1. Are the following statements correct? Prove your answer.
   (a) \(2n^2 + n \log n = \Theta (n^2)\)  
   (b) \(10n^2 + 9n = O(n)\)  
   (c) \(7^n = O(2^n)\)  
   (d) \(n^3 + 10^6n^2 = \Theta (n^3)\)

2. (a) Write the postfix and prefix form of the following expressions
   \(3 + 8 \times 6 - 40 / (9 - 2 \times 2) + 15\)
   (b) Please describe the data structure and algorithm to transfer infix expression into postfix form. You must demonstrate your algorithm step by step for expression in (a).
   (c) Please describe the data structure and algorithm to evaluate postfix expression. You must demonstrate your algorithm step by step for the expression in (a).

3. Please explain the following data structure terminologies
   (a) complete binary tree  
   (b) max heap  
   (c) circular queue  
   (d) dynamic programming

4. Please represent the following graph using (a) adjacent matrix (b) adjacent list.

   ![Figure 1](image)

5. Please draw all the possible binary trees with 4 nodes.