Семинар 4.

① $S \to (S)S \mid \varepsilon$ $\quad D_1$

② $S \to aSb \mid \varepsilon$ $\quad \{a^n b^n \mid n \geq 0\}$

③ $S \to aSb \mid aSbb \mid \varepsilon$ $\quad \{a^n b^m \mid 0 \leq n \leq m \leq 2n\}$

④ $S \to aSbS \mid bSaS \mid \varepsilon$ $\quad L =$

$S \to \varepsilon \mid aB \mid bA$

$A \to aS \mid bAA$

$B \to bS \mid aBB$

⑤ $G \to aGb \mid ab$ $\quad \Sigma^* \setminus \{a^n b^n \geq 0\}$

$S \to BA \mid GaA \mid GBA \mid AaG \mid AbG \mid \widetilde{A}$

$A \to aA \mid BA \mid \varepsilon$

$\widetilde{A} \to a\widetilde{A} \mid a$

⑥ $S \to aABB \mid cBDc \mid \varepsilon$ $\quad \{a^i b^j c^k \mid \begin{bmatrix} i=j \\ j=k \end{bmatrix} \quad i,j,k \geq 0\}$

$A \to aAb \mid \varepsilon$

$B \to cB \mid \varepsilon$

$D \to bDc \mid \varepsilon$

$C \to aC \mid \varepsilon$

⑦ $S \to bSb \mid aSa \mid a \mid b \mid \varepsilon$ $\quad PAL$

⑧ $S \to aSa \mid bSb \mid A$ $\quad \overline{PAL}$

$A \to aBb \mid bBa$

$B \to aB \mid bB \mid \varepsilon$

⑩ $S \to ASA \mid a$

$A \to a \mid b$

⑪