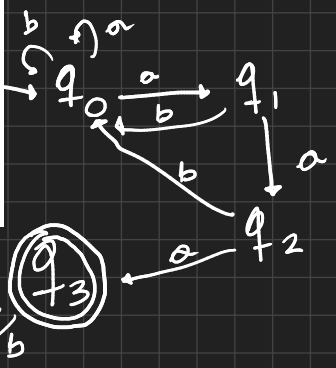
Ejercicio 1. Para los siguientes autómatas finitos no determinísticos, dar un autómata determinístico mínimo que reconozca el mismo lenguaje:

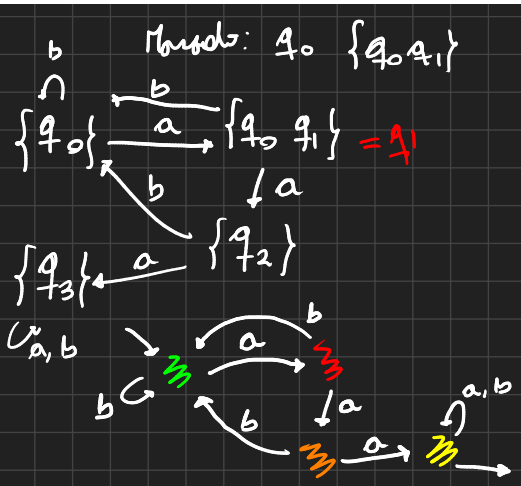
a. $M_0 = \langle \{q_0, q_1, q_2, q_3\}, \{a, b\}, \delta_0, q_0, \{q_3\} \rangle$,

$\delta_0 =$

	a	b	λ
q_0	$\{q_0, q_1\}$	$\{q_0\}$	$\varnothing$
q_1	$\{q_2\}$	$\{q_0\}$	$\varnothing$
q_2	$\{q_3\}$	$\{q_0\}$	$\varnothing$
q_3	$\{q_3\}$	$\{q_3\}$	$\varnothing$



Marcado: q_0 $\{q_0 q_1\}$



	$\equiv_0$	a	b	$\equiv_1$	a	b	$\equiv_2$
q_0	NF	NF	NF	Δ	Δ	Δ	$\equiv$
q_1	NF	NF	NF	Δ	$\square$	Δ	$\equiv$
q_2	NF	F	NF	$\square$	*	Δ	$\equiv$
q_3	F	F	F	*	*	*	$\equiv$

Todos diferentes es lo mas lejos podemos llegar ∴ es mínimo

b. $M_0 = \langle \{0, 1, 2, 3, 4, 5, 6\}, \{a, b\}, \delta_0, 0, \{6\} \rangle$,

$\delta_0 =$

	a	b	λ
0	$\{1\}$	$\{2\}$	$\{4\}$
1	$\varnothing$	$\varnothing$	$\{0, 3\}$
2	$\varnothing$	$\varnothing$	$\{0, 3\}$
3	$\{4\}$	$\varnothing$	$\varnothing$
4	$\varnothing$	$\varnothing$	$\{5\}$
5	$\{6\}$	$\{6\}$	$\varnothing$
6	$\varnothing$	$\varnothing$	$\{5\}$

$Cl_\lambda(\{q_0\}) = \{0, 4, 5\}$

$Cl_\lambda(\{q_1\}) = \{0, 1, 4, 5, 3\}$

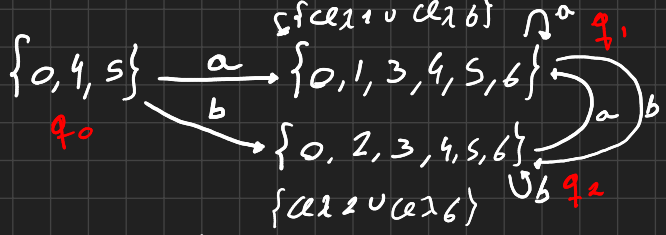
$Cl_\lambda(\{q_2\}) = \{0, 2, 4, 5, 3\}$

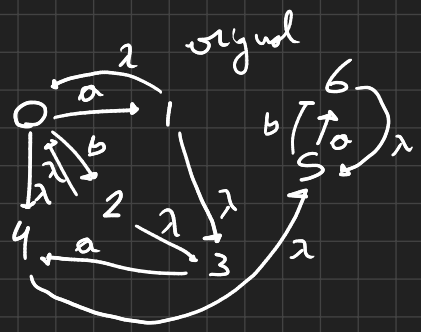
$Cl_\lambda(\{q_3\}) = \{3\}$

$Cl_\lambda(\{4\}) = \{4, 5\}$

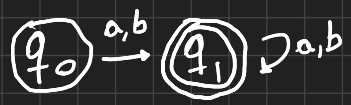
$Cl_\lambda(\{5\}) = \{5\}$

$Cl_\lambda(\{6\}) = \{5, 6\}$





	$\equiv_0$	a	b	$\equiv_1$
q_0	NF	F	F	|||
q_1	F	F	F	*
q_2	F	F	F	*

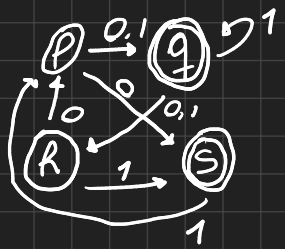


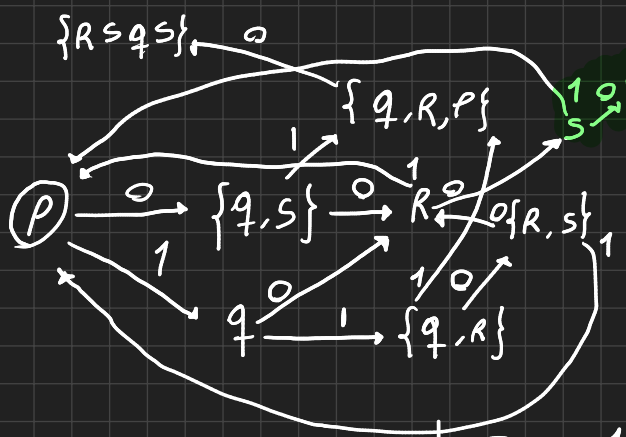
c. $M_0 = \langle \{p, q, r, s\}, \{0, 1\}, \delta_0, p, \{q, s\} \rangle$,

$\delta_0 =$

	0	1	λ
p	$\{q, s\}$	$\{q\}$	$\varnothing$
q	$\{r\}$	$\{q, r\}$	$\varnothing$
r	$\{s\}$	$\{p\}$	$\varnothing$
s	$\varnothing$	$\{p\}$	$\varnothing$

Dice que no es $-\lambda$





	$\equiv_0$	0	1	$\equiv_1$	0	1	$\equiv_2$	0	1
p	N	F	F	A	B	B	1	2	2
qs	F	N	F	B	C	D	2	3	4
q	F	N	F	B	C	D	2	3	5
R	N	F	N	C	E	A	3	6	7
qRp	F	F	F	D	D	F	4	5	4
qR	F	F	F	D	F	D	5	8	4
S	F	N	N	E	E	A	6	6	7
p	N	F	F	A	B	B	7	2	2
RSq	F	F	F	D	F	D	5	8	4
RS	F	F	N	F	E	A	8	6	7

	0	1
p	{qs}	{q}
qs	{R}	{qR, p}
q	{R}	{qR}
R	{S}	{p}
qRp	{RSq}	{qRp}
qR	{RS}	{qRp}
S	$\varnothing$	{p}
p	{qs}	{q}
RSq	{RS}	{qRp}
RS	{S}	{p}

c. $M_0 = \langle \{p, q, r, s\}, \{0, 1\}, \delta_0, p, \{q, s\} \rangle$,

$\delta_0 =$

	0	1	λ
p	$\{q, s\}$	$\{q\}$	$\varnothing$
q	$\{r\}$	$\{q, r\}$	$\varnothing$
r	$\{s\}$	$\{p\}$	$\varnothing$
s	$\varnothing$	$\{p\}$	$\varnothing$

.

Dst

	0	1
P	{qs}	{q}
qs	{R∅}	{q, R, P}
q	{R}	{q, R}
R∅	{	
qRP		
qR		