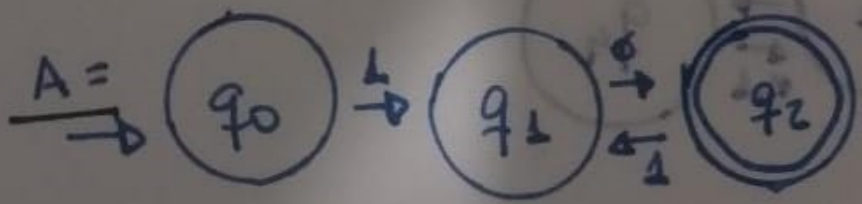
Lista 2. ITC - Mirelo Mei (11208392)

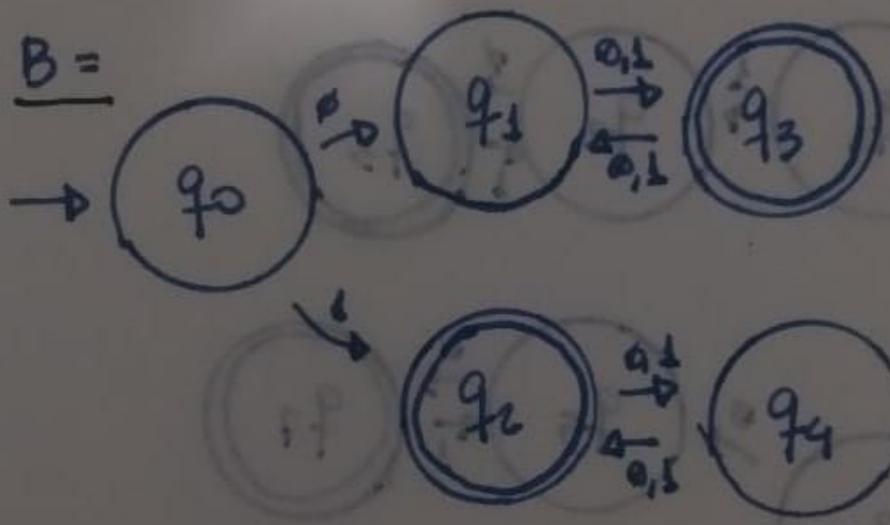
1. $A = \{w \in \{0,1\}^* : w$ começa com 1 e termina com $0\}$

$B = \{w \in \{0,1\}^* : w$ começa com 0 e tem comp. par ou começa com 1 e tem comp. ímpar$\}$

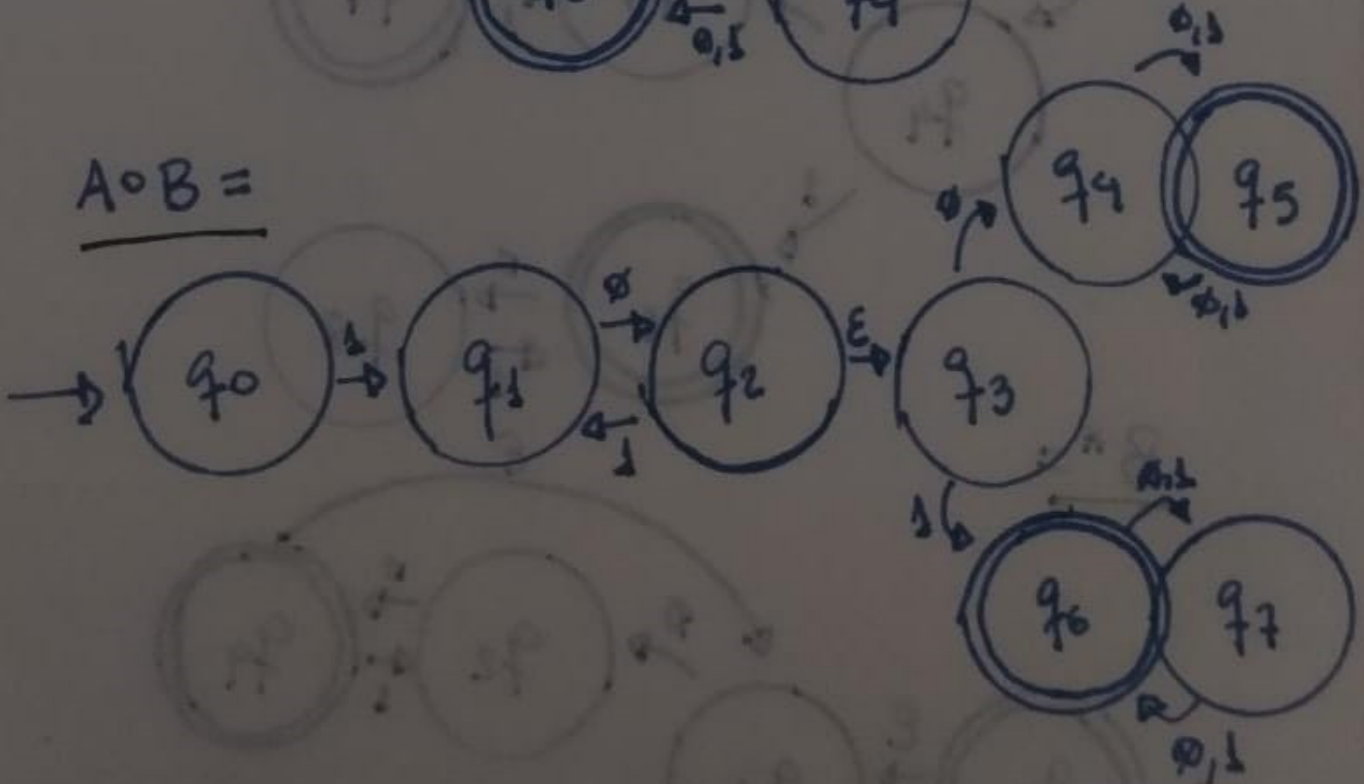
$A =$



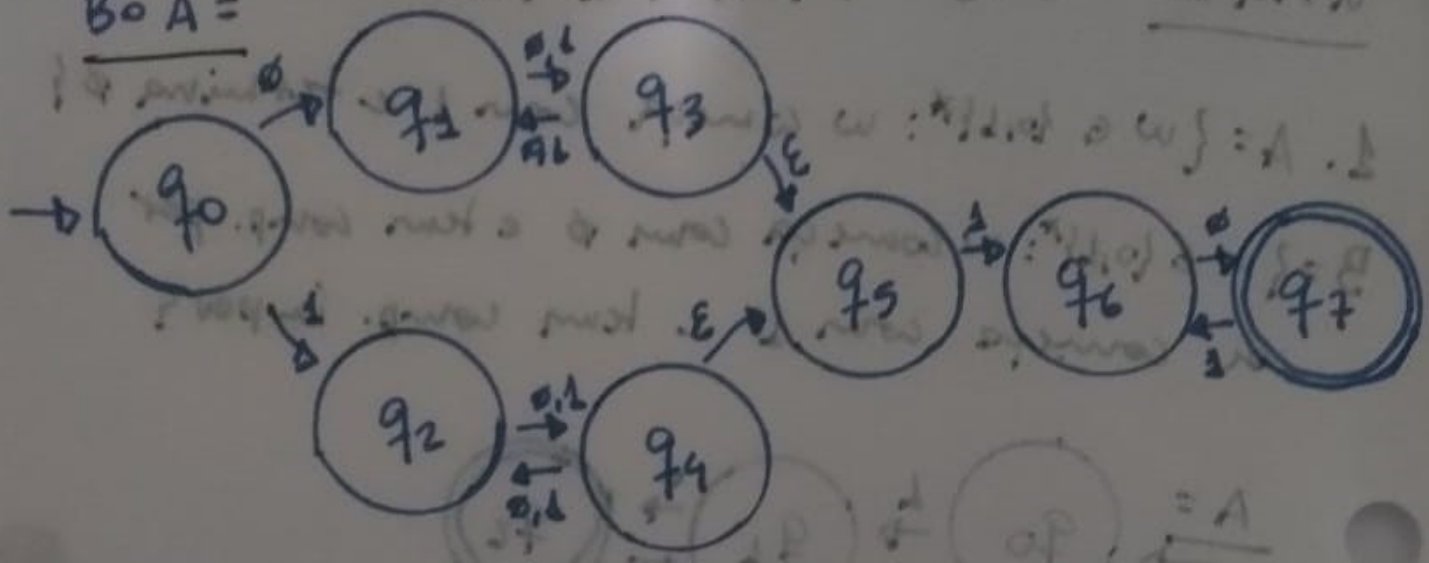
$B =$



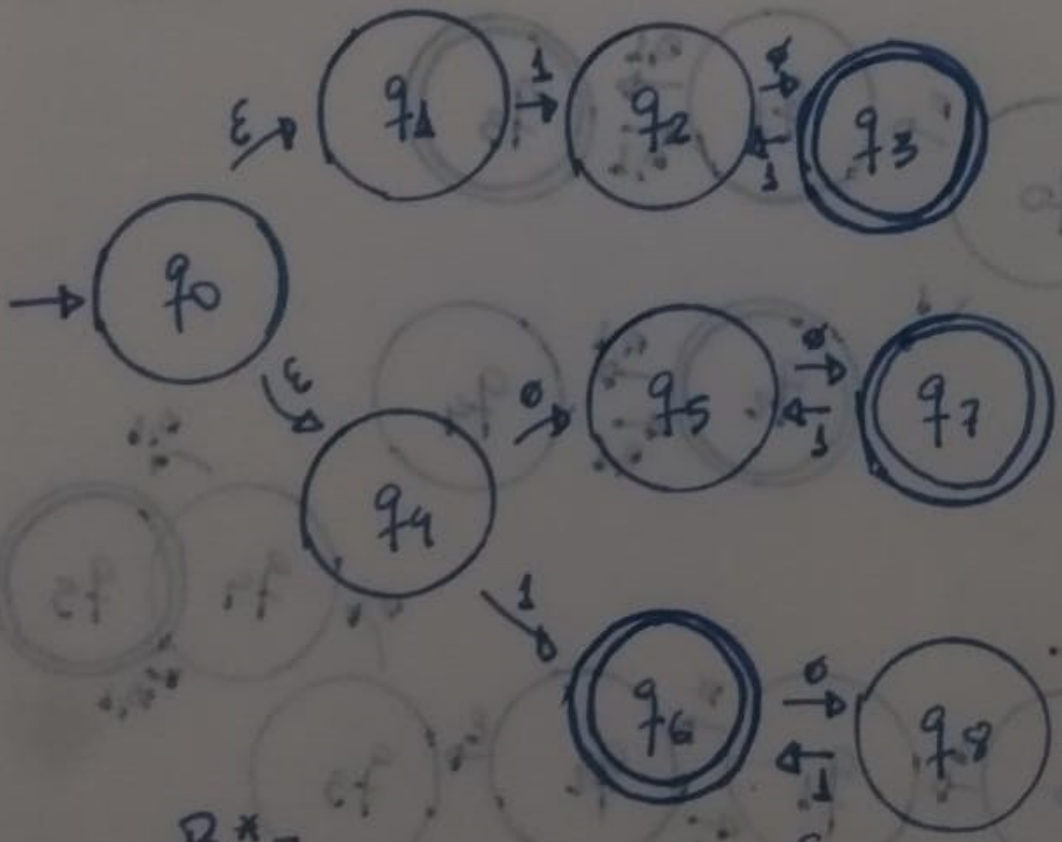
$A \circ B =$



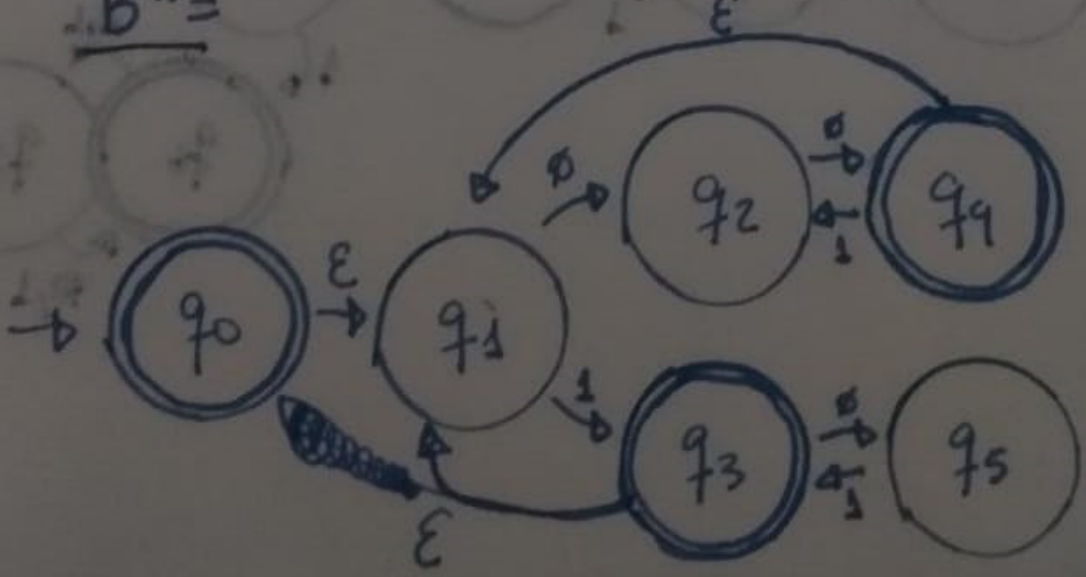
B ∘ A =


q0
q1
q2
q3
q4
q5
q6
q7
ε
0
1
0,1

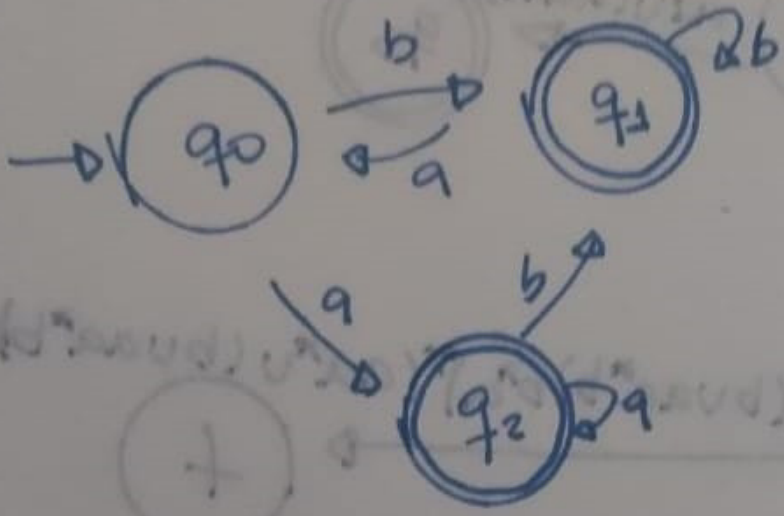
A ∪ B =

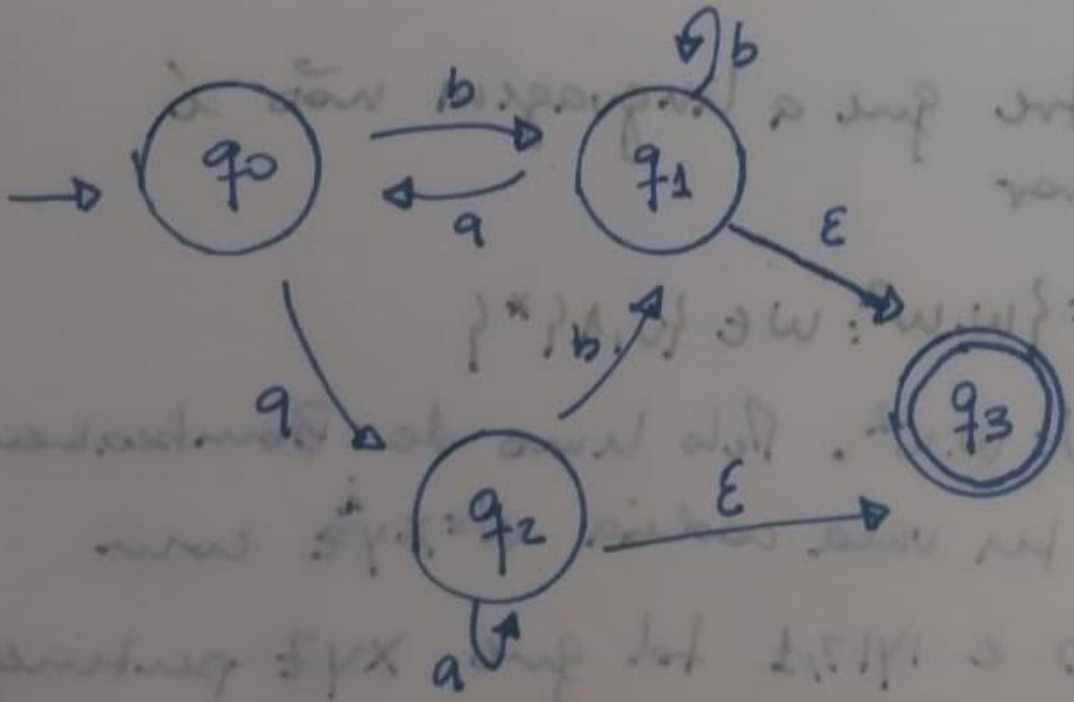

q0
q1
q2
q3
q4
q5
q6
q7
q8
ε
0
1

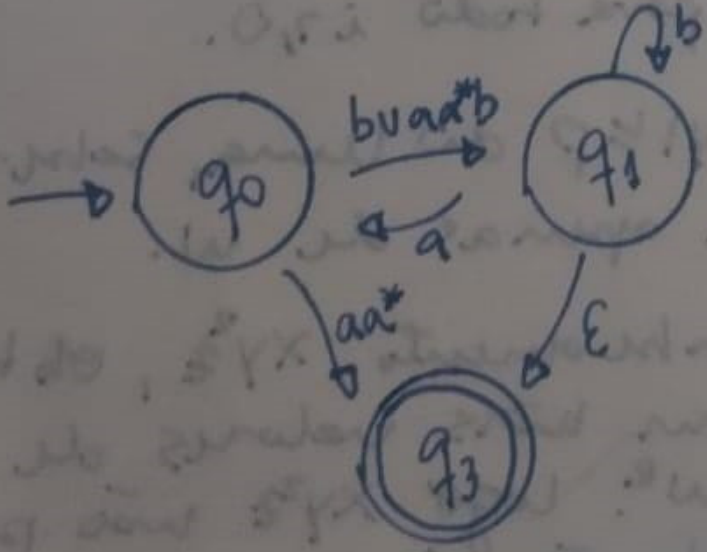
B* =

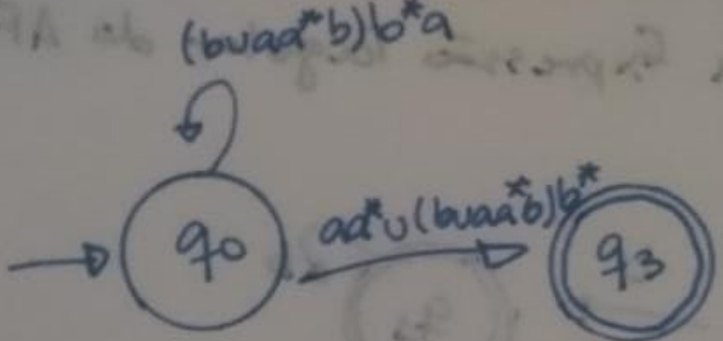

q0
q1
q2
q3
q4
q5
ε
0
1

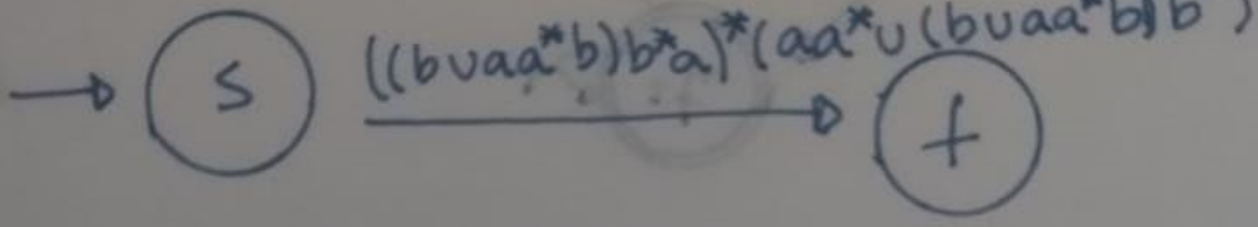
2. Encontrar a Expressão Regular do AFD











3. Mostre que a linguagem não é regular

$A = \{w.w^R : w \in \{0,1\}^*\}$

Seja $W = w.w^R$. Pelo Lema do Bombeamento, há de ter uma cadeia $W = xy^iz$ com $|xy| \leq p$ e $|y| \geq 1$ tal que xyz pertence a linguagem para todo $i \geq 0$.

Pela condição $|xy| \leq p$ do lema, sabe-se que y consiste apenas de w.

Fazendo o bombeamento xy^2z, obtém-se uma cadeia com mais valores de w do que de w^R. Logo xy^2z não pertence a linguagem. Portanto não é regular.