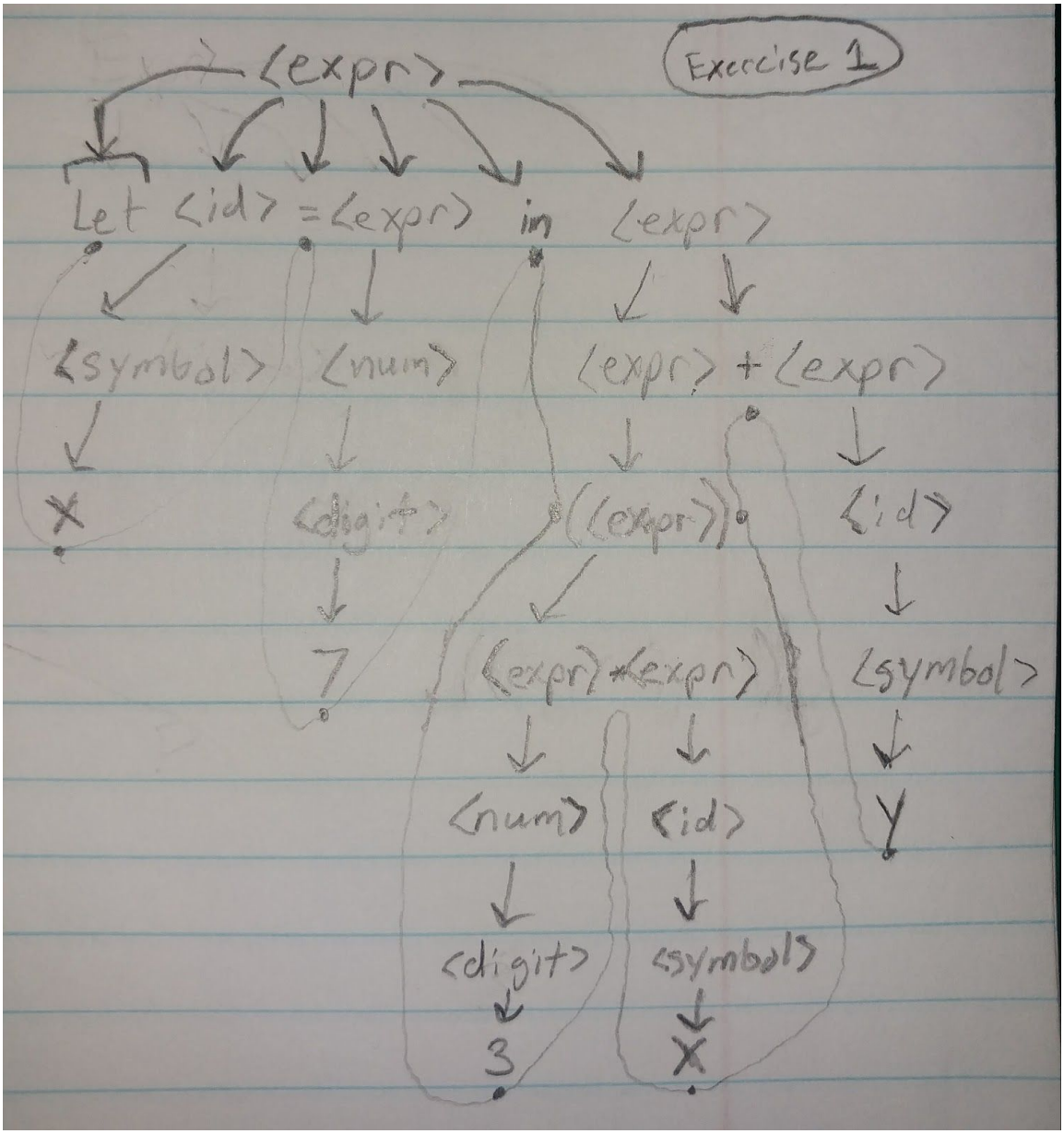
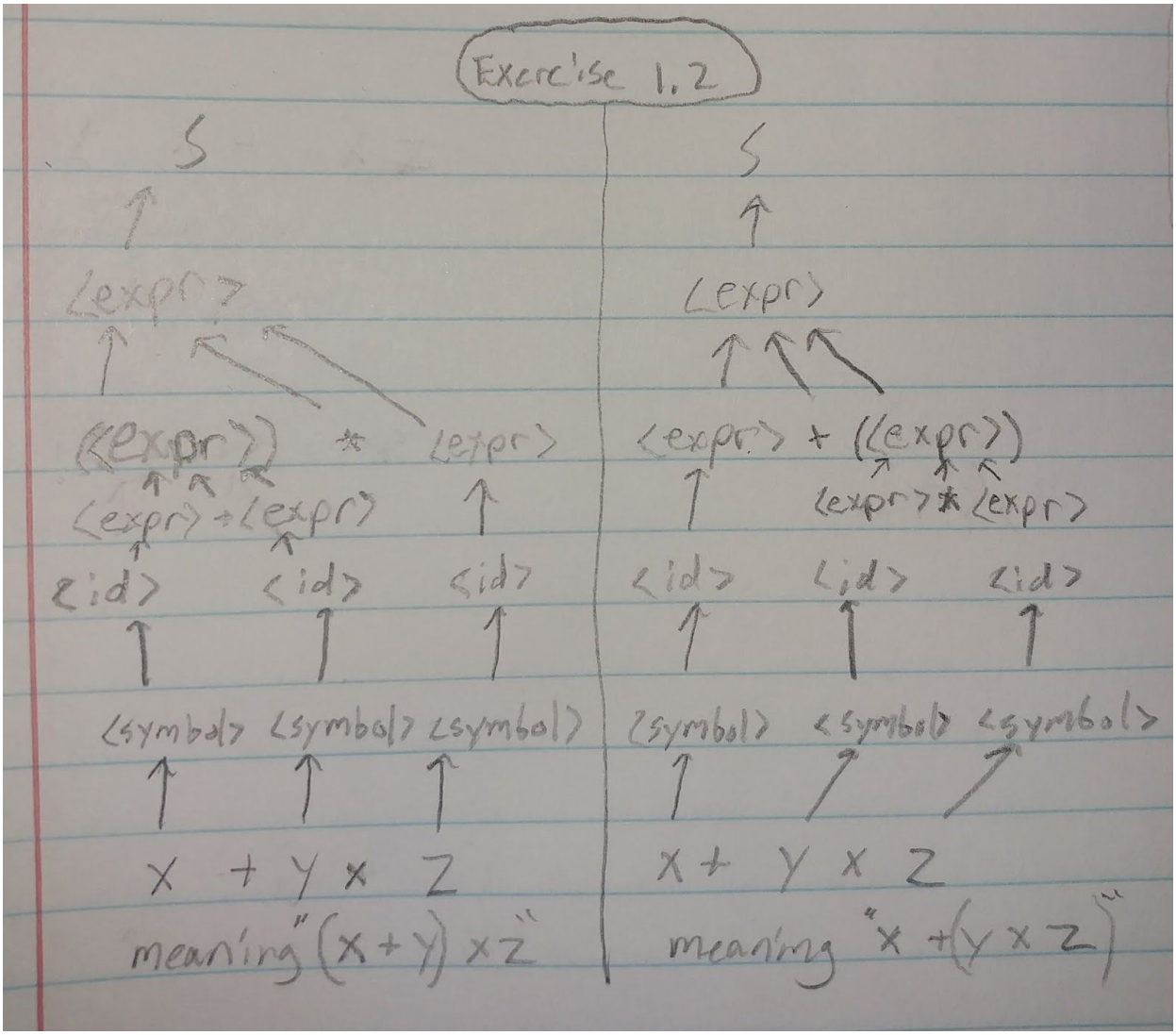
Brandon Horner
Homework Assignment #3 - Syntax
29 Jan 2018

Exercise 1

1. Give a parse tree for let x = 7 in (3 * x) + y.



2. Show that this grammar is ambiguous by finding a string that admits two parse trees.



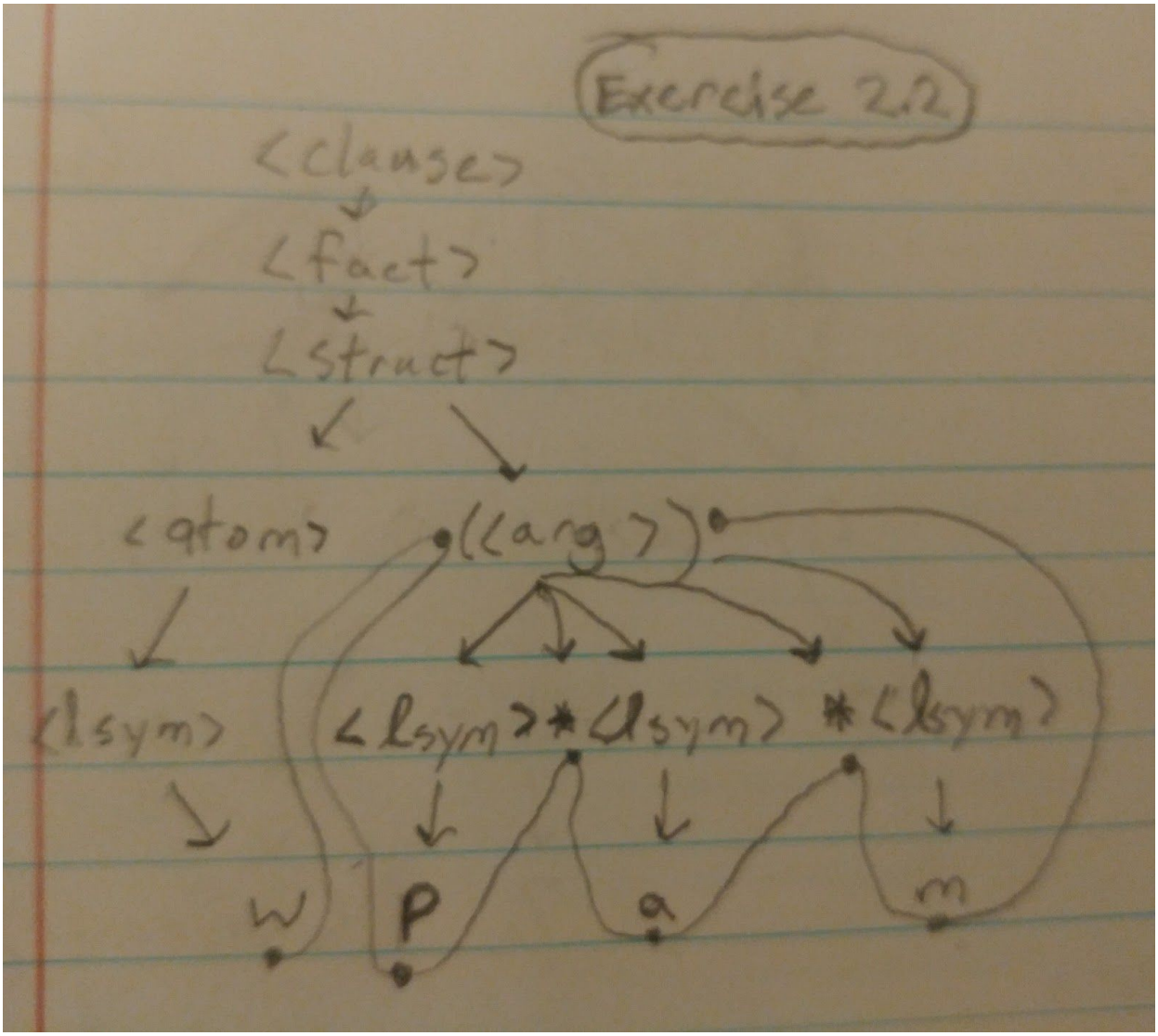
Exercise 2

1. Show that w(pam) can be derived from <*clause*>.

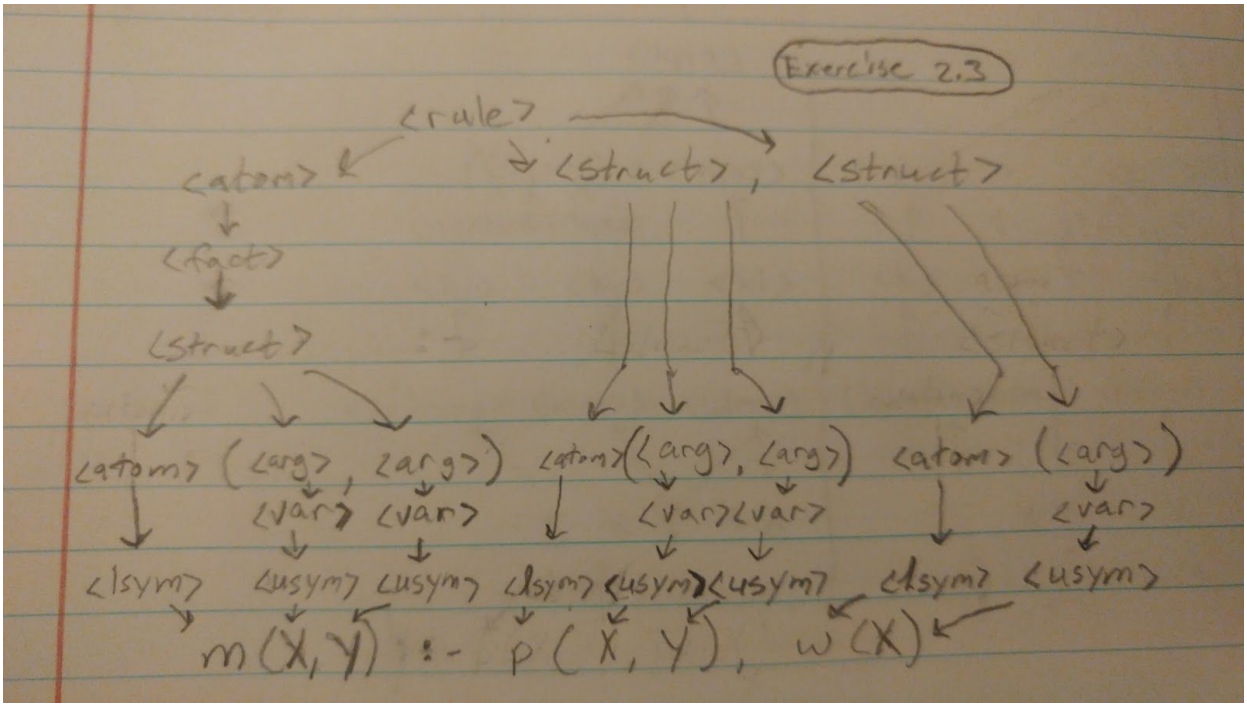
<clause> =><clause>

=><fact>	clause -> fact
=><struct>	fact -> struct
=><atom>(<arg>)	struct -> atom(arg)
=><lsym>(<arg>)	atom -> lsym
=> <lsym>(<lsym><lsym><lsym>)	arg -> lsym {lsym}*
=> w(pam)	4 * lsym -> a|...|z

2. Give a parse tree for w(pam).

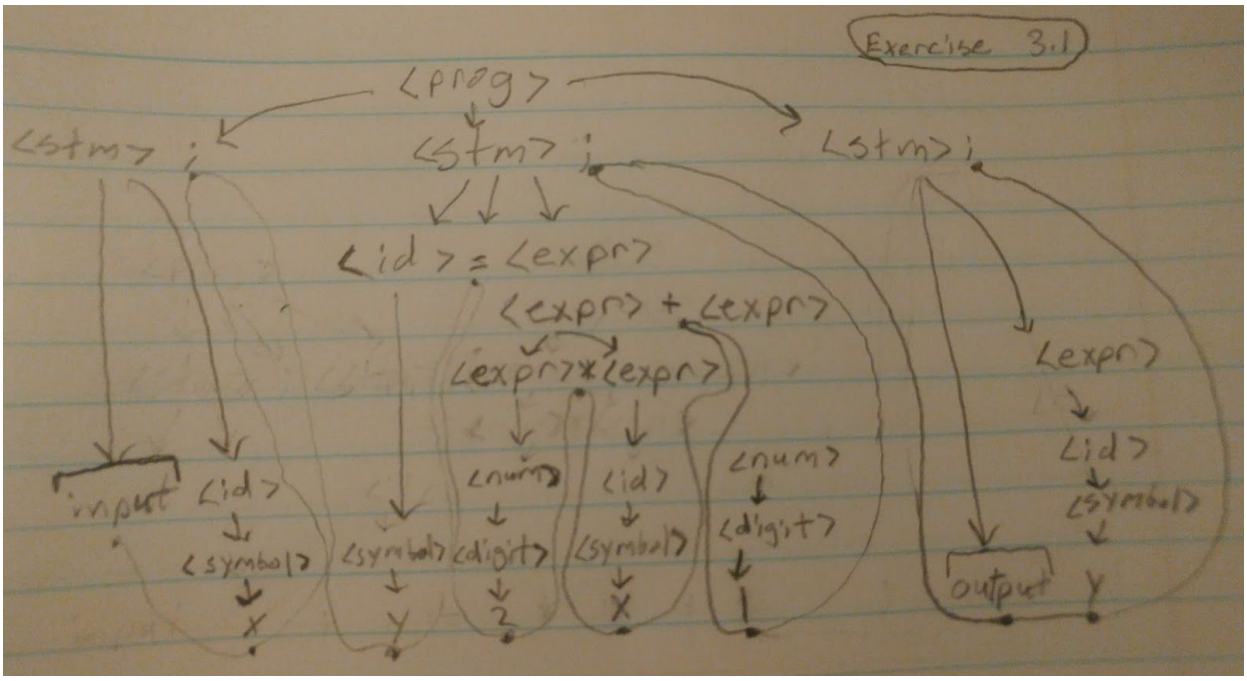

Exercise 2.2
<clause>
<fact>
<struct>
<atom>
(<arg>)
<lsym>
<lsym>*<lsym>*<lsym>
w
p
q
m

3. Give a parse tree for m(X,Y) :-- p(X,Y), w(X).

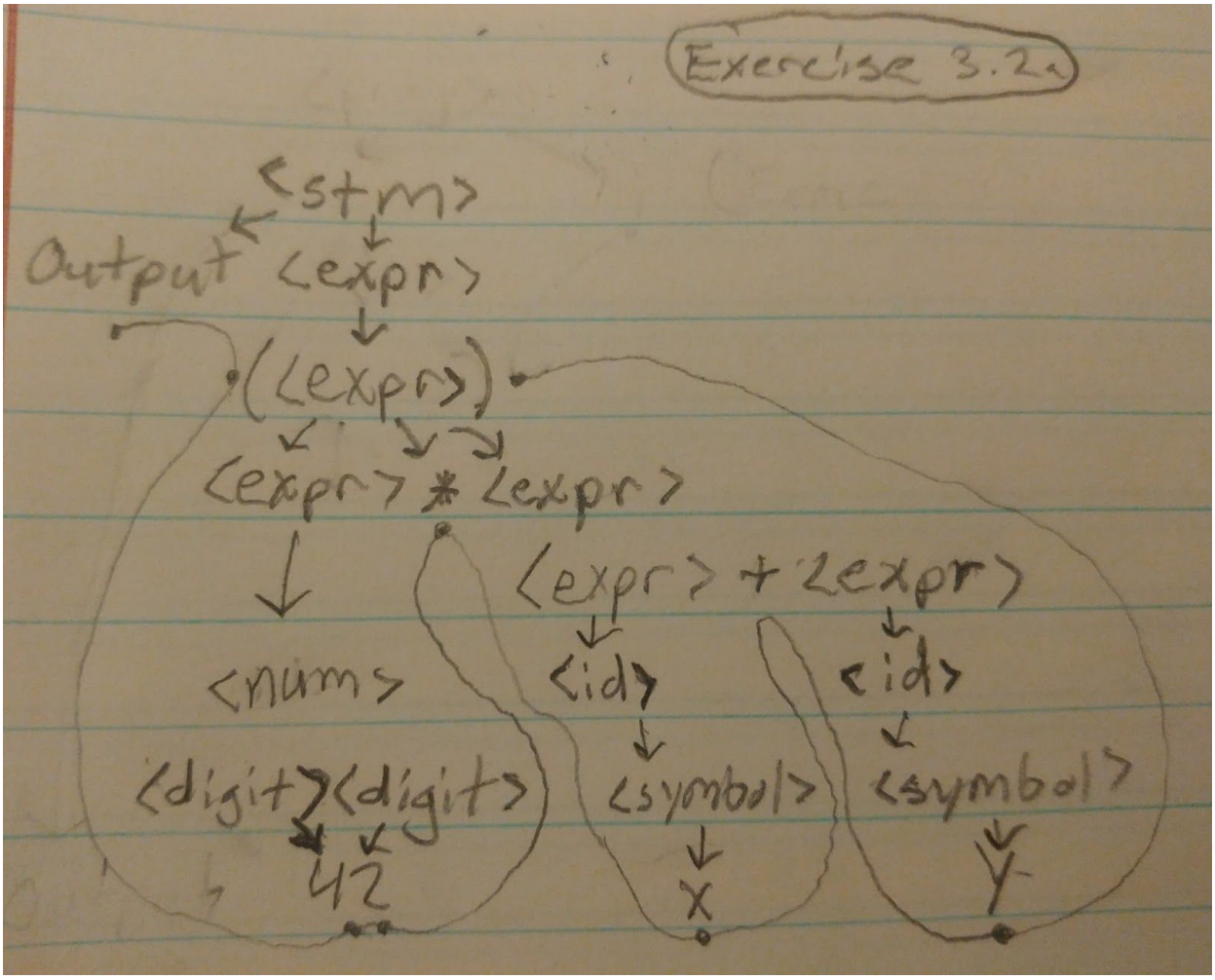


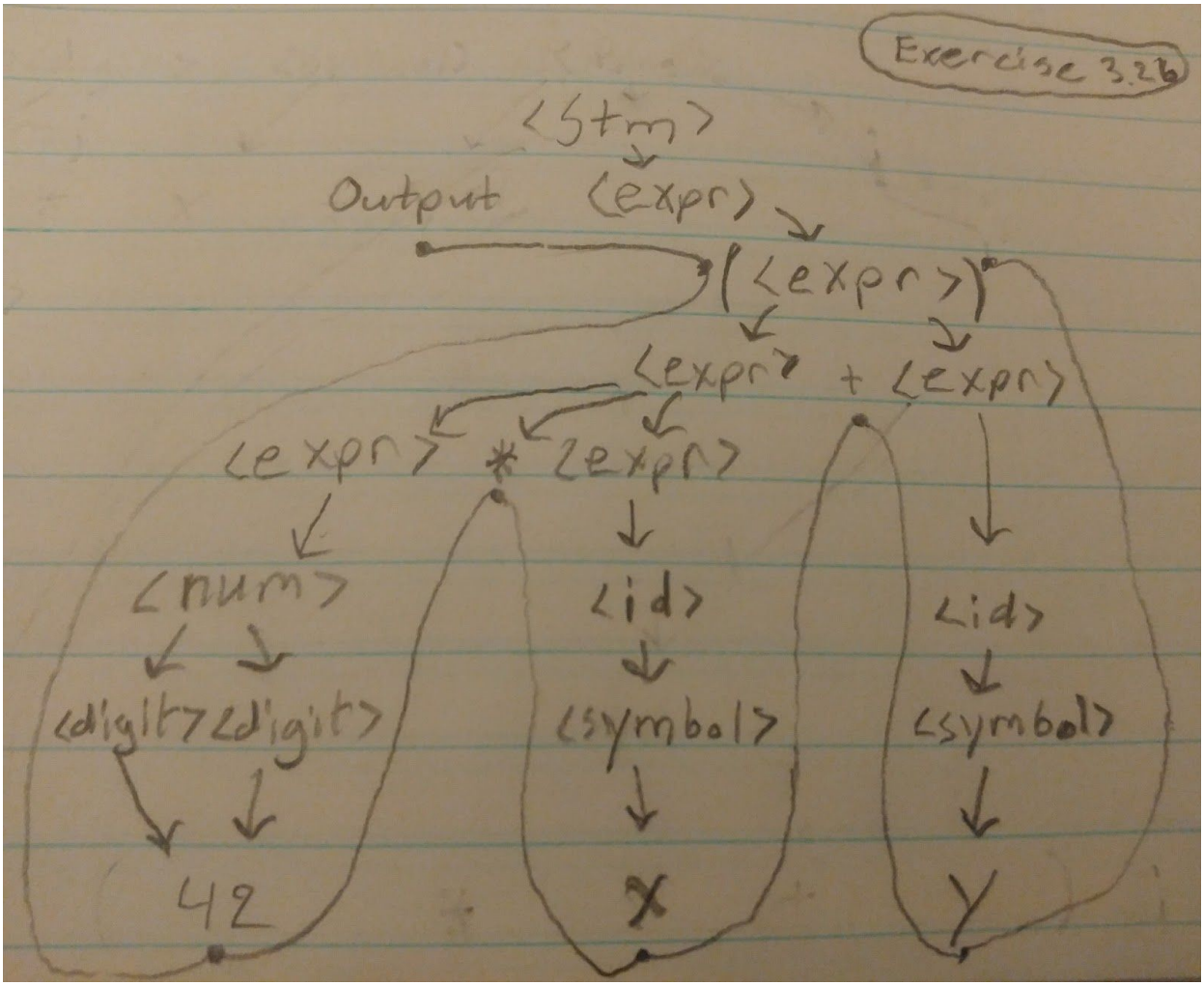
Exercise 3

1. Give a parse tree for the following program: input x; y = 2 + x + 1; output y;



2. Give two parse trees for the following statement: output (42 * x + y)




Exercise 3.2b
<stm>
Output
<expr>
(<expr>)
<expr> + <expr>
<expr> * <expr>
<num>
<id>
<id>
<digit><digit>
<symbol>
<symbol>
42
x
y