

$$(aS \rightarrow aSb)$$

$$L(a \cdot b) = L(a) \cdot L(b)$$

$$abc = a \cdot b \cdot c$$

$$(a \cdot b) \cdot c = a \cdot (b \cdot c)$$

$$6.2 \text{ a) } L(\alpha | \alpha^*)$$

$$= L(\alpha) \cup L(\alpha^*)$$

$$[L(\alpha) \subseteq L(\alpha^*)]$$

$$= L(\alpha^*)$$

$$\text{b) } L(\epsilon | \alpha^*) = L(\epsilon) \cup L(\alpha^*)$$

$$= \{\epsilon\} \cup L(\alpha^*)$$

$$[\epsilon \in L(\alpha^*)]$$

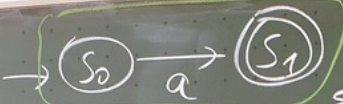
$$= L(\alpha^*)$$

c) Gegenbsp.:

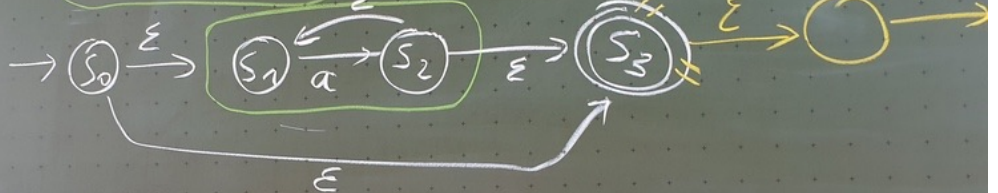
$$\alpha = a, \beta = b$$

$$L((a|b)^*) \ni ab \notin L(a^*) \cup L(b^*)$$

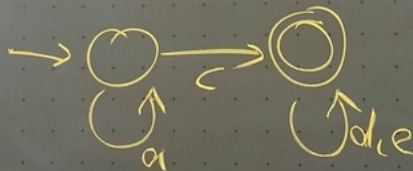
6.3 a)  $\underline{a}$

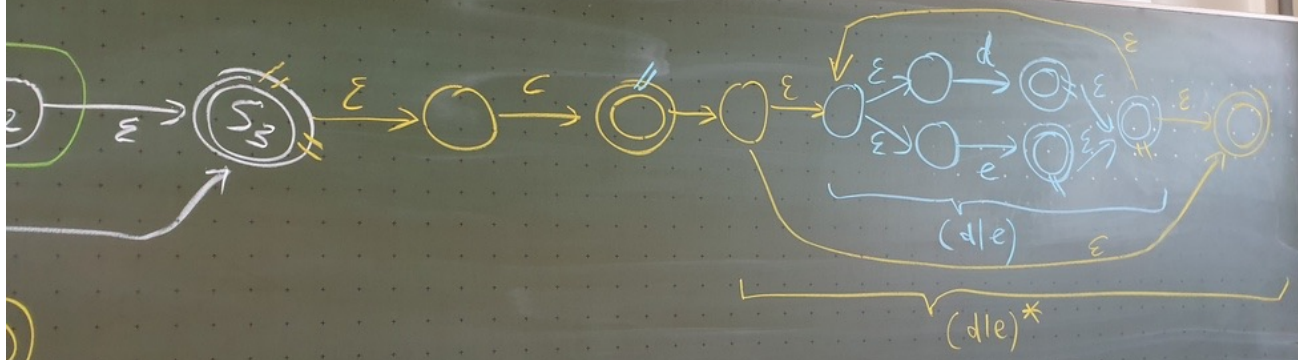


b)  $a^*$



c)  $a^*c$





6.4)  $L = \{ab^n c \mid n \in \mathbb{N}_0\}$

$S \rightarrow aT, T \rightarrow bT \mid c$

$S \Rightarrow aT \Rightarrow abT \Rightarrow abbT \Rightarrow abbbT \Rightarrow abbbbT \Rightarrow abbbbc$

6.5)  $L = \{ab^n c^m d \mid n, m \in \mathbb{N}_0\}$

$S \rightarrow Td, T \rightarrow Tc \mid U, U \rightarrow Ub \mid a$

$S \Rightarrow Td \Rightarrow Tcd \Rightarrow Tcccd \Rightarrow Tcccdd \Rightarrow Ucccd \Rightarrow Ubcccd \Rightarrow^* Ubbbbbcccd \Rightarrow abbbbbbcccd = ab^5 c^3 d$

6.6) a)  $L = L((aab|bba)(cc)^*) = \{vw \mid (v=aab \vee v=bba) \wedge w=(cc)^k, k \in \mathbb{N}_0\}$

b)  $L((a|b)(c|d))^* = L(\underbrace{w_1 w_2 w_3 \dots}_{k \text{ Teile}} \mid w_i \in \{ac, bc, cd, bd\}, k \in \mathbb{N}_0)$

