1.a) $\{0\}^* \{00\} = \{ 0^k \mid k \geq 2 \}$ $\Sigma = \{0,1\}$

$\{\varepsilon, 0, 00, 000, \ldots\}\{00\}$

$\varepsilon \in (L^*) = \{ x_1 \ldots x_n \mid n \geq 0 \}$ $x_i \in L$

$\emptyset \cdot L = \emptyset$

$\emptyset^* = \{\varepsilon\}$

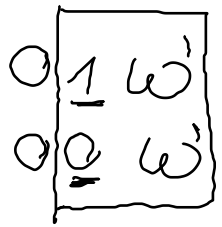
3. a) $((0^*)(00))$ $R_a = 0^*00$

1

c) $\{0\}^*\{1\}^* = \{0^m 1^n \mid m, n \geq 0\}$ $\quad R = 0^* 1^*$

d) $\{01, 00\}\{0,1\}^* = \{0\omega \mid \omega \in \Sigma^*, |\omega| \geq 1\}$

$R = (01+00)\cdot(0+1)^*$



$\omega' \in \Sigma^*$

i) $\{0\}\{00\}^* \cup \{1\}^* = \{0^{2k+1} \mid k \geq 0\} \cup \{1^k / k \geq 0\}$

$0, 000, \ldots$

$R = 0(00)^* + 1^*$

j) $\overline{\{000, 1\}^*} \cap \overline{\{00, 1\}^*} = \{0^{6n_1} 1^{n_2} 0^{6n_3} \ldots 1^{n_m} \mid m \geq 0,\ n_1, n_m \geq 0,\ n_2, \ldots, n_{m-1} \geq 1\}$

- $0^{3k_1} 1^{k_2} 0^{3k_3} 1^{k_4} \ldots\ldots 1^{k_n}$ $\quad k_2, \ldots, k_{n-1} \geq 1$, $k_1, k_n \geq 0$
- $0^{2l_1} 1^{l_2} 0^{2l_3} \ldots\ldots 1^{l_n}$ $\quad l_i \ldots\ldots$

$R = \left((000000)^* 1^*\right)^*$

2. a) $A = \{0,1\}^* \{1\} \{0,1\}^* \neq \{0,1\}^* \{1\} = B$

pq $10 \in A$ mas $10 \notin B$

b) $A = \{0\}^* \{00\} = \{00, 000\}^* \setminus \{\varepsilon\} = B$

$A = \{0^k \mid k \geq 2\}$

$\not{\varepsilon}$, $\not{0}$

00, 000, 0000, ...

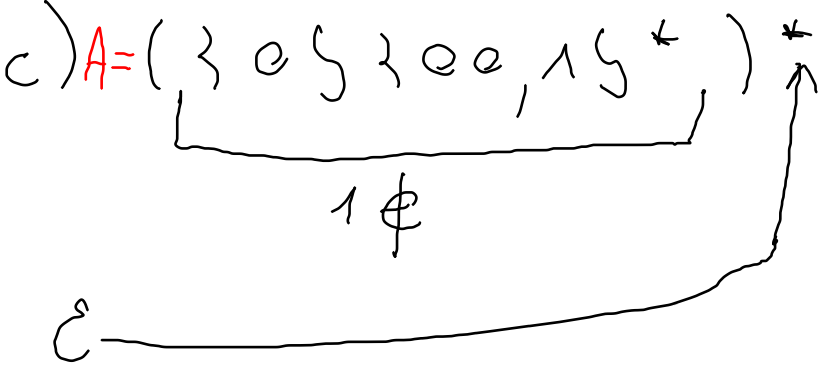
00, 000, 0000, 00000, 000000, ...

$\not{0}$ $\not{\varepsilon}$

$B = A$ pq $0, \varepsilon \notin B$ e

qq seq. de 2 ou mais 0's pode ser formada concatenando pal. de 2 ou 3 0's.

c) $A=(\{c\}\{cc,1\}^*)^* \neq \{0,1\}^* = B$



0 ✓

~~1~~

$A \neq B$

pq $1 \in B$ mas $1 \notin A$.

4. a) $R = 1^*01^* + 1^*01^*01^* + 1^*01^*01^*01^* + 1^*$

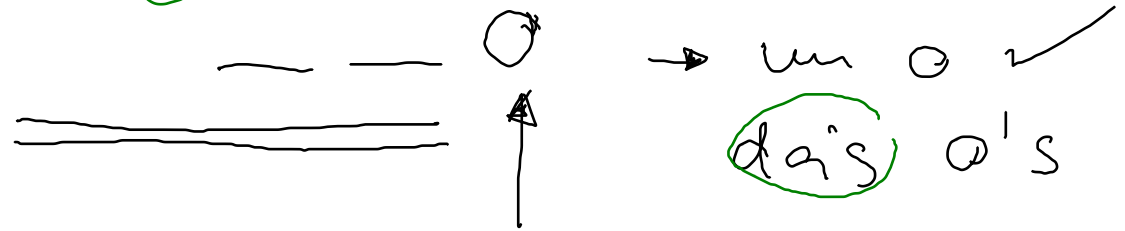
b) $R = (0+1)^*00(0+1)^*11(0+1)^* + (0+1)^*11(0+1)^*00(0+1)^*$

c) $R = 1^*110 + 111^*00 + 11^*010 + 1^*0111^*0$

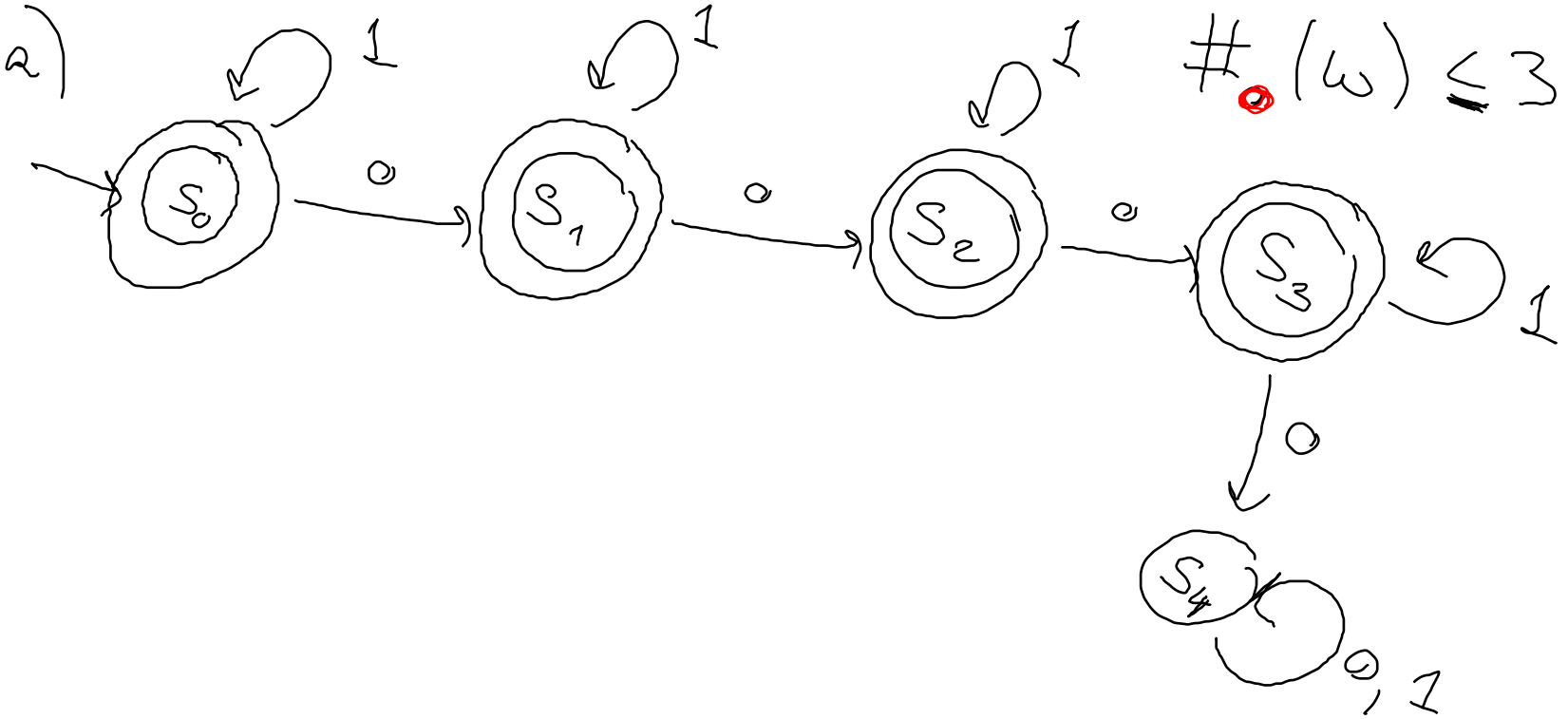
$\#_0(\omega) \leq 2$

$\#_1(\omega) \geq 2$

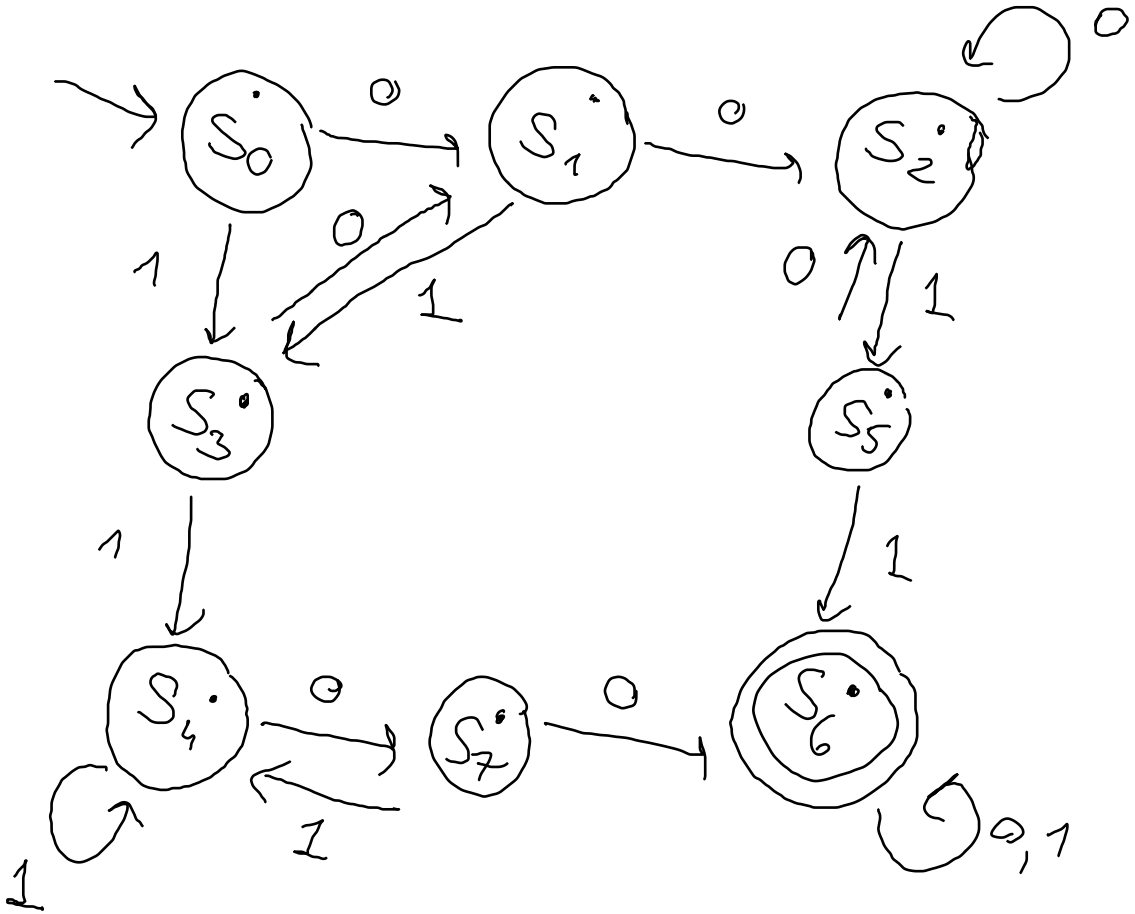
ω termina em 1



5.2)



5.6)



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5.d)

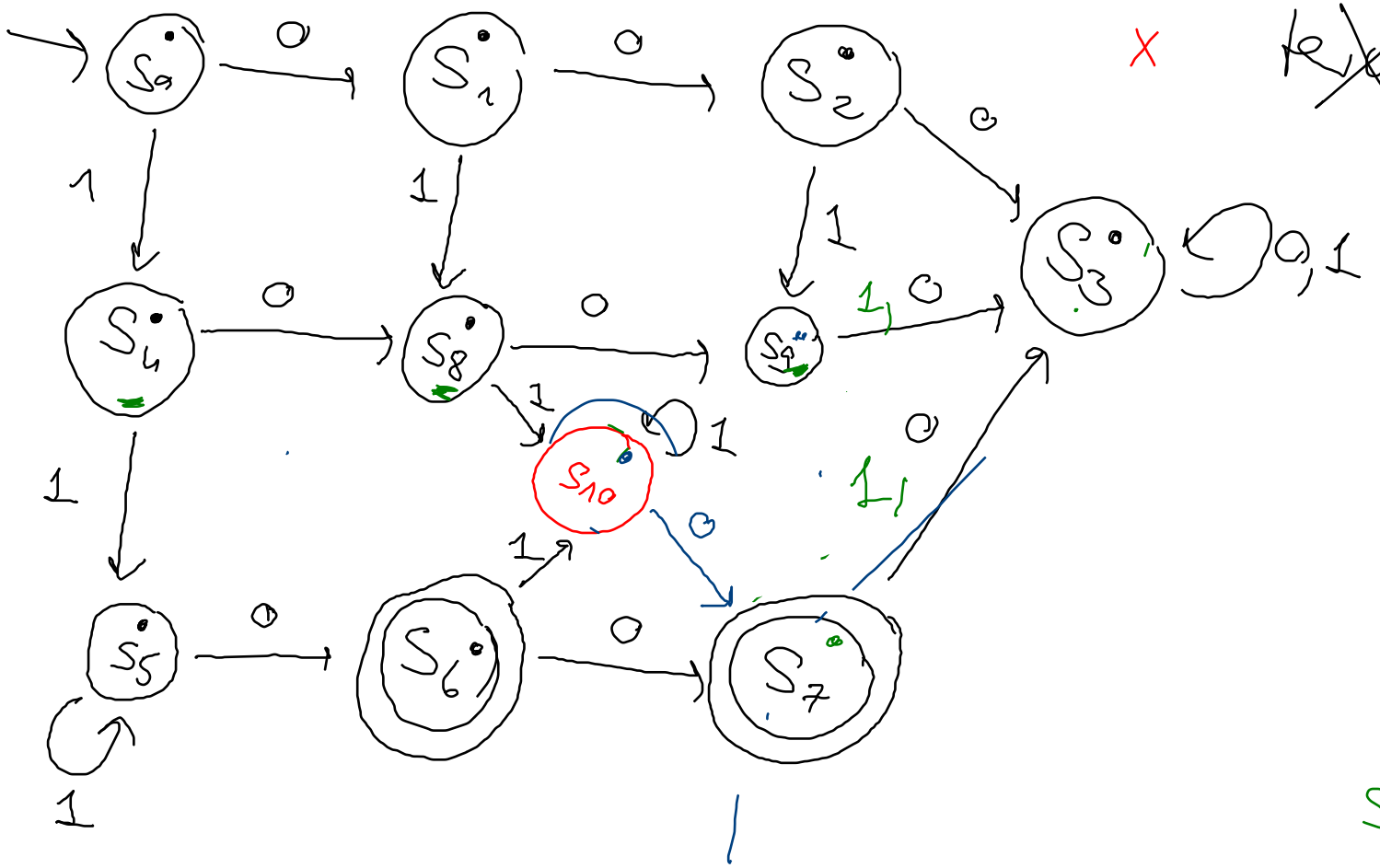
S_0: (0's, 1's, could 3) (0, 0, f)

S_1: (1, 0, true)

✓ : $\#_0(\omega) \leq 2$

✓ : $\#_1(\omega) \geq 2$ X

X ~~keine~~ 1



S_{10}: $\#_0 = 1 \wedge \#_1 \geq 2 \wedge$ keine 1

S_9: $\#_0 = 2 \wedge \#_1 = 1 \wedge$ keine 1

S_{11}: $\#_0 = 2 \wedge \#_1 \geq 2 \wedge$ keine 1