1. see pics

2. Σ = {csc, math, 0, 1, 2, 3, ','}

3. 12 transitions

4. There's 12 necessary characters which is the total size of the language

5.
    a. RG
    b. RG
    c. CFG
    d. RG
    e. CFG
    f. CFG
    g. CFG
    h. BOTH

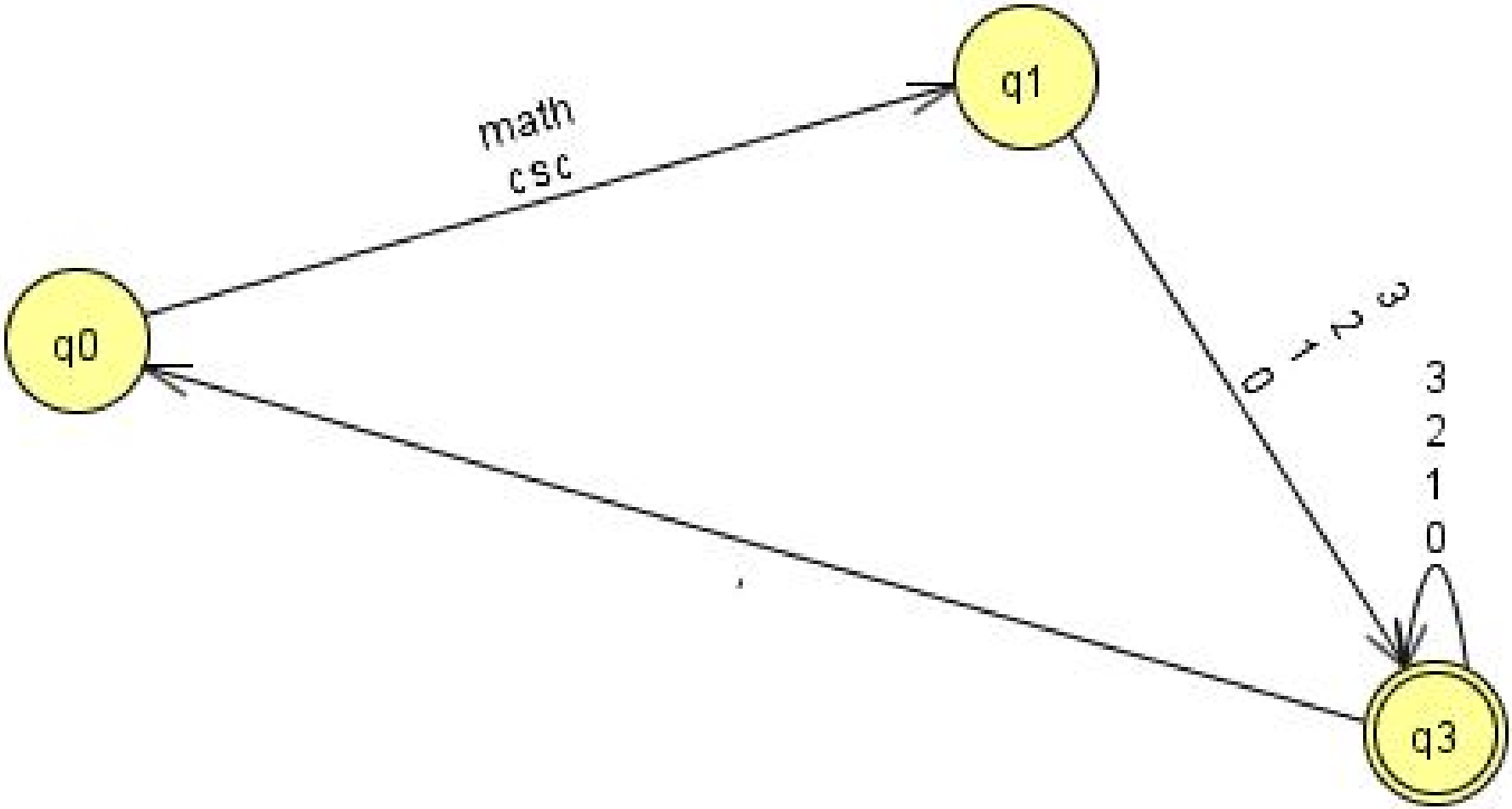
6.
    a. DFA
    b. NFA
    c. BOTH
    d. BOTH
    e. BOTH

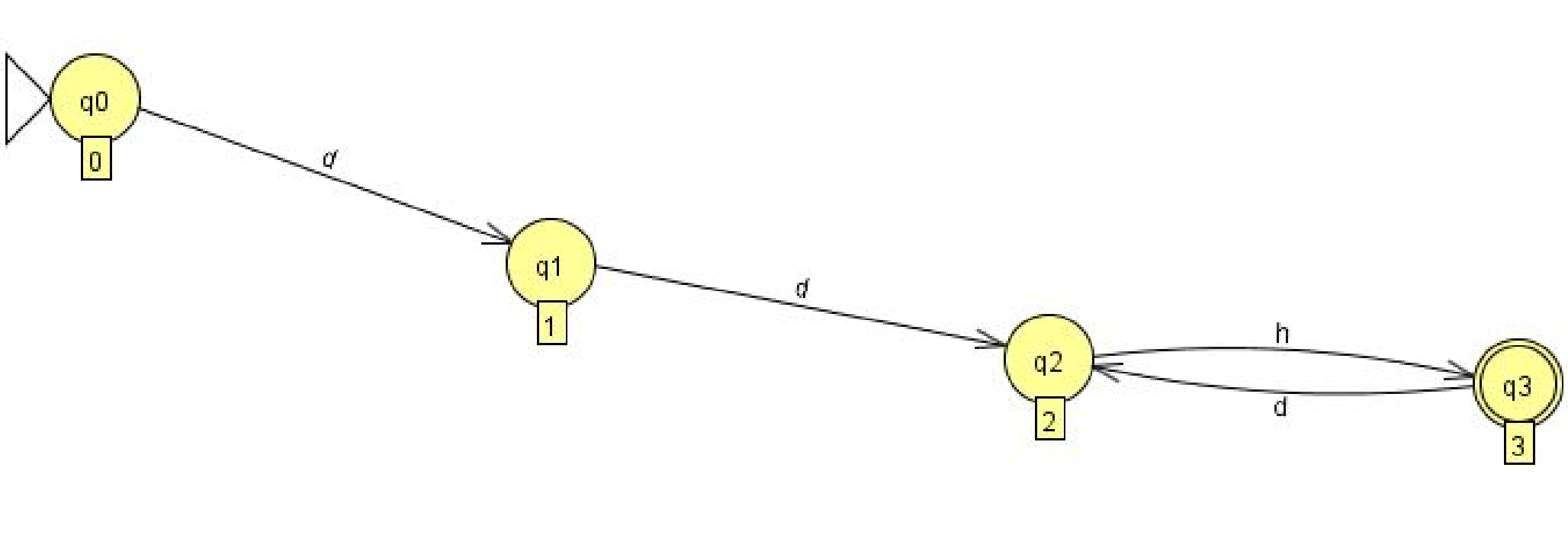
7. see pics

8. 2

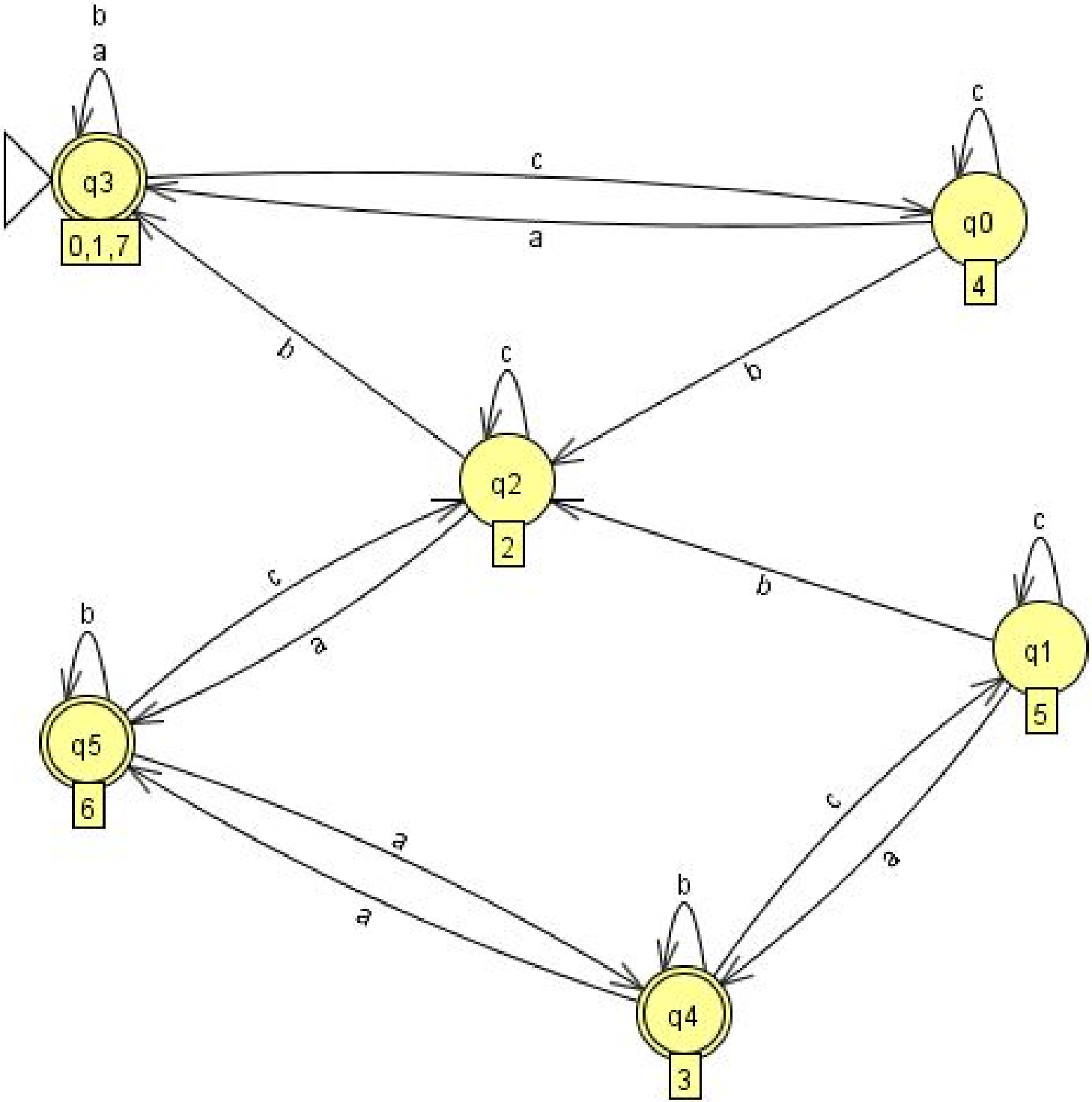
9. see pics

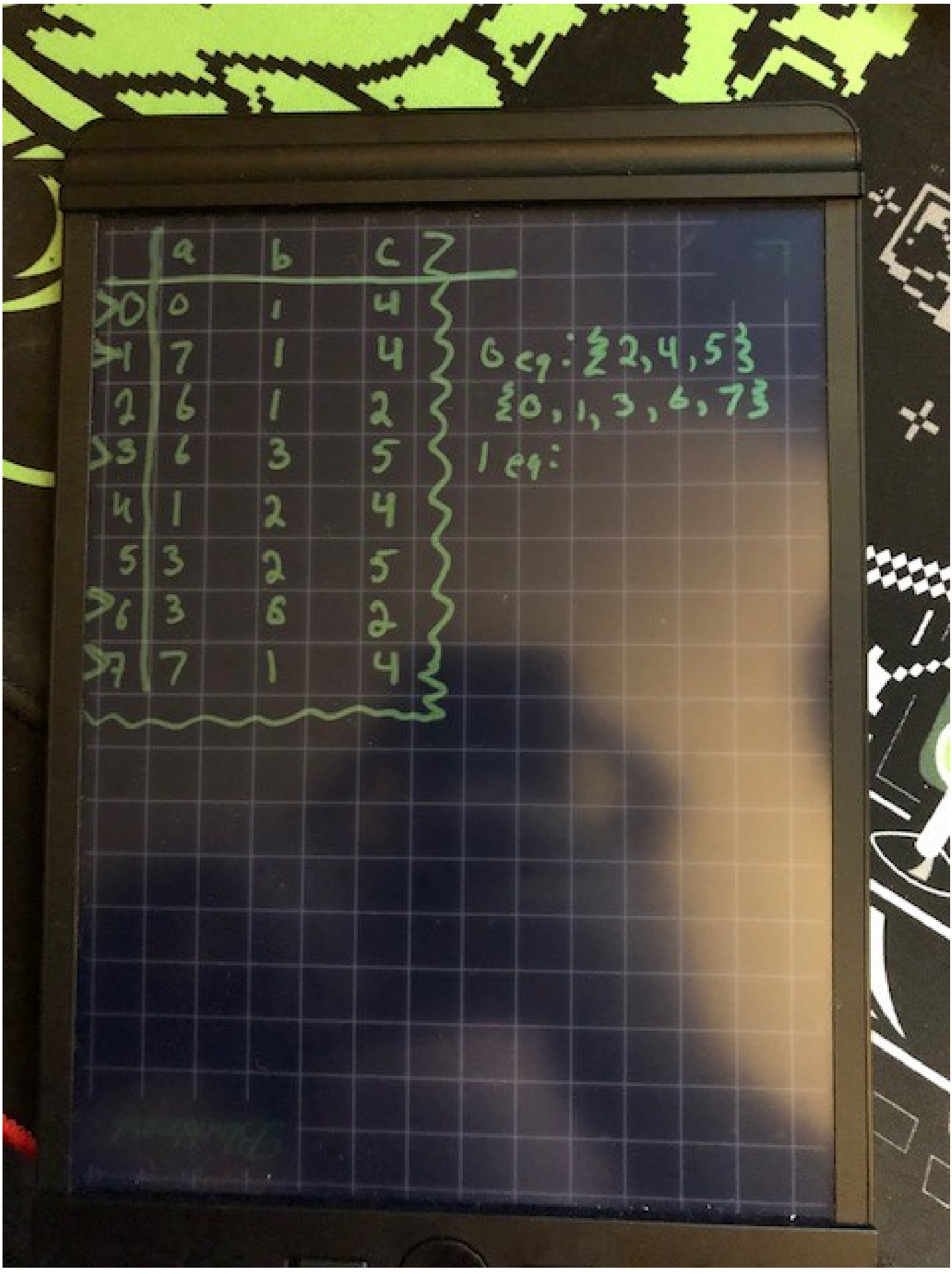
10.
    a. see pics
    b. Consider the state [q0]:
        on input a:
            δ([q0], a) = lamda-closure(δ(q0, a))
                       =(A, E, C)
            δ([q0], b) = lamda-closure(δ(q0, b))
                       =(∅)
            δ([q0], c) = lamda-closure(δ(q0, c))
                       =(∅)
            δ([q0], d) = lamda-closure(δ(q0, d))
                       =(∅)
            ℓ([A, E, C]) = lamda-closure[(dn(A,a)) U dn(E, a) U dn (c,a)]
                       =(∅)

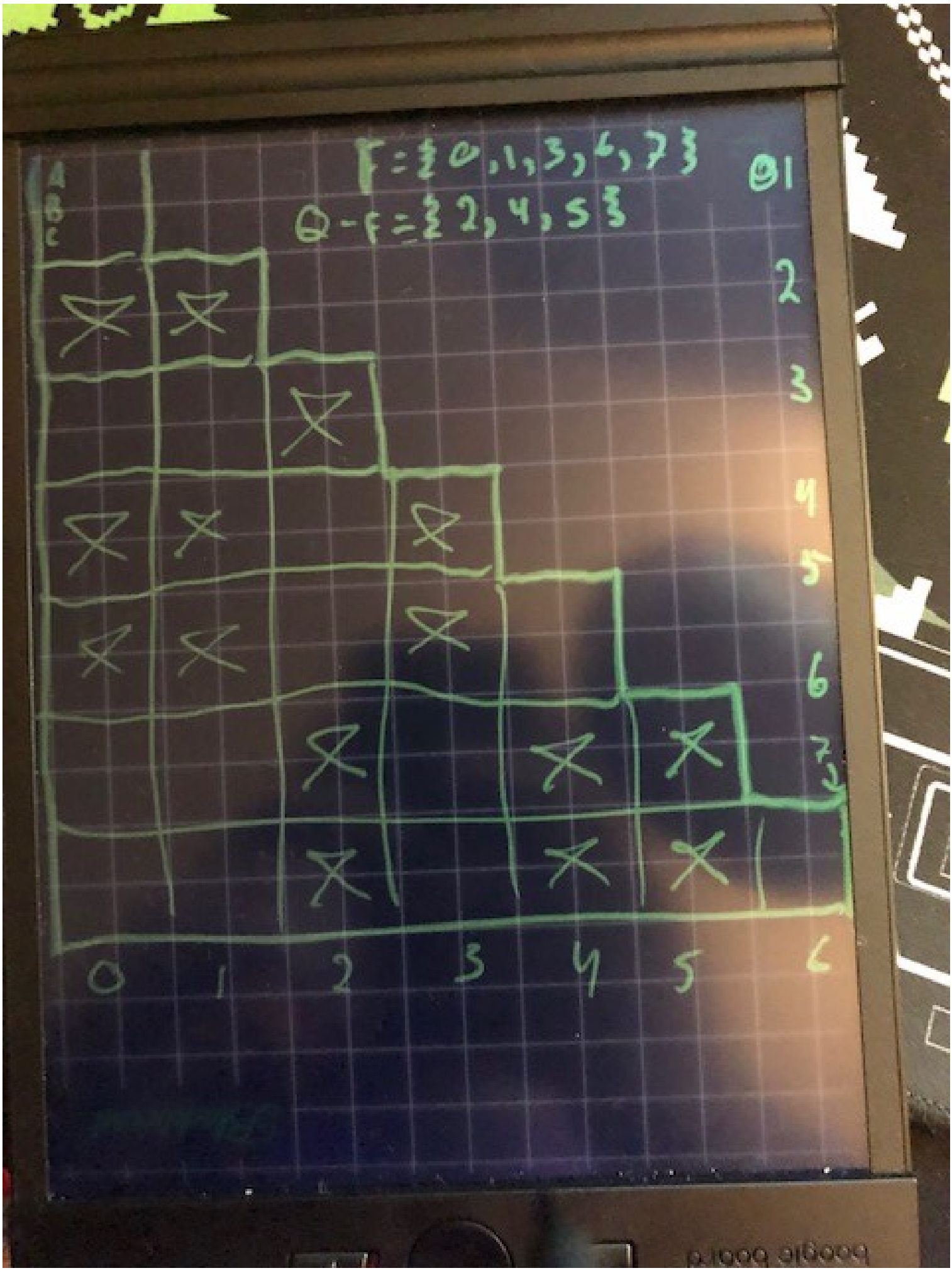

q0
q1
q3
math
csc
0
1
2
3
3
2
1
0

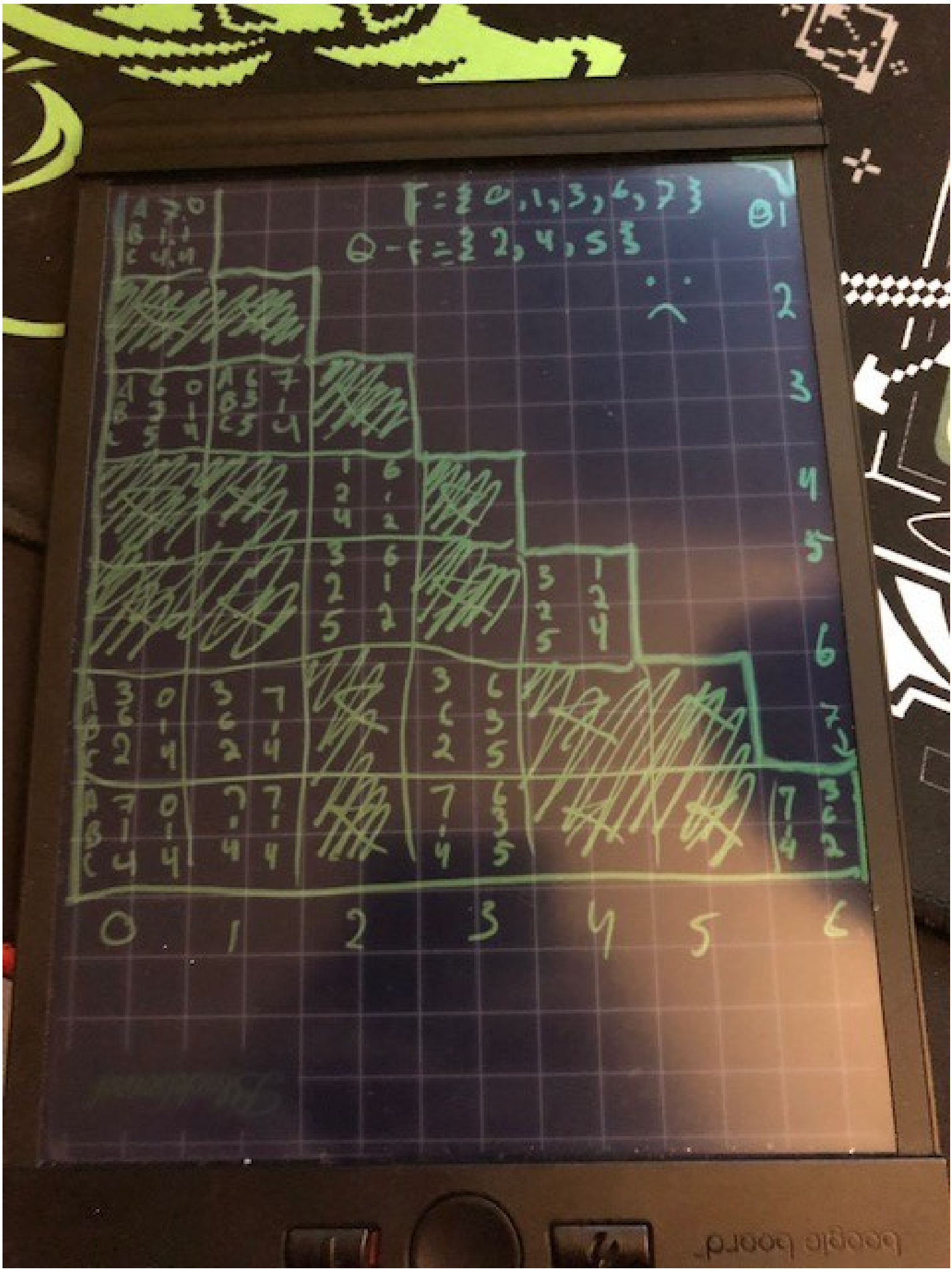

q0
0
a
q1
1
d
q2
2
h
d
q3
3

B	→	hC
C	→	hD
A	→	hD
D	→	dD
B	→	dD
C	→	λ
D	→	hD
S	→	hD
C	→	dB
A	→	dB
S	→	dA

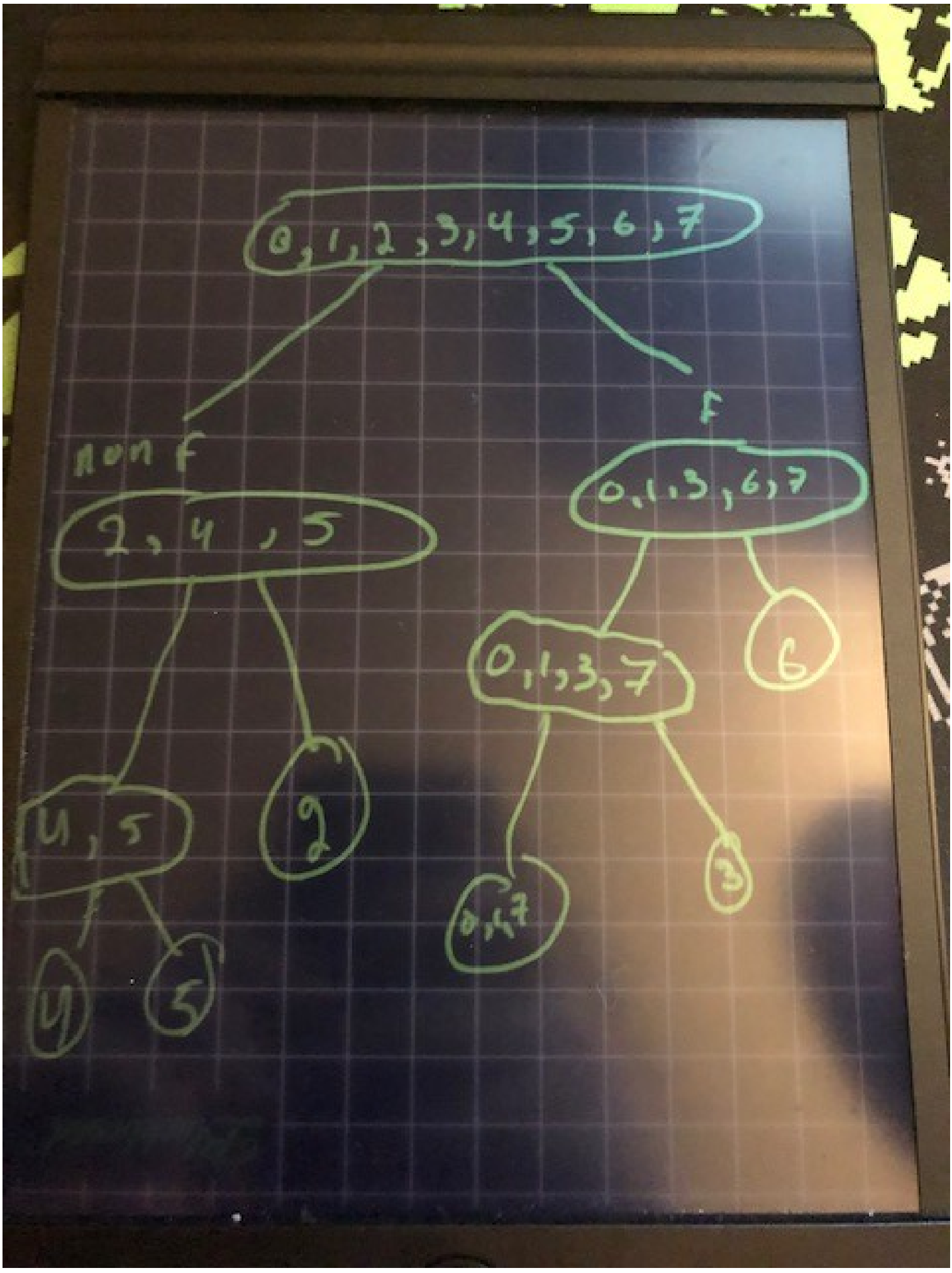

b
a
q3
0,1,7
c
a
c
q0
4
b
b
c
q2
2
c
a
b
c
q1
5
b
q5
6
a
a
b
q4
3
c
a

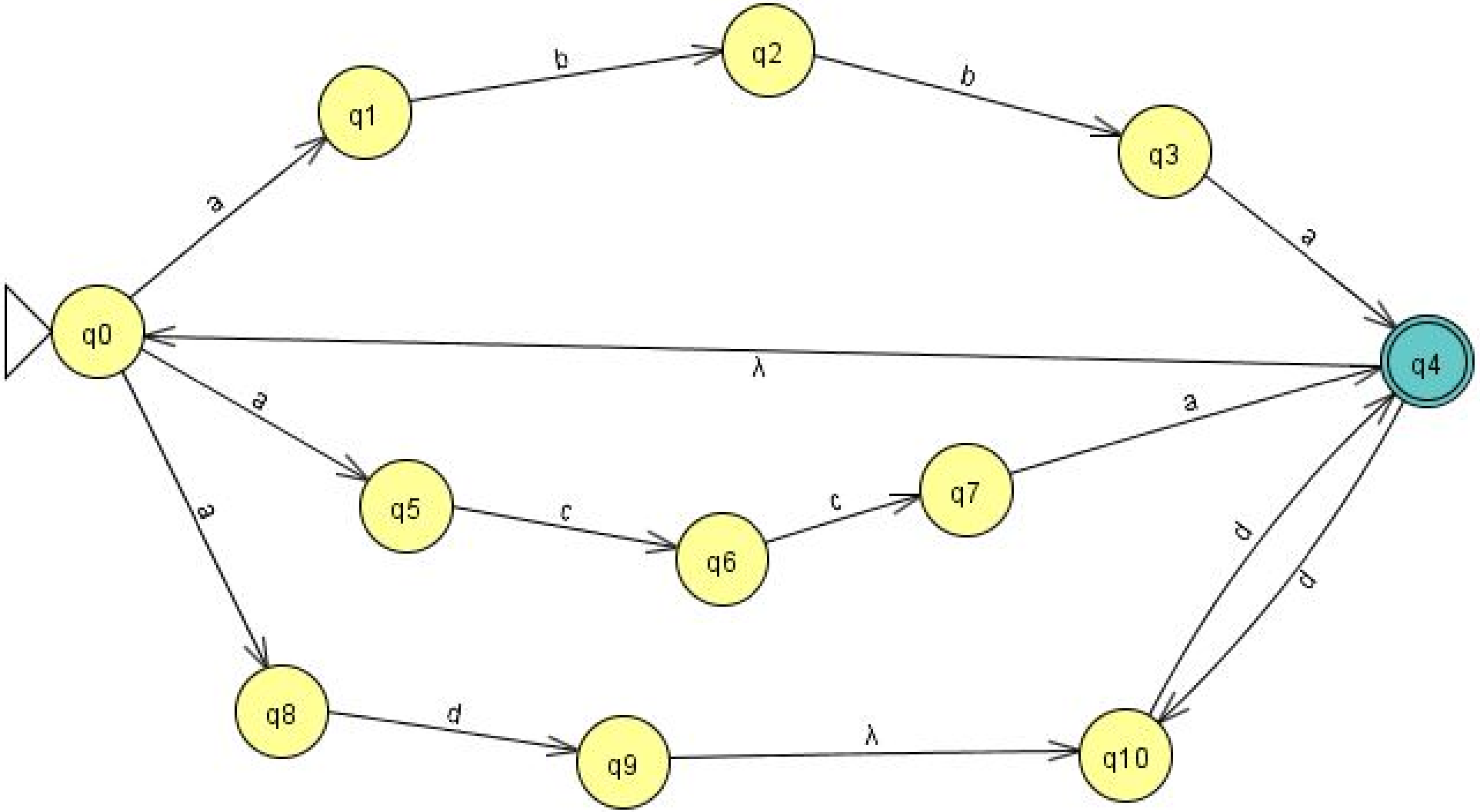

a b c z
0 1 4
7 1 4
6 1 2
6 3 5
1 2 4
3 2 5
3 6 2
7 1 4
6 eq: {2,4,5}
{0,1,3,6,7}
1 eq:

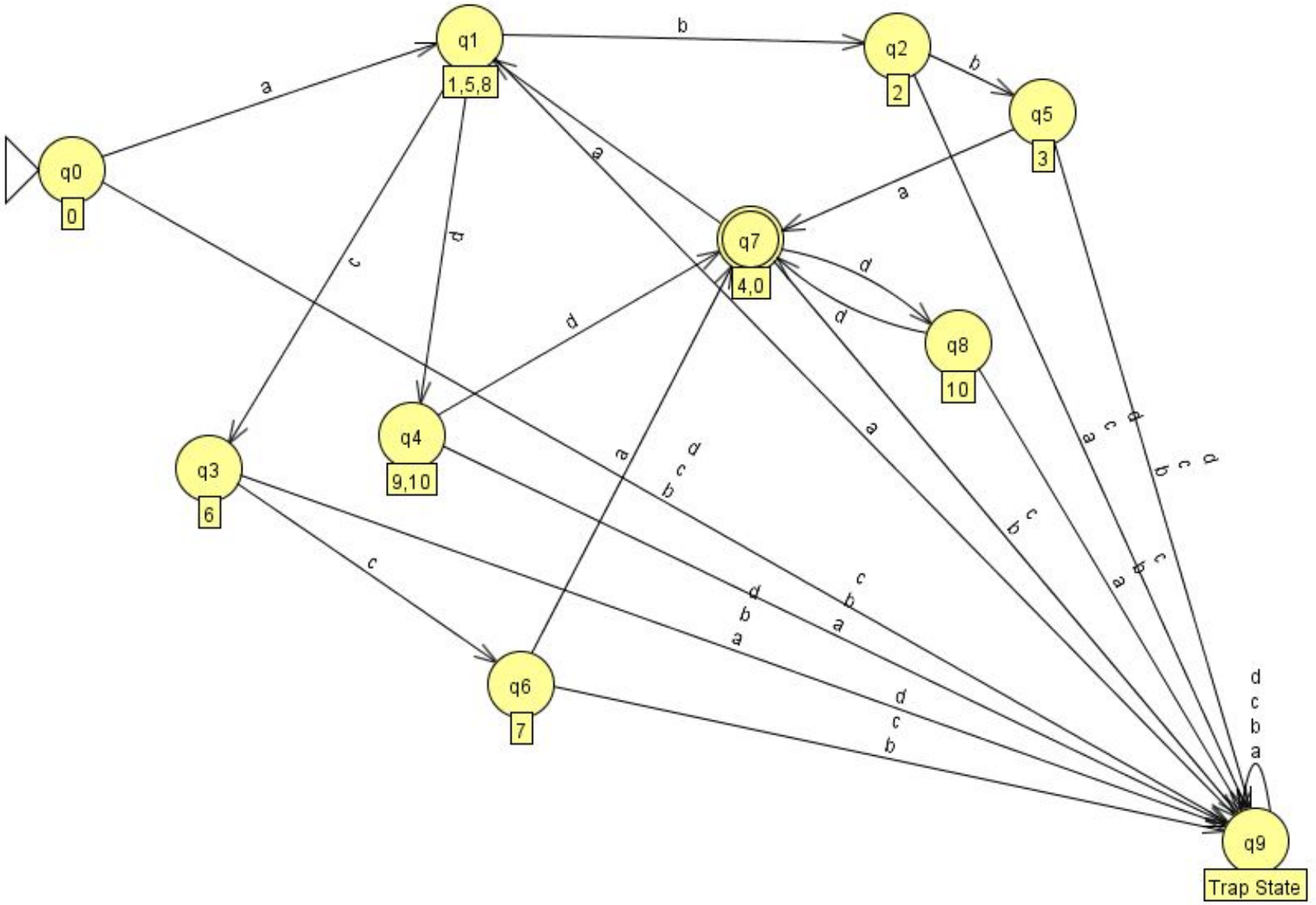

F = {0, 1, 3, 6, 7}
Ω - F = {2, 4, 5}
0 1
2
3
4
5
6
7
0 1 2 3 4 5 6


F = { 0, 1, 3, 6, 7 }
Ω - F = { 2, 4, 5 }
0 1 2 3 4 5 6 7

	a	b	c	
0	0	1	4	F = 0, 1, 3,
1	7	1	4	6, 7
2	6	1	2	Q - F = 2, 4, 5
3	6	3	5	
4	1	4	2	
5	3	2	5	
6	3	6	2	
7	7	1	4	


0,1,2,3,4,5,6,7
non f
f
2,4,5
0,1,3,6,7
0,1,3,7
6
4,5
2
3
0,1,7
4
5


q0
q1
q2
q3
q4
q5
q6
q7
q8
q9
q10
a
b
b
a
λ
a
c
c
a
a
d
d
d
λ


q0
0
q1
1,5,8
q2
2
q3
6
q4
9,10
q5
3
q6
7
q7
4,0
q8
10
q9
Trap State
a
b
c
d