Homework #8 Grammar

Problem #1

a) <switch>, <request>, <polite>, <action>, <device>
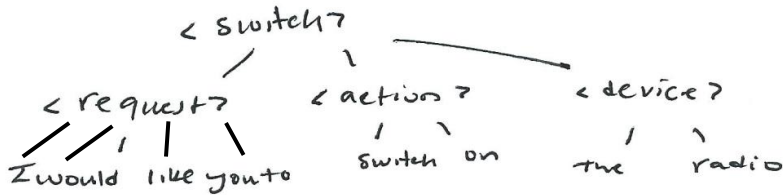
b)

c) <switch> → [<request>] <action> <device>
→Please <action> <device>
→Please turn off <device>
→Please turn off the lights

Problem #2

a) <exp>

b) $(7+3)*2$
$(<digit>+3)*2$
$(<digit>+<digit>)*2$
$(<digit>+<digit>)*<digit>$
$(<number>+<number>)*<number>$
$(<exp>+<exp>)*<exp>$
$(<exp>)*<exp>$
$<exp>*<exp>$
$<exp>$

c)

Problem #3

a) <pop>, <bop>, <boop>

b) x, y, z, , (comma), (,), [,]

c)

<pop>
|
<bop>
|
(<pop>)
/ | \
(<bop>   )
|
<boop>
|
x
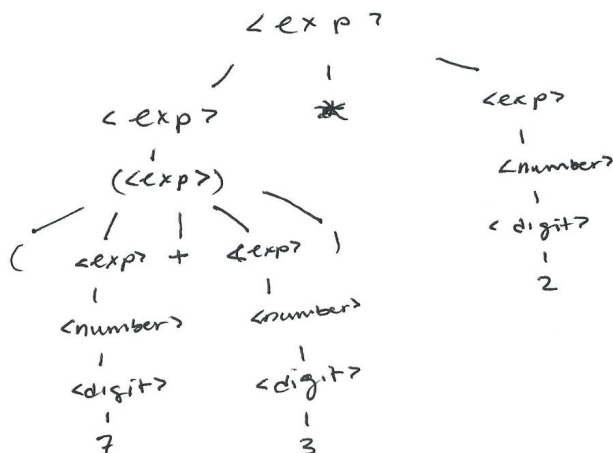
d) Is the following sentence legal (valid) in the language? [(x),[y,x]]
    Yes, based on deriving it using the parse tree below

<pop>
|
[<bop> , <pop>]
/ | | |
[(<pop>)   )   [<bop> , <pop>]
/ | \   / | |
(<boop>   )   [<boop>   )   <bop>]
| | |
x   y   <boop>
                              |
                              x