Exemples d'expressions régulières :

alphabet {a, b}

- $aa.b.(a+bb)$ le lang. {aaba, aabbb}
- le lang. des mots qui commencent et terminent par la même lettre

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

$(a+b)^*$ tous les mots

$= \varepsilon + (a+b) + \underbrace{(a+b)^2} + (a+b)^3 + \dots$

$= (a+b).(a+b)$

$= (aa + ab + ba + bb)$

- mots de 3 lettres avec un b en seconde lettre

$$(a+b)\,b\,(a+b)$$

- mots de longueur paire (long. 0, 2, 4, ...)

Exp. rég. Utilise long-sol :
- a et b
- +
- .
- *
- parenthèses.

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

$$= (aa + ab + ba + bb)^*$$

- le lang. des mots qui commencent et terminent par une lettre différente.

? mot vide ε ? (sup. $\varepsilon \notin$ lang.)

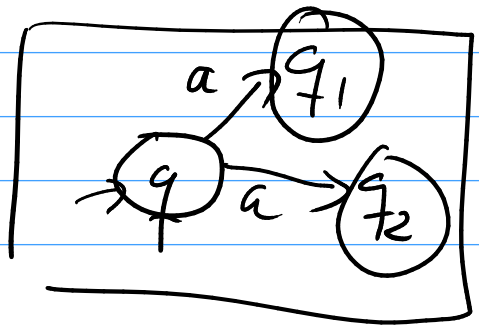
$$a(a+b)^* b + b(a+b)^* a$$

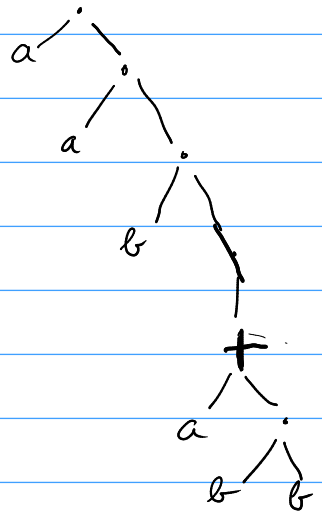
Si alphabet $\{a, b, c\}$

$$\begin{aligned} & a(a+b+c)^* b \\ + \; & a(a+b+c)^* c \\ + \; & b(a+b+c)^* a \\ + \; & b(a+b+c)^* c \\ + \; & c(a+b+c)^* a \\ + \; & c(a+b+c)^* b \end{aligned}$$

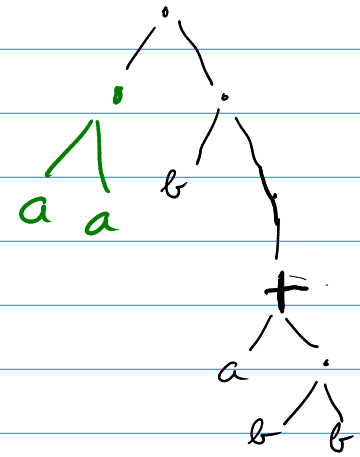
Sur un exemple, comment passer d'une exp. reg. à un automate fini (non-déterministe)?

exemple



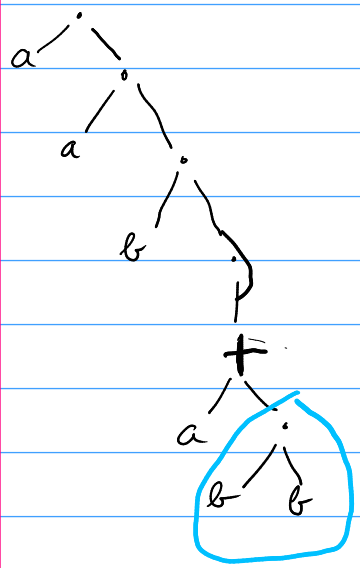


$(a.a)b.(a+bb)$

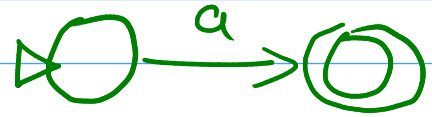


associativité

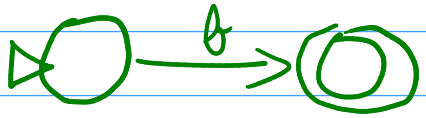
$$(x.y).z = x.(y.z) = x.y.z$$

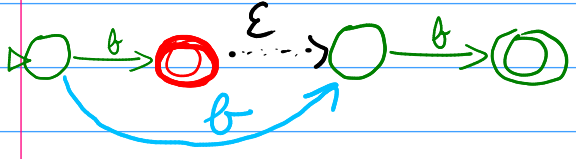


lettre a

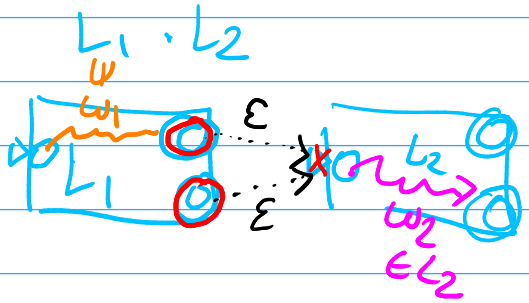


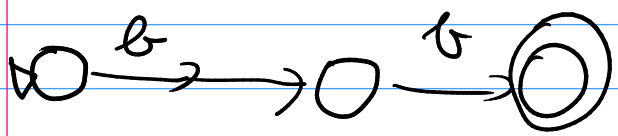
lettre b

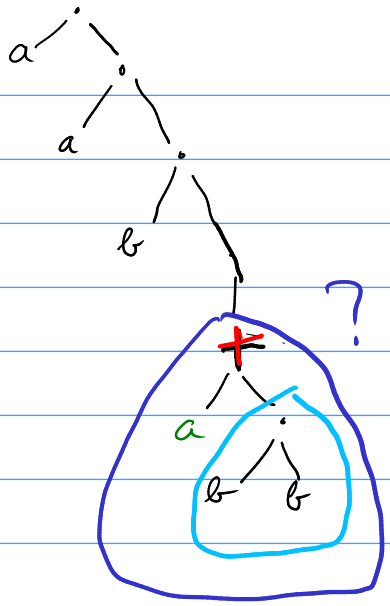




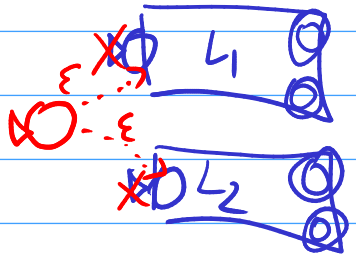
$L_1 \cdot L_2$

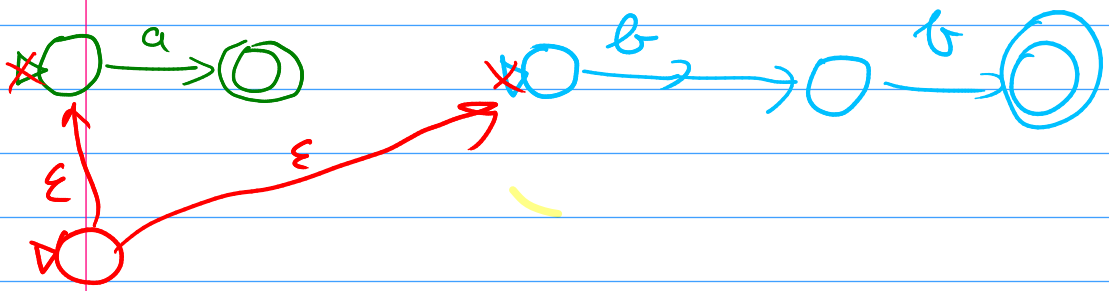


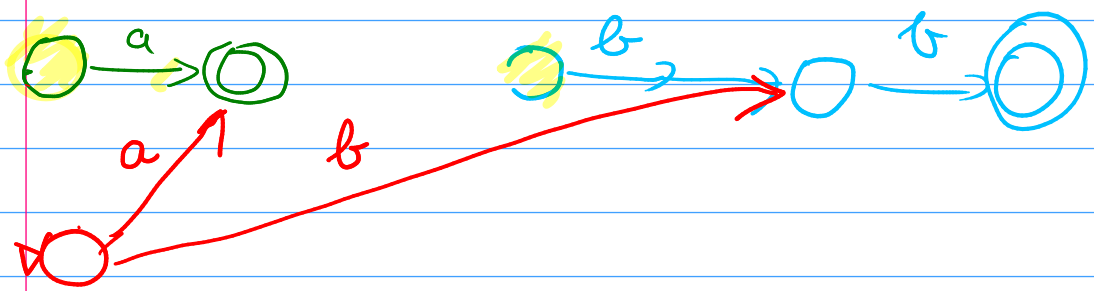


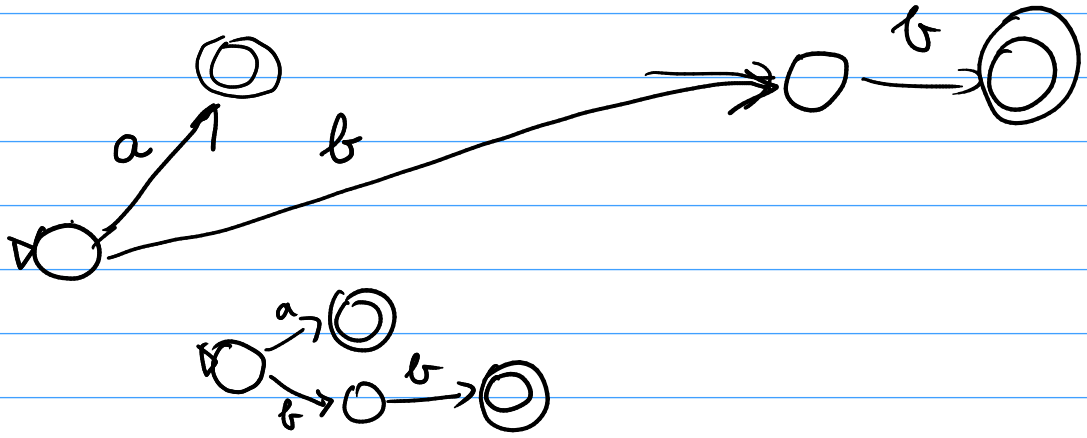


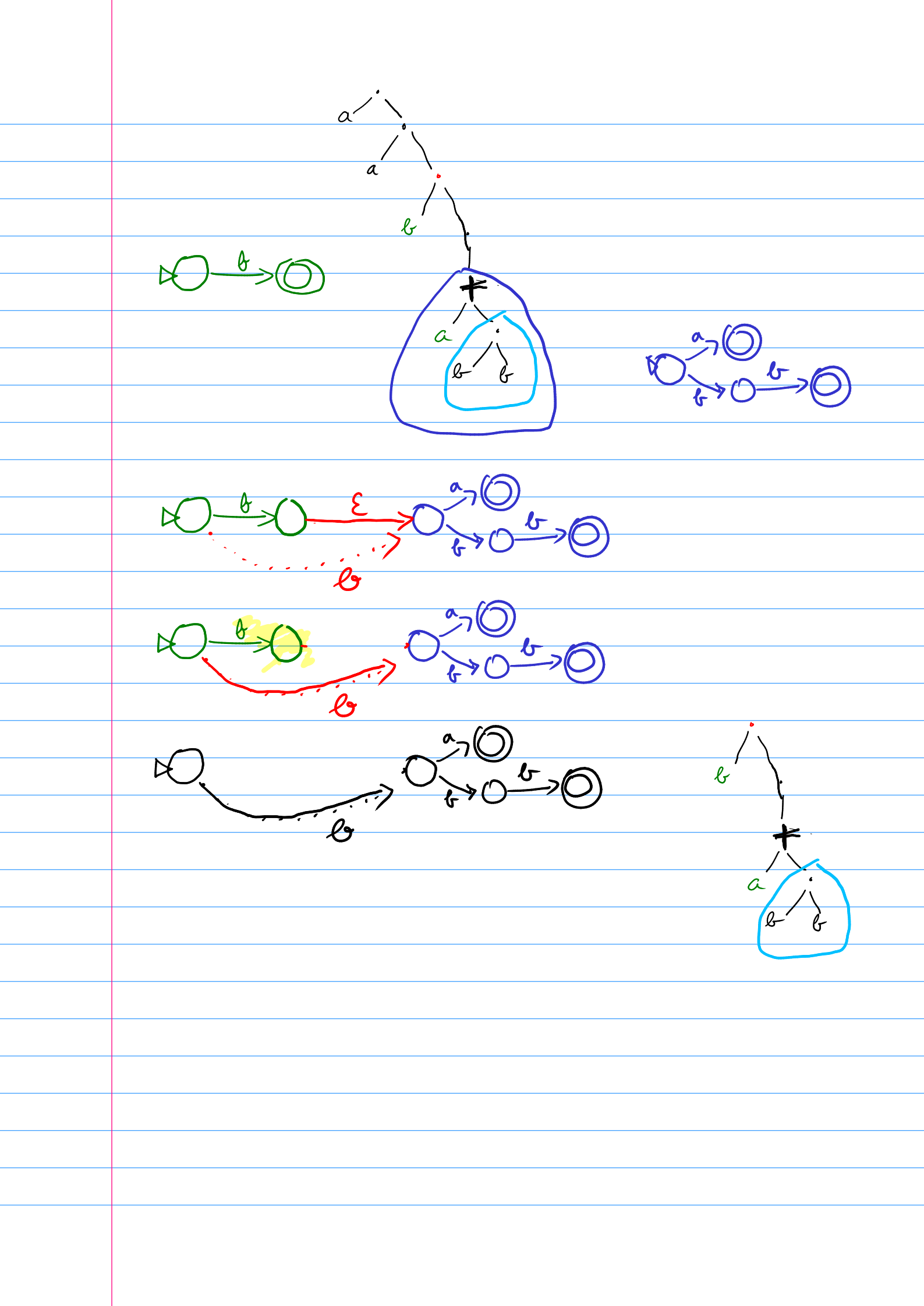
$L_1 + L_2$







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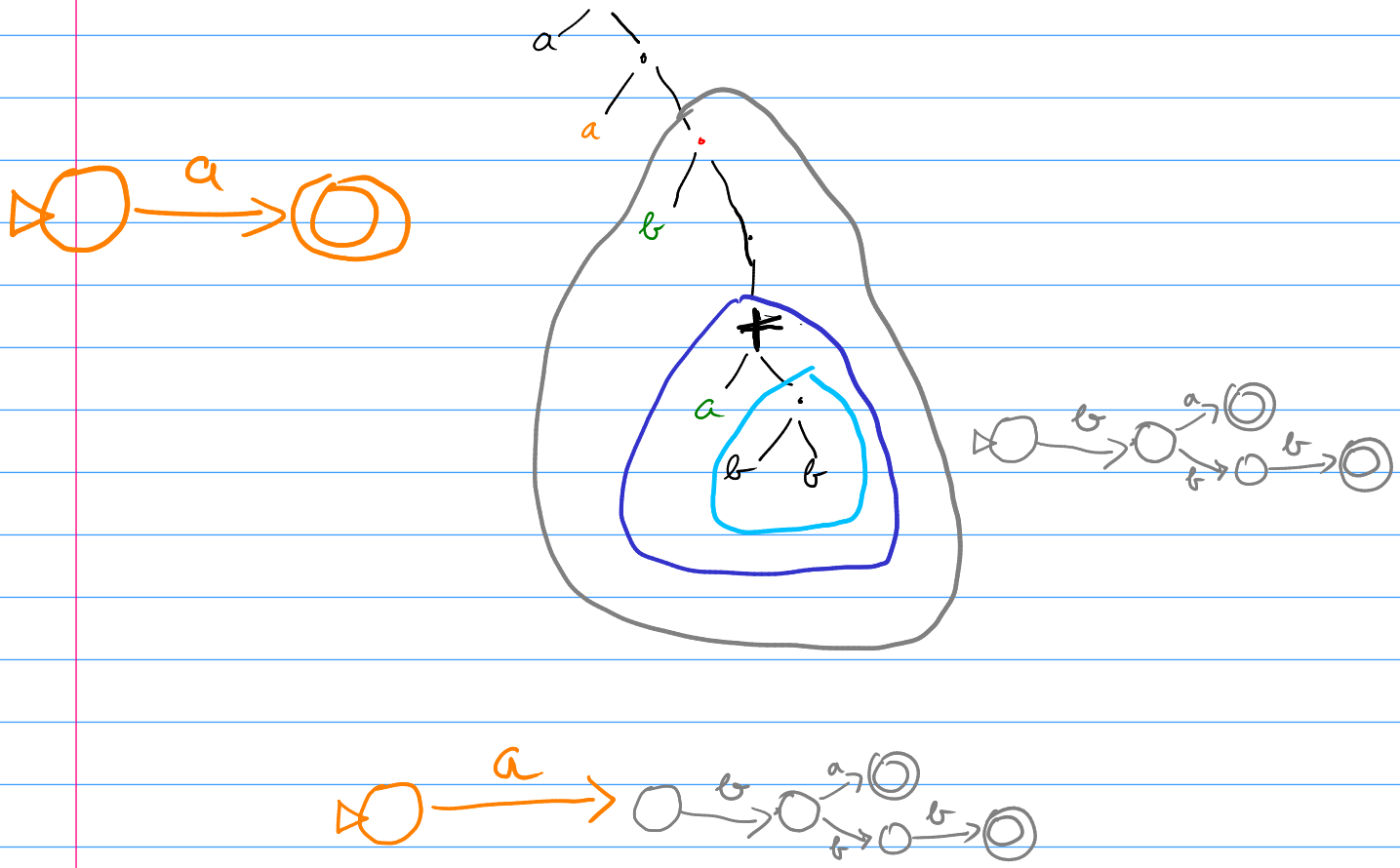
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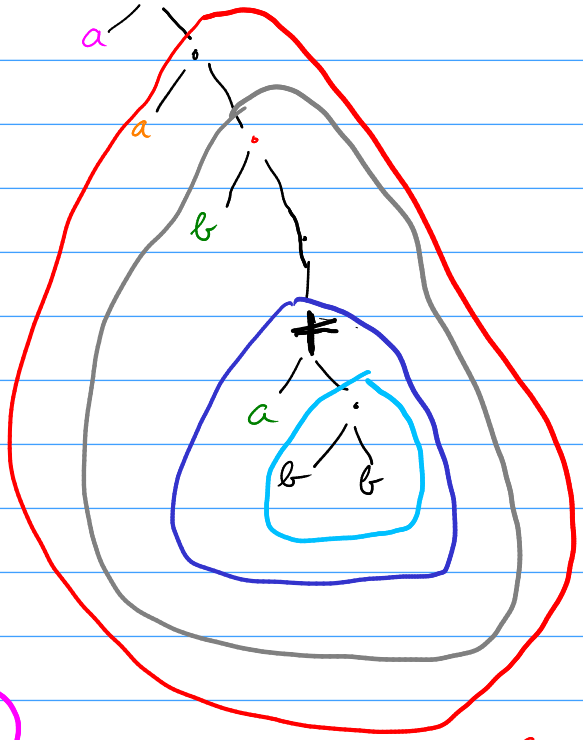
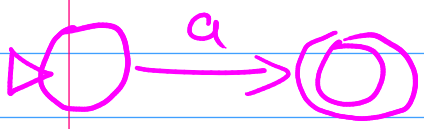
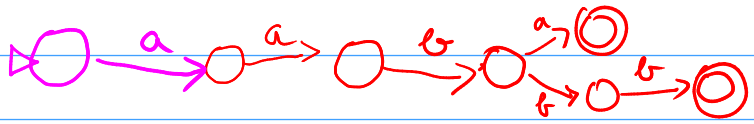
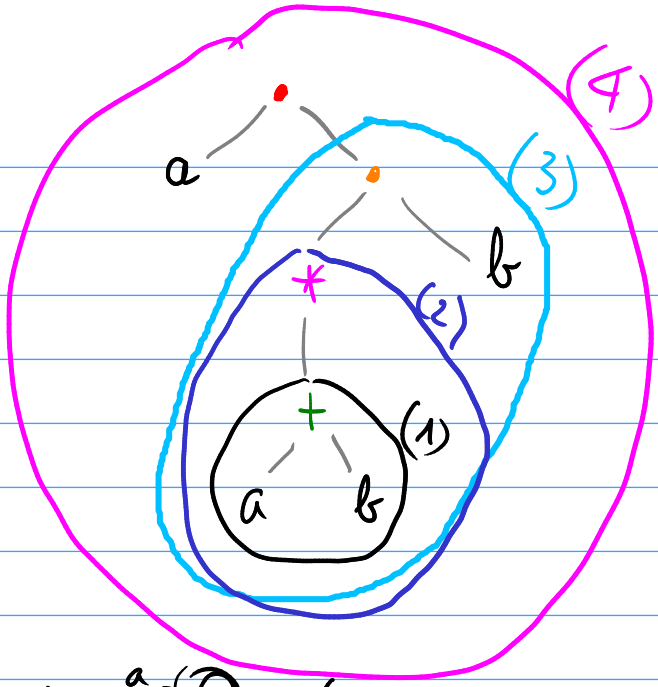


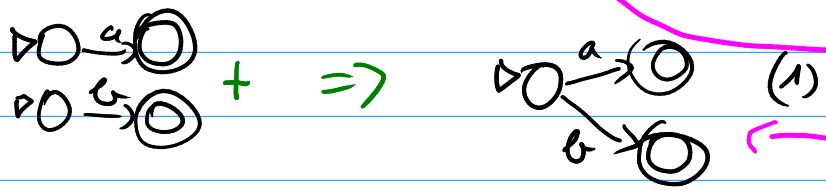


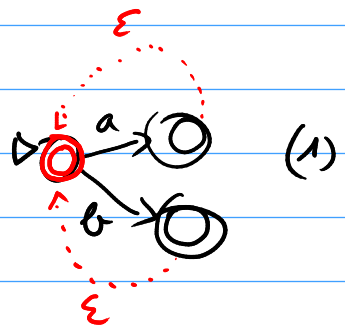


terminé. oui.

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

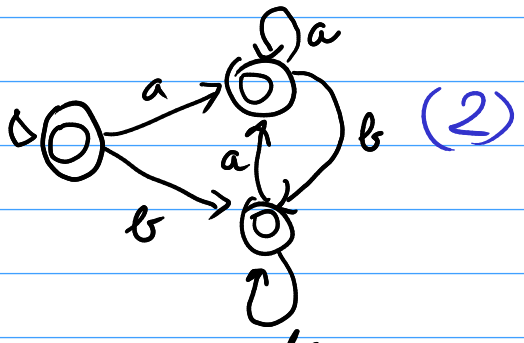


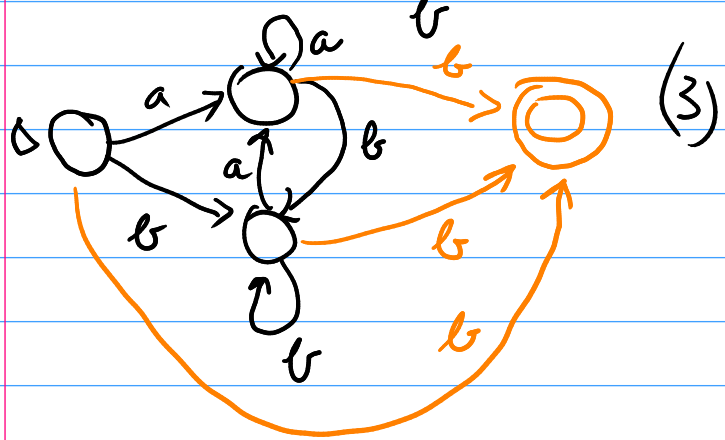


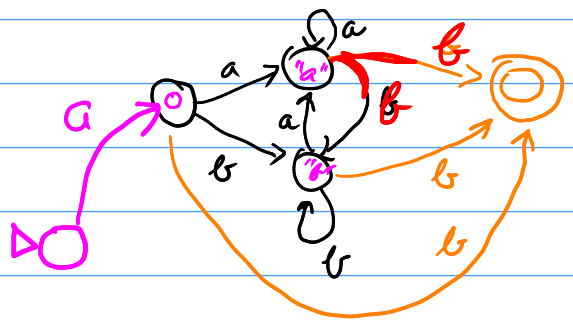


* : 0 ou plusieurs fois un mot du lang. reconnu par

$\varepsilon + L + LL + LLL + \dots$







(4)

Deux exercices possibles sur cette séquence

**1) J'exprime un langage (en français, sous forme d'ensemble de mots, ...)
je demande une regexp**

2) a) Je donne une regexp et je demande un arbre
b) je donne un arbre et je demande la construction de l'automate.