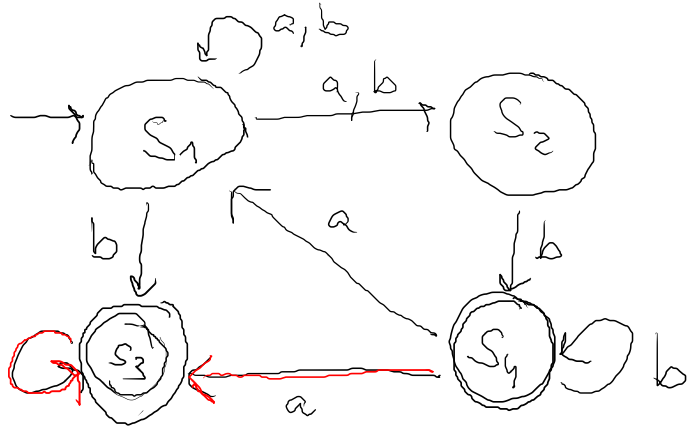
1. a)

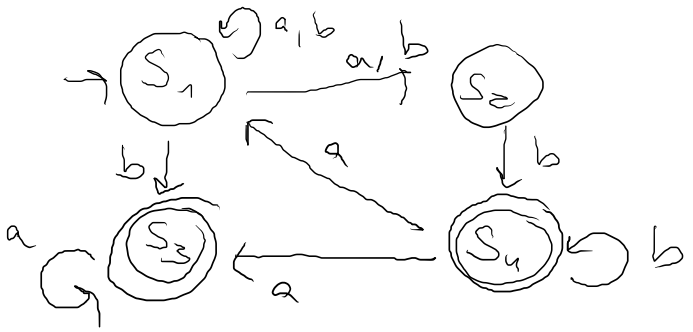


b) a a $\notin \mathcal{L}(M)$

b
a b
a a b

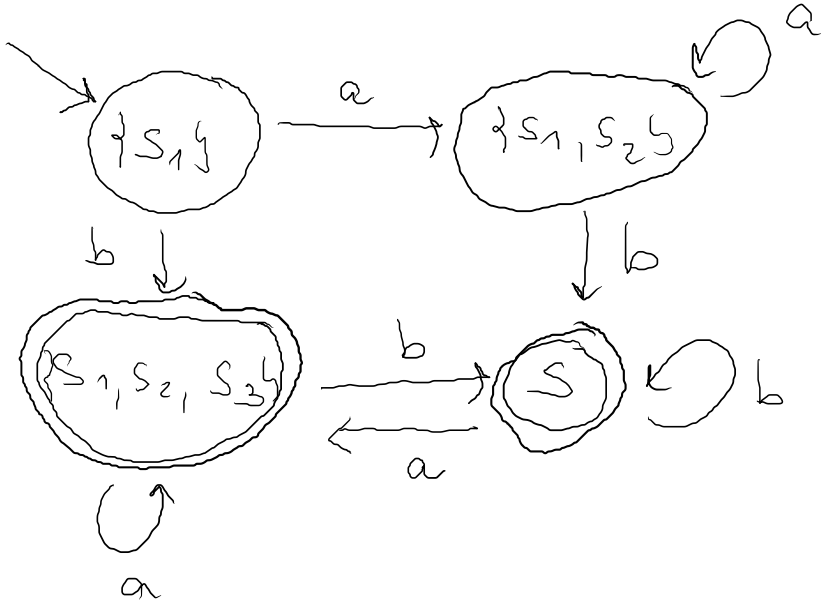
b) Se x termina em b, então $x = x'b$ ($x' \in \Sigma^*$). A palavra x' pode ser processada usando o laçek em S_1 (zero ou mais vezes). No final transita-se por b para $S_3 \in F$.

$ba \in \mathcal{L}(M)$



$\mathcal{A}$

	a	b
→ $\{s_1\}$	$\{s_1, s_2\}$	$\{s_1, s_2, s_3\}$
$\{s_1, s_2\}$	$\{s_1, s_2\}$	$\{s_1, s_2, s_3, s_4\} = s$
* $\{s_1, s_2, s_3\}$	$\{s_1, s_2, s_3\}$	$\{s_1, s_2, s_3, s_4\} = s$
* s	$\{s_1, s_2, s_3\}$	s



$\mathcal{A}'$

$\mathcal{L}(\mathcal{A}') = \{ x \in \Sigma^* \mid x$ tem prefixo b ou $a^n b$ com $n \geq 1 \}$

$= \{ x \in \Sigma^* \mid x$ tem prefixo da forma $a^n b, n \geq 0 \}$

2. c) $\mathcal{L}(A) = \{x \in \Sigma^* \mid x \text{ termina em } abaa\} = \mathcal{L}((a+b)^* abaa)$

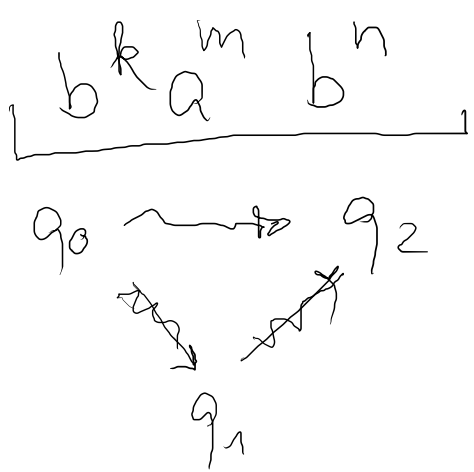
d) $\mathcal{L}(A) = \{x \in \Sigma^* \mid x \text{ começa em } abaa\} = \mathcal{L}(abaa(a+b)^*)$

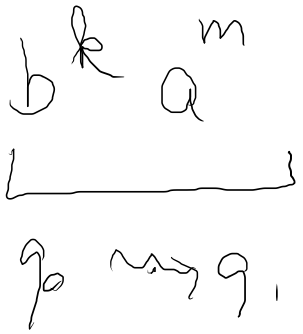
a) $\mathcal{L}(A) = \Sigma^* = \mathcal{L}((a+b)^*)$

b) $\mathcal{L}(A) = \{x \in \Sigma^* \mid b^k a^m b^n, \ k, m, n \geq 0\}$

$= \mathcal{L}(b^* a^* b^*)$

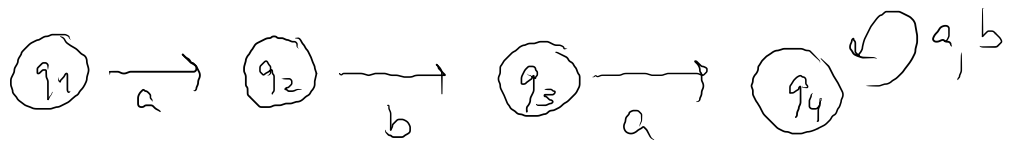
$n \geq 0$



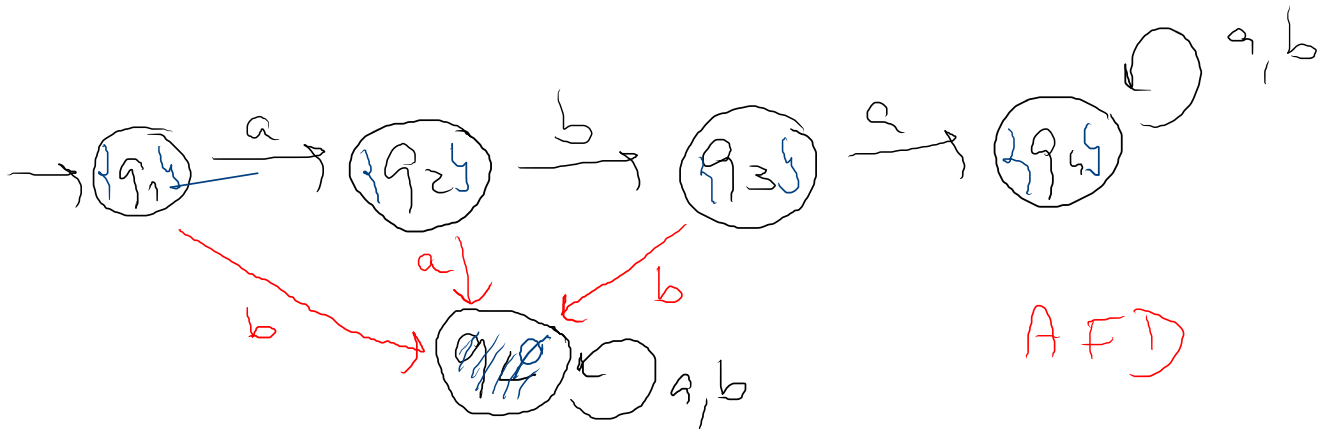


$m \geq 0$

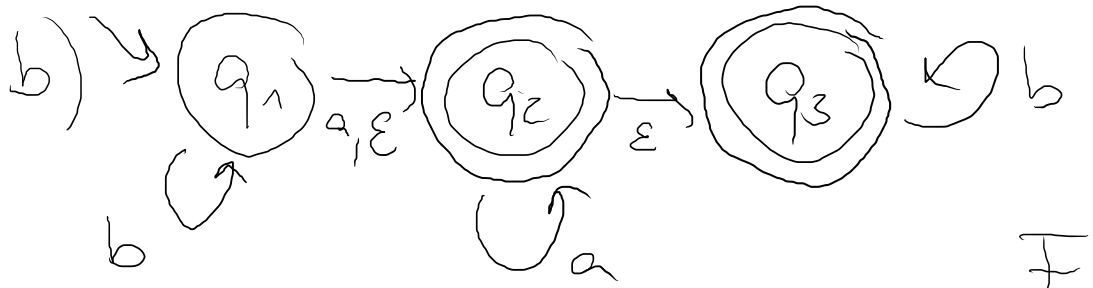
3. d)



	a	b
→ {q1}	{q2}	∅
{q2}	∅	{q3}
{q3}	{q4}	∅
* {q4}	{q4}	{q4}
∅	∅	∅



b)

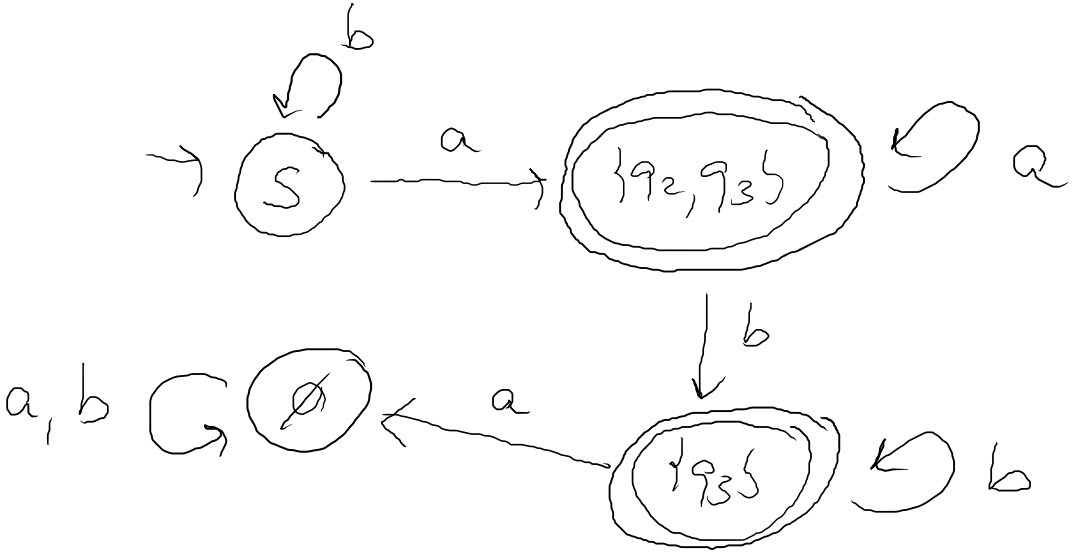


$F_\varepsilon(q_1) = \{q_1, q_2, q_3\}$

$F_\varepsilon(q_2) = \{q_2, q_3\}$

$F_\varepsilon(q_3) = \{q_3\}$

	a	b
→ $\{q_1, q_2, q_3\}$	$\{q_2, q_3\}$	$\{q_1, q_2, q_3\}$
* $\{q_2, q_3\}$	$\{q_2, q_3\}$	$\{q_3\}$
* $\{q_3\}$	$\{\}$	$\{q_3\}$
$\{\}$	$\{\}$	$\{\}$



6. a) $\delta(s_0, \varepsilon) = \{s_2\}$ $\delta(s_5, a) = \{s_0, s_5\}$ $F_\varepsilon(s_0) = \{s_0, s_2, s_3, s_4\}$

$F_\varepsilon(s_3) = \{s_3\}$ $F_\varepsilon(s_1) = \{s_1, s_4, s_3\}$ $F_\varepsilon(s_1) = \{s_1, s_3, s_4\}$

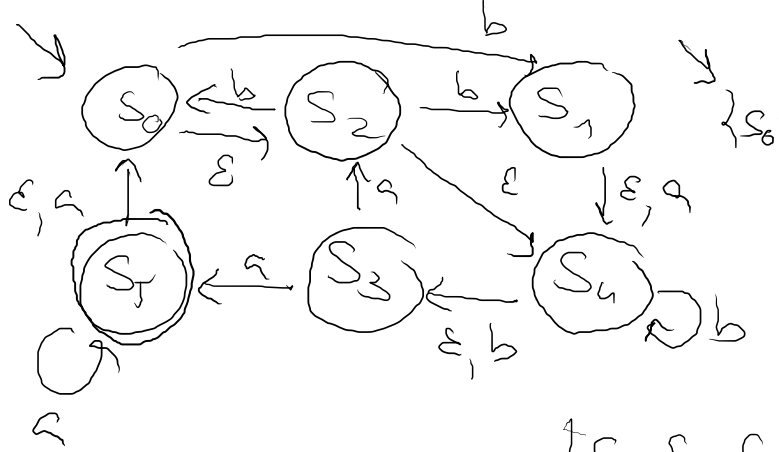
$F_\varepsilon(s_2) = \{s_2, s_3, s_4\}$

$F_\varepsilon(s_3) = \{s_3\}$

$F_a(s_4) = \{s_3, s_4\}$

$F_a(s_5) = \{s_0, s_5\}$

b) $a \in \mathcal{L}(\mathcal{A})$ $b \notin \mathcal{L}(\mathcal{A})$



	a	b
$\{s_0, s_2, s_3, s_4\}$	$\{s_2, s_5, s_3, s_4, s_0\}$	$\{s_1, s_0, s_3, s_4, s_2\}$
$\{s_0, s_2, s_3, s_4, s_5\}$	$\{s_0, s_2, s_3, s_4, s_5\}$	

terminar!