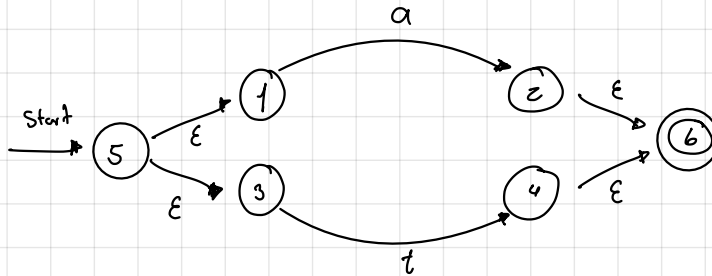
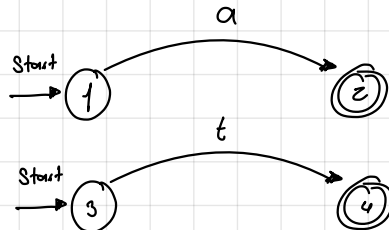
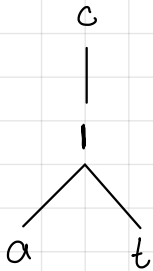


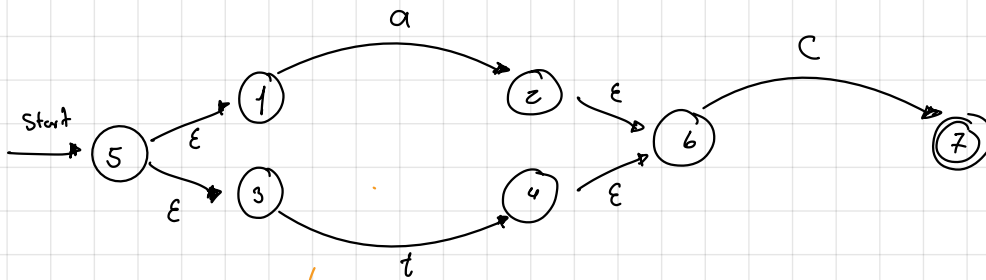
Ejercicio No. 1 (25%) - Convierta las siguientes expresiones regulares en autómatas finitos deterministas (para ello deberá primero convertir las expresiones regulares a AFN y luego convertirlas a AFD). Muestre todo su procedimiento, i.e., AFN construido con Thompson, tabla de transición, conversión a AFD. Para el inciso g, interprete \ como un escape de carácter, i.e., \ (significa que su regex reconoce el carácter).

- a) $(a|t)c$
- b) $(a|b)^*$
- c) $a * |b^+|$
- d) $((\epsilon|a)|b^+)^*$
- e) $(a|b)^+ abb(a|b)^*$
- f) $0?(1?)^?0^+$
- g) $if\backslash([ae] + \backslash)\{[ei] + \backslash\}(\backslash n(else\backslash([j]l + \backslash)))?$
- h) $[ae03]^+ @ [ae03]^+ . (com|net|org) (. (gt|cr|co))^?$

a) $(a|t)c$



AFN



$$Q = \{1, 2, 3, 4, 5, 6, 7\} \quad q_0 = 5 \quad F = \{7\}$$

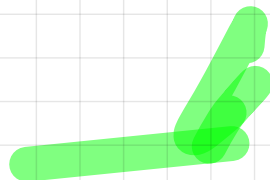
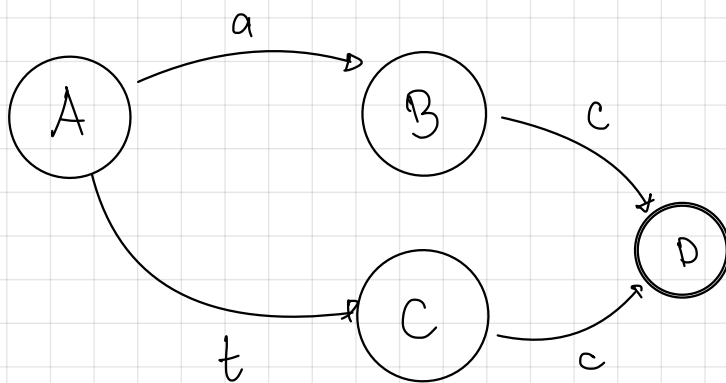
$$\Sigma = \{\epsilon, a, b\}$$

$$\delta = \left\{ \begin{array}{ll} (5, \epsilon) \rightarrow 1 & (2, \epsilon) \rightarrow 6 \\ (5, \epsilon) \rightarrow 3 & (4, \epsilon) \rightarrow 6 \\ (1, a) \rightarrow 2 & (6, c) \rightarrow 7 \\ (3, t) \rightarrow 4 & \end{array} \right\}$$

	ϵ	a	t	c
5	$\{5,1,3\}$	—	—	—
1	—	$\{2\}$	—	—
3	—	—	$\{4\}$	—
2	$\{6\}$	—	—	—
4	$\{6\}$	—	—	—
6	—	—	—	$\{7\}$
7	—	—	—	—

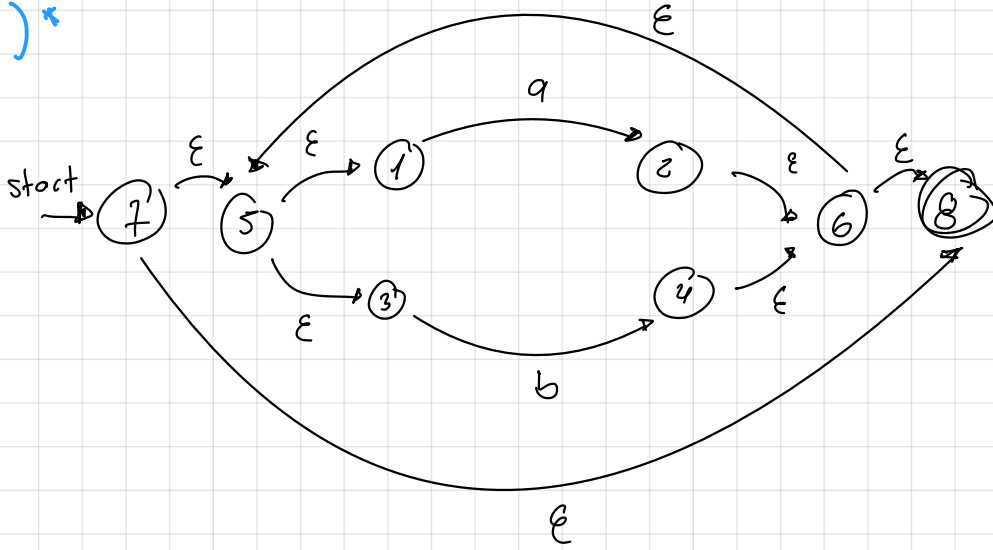
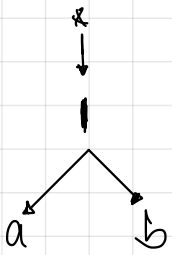
Tabla AFD

$\{5,1,3\} = A$	a	t	c
$\{2,6\} = B$	$\{2,6\}$	$\{4,6\}$	—
$\{4,6\} = C$	—	—	$\{7\}$
$\{7\} = D$	—	—	—



b) $(a|b)^*$

AFN



$Q = \{7, 5, 1, 3, 2, 4, 6, 8\}$

$q_0 = \{7\}$

$F = \{8\}$

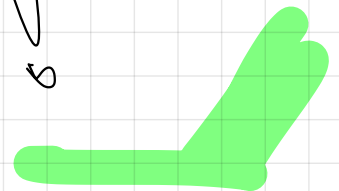
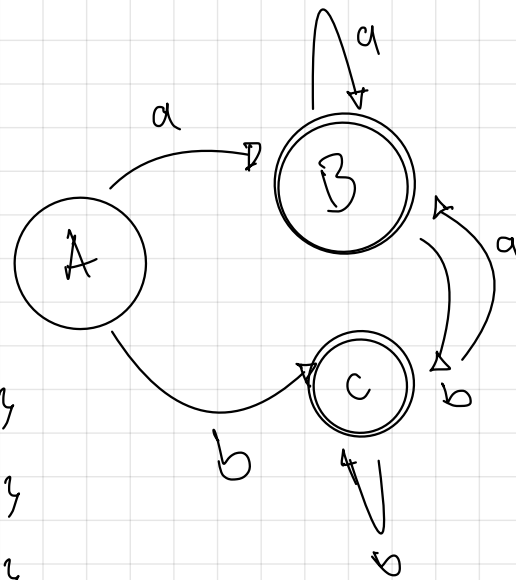
$\Sigma = \{a, b\}$

$\delta = \left\{ \begin{array}{lll} (7, \epsilon) \rightarrow 5, 8 & (1, a) \rightarrow 2 & (2, \epsilon) \rightarrow 6 \\ (5, \epsilon) \rightarrow 1, 3 & (3, b) \rightarrow 4 & (4, \epsilon) \rightarrow 6 \\ & & (6, \epsilon) \rightarrow 5, 8 \end{array} \right\}$

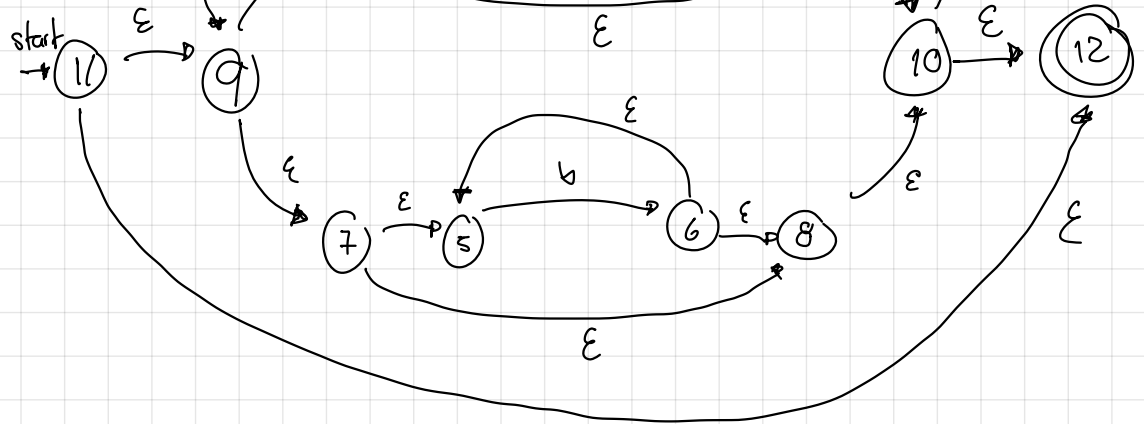
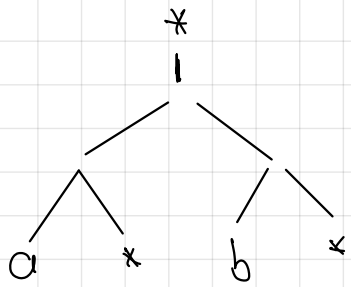
	ϵ	a	b
7	$\{7, 5, 1, 3, 8\}$	—	—
5	$\{5, 1, 3\}$	—	—
1	—	$\{2\}$	—
3	—	—	$\{4\}$
2	$\{2, 6, 5, 1, 3, 8\}$	—	—
4	$\{4, 6, 5, 1, 3, 8\}$	—	—
6	$\{6, 8, 5, 1, 3\}$	—	—
8	—	—	—

Table AFD

	a	b
$\{7, 5, 1, 3, 8\} = A$	$\{2, 6, 5, 1, 3, 8\}$	$\{4, 6, 5, 1, 3, 8\}$
$\{2, 6, 5, 1, 3, 8\} = B$	$\{2, 6, 5, 1, 3, 8\}$	$\{4, 6, 5, 1, 3, 8\}$
$\{4, 6, 5, 1, 3, 8\} = C$	$\{2, 6, 5, 1, 3, 8\}$	$\{4, 6, 5, 1, 3, 8\}$



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

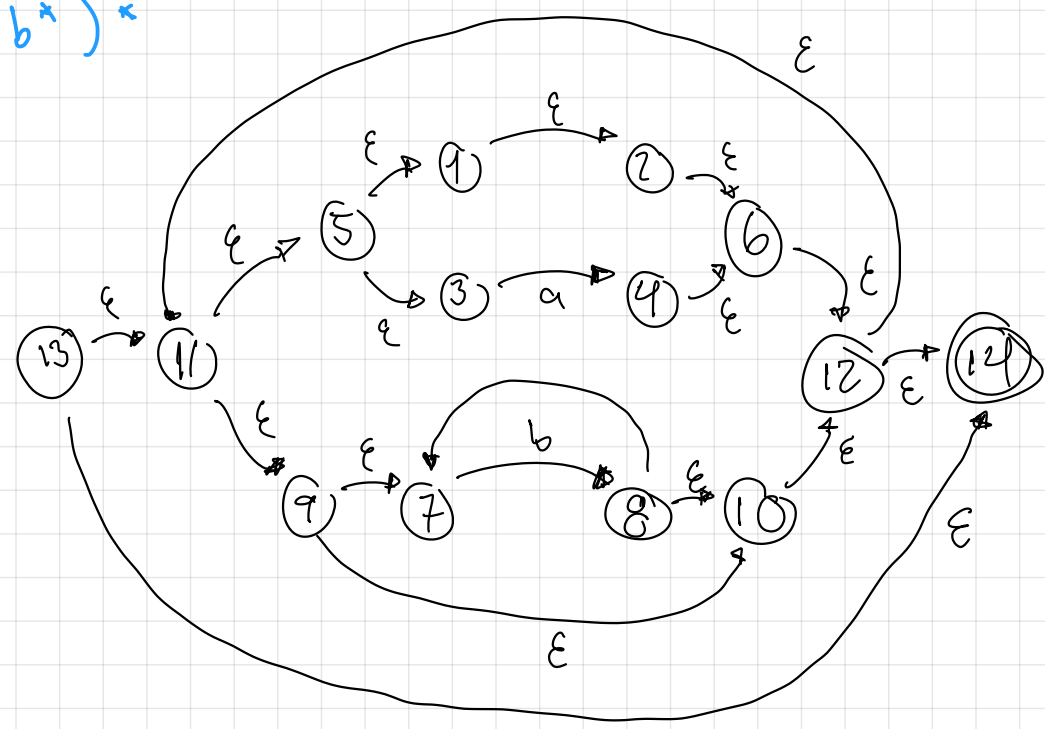
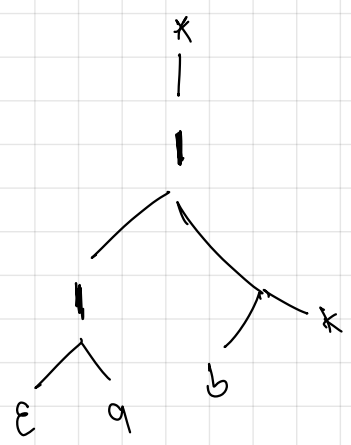


a

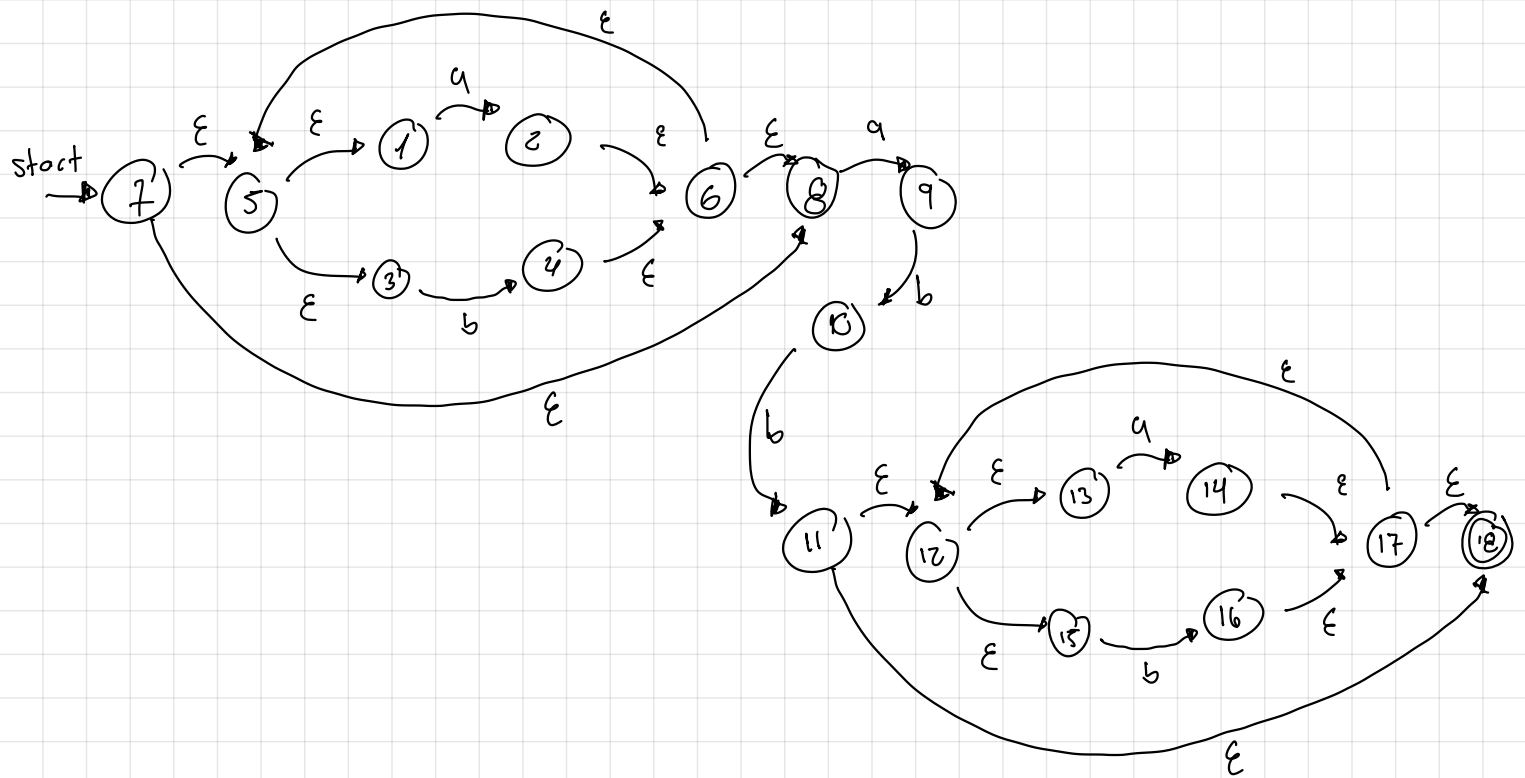
b

- ε
- 11 {11, 9, 12, 3, 7, 1, 4, 5, 8, 10}
 - 9 {9, 12, 3, 7, 1, 4, 5, 8, 10}
 - 3 {12, 3, 7, 1, 4, 5, 8, 10}
 - 7
 - 1
 - 2
 - 5
 - 6
 - 9
 - 8
 - 10
 - 12

d) $((\epsilon | a) | b^*)^*$



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



$$f) \quad 0? (1?) ? 0^*$$

g) if $([ac] + 1) \setminus \{[ei] + 1\} (\neq \text{else } \{[il] + 1\})$?

h) $[ae03] + @ [ae03] + . (com1net10g) (. (g+1cr1co)) ?$