Определете езиците, пораждани от следните граматики:

1) $G = (\{S, A\}, \{0\}, S, \{S \to 0,\ S \to 0A,\ A \to 0S\})$

2) $G = (\{S, A\}, \{0\}, S, \{S \to \varepsilon,\ S \to 0A,\ A \to 0S\})$

3) $G = (\{S, A, B\}, \{0, 1\}, S, \{S \to A,\ A \to 0A1,\ A \to B,\ B \to 1B,\ B \to 1\})$

4) $G = (\{S\}, \{0, 1\}, S, \{S \to 0S0,\ S \to 1S1,\ S \to 1\})$

1) $L = \{0^{2n+1} \mid n \geq 0\}$ - нечетен брой 0

2) $L = \{0^{2n} \mid n \geq 0\}$ - четен брой 0

3) $L = \{0^m 1^n \mid 1 \leq m < n\}$

4) $L = \{\alpha 1 \alpha^r \mid \alpha \in \{0, 1\}^*\}$

Постройте граматика G, за която

$$L(G) = \{10\alpha \mid \alpha \in \{0,1\}^*\}$$

$$G = (\{S, A\}, \{0,1\}, S, \{S \to 10,\ S \to 10A,$$
$$A \to 0,\ A \to 1,\ A \to 0A,\ A \to 1A\})$$

Постройте автоматна граматика, пораждаща същия език

$$G = (\{S, A\}, \{0,1\}, S, \{S \to 1A,\ A \to 0B,\ A \to 0,$$
$$B \to 0B,\ B \to 1B,\ B \to 0,\ B \to 1\})$$

Да се построи автоматна граматика, пораждаща езика

1) $L = \{ \alpha 10 \mid \alpha \in \{0,1\}^* \}$

$G = \{ \{S, A\}, \{0,1\}, S, \{ S \to 0S,\ S \to 1S,\ S \to 1A,\ A \to 0 \}$

2) $L = \{ \alpha 10 \beta \mid \alpha, \beta \in \{0,1\}^* \}$

$G = \{ \{S, A, B\}, \{0,1\}, S, \{ S \to 0S,\ S \to 1S,\ S \to 1A,\ A \to 0B,\ B \to 0B,\ B \to 1B,\ B \to 0,\ B \to 1 \}$

Да се построи автоматна граматика, пораждаща езика

1) $L = \{a^n b \mid n \geq 0\}$

$G = (\{S\}, \{a, b\}, S, \{S \to aS, S \to b\})$

2) $L = \{a^n b \mid n \geq 1\}$

$G = (\{S, A\}, \{a, b\}, S, \{S \to aS, S \to aA, A \to b\})$

3) $L = \{a b^n \mid n \geq 0\}$

$G = (\{S, B\}, \{a, b\}, S, \{S \to aB, S \to a, B \to bB, B \to b\})$

4) $L = \{a b^n \mid n \geq 1\}$

$G = (\{S, B\}, \{a, b\}, S, \{S \to aB, B \to bB, B \to b\})$

За е построи автоматна граматика G, за която

1) $L(G) = \{a^m b^n \mid m, n \geq 0\}$

$G = (\{S, B\}, \{a, b\}, S, \{S \to \varepsilon, S \to a, S \to b, S \to aS, S \to aB, B \to bB, B \to b\})$

2) $L(G) = \{a\alpha b \mid \alpha \in \{a, b\}^*\}$

$G = (\{S, A\}, \{a, b\}, S, \{S \to aA, A \to aA, A \to bA, A \to b\})$

3) $L(G) = \{ab\alpha ba \mid \alpha \in \{a, b\}^*\}$

$G = (\{S, A, B, C\}, \{a, b\}, S, \{S \to aA, A \to bB, B \to aB, B \to bB, B \to bC, C \to a\})$

4) $L(G) = \{\alpha \mid \alpha \in \{a, b\}^*$ и започва и завършва с една и съща буква$\}$

$G = (\{S, A, B\}, \{a, b\}, S, \{S \to aA, S \to bB, A \to aA, A \to bA, A \to a, B \to aB, B \to bB, B \to b\})$