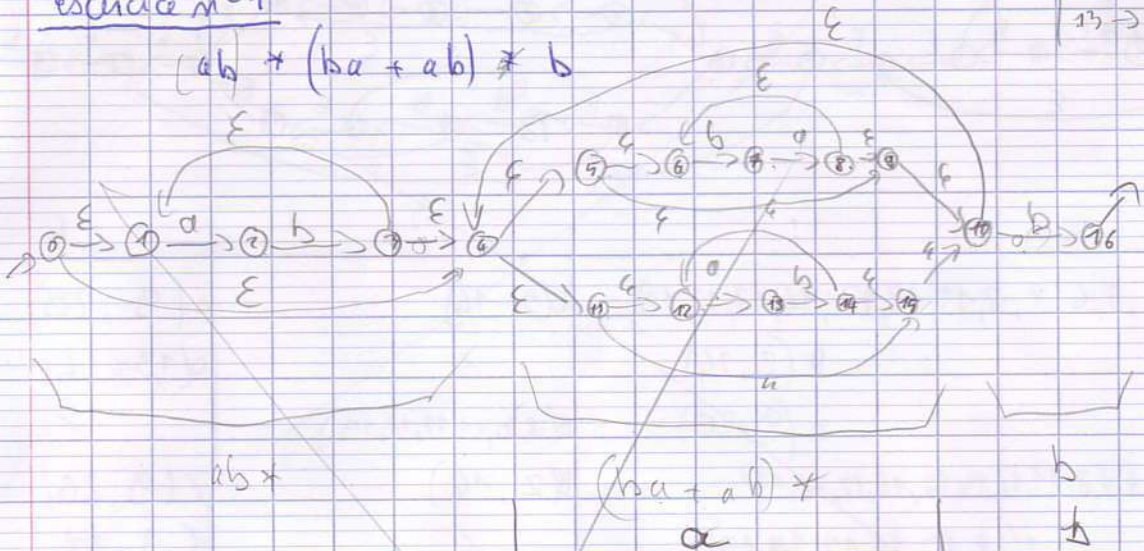


Exercícios nacionais

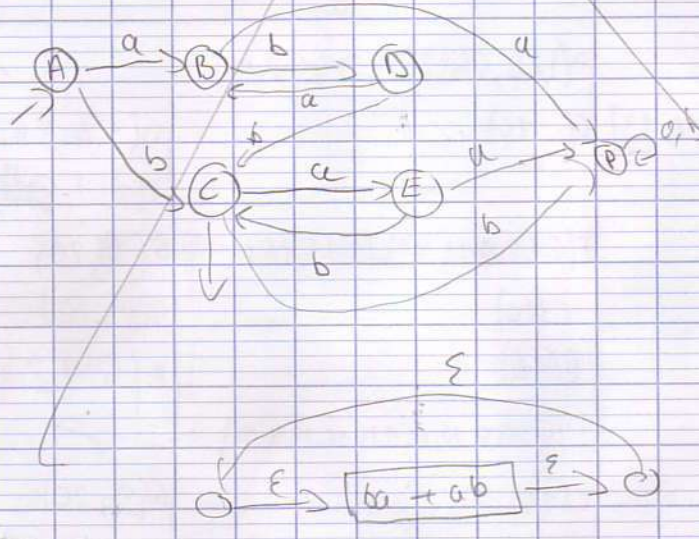
a	b
1 → 2	2 → 3
7 → 8	6 → 7
12 → 13	10 → 16
	13 → 14

Exercício nº 1

$(ab)^* \neq (ba + ab)^* \neq b$

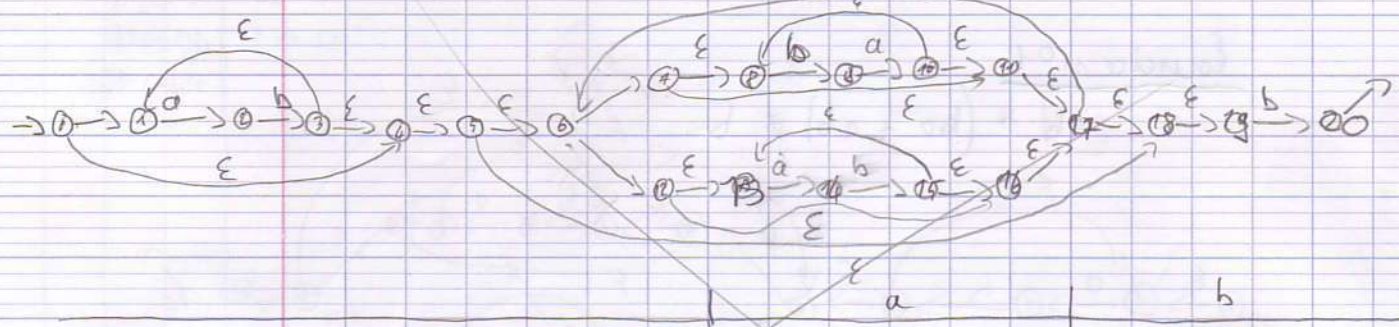


A (0, 1, 4, 5, 6, 9, 10, 11, 12, 15)	B (2, 13)	C (7, 16)
B (2, 13)	E (6, 8, 9, 10)	D (1, 3, 4, 5, 6, 9, 10, 11, 12, 15)
C (7, 16)	B (2, 13)	C (7, 16)
D (1, 3, 4, 5, 6, 9, 10, 11, 12, 15)		C (7, 16)
E (6, 8, 9, 10)		



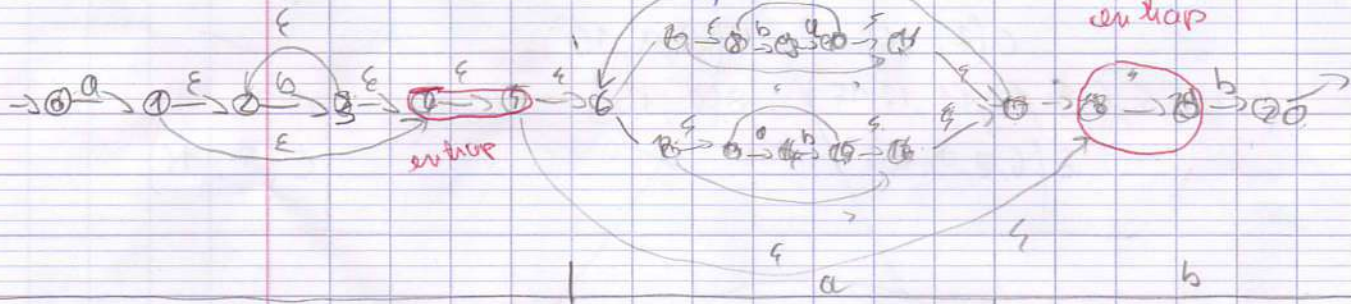
a	b
1 → 2	2 → 3
9 → 10	8 → 9
13 → 14	14 → 15
	19 → 20

$$E = (ab)^* (ba + ab)^* b$$



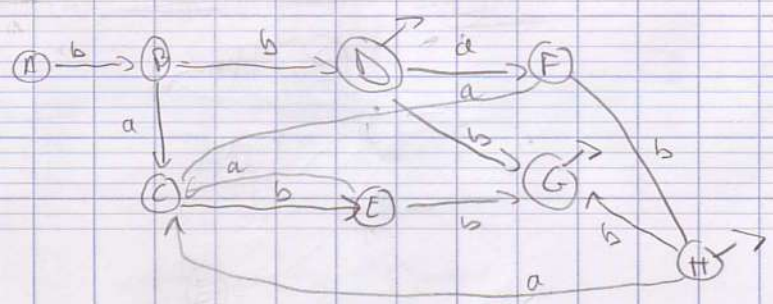
	a	b
A (0, 1, 4, 5, 6, 7, 8, 11, 12, 13, 15, 17, 18, 19)	B (2, 14)	C (9, 20)
D (1, 3, 4, 5, 6, 7, 8, 11, 12, 13, 15, 16, 17, 18, 19)	E (8, 10, 11, 17, 18, 19)	F (2, 14)
E (8, 10, 11, 17, 18, 19)	G (9, 20)	H (9, 20)

$$E = a b^* (ba + ab)^* b$$



	a	b
A (0)	N (1, 3, 4, 5, 6, 7, 8, 11, 12, 13, 15, 16, 17, 18, 19)	
B (1, 4, 5, 6, 7, 8, 11, 12, 13, 15, 16, 17, 18, 19)	C (14)	D (3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 15, 16, 17, 18, 19)
C (14)	E (6, 7, 8, 11, 12, 13, 15, 16, 17, 18, 19)	F (9, 20)
D	F (6, 7, 8, 11, 12, 13, 15, 16, 17, 18, 19)	G (9, 20)
E	G (14)	H (6, 7, 8, 11, 12, 13, 15, 16, 17, 18, 19)
F	H (14)	I (9, 20)
G	J (6, 7, 8, 10, 11, 12, 13, 15, 16, 17, 18, 19)	
H	K (14)	L (9, 20)

a	b
0 → 1	2 → 3
9 → 10	8 → 9
13 → 14	14 → 15
	19 → 20



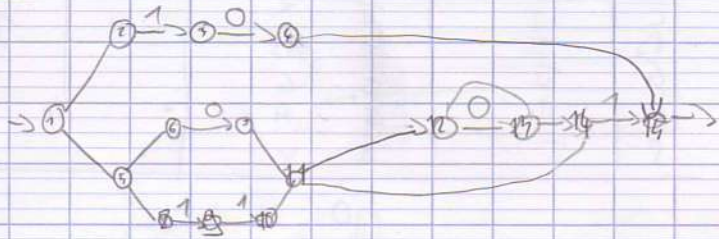
(3)

$\Sigma = \text{set of integers}$

Exercice n°2

$10 + (0 + 11) 0^* 1$

0	1
3 → 4	2 → 3
6 → 9	8 → 9
12 → 13	5 → 10
	16 → 15



A(1, 2, 5, 6, 8)

B(2, 11, 12, 14)

C(3, 9)

B

D(12, 13, 14)

E(15)

C

F(6, 15)

G(10, 11, 12, 14)

D

H(11, 12, 13, 14)

E(15)

E

/

/

F

/

/

G

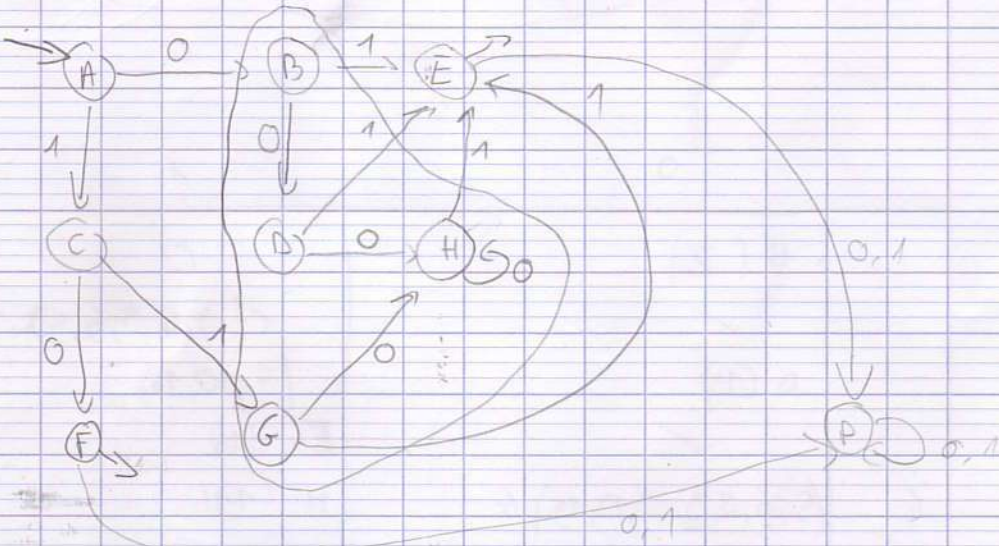
H(11, 12, 13, 14, 15)

E(15)

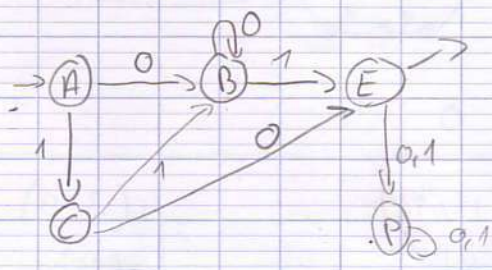
H

H(11, 12, 13, 14, 15)

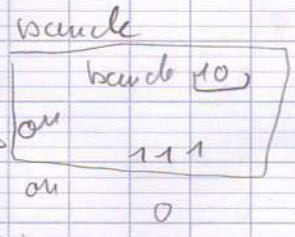
E(15)



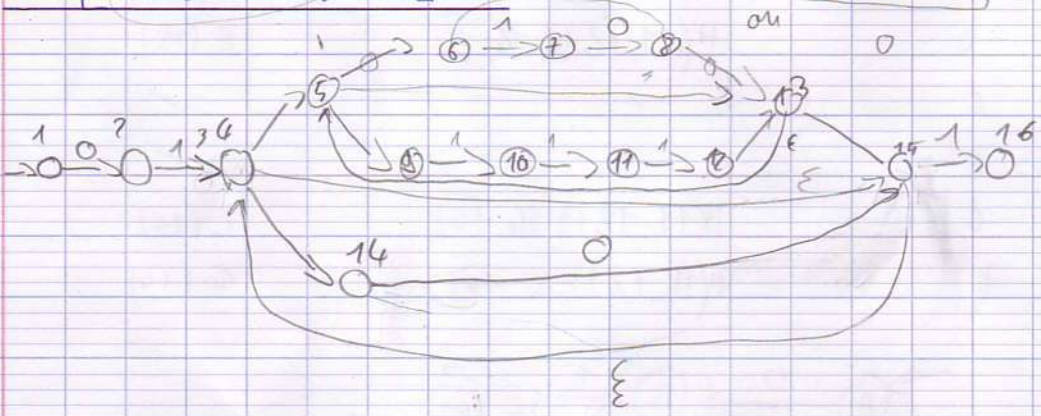
	$\Theta_1 \{ (EF), (A, B, C, D, G, H) \}$				$\Theta_2 \{ (EF), (A, B, C, D, G, H) \}$				
	I	II			I	II	III	IV	V
	0	1			0	1			
E	H	H		-F	B	V	I		
F	H	H			D	V	I		
A	H	H		X	G	V	I		
B	H	H		X	H	V	I		
C	H	H		X					
D	H	H		X					
G	H	H		X					
H	H	H		X					



$01[(10)^* + 111]^* + 0]^* 1 \leftarrow 01 \rightarrow$



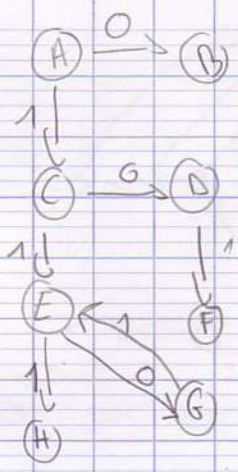
0	1
1	2
7	6
14	9
	10
	11
	15



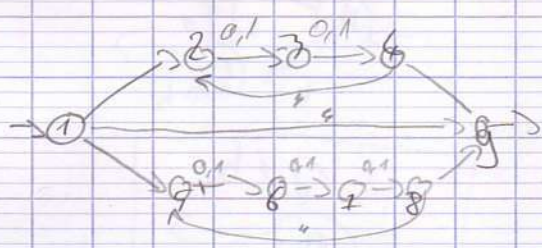
	0	1
A(1)	B(2)	C(3, 4, 5, 6, 9, 13, 14, 15)
B(2)	D(15)	E(7, 10, 16)
C		F(16)
D		H(11)
E	G(5, 6, 8, 9, 17, 15)	E(7, 10, 16)
F		(5, 6, 9, 12, 13, 15)
G		
H		

found

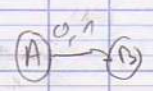
5



$$\frac{((0+1)(0+1))^* + ((0+1)(0+1)(0+1))^*}{}$$

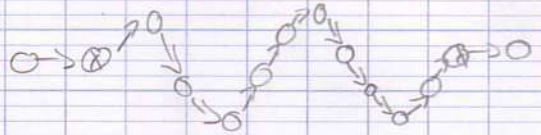
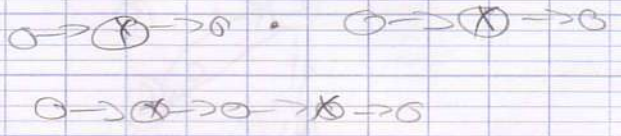
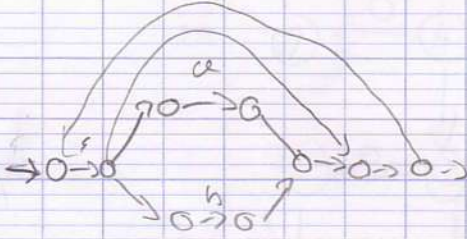
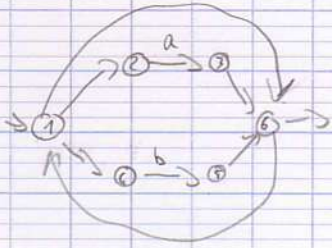


	0	1
A (1, 2, 5, 9)	B (3, 6)	h (7, 6)
B	C (4, 7, 9)	C (2, 4, 9, 9)
C	D (3, 5, 8, 9)	D (3, 9, 8, 9)
D	E (2, 4, 6)	E (2, 4, 6)
E	F (3, 7)	F (3, 7)
F	G (2, 4, 5, 8, 9)	G (2, 4, 7, 8, 9)
G	B (3, 6)	h (7, 6)

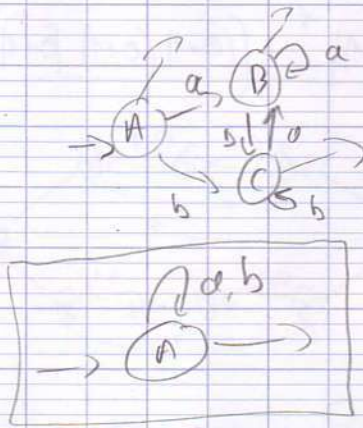
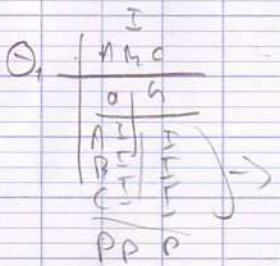


Exercice n°3

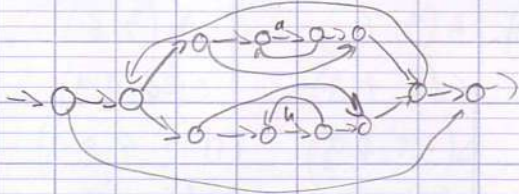
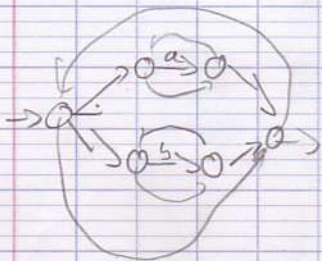
$(a+b)^*$



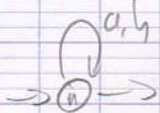
	a	b
(A) 1246	12346	12456
(B) 1746	12346	12456
(C) 17456	12346	12456



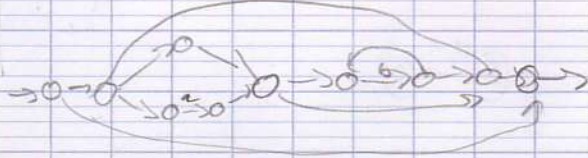
$(a^* + b^*)^*$



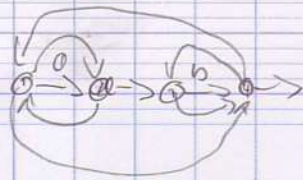
	a	b
123456	12456	123456



$((\epsilon + a) b^*)^*$



	a	\epsilon
1246	1246	1246



⑦

Essence of

new 1<sup>st</sup> false

$$A_1 = (a^* \ c \ b^* \ d \ a^*)^*$$

$$A_2 = 0 \left[ 0 \left( (00)^* (01)^* \right) + 1 \left( (01)^* + (11)^* \right) \right]$$

$$A_3 = \left( 0^* \left( 1 \ 1^* \left( 0 \ 0 + (010)^* \right) 0 \right)^* \right)^*$$

infinite

$$x = xy + z \rightarrow x = z y^*$$

$$A_1: \begin{aligned} x_1 &= \varepsilon + a x_1 + d x_2 \\ x_2 &= b x_2 + c x_1 \end{aligned} \quad x_2 = c x_1 b^*$$

$$x_1 = a x_1 + d c x_1 b^* + \varepsilon$$

$$x_1 = x_1 (a + d c b^*) + \varepsilon$$

$$= (a + d c b^*)^* \varepsilon = (a^* + d c b^*)^*$$

$$A_2: \begin{aligned} x_1 &= 0 x_2 + 1 x_3 \\ x_2 &= 0 x_1 + 0 x_3 \\ x_3 &= 1 x_1 + 1 x_2 \end{aligned}$$

$$x_1 = 1 x_3 0^*$$

$$x_2 = 0 1 x_3 0^* + 0 x_3 0^*$$

$$x_3 = 1 1 x_3 0^* + 1 0 1 x_3 0^* + 1 0 x_3 0^*$$

$$x_3 = x_3 (1 1 0^* + 1 0 1 0^* + 1 0 0^*)$$

in fact result

auto method

response:  $x_{AB} = x_{AC}$

$$x_{AB} = x_{AB} 0 + x_{AC} 0 \Rightarrow (x_{AB} 0 + x_{AC} 1) 0 + x_{AC} 0$$

$$x_{AC} = x_{AA} 1 + x_{AB} 1 \Rightarrow x_{AA} 1 + (x_{AB} 0 + x_{AC} 1) 1$$

$$x_{AA} = x_{AB} 0 + x_{AC} 1 + \varepsilon$$

$$X_{AB} = \overset{x}{\underbrace{X_{AA}}_{00}} \overset{y}{\underbrace{00}} + \overset{0}{\underbrace{X_{AC} 10 + \varepsilon 0 + X_{AC} 0}}$$

$$x = x y + z$$

$$x = z y^*$$

$$X_{AB} = (X_{AC} 10 + 0 + X_{AC} 0) 00^* = X_{AC} (10 + 0) (001)^* + 0(00)^*$$

$$X_{AC} = X_{AB} 11 + X_{AB} 01 (\varepsilon 1) + X_{AB} 1$$

$$X_{AC} = X_{AC} \left( 11 + (10+0)(00)^* (01+1) \right) + 1 + 0(001)^* (01+1)$$

facteur de  $X_{AB}$

On trouve  $X_{AC}$   
 on remplace dans  $X_{AB}$   
 On trouve  $X_{AB}$   
 on fait  $X_{AA} + X_{AC}^t$