Homework #2
Grammars & Top-Down Parsing

#1. (1/2 point) Remove the left recursion from:

A --> A X | Y
X --> b | c
Y --> d | e

2. (1/2 point) Show that the following grammar is or is not LL(1)

A --> d A

A --> d B

A --> f

B --> g

3. (1/2 point) Show that the following grammar is or is not LL(1).

S --> X d

X --> C

X--> B a

C --> ε

B --> d

4. (1/2 point) Given the grammar:

S --> XX

X -->xX

X --> y

(a) Show that it is LL(1).

(b) Create a parsing table.

(c) Parse the string *xyxxy*.

(d) Draw the parse tree.

#5. (1/2 point) (a) Show that the grammar

E --> E + E | E - E | E * E | E / E | (E) | Id

is ambiguous (produces more than one parse is for a given input).

(b) Show that an ambiguous grammar cannot be LL(1).