

形式语言作业

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习题: p67 3, 4, 8.2, 8.6, 10.3, 11.3

3. $E \Rightarrow E + E$

$$\Rightarrow E + E * E$$

$$\xRightarrow{3} id + id * id$$

$$E \Rightarrow E * E$$

$$\Rightarrow E + E * E$$

$$\xRightarrow{3} id + id * id$$

$$id + id * id \xleftarrow{3} E + E * E$$

$$\leftarrow E * E$$

$$\leftarrow E$$

$$id + id * id \xleftarrow{3} E + E * E$$

$$\leftarrow E + E$$

$$\leftarrow E$$

4. $S \Rightarrow a\underline{S}BC$

$$\Rightarrow aa\underline{S}BCBC$$

$$\Rightarrow aaa\underline{B}CBCBC$$

$$\Rightarrow aaab\underline{C}BCBC$$

$$\Rightarrow aaab\underline{B}CCBC$$

$$\Rightarrow aaabb\underline{C}CBC$$

$$\Rightarrow aaabb\underline{C}BCC$$

$$\Rightarrow aaabb\underline{B}CCC$$

$$\Rightarrow aaabbb\underline{C}CC$$

$$\Rightarrow aaabbb\underline{c}CC$$

$$\Rightarrow aaabbb\underline{cc}C$$

$$\Rightarrow aaabbbccc$$

$$S \Rightarrow a\underline{S}BC$$

$$\Rightarrow aa\underline{S}BCBC$$

$$\Rightarrow aaa\underline{B}CBCBC$$

$$\Rightarrow aaab\underline{C}BCBC$$

$$\Rightarrow aaab\underline{B}CCBC$$

$$\Rightarrow aaab\underline{B}CBCC$$

$$\Rightarrow aaabb\underline{C}BCC$$

$$\Rightarrow aaabb\underline{B}CCC$$

$$\Rightarrow aaabbb\underline{C}CC$$

$$\Rightarrow aaabbb\underline{c}CC$$

$$\Rightarrow aaabbb\underline{cc}C$$

$$\Rightarrow aaabbbccc$$

$$aaabbbccc \Leftarrow aaabbb\underline{cc}C$$

$$\Leftarrow aaabbb\underline{c}CC$$

$$\Leftarrow aaabbb\underline{B}CCC$$

$$\Leftarrow aaab\underline{B}BCCC$$

$$\Leftarrow aaa\underline{B}BBCCC$$

$$\Leftarrow aaa\underline{B}BCBCC$$

$$\Leftarrow aaa\underline{B}CBBC$$

$$\Leftarrow aaa\underline{B}CBCBC$$

$$\Leftarrow aa\underline{S}BCBC$$

$$\Leftarrow a\underline{S}BC$$

$$\Leftarrow S$$

$$\begin{aligned}
aaabbbccc &\Leftarrow aaabbb\underline{cc}C \\
&\Leftarrow aaabbb\underline{c}CC \\
&\Leftarrow aaabbb\underline{C}CC \\
&\Leftarrow aaabbb\underline{B}CCC \\
&\Leftarrow aaabbb\underline{C}BCC \\
&\Leftarrow aaab\underline{B}CBCC \\
&\Leftarrow aaa\underline{B}BCBCC \\
&\Leftarrow aaa\underline{B}CB\underline{B}CC \\
&\Leftarrow aaa\underline{B}C\underline{B}CBC \\
&\Leftarrow aa\underline{S}BCBC \\
&\Leftarrow \underline{a}S\underline{B}C \\
&\Leftarrow S
\end{aligned}$$

$$8 \quad (2) \quad S \rightarrow 0B1$$

$$B \rightarrow \epsilon|0B|1B$$

$$(6) \quad S \rightarrow \epsilon|0S0|0S1|1S0|1S1$$

$$10 \quad (3) \quad G = (V_1 \cup V_2 \cup S, T, P_1 \cup P_2 \cup \{S \rightarrow S_1aS_2|S_1bS_2\}, S)$$

$$\begin{aligned}
11 \quad (3) \quad G &= (V_1 \cup V_2 \cup \{S, C\}, T, P'_1 \cup P_2 \cup P_3, S_1) \\
P'_1 &= \{A \rightarrow aB | A \rightarrow aB \in P_1\} \\
P_3 &= \{A \rightarrow aC | A \rightarrow a \in P_1\} \\
P_4 &= \{C \rightarrow aS_2|bS_2\}
\end{aligned}$$