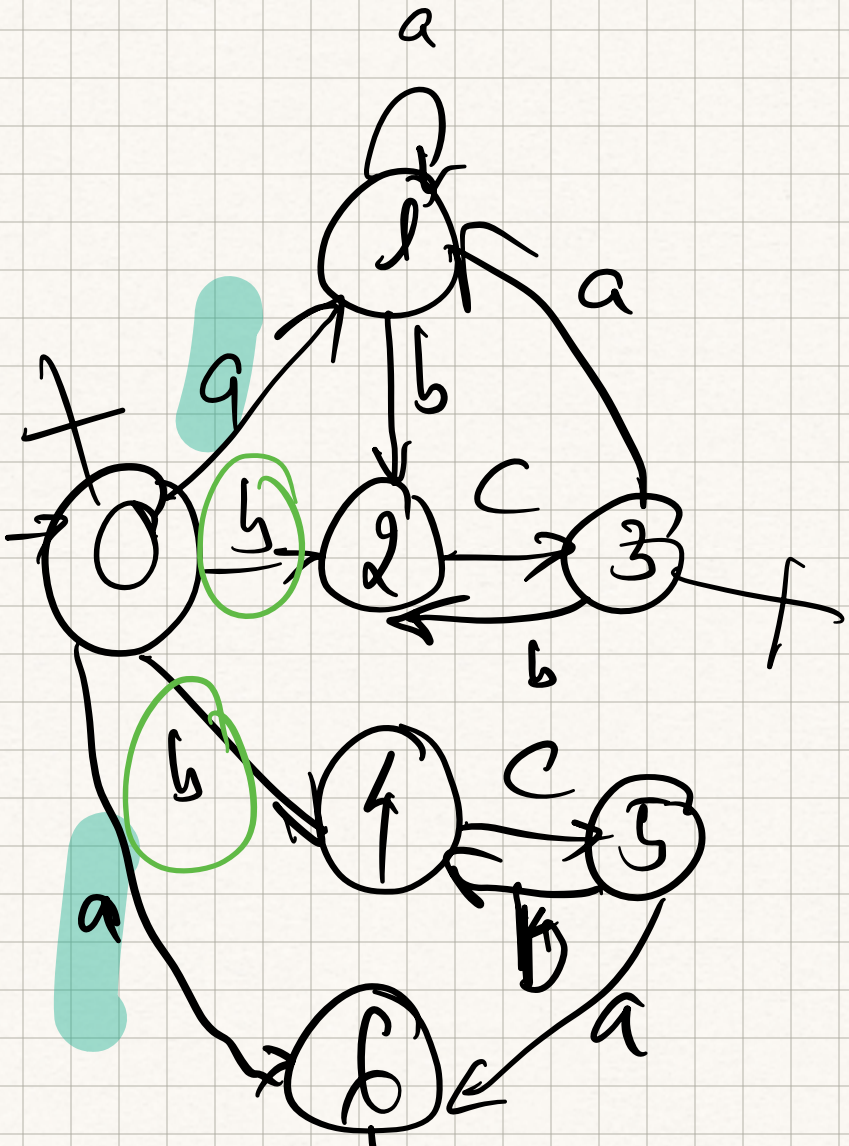
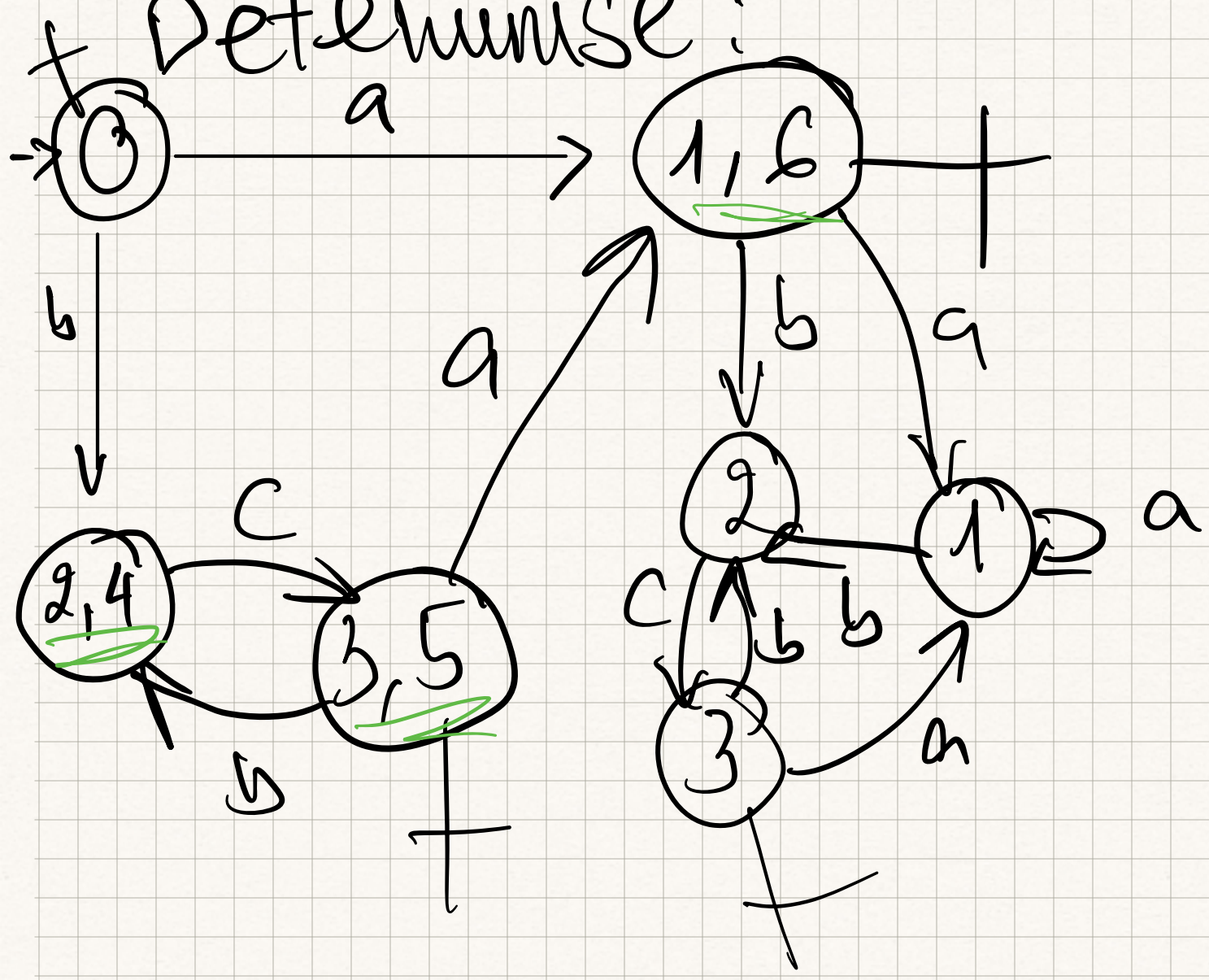
Ex1 $(a^* bc)^* + (bc)^* a$

$(a_1^* b_2 c_3)^* + (b_4 c_5)^* a_6$

	Succ			
$\emptyset$	a_1	b_2	b_4	a_6
a_1	a_1	b_2		
b_2	c_3			
c_3	a_1	b_2		
b_4	c_5			
c_5	b_4	a_6		
a_6	$\emptyset$			



Déterminisé :



Ex 1

$$(a^*bc)^* + (bc)^*a$$

$$\Rightarrow (a_1^* b_2 c_3)^* + (b_4 c_5)^* a_6$$

$\delta(0, a) = \{1, 6\}$

$\delta(0, b) = \{2, 4\}$

$\delta(\{1, 6\}, a) = \{1\}$

$\delta(\{1, 6\}, b) = \{2\}$

$\delta(\{2, 4\}, a) = \emptyset$

$\delta(\{2, 4\}, b) = \emptyset$

$\delta(\{2, 4\}, c) = \{3, 5\}$

$\delta(1,a) = \{1\}$

$\delta(1,b) = \{2\}$

$\delta(2,a) = \emptyset \quad \delta(2,b) = \emptyset$

$\delta(2,c) = \{3\}$

$\delta(\{3,5\},a) = \{1,6\}$

$\delta(\{3,5\},b) = \{4,2\}$

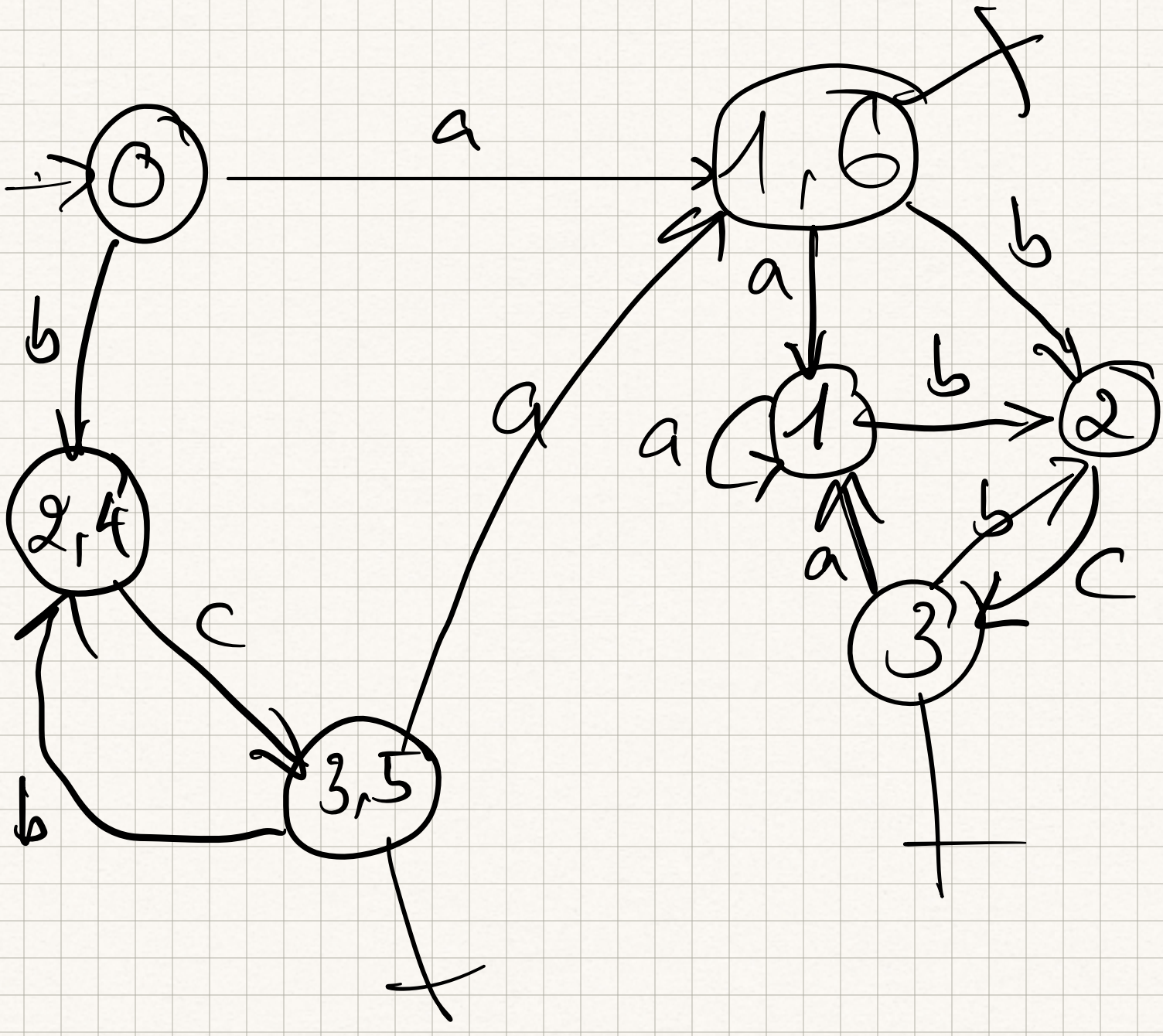
$\delta(\{3,5\},c) = \emptyset$ car

bcbc

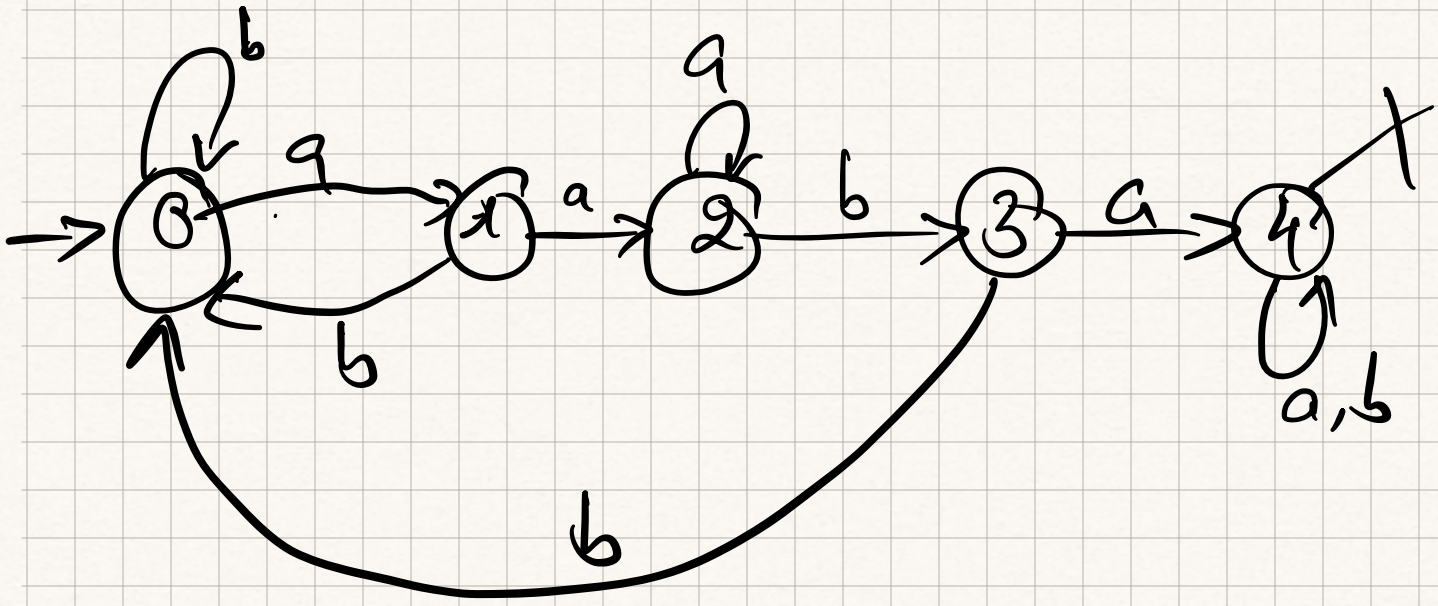
$\delta(3,a) = \{1\}$

$\delta(3,b) = \{2\}$

$\delta(3,c) = \emptyset$


0
a
1,6
b
a
b
2,4
a
1
b
2
a
b
c
3
c
3,5
b

Ex 2



$L = aL + (b \dots)$

$L^* = a^*(b \dots)$

$$\begin{cases} L_0 = bL_0 + aL_1 \\ L_1 = bL_0 + aL_2 \\ L_2 = aL_2 + bL_3 \\ L_3 = bL_0 + aL_4 \\ L_4 = (a+b)L_4 \end{cases}$$

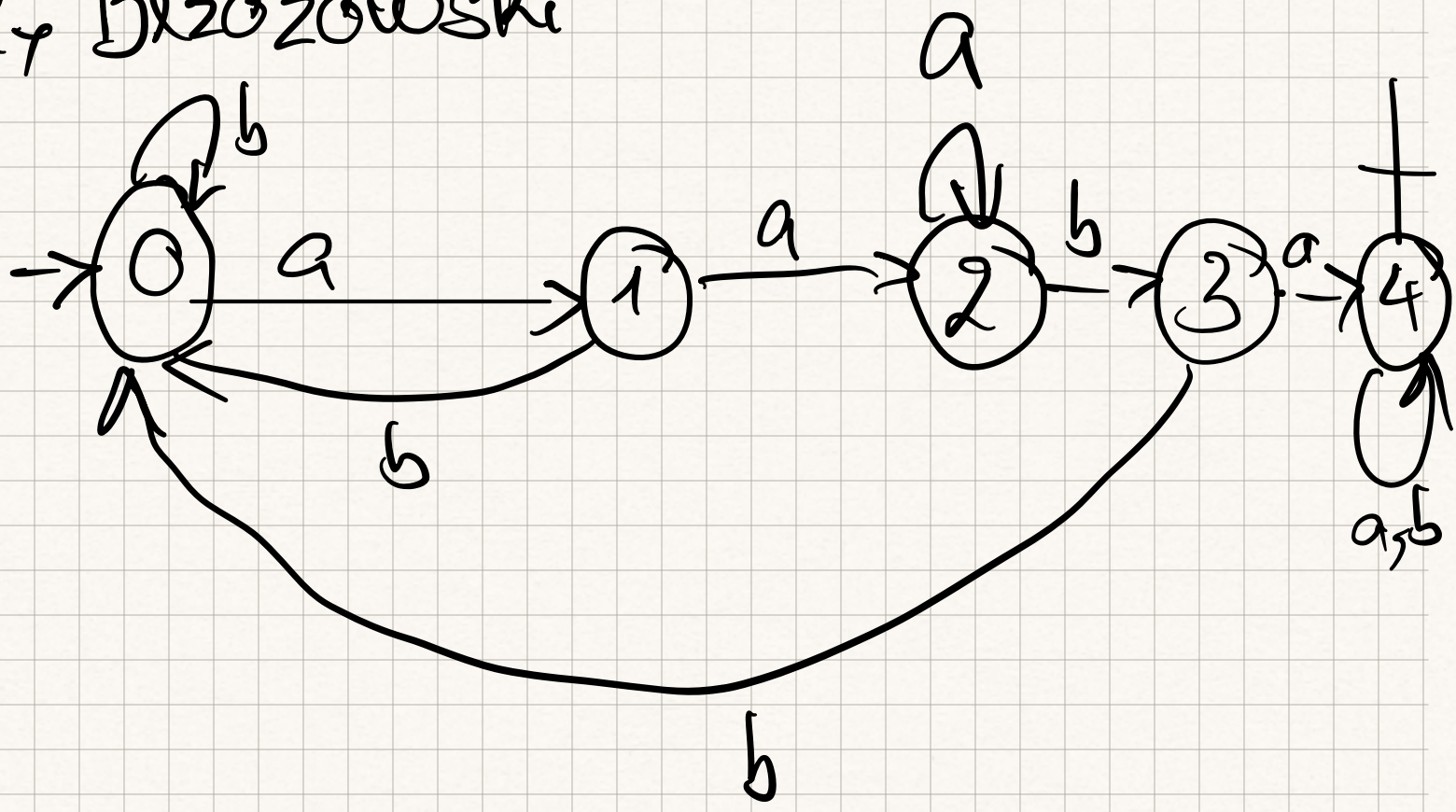
$$\begin{cases} L_0 = 1 \\ L_1 = bL_0 + aL_2 \\ L_2 = a^* b L_3 \\ L_3 = bL_0 + a(a+b)^* \\ L_4 = (a+b)^* \end{cases}$$

$$\begin{cases} L_0 = b^* a L_1 \\ L_1 = bb^* a L_1 + aa^* ba L_0 + aa^* ba(a+b)^* \\ L_2 = a^* b(aL_0 + a(a+b)^*) \\ L_3 = \text{——} \\ L_4 = \text{——} \end{cases}$$

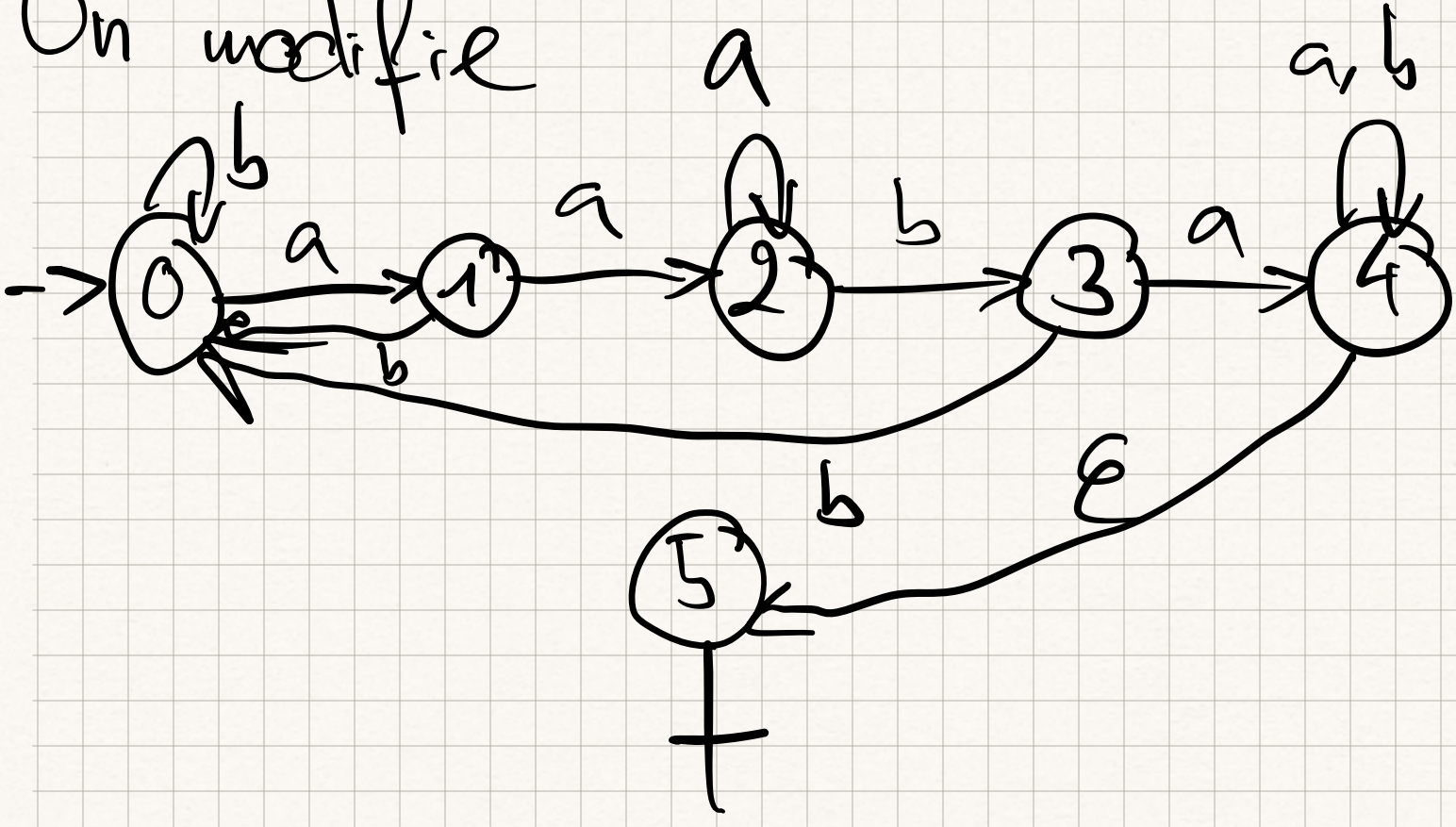
$$\begin{cases} L_1 = bb^* a L_1 + aa^* ba L_1 + aa^* ba(a+b)^* \\ \quad = (bb^* a + aa^* ba) L_1 + aa^* ba(a+b)^* \\ \quad = (bb^* a + aa^* ba)^* aa^* ba(a+b)^* \end{cases}$$

(✗) (✓)

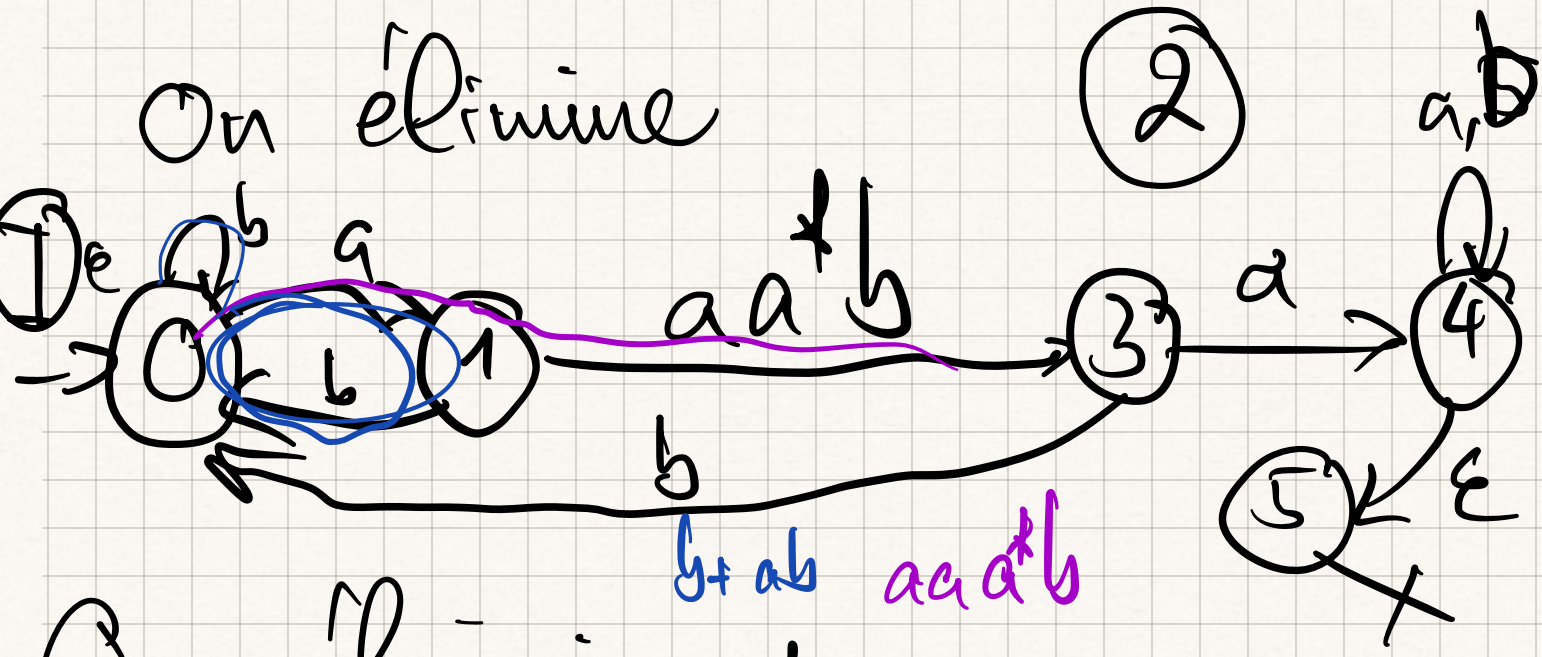
2. Brzozowski



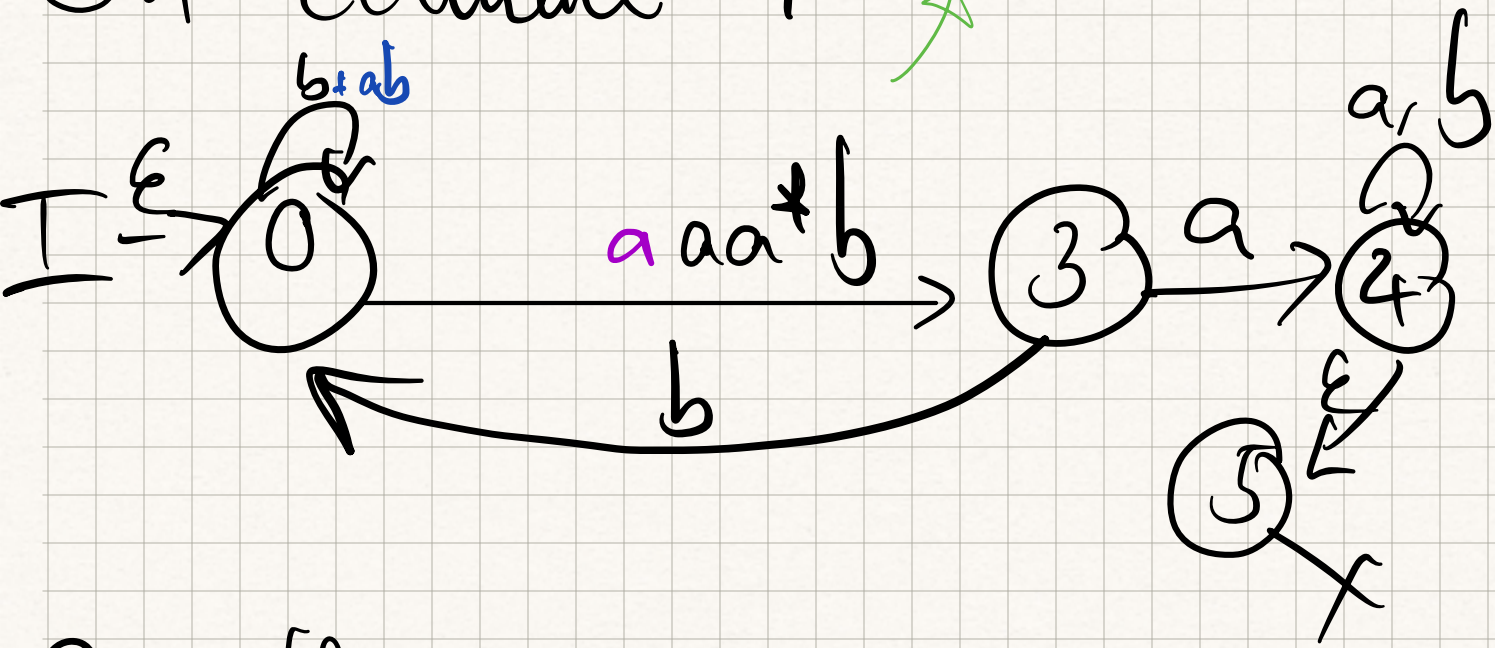
On modifie



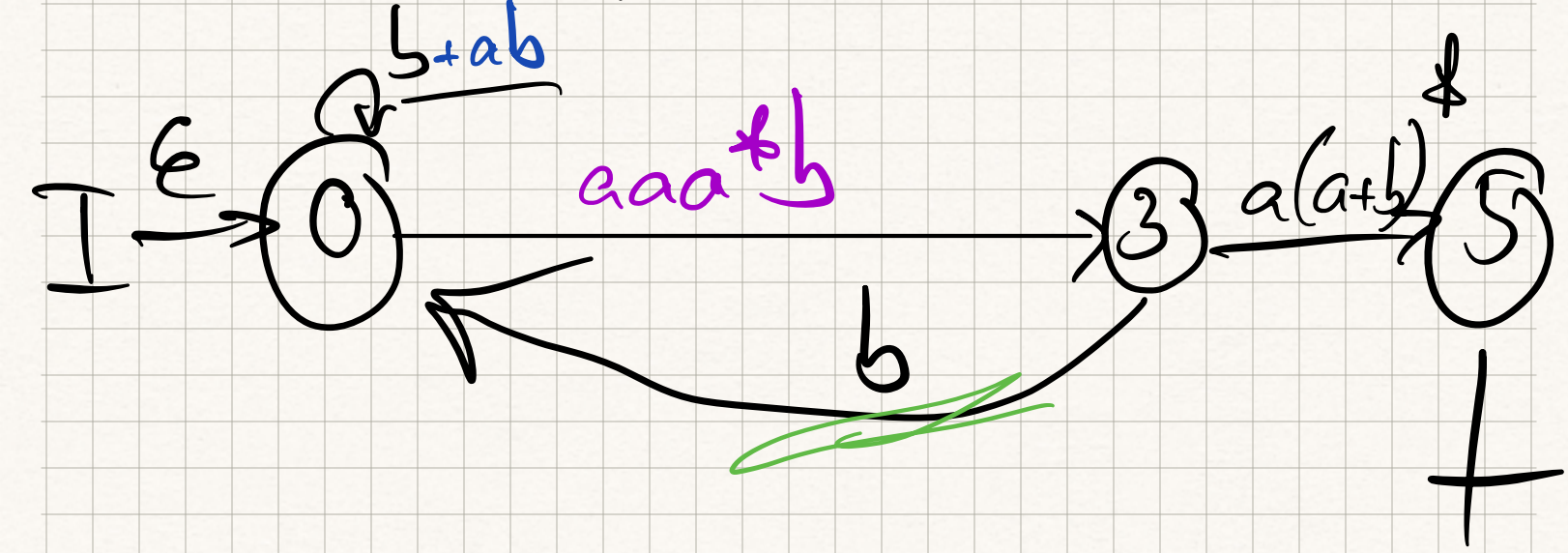
On élimine 2



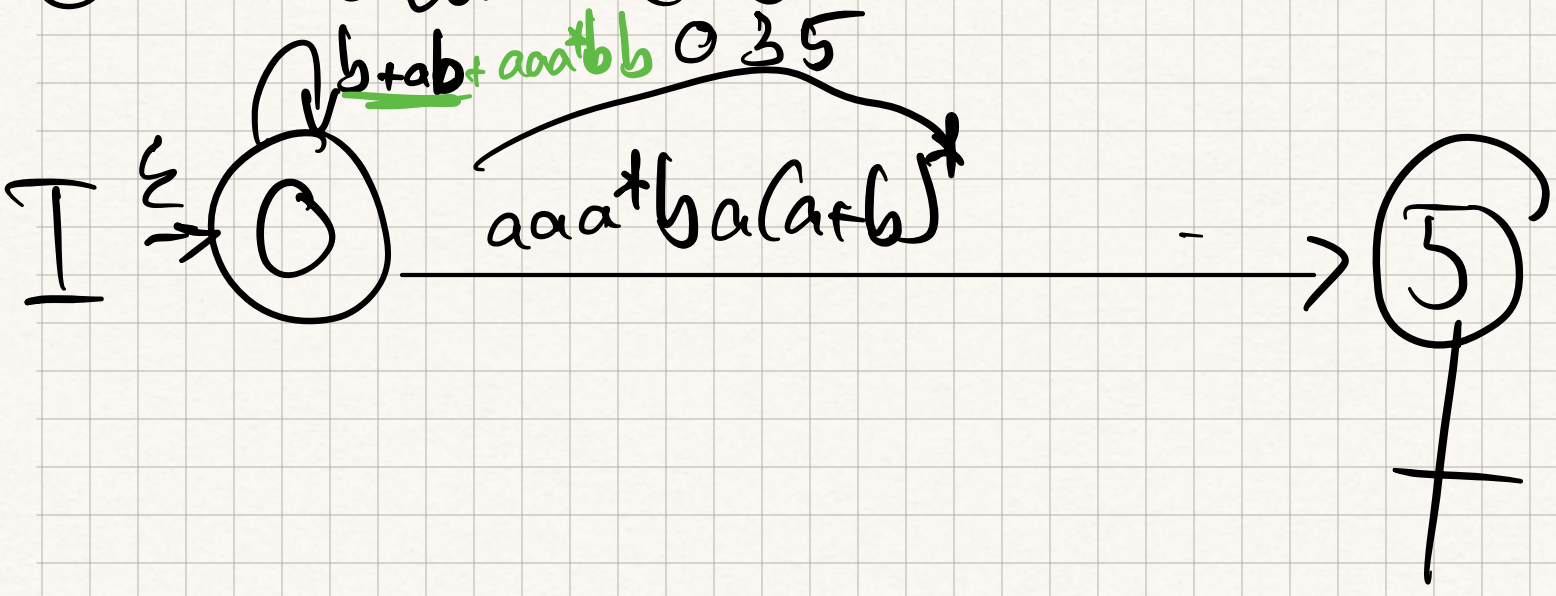
On élimine 1

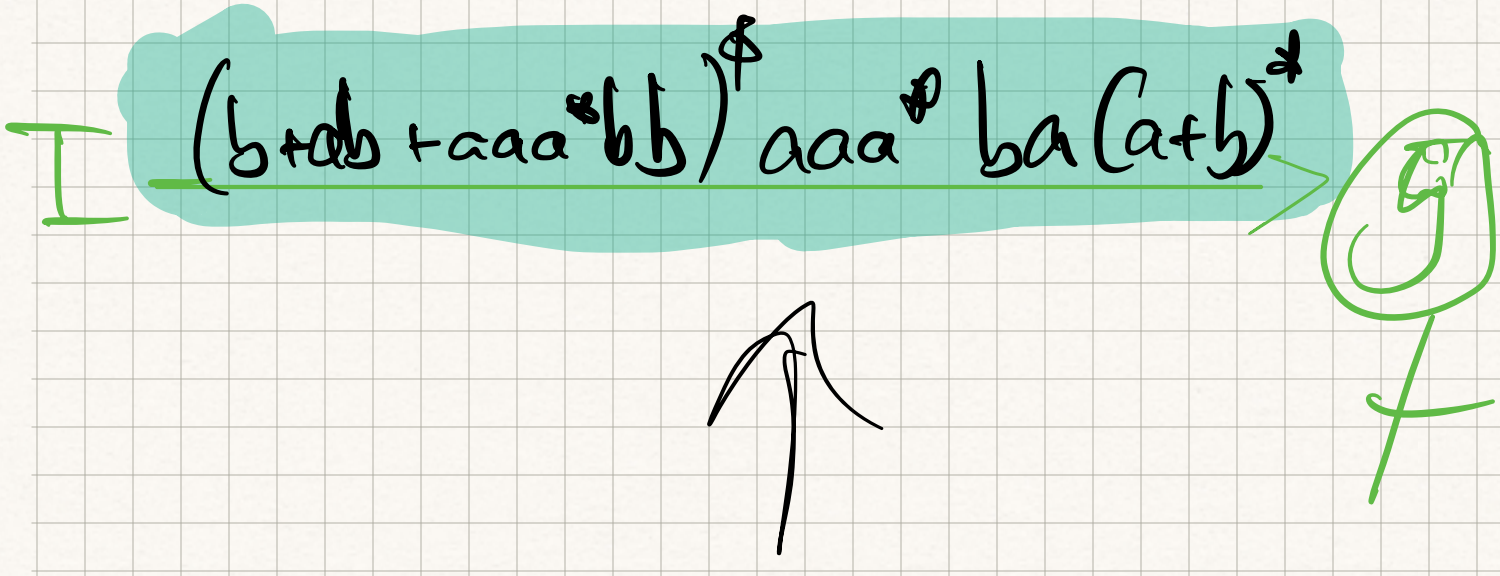


On élimine 4

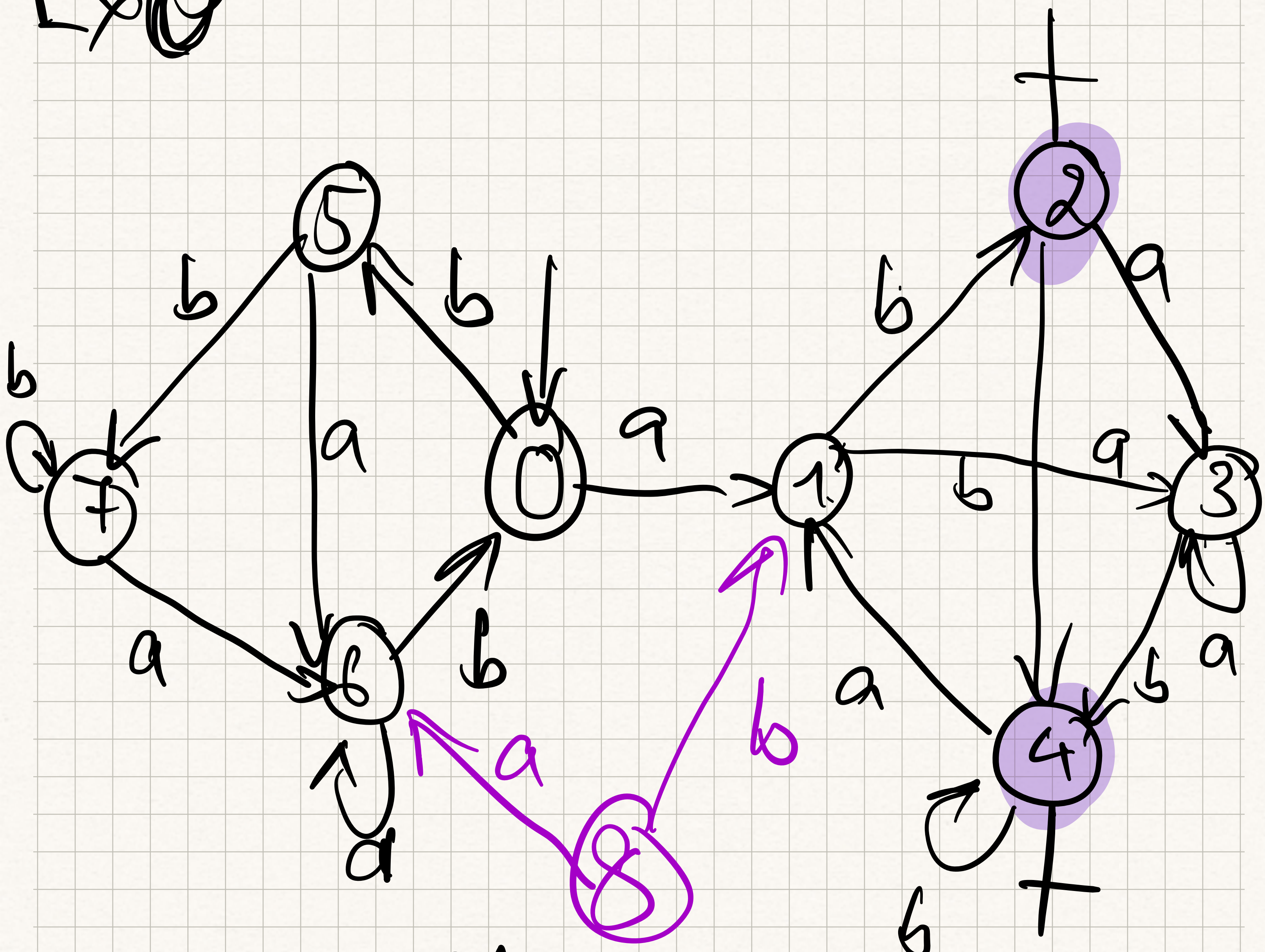


On élimine 3





Ex 6



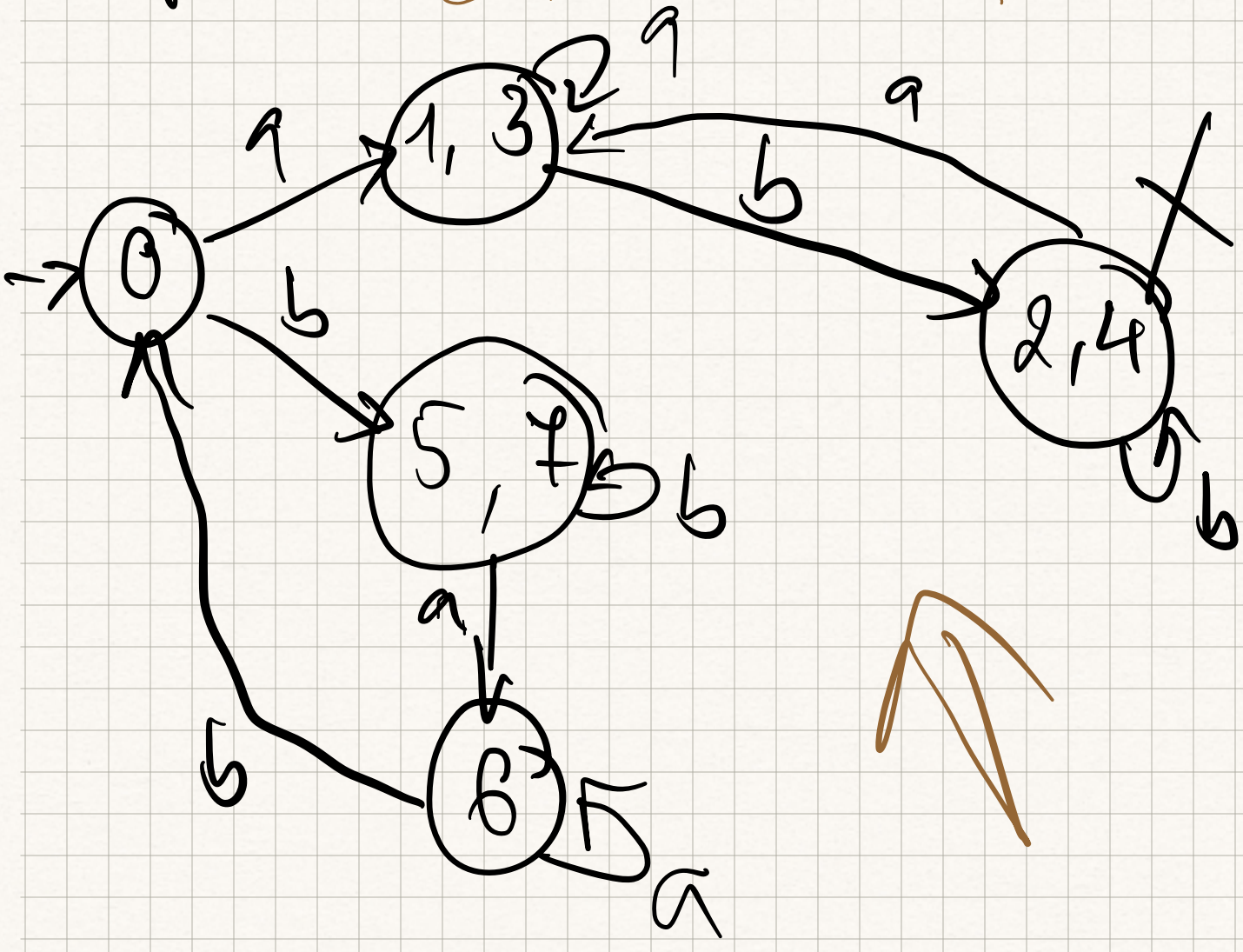
{0, 1, 34

	0	1	2	3	4	5	6	7	8
a	1	3	3	3	1	6	6	6	
b	5	2	4	4	4	7	0	7	

étape 0 : {0, 1, 3, 5, 6, 7} {2, 4}

étape 1 : {0, 1, 3} {5, 6, 7} {2, 4}

étape 2 : {0} {1, 3} {5, 7} {6} {2, 4}



Ex 4

V

F

F

V

F

Ex 3

$u = ab^N ab^N a$

$ab^{N-1} \, b a b^N a$

$xyz \in$

$xy = ab^{N-1}$

$z = bab^N a$

Cas 1 $x = ab^i$

$y = b^j$

$i + j \leq N-1$

$z = ba b^N a$

Cas 2 $x = \varepsilon$

$y = ab^s$

$s \leq N-1$

Ex 5

$$(a+5)^* \; aaba(a+b)^+$$