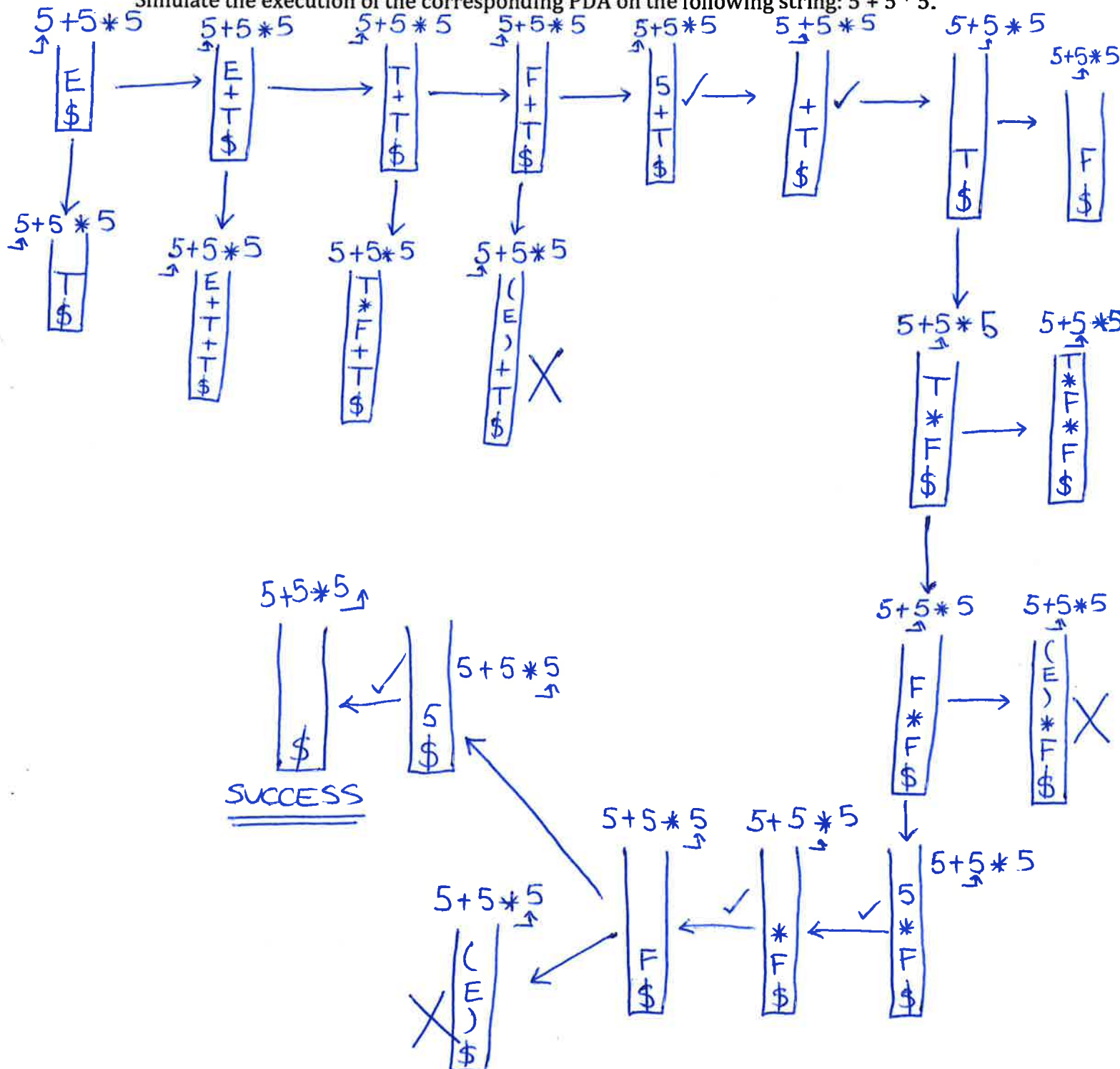
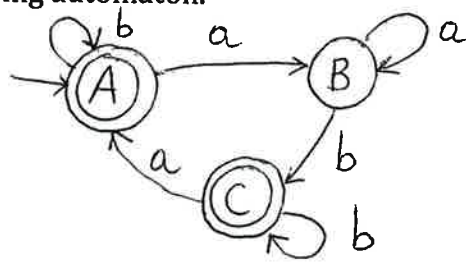


$$E \rightarrow E + T \mid T$$
$$T \rightarrow T * F \mid F$$
$$F \rightarrow 5 \mid (E)$$

Simulate the execution of the corresponding PDA on the following string: $5 + 5 * 5$.



2. Identify (following the method presented in class) the language recognized by the following automaton.



$$\begin{cases} A = \varepsilon + bA + aB \\ B = aB + bC \\ C = \varepsilon + bC + aA \end{cases}$$

$$\begin{aligned} C &= \varepsilon + bC + aA \Rightarrow C = b^*(\varepsilon + aA) \\ B &= aB + bC = aB + bb^*(\varepsilon + aA) \\ &= a^*b^+(\varepsilon + aA) \end{aligned}$$

$$\begin{aligned} A &= \varepsilon + bA + aB = \varepsilon + bA + aa^*b^+(\varepsilon + aA) \\ &= bA + a^+b^+ + a^+b^+aA + \varepsilon \\ &= (b + a^+b^+a)A + (a^+b^+ + \varepsilon) \\ &= (b + a^+b^+a)^* \cdot (a^+b^+ + \varepsilon). \end{aligned}$$