

Pre-Laboratorio A y B

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Para cada una de las siguientes expresiones regulares:

- $ab * ab *$
- $0? (1?)? 0*$
- $(a^*|b^*)c$
- $(b|b)^*abb(a|b)^*$
- $(a|ε)b(a^+)c?$
- $(a|b)^*a(a|b)(a|b)$

Genere los siguientes elementos:

- Construya un AFN utilizando el algoritmo de Thompson.
 - Incluya la tabla de transiciones y el dibujo del autómata.
- Construya un AFD utilizando el algoritmo de construcción de subconjuntos.
 - Incluya la tabla de transiciones y el dibujo del autómata.

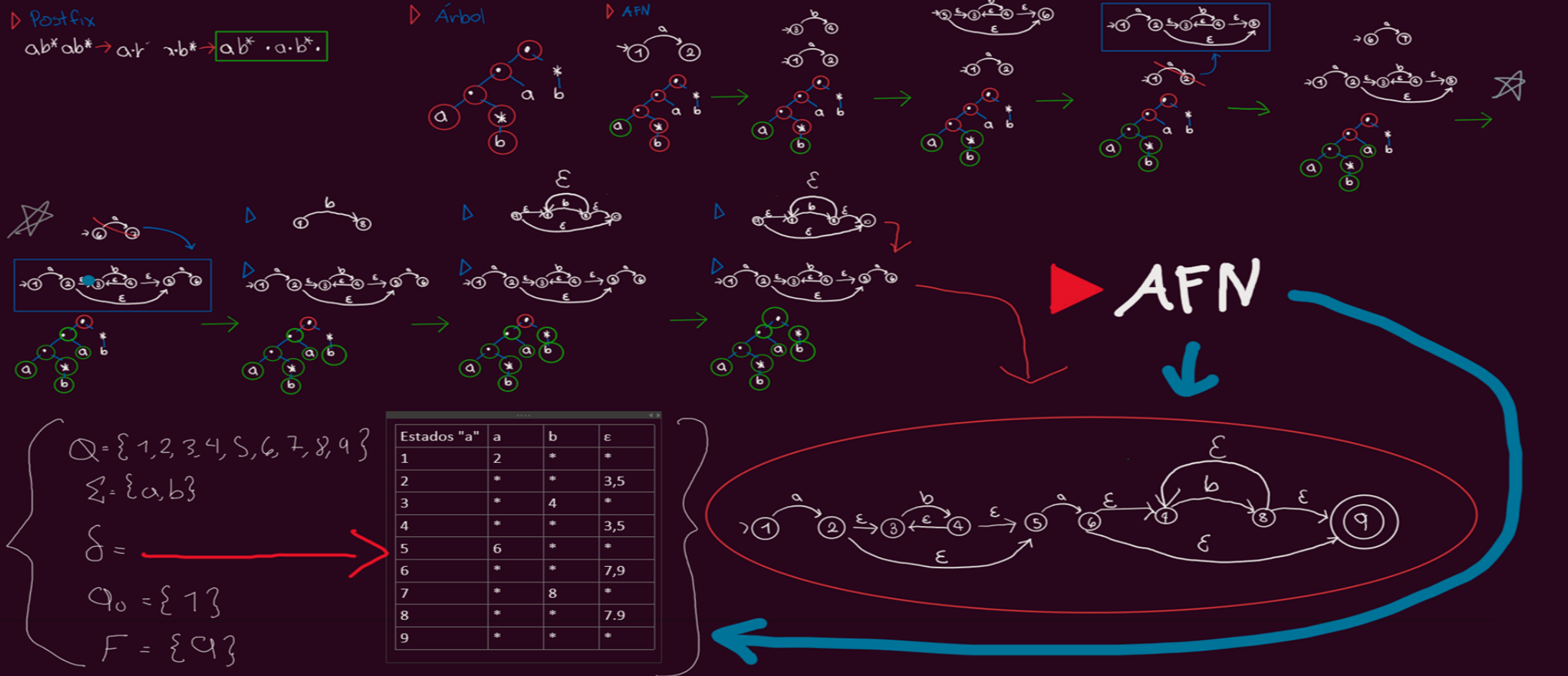
Haga el ejercicio a mano, o si lo prefiere, comience a programar sus funciones para sus laboratorios siguientes y utilice estas funciones para generar los elementos solicitados. En cualquier caso, suba como evidencia todo su trabajo.

Esta actividad es requisito para entregar su Laboratorio A y B.

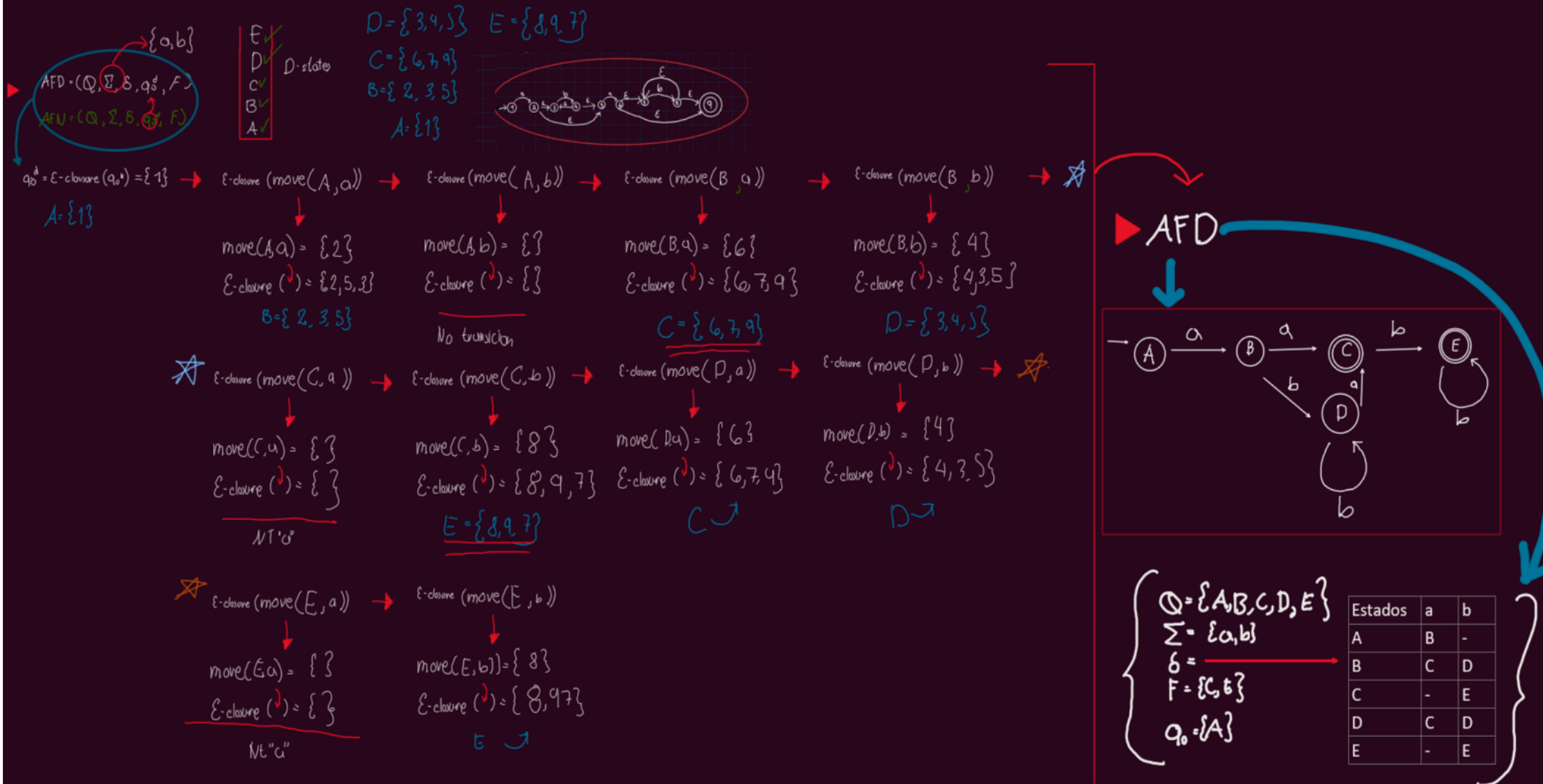
EN LA SIGUIENTE PÁGINA EMPIEZAN LAS SOLUCIONES

- ab^*ab^*

AFN

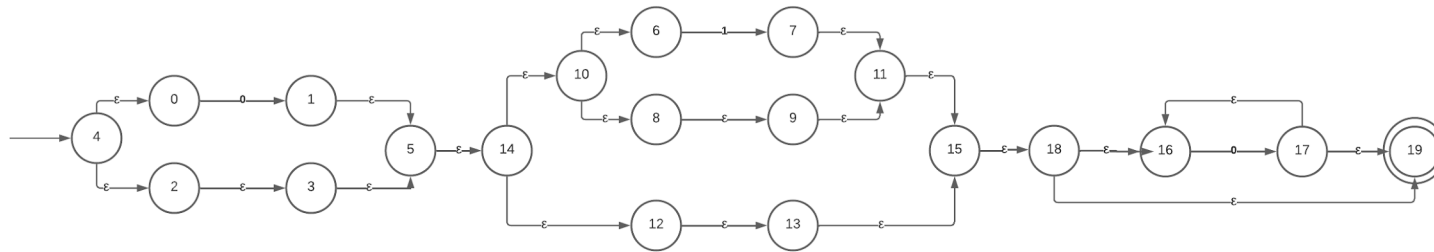


AFD



- $0?(1?)?0^*$

AFN



Estados	0	1	ϵ
0	1	*	*
1	*	*	5
2	*	*	3
3	*	*	5
4	*	*	0,2
5	*	*	14
6	*	7	*
7	*	*	11
8	*	*	9
9	*	*	11
10	*	*	6,8

11	*	*	15
12	*	*	13
13	*	*	15
14	*	*	10,12
15	*	*	18
16	17	*	*
17	*	*	16,19
18	*	*	16,19
19	*	*	*

AFD

$\text{eClosure}(4) = 4,0,2,3,5,14,10,6,8,9,11,15,12,13,18,16,19$

Estados	0	1
0,2,3,4,5,6,8,9,10,11,12,13,14,15,16,18,19	1,5,6,8,9,10,11,12,13,14,15,16,17,18,19	7,11,15,16,18,19
1,5,6,8,9,10,11,12,13,14,15,16,17,18,19	16,17,19	7,11,15,16,18,19
7,11,15,16,18,19	16,17,19	*
16,17,19	16,17,19	*

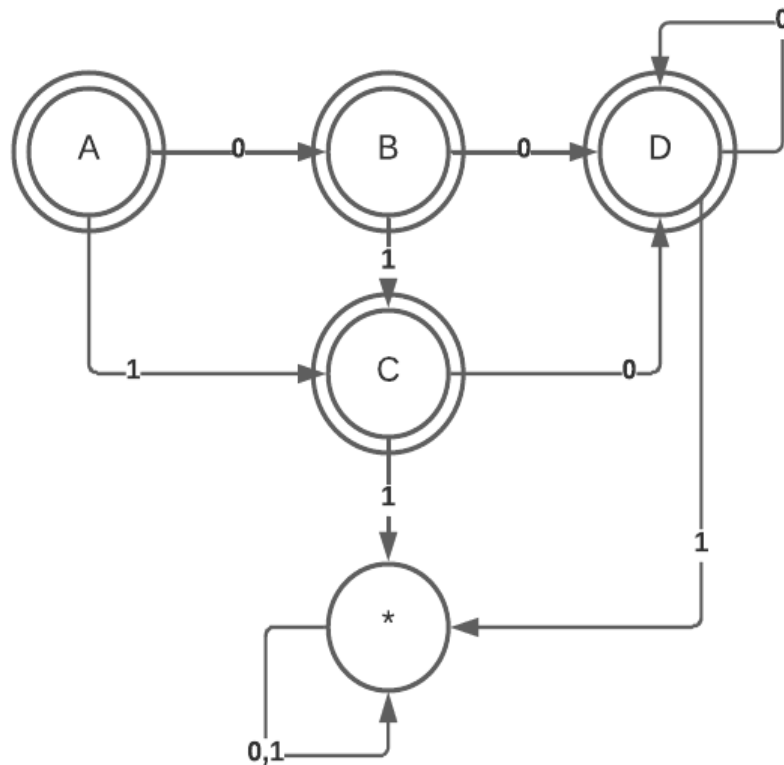
0,2,3,4,5,6,8,9,10,11,12,13,14,15,16,18,19 = A

1,5,6,8,9,10,11,12,13,14,15,16,17,18,19 = B

7,11,15,16,18,19 = C

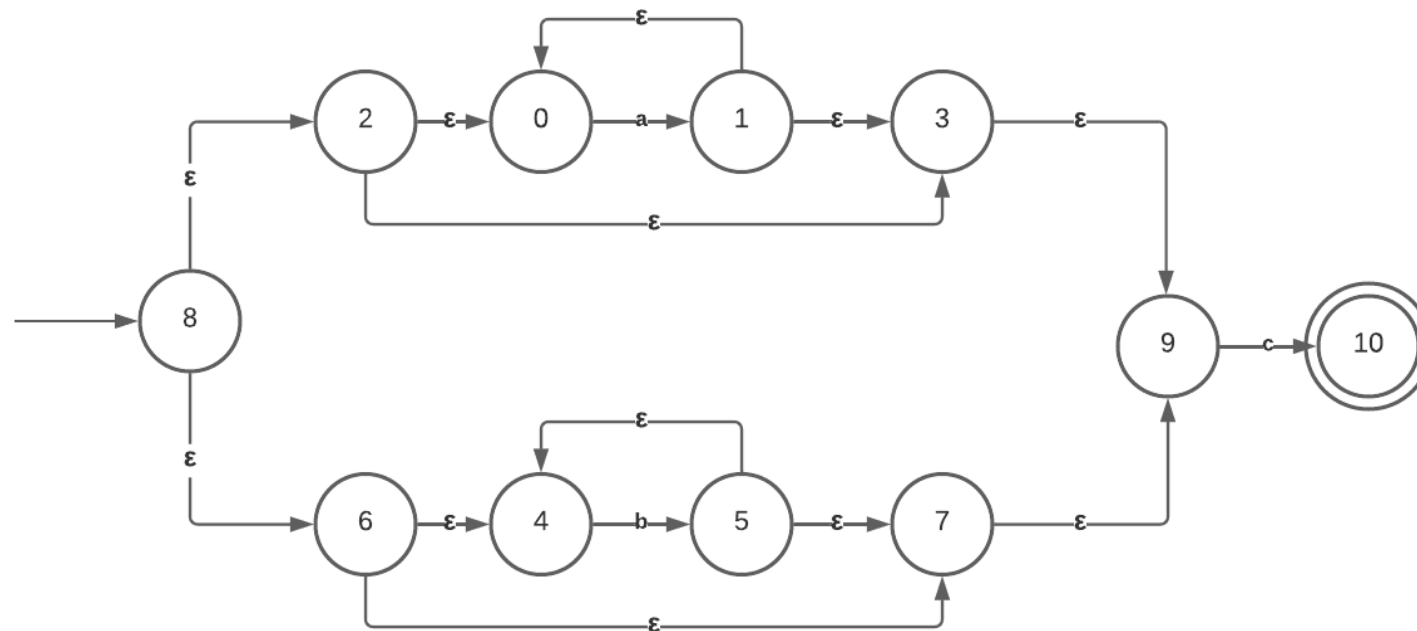
16,17,19 = D

Estados	0	1
A	B	C
B	D	C
C	D	*
D	D	*



- $(a^*|b^*)c$

AFN



Estados	a	b	c	ϵ
0	1	*	*	*
1	*	*	*	3
2	*	*	*	0,3
3	*	*	*	9
4	*	5	*	*

5	*	*	*	7
6	*	*	*	4,7
7	*	*	*	9
8	*	*	*	2,6
9	*	*	10	*
10	*	*	*	*

AFD

eClosure(8) = 8,2,6,0,4,3,7,9

Estados	a	b	c
0,2,3,4,6,7,8,9	0,1,3,9	4,5,7,9	10
0,1,3,9	0,1,3,9	*	10
4,5,7,9	*	4,5,7,9	10
10	*	*	*

0,2,3,4,6,7,8,9 = A

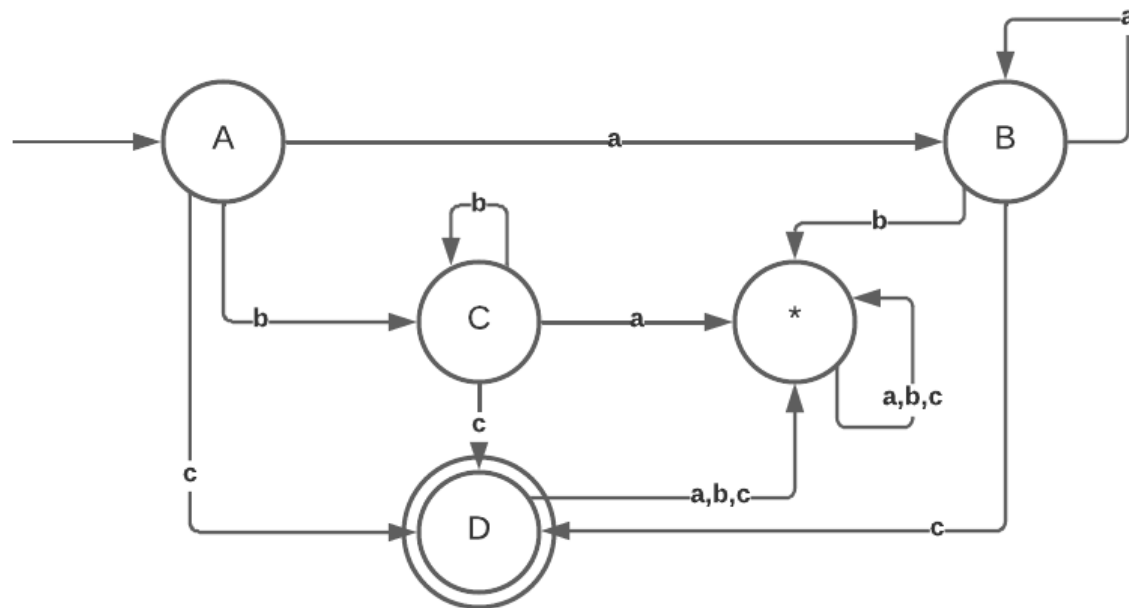
0,1,3,9 = B

4,5,7,9 = C

10 = D

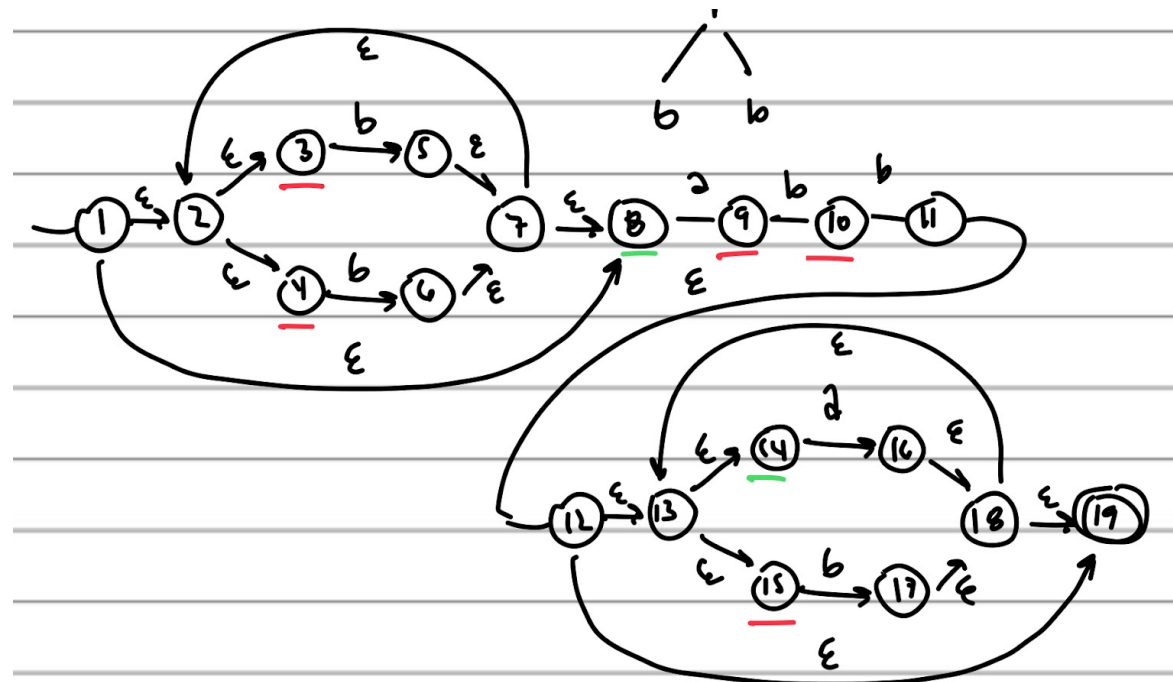
Estados	a	b	c
A	B	C	D
B	B	*	D

C	*	C	D
D	*	*	*



- $(b|b)^*abb(a|b)^*$

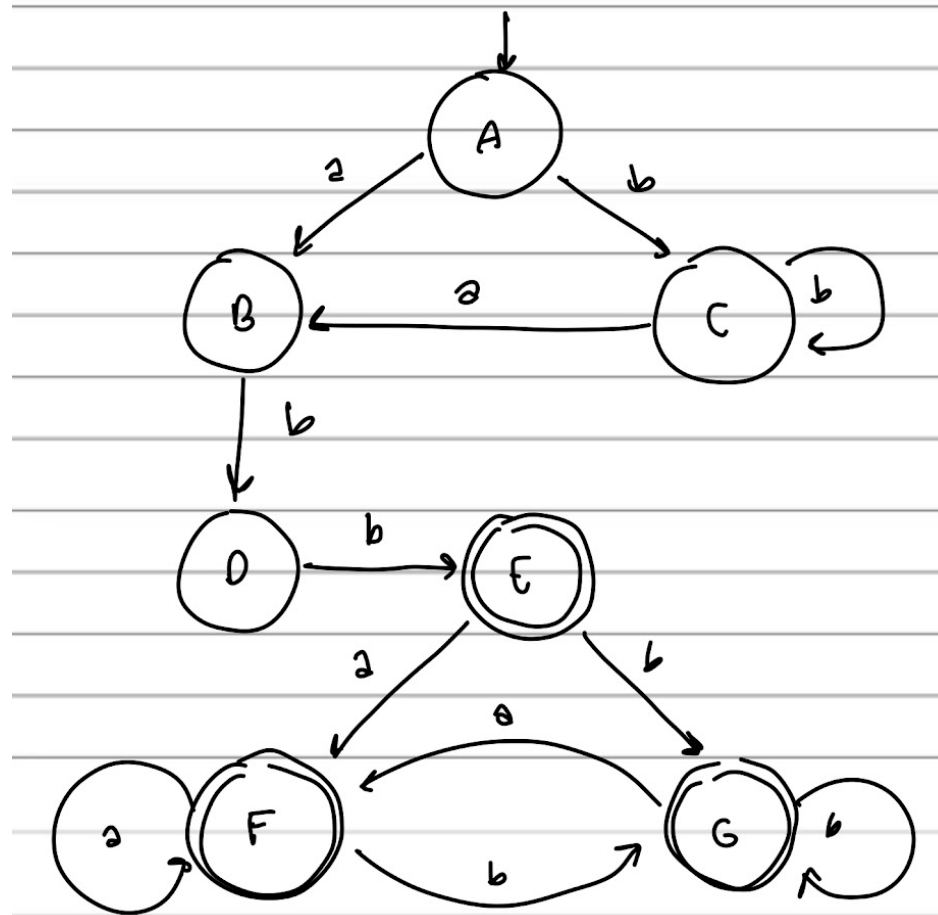
AFN



Estados	a	b	ϵ
1	*	*	2
2	*	*	3, 4
3	*	5	*
4	*	6	*
5	*	*	7
6	*	*	7

7	*	*	8
8	9	*	*
9	*	10	*
0	*	10	*
11	*	*	12
12	*	*	13
13	*	*	14, 15
14	16	*	*
15	*	17	*
16	*	*	18
17	*	*	18
18	*	*	19
19	*	*	*

AFD



ϵ -closure(1) = 1, 2, 3, 4, 8

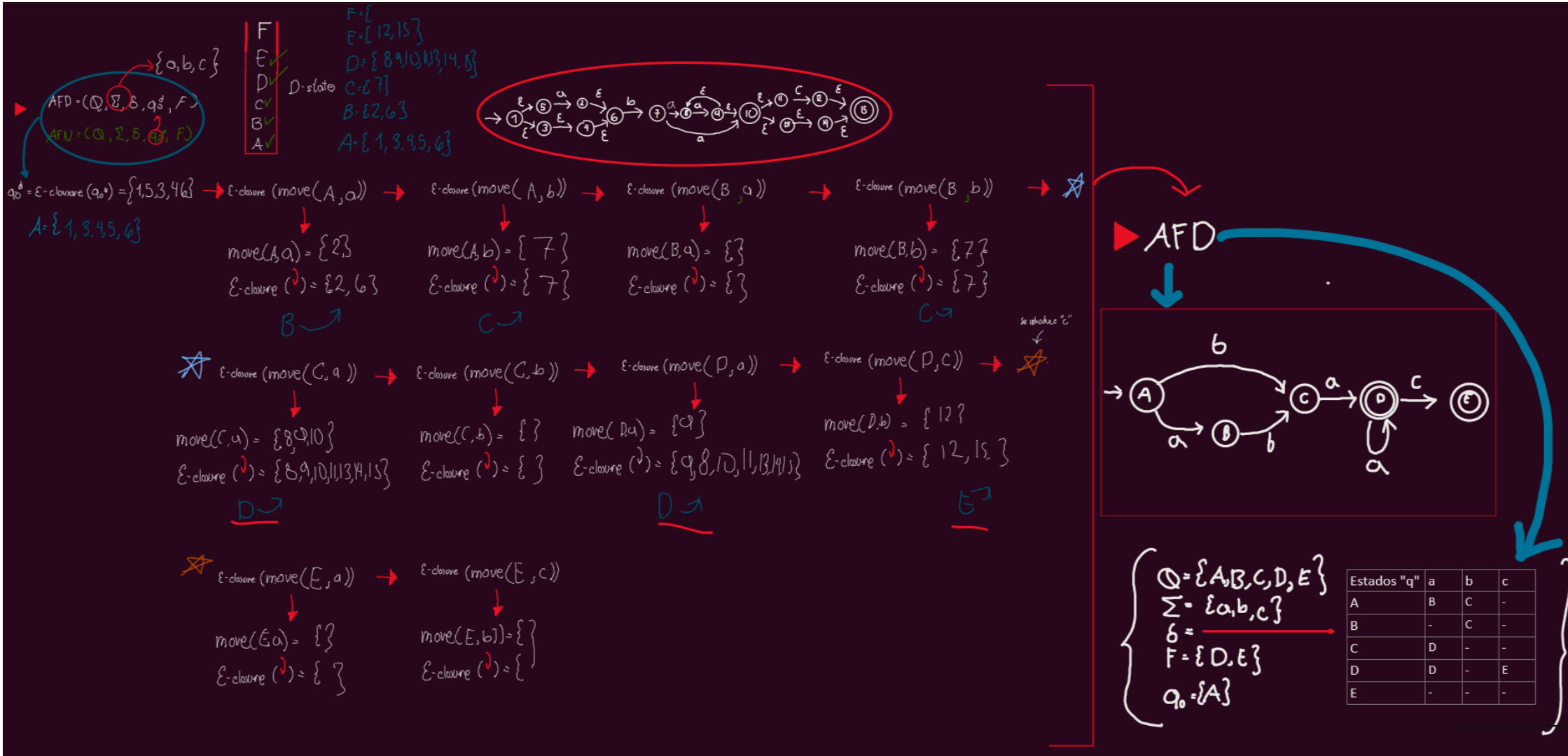
Estados	a	b
A = {1, 2, 3, 4, 8}	B = {9}	C = {5, 6, 7, 2, 3, 4, 8}
B = {9}	*	C = {5, 6, 7, 2, 3, 4, 8}

$C = \{5, 6, 7, 2, 3, 4, 8\}$	$B = \{9\}$	$C = \{5, 6, 7, 2, 3, 4, 8\}$
$D = \{10\}$	*	$E = \{11, 12, 13, 14, 15, 19\}$
$E = \{11, 12, 13, 14, 15, 19\}$	$F = \{16, 18, 13, 14, 19, 15\}$	$G = \{17, 18, 13, 14, 15, 19\}$
$F = \{16, 18, 13, 14, 19, 15\}$	$F = \{16, 18, 13, 14, 19, 15\}$	$G = \{17, 18, 13, 14, 15, 19\}$
$G = \{17, 18, 13, 14, 15, 19\}$	$F = \{16, 18, 13, 14, 19, 15\}$	$G = \{17, 18, 13, 14, 15, 19\}$

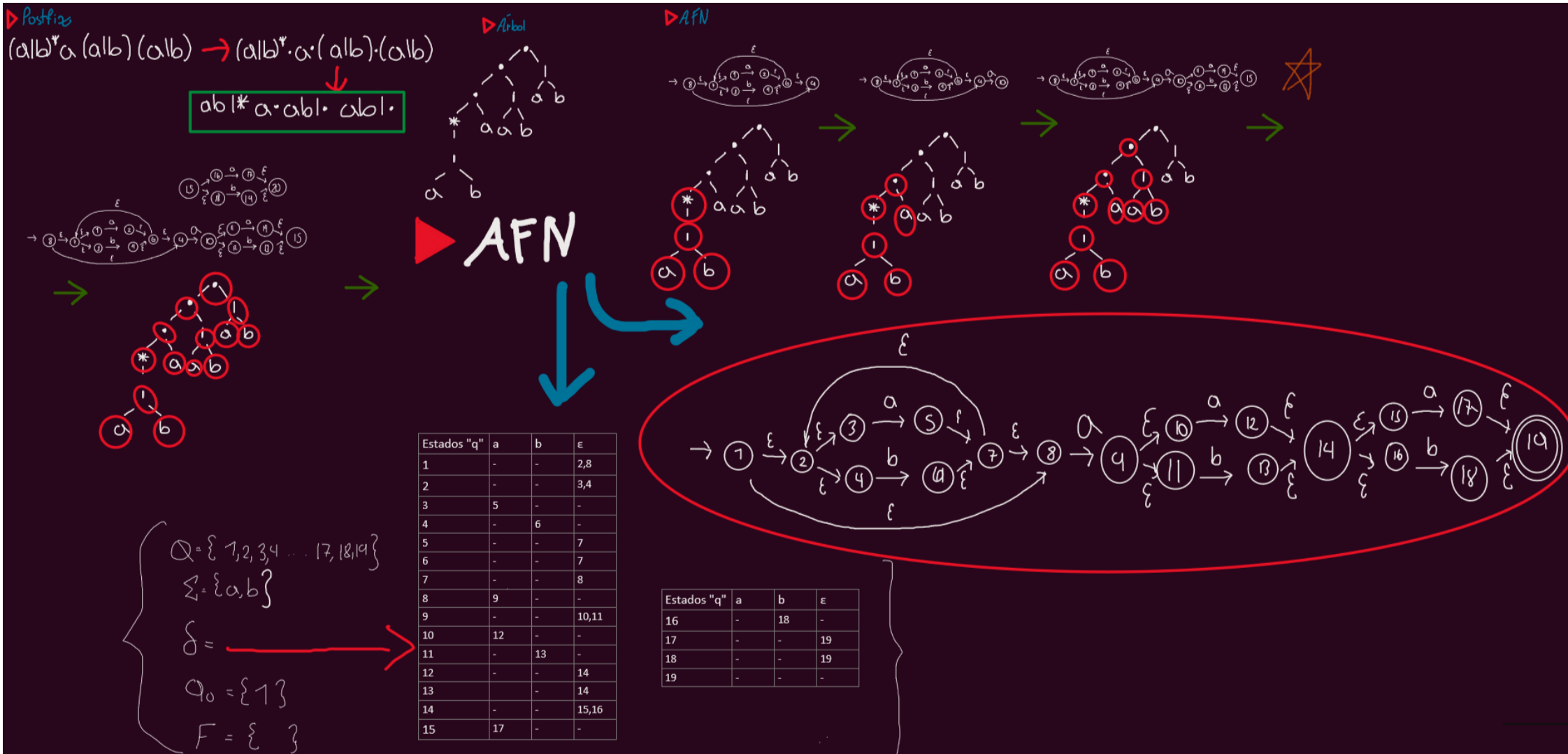
- $(a|\epsilon)b(a^+)c?$

AFN

AFD



- $(a|b)^*a(a|b)(a|b)$



AFD

AFD $(Q, \Sigma, \delta, q_0, F)$
AFN $(Q, \Sigma, \delta, q_0, F)$

$q_0^A = \epsilon\text{-closure}(q_0) = \{1, 2, 3, 4, 5, 6, 7, 8\}$

$A \rightarrow$

DFA
states

$G = \{2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14\}$
 $F = \{2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14\}$
 $G = \{2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14\}$
 $D = \{2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14\}$
 $C = \{2, 3, 4, 5, 6, 7, 8\}$
 $B = \{2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14\}$
 $A = \{2, 3, 4, 5, 6, 7, 8\}$

$I = \{2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14\}$
 $H = \{2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14\}$

AFD

$Q = \{A, B, C, \dots, G, H, I\}$
 $\Sigma = \{a, b\}$
 $\delta =$
 $F = \{F, G, H, I\}$
 $q_0 = \{A\}$

Estados "q"	a	b
A	B	C
B	D	E
C	B	C
D	F	G
E	H	I
F	F	G
G	H	I
H	D	E
I	B	C

