**3.3** Given the grammar

*exp → exp addop term* | *term*

*addop → +* | *-*

*term → term mulop factor* | *factor*

*mulop → \**

*factor → ( exp )* |***number***

write down leftmost derivations, parse trees, and abstract syntax trees for the following ecpressions.

a) 3+4\*5-6 b) 3\*(4-5+6) c) 3-(4+5\*6)

**3.4** The following grammar generates all regular expressions over the alphabet of letters ( we have used quotes to surround operators, since the vertical bar is an operator as well as a metasymbol) :

*rexp* *→ rexp “* |*” rexp*

| *rexp rexp*

| *rexp “\*”*

|*”(“ rexp “)”*

| ***letter***

1. Give a derivation for the regular expression **( ab|b)\*** using this grammar
2. Show that this grammar is ambiguous
3. Rewrite this grammar to establish the correct precedence for the operations
4. What associativity does your answer is part( c) give to the binary operators? Why ?