

Computer Science G12

Howework (To be discussed Wed 1 Nov 2017)

Consider the *grammar* given by the alphabet $\Sigma = \{x, y, z, (,), +, -, *, /\}$, the *start symbol* S , and the following *production rules*:

1. $S \rightarrow x$
2. $S \rightarrow y$
3. $S \rightarrow z$
4. $S \rightarrow S + S$
5. $S \rightarrow S - S$
6. $S \rightarrow S * S$
7. $S \rightarrow S / S$
8. $S \rightarrow (S)$

The string $(x + y) * x - z * y / (x + x)$ is a well-formed formula (wff) in this grammar, i.e., this grammar can *generate* that string.

Exercise: Prove this statement, i.e, prove that that string is a wff. (or rather, complete the proof that starts as shown below)

Sol.:

1. S [the start symbol]
2. $S-S$ [rule 5]
- 3.