Problems 1: Top-down parsing

1. Convert the following grammar to LL(1) form. The start symbol is *E* and the other non-terminal symbols are *S* and *D*.

   1. $E \rightarrow S\ *$
   2. $S \rightarrow S\ D$
   3. $S \rightarrow D$
   4. $D \rightarrow [\ D\ ]$
   5. $D \rightarrow x$

2. For the LL(1) grammar in Q1, compute nullable, FIRST, and FOLLOWS.

3. For the LL(1) grammar in Q1, compute the predictive parsing table.

4. For the LL(1) grammar in Q1, apply the LL(1) parsing algorithm on the string

   *x[x]**

   For each parsing step show the stack, the input, and the output.