

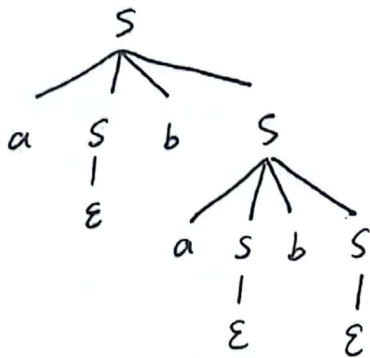
$$3.2 \quad S \rightarrow aSbS \mid bSaS \mid \varepsilon$$

$$(a) \textcircled{1} S \Rightarrow_{lm} aSbS \Rightarrow_{lm} abs \Rightarrow_{lm} abasbS \Rightarrow_{lm} ababS \Rightarrow_{lm} abab$$

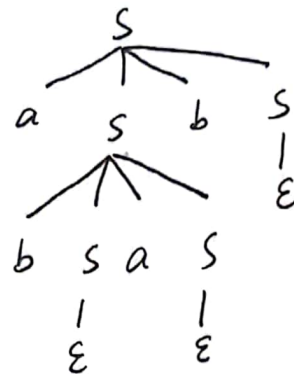
$$\textcircled{2} S \Rightarrow_{lm} aSbS \Rightarrow_{lm} absaSbS \Rightarrow_{lm} abasbS \Rightarrow_{lm} ababS \Rightarrow_{lm} abab$$

$$(b) S \Rightarrow_{rm} aSbS \Rightarrow_{rm} asb asbS \Rightarrow_{rm} asb asb \Rightarrow_{rm} asbab \Rightarrow_{rm} abab$$

(c) ①



②



(d) 表示由 a 和 b 组成的所有串的集合, 包括空串

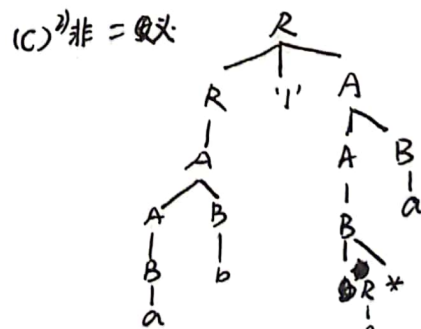
3.4

$$(b) R \rightarrow R'IA \mid A$$

$$A \rightarrow AB \mid B$$

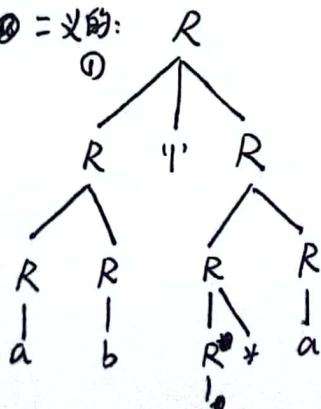
$$B \rightarrow R^* \mid (R) \mid a \mid b$$

(c) 非 = 义:



(c) 义 = 义的:

①



②



③



3.6

$$(a) \quad R \rightarrow abR \mid bR \mid \varepsilon$$

语言 $L(R)$ 是正规的, 其正规式为: $(ab \mid b^*)^*$

$$(b) \quad R \rightarrow aRbR \mid bRaR \mid \varepsilon$$

语言 $L(R)$ 不是正规的.

3.8

$$(a) \quad S \rightarrow (L) \mid a$$

$$L \rightarrow L, S \mid S$$

$$\text{解: } S \rightarrow (L) \mid a$$

$$L \rightarrow S^* L' \mid \varepsilon$$

$$L' \rightarrow , S L' \mid \varepsilon$$