1. **Derivation and Parse Tree:**
   Derive the string using leftmost derivation and draw the parse tree for the following grammar.
   i) **String:** *abbbaaabbaba*
   Grammar:
   S → aB | bA
   A → a | aS | bAA
   B → b | bS | aBB
   ii) **Expression:** *y = cos(x) - sin(z) * log(y)*
   Grammar:
   S → V = E | E
   V → x | y | z
   E → E + T | E - T | T
   T → T * F | T / F | F
   F → (E) | V | fun(V)
   fun → sin | cos | log
2. **Ambiguity Check:**
   Demonstrate that the following grammar is ambiguous:
   S -> I
   I -> E + E | (E) | E * E | I
   E -> a-z | 0-9

   The expression you will check with should have a digit in it.

3. **Regular Expression Matching:**
   Determine which of the following words are accepted by the given simple regular expressions.

   i) *(a+b)a(a+b)(a+b)**
   a) abbabab
   b) baaabba
   c) abbaabb
   d) aabaab

   ii) *(a+b)*bb(a+b)(a+b)*
   a) abababba
   b) babbaabb
   c) ababbbaa
   d) bbbabba
4. **Regular Expression Construction:**
   Construct a regular expression for the following language:
   L = { $a^m b^n$ | m * n is odd }

5. **EBNF to BNF Conversion:**
   Convert the following EBNF to BNF:
   S → A{cA}
   A → a[c]A