

Какие из предложенных ниже цепочек можно вывести в грамматике

$$G = \{S \rightarrow AC|BS|CSC; C \rightarrow Db|\varepsilon; A \rightarrow a; B \rightarrow b; D \rightarrow d\} — KC$$

- 1) ddabb 2) bbdba 3) adbdb 4) bdabb

Решение

1) 1.  $S \Rightarrow$

$$\begin{array}{lll} 1.1 S \Rightarrow \textcolor{green}{AC} & 1.2 S \Rightarrow \textcolor{blue}{BS} & 1.3 S \Rightarrow \textcolor{brown}{CSC} \\ \Downarrow & \Downarrow & \Downarrow \\ \textcolor{green}{aC} & \textcolor{blue}{bS} & \textcolor{brown}{DbSC} \\ \Downarrow & \Downarrow & \Downarrow \\ \text{тупик} & \text{тупик} & \textcolor{brown}{dbSC} \\ & & \Downarrow \\ & & \text{тупик} \end{array}$$

2)  $S \Rightarrow \textcolor{blue}{BS} \Rightarrow \underline{b} \textcolor{blue}{S} \Rightarrow b \underline{\textcolor{blue}{B}} \textcolor{blue}{S} \Rightarrow bb \underline{\textcolor{red}{S}} \Rightarrow bb \underline{\textcolor{brown}{C}} \textcolor{red}{SC} \Rightarrow bb \underline{\textcolor{brown}{D}} \textcolor{brown}{b} SC$

$$\Rightarrow bb \underline{d} \underline{b} S \textcolor{blue}{C} \Rightarrow bb \underline{d} \underline{b} \textcolor{red}{S} \Rightarrow bb \underline{d} \underline{b} \textcolor{green}{A} \textcolor{red}{C} \Rightarrow bb \underline{d} \underline{b} a \textcolor{blue}{C} \Rightarrow bb \underline{d} \underline{b} a$$

3)  $S \Rightarrow \textcolor{blue}{CSC} \Rightarrow \textcolor{red}{SC} \Rightarrow \textcolor{blue}{CSC} \textcolor{red}{C} \Rightarrow \textcolor{red}{S} \textcolor{red}{CC} \Rightarrow \textcolor{green}{A} \textcolor{red}{C} \textcolor{red}{CC} \Rightarrow \underline{a} \textcolor{brown}{C} \textcolor{brown}{CC}$

$$\Rightarrow a \underline{\textcolor{brown}{D}} \textcolor{brown}{b} CC \Rightarrow a \underline{d} \underline{\textcolor{brown}{b}} \textcolor{brown}{C} \textcolor{brown}{C} \Rightarrow a \underline{d} \underline{b} \underline{\textcolor{brown}{D}} \textcolor{brown}{b} C \Rightarrow a \underline{d} \underline{b} \underline{d} \textcolor{blue}{C} \Rightarrow adbdb$$

4) 1.  $S \Rightarrow$

$$\begin{array}{lll} 1.1 S \Rightarrow \textcolor{green}{AC} & 1.2 S \Rightarrow \textcolor{blue}{BS} & 1.3 S \Rightarrow \textcolor{brown}{CSC} \\ \Downarrow & \Downarrow & \Downarrow \\ \textcolor{green}{aC} & \textcolor{blue}{bS} & \textcolor{brown}{DbSC} \\ \Downarrow & \Downarrow & \Downarrow \\ \text{тупик} & \textcolor{blue}{b} \underline{\textcolor{red}{C}} \textcolor{red}{SC} & \textcolor{brown}{dbSC} \\ & \Downarrow & \Downarrow \\ & \textcolor{brown}{b} \underline{\textcolor{brown}{D}} \textcolor{brown}{b} SC & \text{тупик} \\ & \Downarrow & \\ & \textcolor{brown}{b} \underline{d} \underline{b} SC & \\ & \Downarrow & \\ & \text{тупик} & \end{array}$$

Ответ: 2) bbdba, 3) adbdb