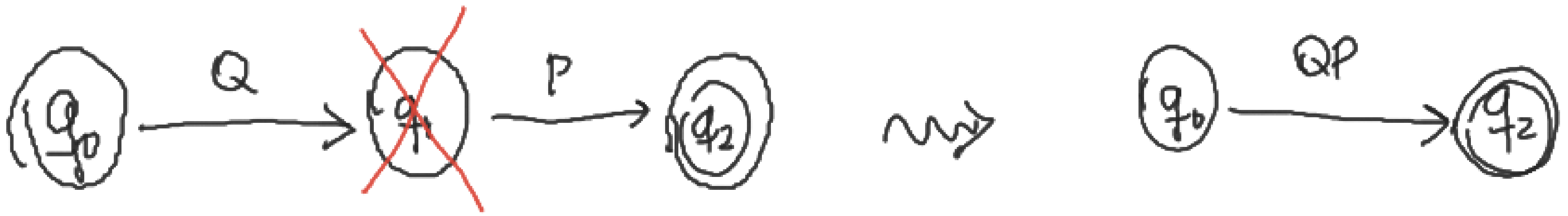

q0
Q
q1
P
q2
q0
QP
q2


q0
Q
q1
P
S
q2
q0
QS*P
q2


R
q0
Q
q1
P
S
q2
q0
R + QS*P
q2

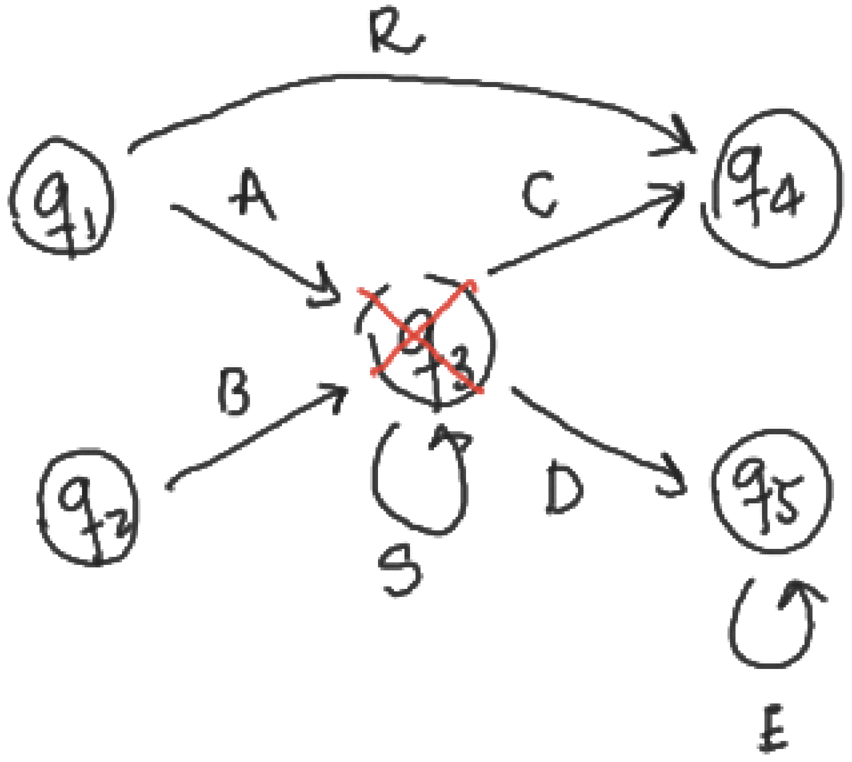

q0
Q
q1
P
q2
V
q0
(QPV)*QP
q2

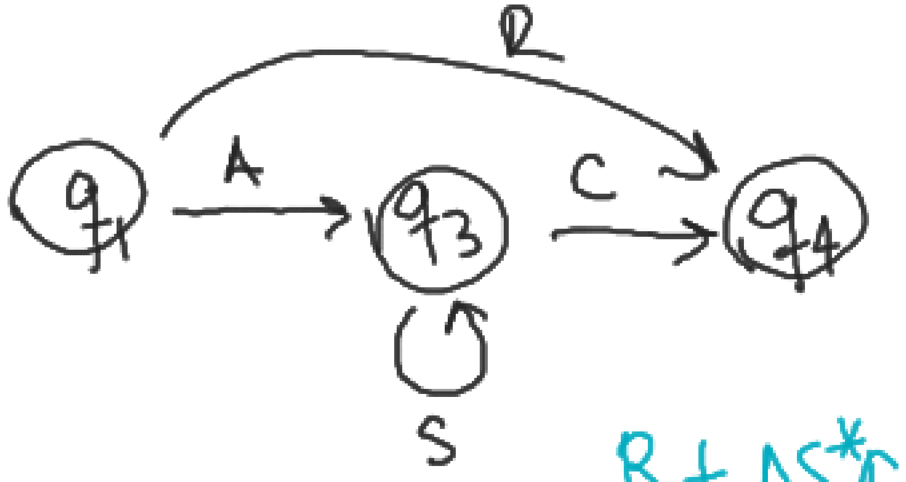

q0
Q
q1
P
q2
T
q0
Q(PT)*P
q2


q0
Q
q1
P
q2
U
q0
(QU)*QP


q0
Q
S
q1
W
P
q2
q0
Q(S+W)*P
q2

Ej:



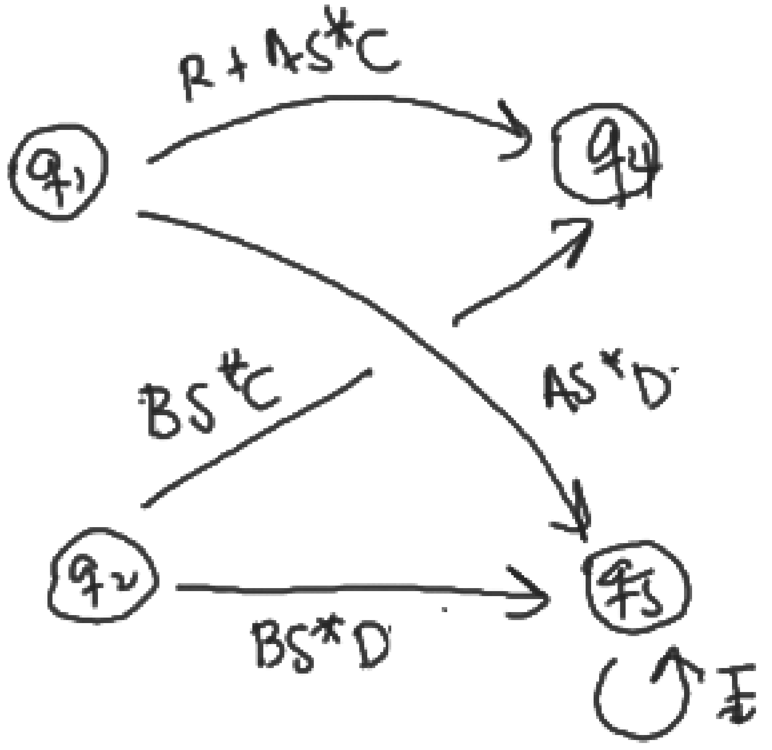


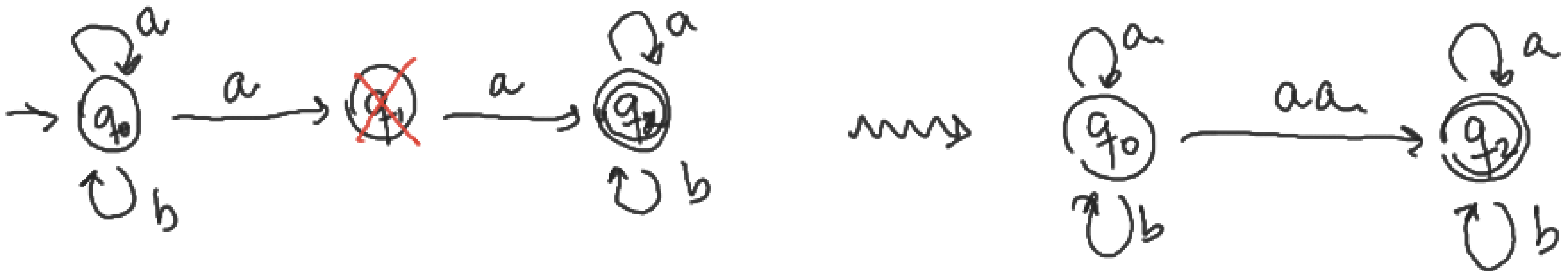
$R + AS^*C$

AS^*DE^*

BS^*C

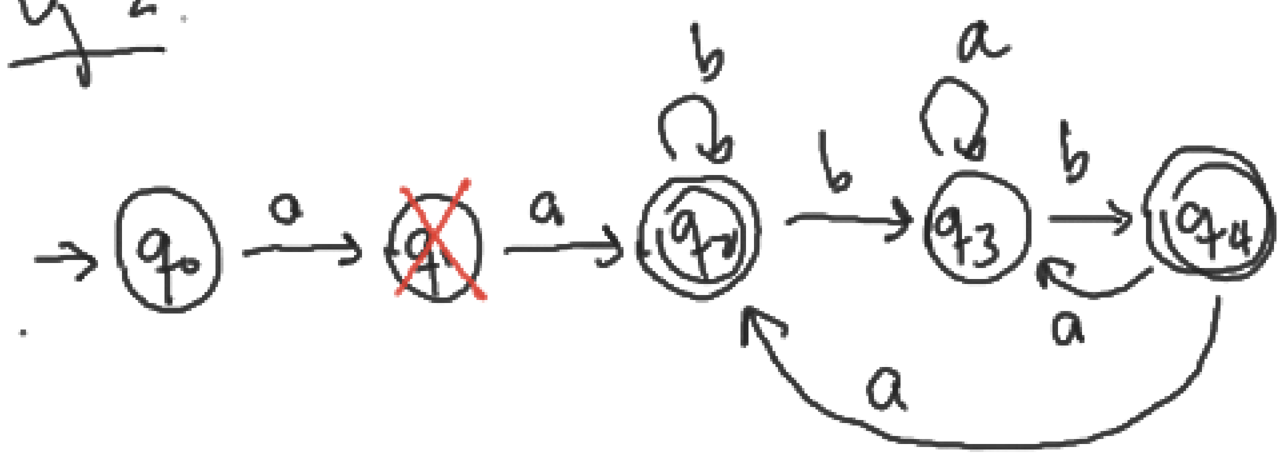
BS^*DE^*

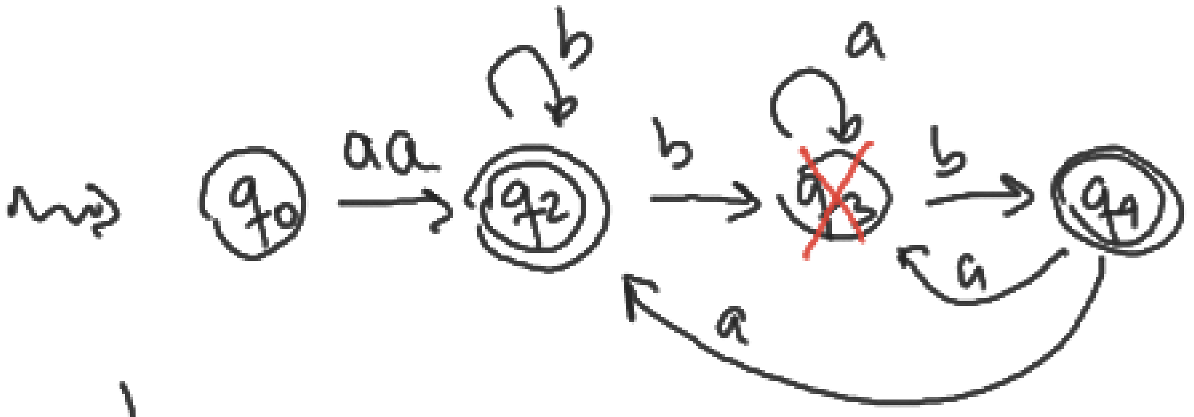


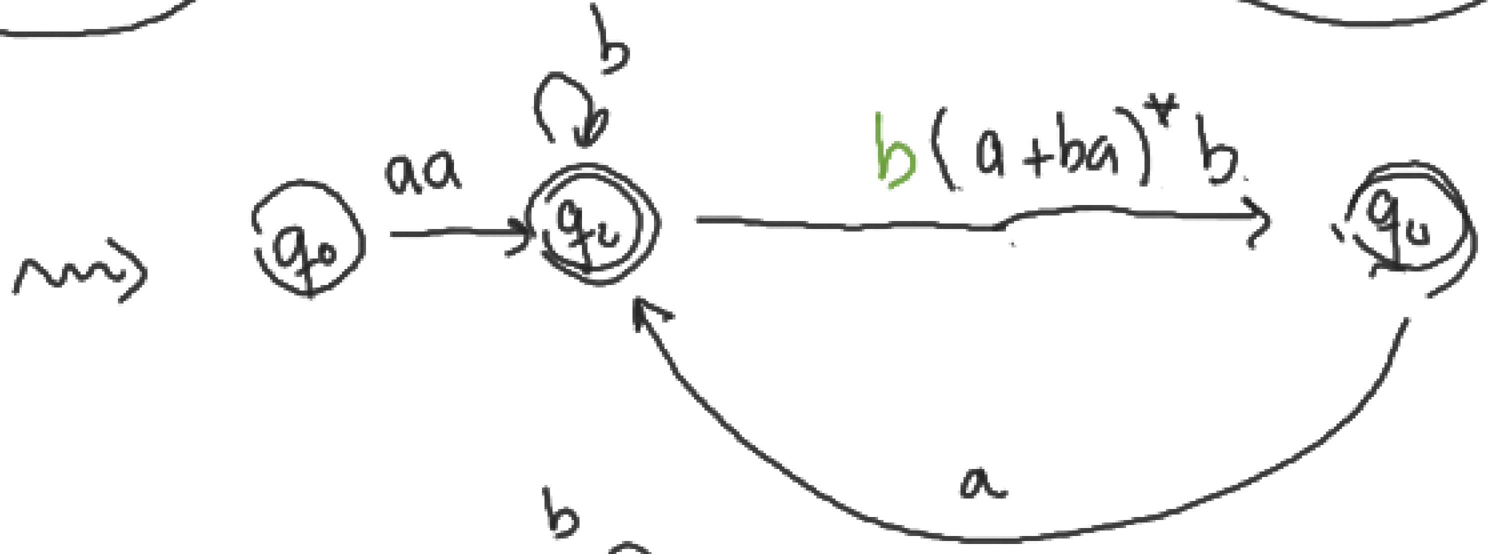


$$(a+b)^* aa (a+b)^*$$

Ej 2:

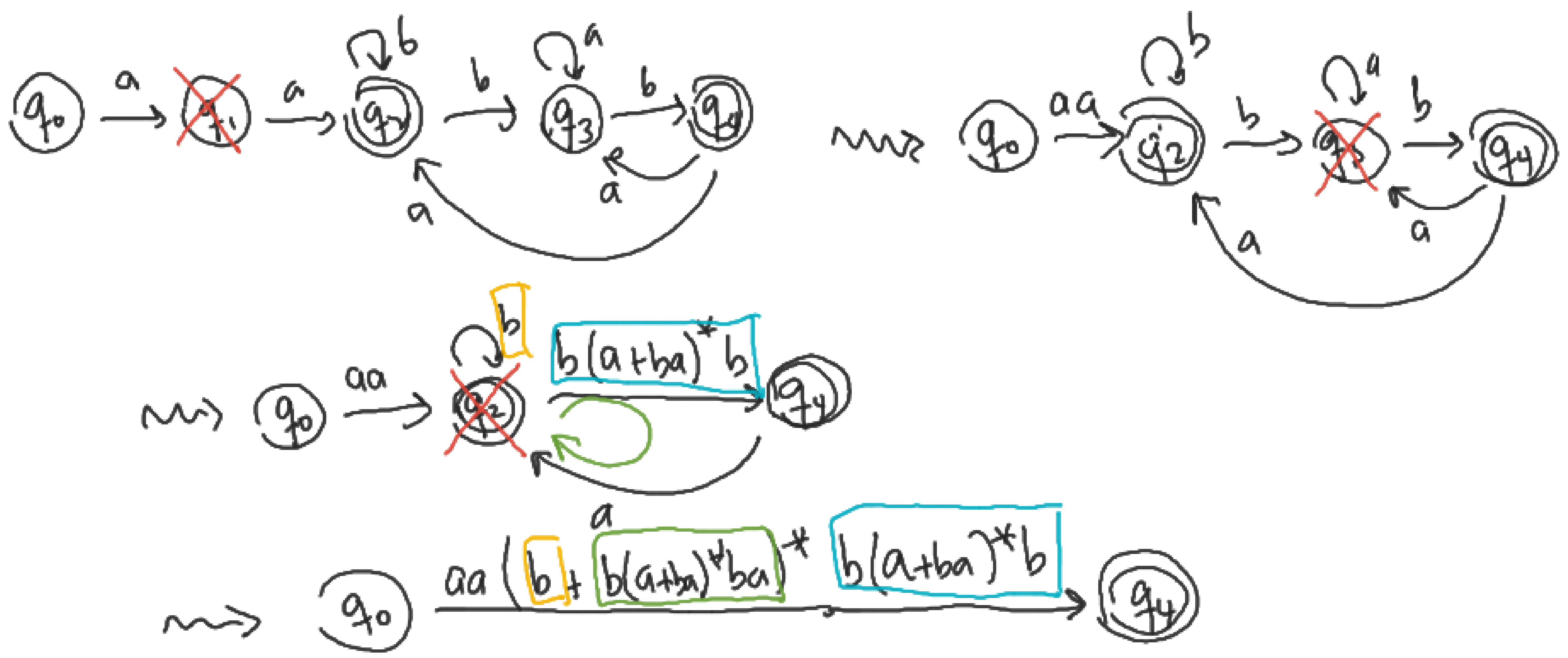






$$aa\left(b + b(a+ba)^*ba\right)^*$$

$$(r+s)^*$$



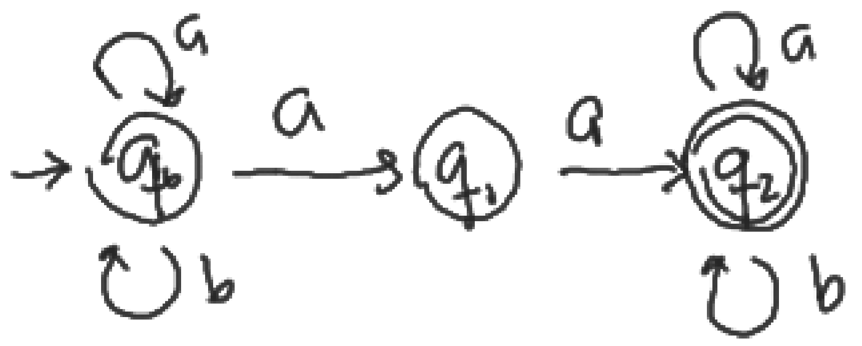
q0
a
q1
a
q2
b
b
q3
a
b
q4
a
a
q0
aa
q2
b
b
q3
a
b
q4
a
a
q0
aa
q2
b
b(a+ba)* b
q4
q0
a
aa (b + b(a+ba)*ba)* b(a+ba)*b
q4

Lema de Arden: $X = A^*B$

$$\underline{AX + B} = A(A^*B) + B = (AA^*)B + B = A^+B + B$$

$$= A^+B + \varepsilon B = (A^+ + \varepsilon)B = A^*B = \underline{X}$$

Ej:



(0) $A_0 = aA_0 + bA_0 + aA_1$

(1) $A_1 = aA_2$

(2) $A_2 = aA_2 + bA_2 + \varepsilon$

$A_i = \sigma A_j$

Eq (2): $A_2 = (a+b)A_2 + \varepsilon$

Lema de Arden $\Rightarrow$ $A_2 = (a+b)^*\varepsilon = (a+b)^*$

Sust. en (1) $A_1 = a(a+b)^*$

Sust en (0) $A_0 = aA_0 + bA_0 + aa(a+b)^*$

$A_0 = (a+b)A_0 + aa(a+b)^*$

Lema de Arden $\Rightarrow$ $A_0 = \underline{(a+b)^* aa (a+b)^*}$