

1. What is the form of the rule that would be useful when equal counts of terminals **a** and **b** are needed and **a**'s must come before **b**'s in a CFL?

Assume **R** is a variable.

(3 points)

1. $R \rightarrow Rba$

2. $R \rightarrow bRa$

✓ 3. $R \rightarrow aRb$

4. $R \rightarrow \epsilon$

5. $R \rightarrow baR$

2. Consider a grammar with the 4 rules below and start variable E:

$$E \rightarrow E + E \mid E * E \mid (E) \mid a$$

Which of the following words could not be generated by this grammar? (terminals in blue)

(3 points)

1. (a+a)+a

2. (a+a)*a

✓ 3. (a+a)a

4. a*(a+a)

5. none of the above

3. How many DFAs can be constructed to recognize all the words of the language $\{w \mid w = 0^n 1^n 0^n \text{ for } n > 0\}$, assuming $\Sigma = \{0, 1\}$?

(3 points)

1. one
2. an infinite number
- ✓ 3. zero
4. three
5. none of the above