

Homework 3

① Given the CFG below, give the leftmost and right most derivations for w and draw the syntax tree.

b) $G = \{E, T, F\}, \{a, +, *\}, \{, \}$,

$$E \rightarrow E + T \mid T,$$

$$T \rightarrow T * F \mid F,$$

$$F \rightarrow (E) \mid a$$

$$w = a * (a + a)$$

② Build the parse tree using the recursive descent parser (last exercise from Seminar 7) for:

$$G = (N, \Sigma, P, S)$$

$$N = \{S, A, B\}, \Sigma = \{a, b\}$$

$$P: S \rightarrow aB \mid bA$$

$$A \rightarrow a \mid aS \mid bAA$$

$$B \rightarrow b \mid bS \mid aBB$$

a) $w = abba$

b) $w = abaabb$

c) $w = bb$