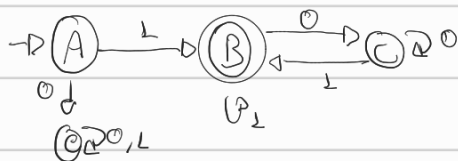


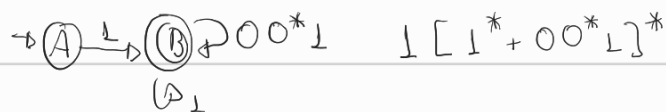
8.4.1 Exercícios de fixação

1. Para cada linguagem abaixo, apresente um AFD para a mesma. A partir do AFD apresentado, construa a ER usando a técnica do Teorema 12.

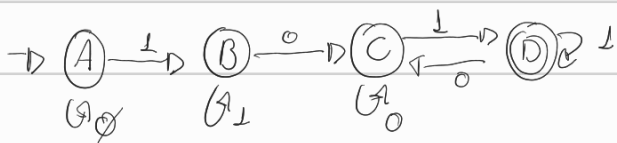
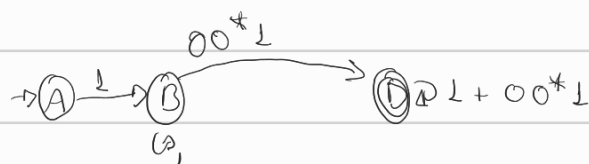
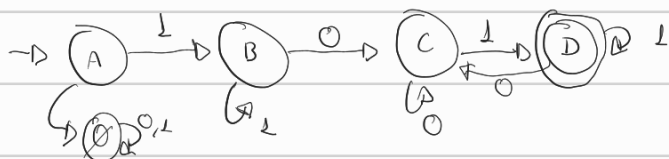
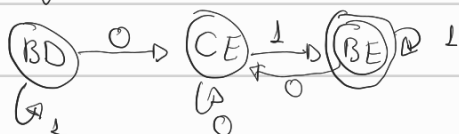
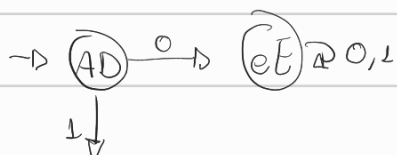
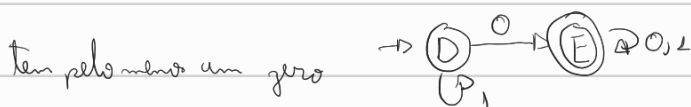
(a) Palavras que começam e terminam com 1.



Removendo C

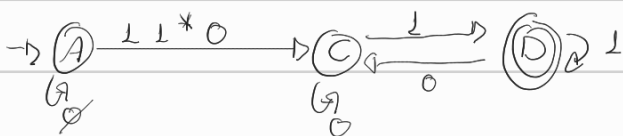


(b) Palavras que começam e terminam com 1 e tem pelo menos um 0.

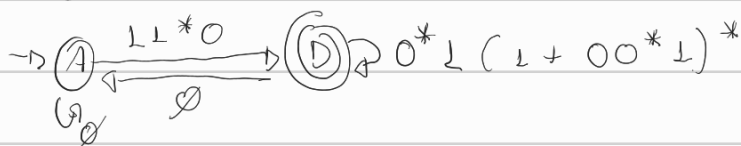


$$\emptyset(11^*00^*1)(1+00^*1) + \emptyset\emptyset^*(11^*00^*1)^*$$

Remove B



Remove C



$$\emptyset^*11^*0[0^*1(1+00^*1)^* + \emptyset\emptyset^*11^*0]^*$$

2. Utilizando a construção do Teorema 11, apresente AFs para as seguintes ERs.

(a) $(ab)^*ac$

(b) $(ab)^*(ba)^*$

(c) $((aa+bb)^*cc)^*$

a) $(ab)^*ac$

$\bar{e}_1 \bar{e}_2 \bar{e}_1 \bar{e}_3$

e_4

e_5

e_6

e_7

$e_1 = \rightarrow \bigcirc \xrightarrow{a} \bigcirc$

$e_2 = \rightarrow \bigcirc \xrightarrow{b} \bigcirc$

$e_3 = \rightarrow \bigcirc \xrightarrow{c} \bigcirc$

$e_4 = ab$

$\rightarrow \bigcirc \xrightarrow{a} \bigcirc \xrightarrow{\lambda} \bigcirc \xrightarrow{b} \bigcirc$

$e_5 = (ab)^*$

$\rightarrow \bigcirc \xrightarrow{\lambda} \bigcirc \xrightarrow{a} \bigcirc \xrightarrow{\lambda} \bigcirc \xrightarrow{b} \bigcirc$

$e_6 = (ab)^*a$

$\rightarrow \bigcirc \xrightarrow{\lambda} \bigcirc \xrightarrow{a} \bigcirc \xrightarrow{\lambda} \bigcirc \xrightarrow{b} \bigcirc$

$e_7 = (ab)^*ac$

$\rightarrow \bigcirc \xrightarrow{\lambda} \bigcirc \xrightarrow{a} \bigcirc \xrightarrow{\lambda} \bigcirc \xrightarrow{b} \bigcirc$

b) $(\underline{a} \underline{b})^* (\underline{b} \underline{a})^*$

$e_1 e_2$

$e_2 e_1$

e_3

e_4

e_5

e_6

e_7

$e_1: a \rightarrow \bigcirc \xrightarrow{a} \bigcirc$

$e_2: b \rightarrow \bigcirc \xrightarrow{b} \bigcirc$

$e_3: ab$

$\rightarrow \bigcirc \xrightarrow{a} \bigcirc \xrightarrow{\lambda} \bigcirc \xrightarrow{b} \bigcirc$

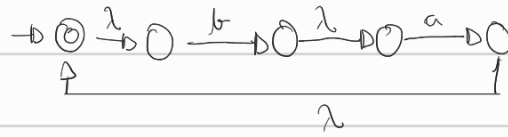
$e_4: ba$

$\rightarrow \bigcirc \xrightarrow{b} \bigcirc \xrightarrow{\lambda} \bigcirc \xrightarrow{a} \bigcirc$

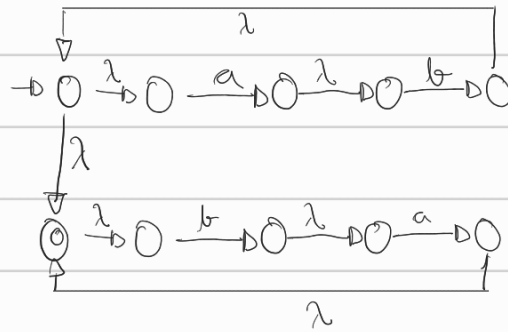
$e_5: (ab)^*$

$\rightarrow \bigcirc \xrightarrow{\lambda} \bigcirc \xrightarrow{a} \bigcirc \xrightarrow{\lambda} \bigcirc \xrightarrow{b} \bigcirc$

$$e_6: (ba)^*$$



$$e_7: (ab)^*(ba)^*$$



3. Utilizando o conceito de derivadas, apresente AFDs para as seguintes ERs.

- (a) $(ab)^*ac$
- (b) $(ab)^*(ba)^*$
- (c) $((aa + bb)^*cc)^*$

$$a) (ab)^*ac$$

$$\partial((ab)^*ac, a) = \partial(ab, a)ac + \partial(ac, a)$$

$$\partial(a, a)bac + \partial(a, a)c$$

$$\lambda bac + \lambda c$$

$$\textcircled{bac + c}$$

$$\partial((ab)^*ac, b) = \partial$$