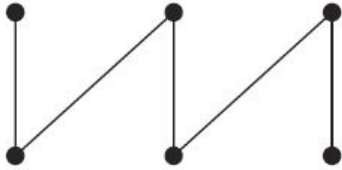


11.1 Introduction to Trees

11.1 pg. 775 # 1

Which of these graphs are trees?

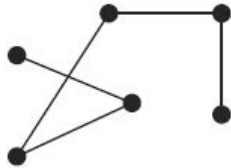
a)



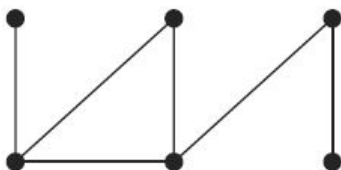
b)



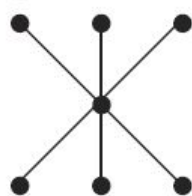
c)



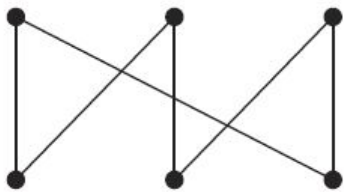
d)



e)

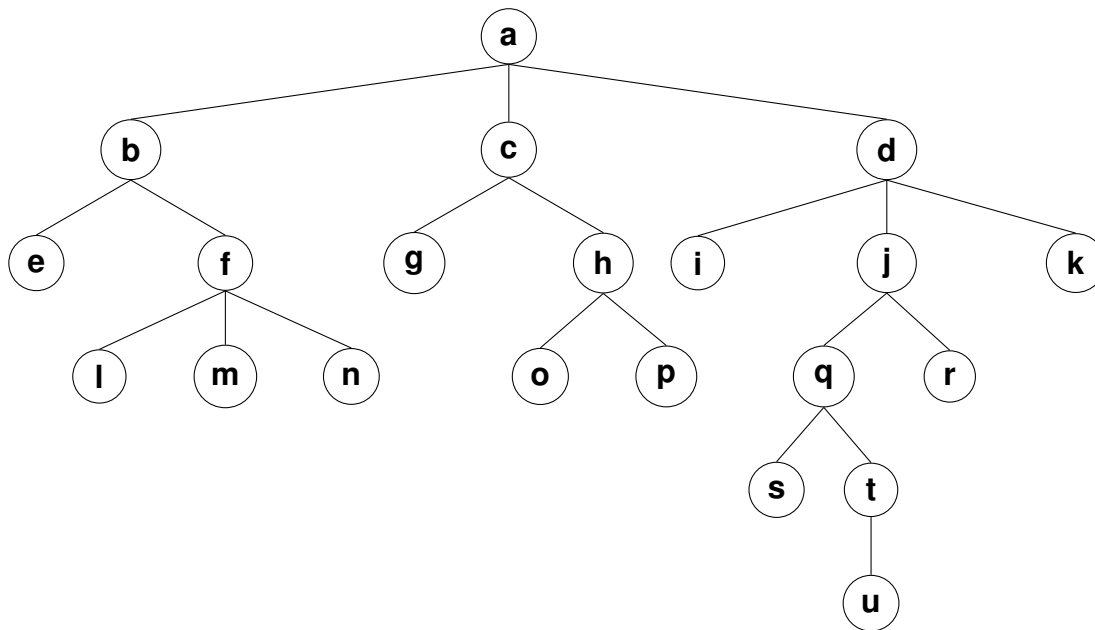


f)



11.1 pg. 775 # 3

Answer these questions about the rooted tree illustrated



- a) Which vertex is a root?
- b) Which vertices are internal?
- c) Which vertices are leaves?
- d) Which vertices are children of j ?
- e) Which vertex is the the parent of h ?
- f) Which vertices are siblings of o ?
- g) Which vertices are ancestors of m ?
- h) Which vertices are descendants of b ?

11.1 pg. 755 # 5

Is the rooted tree in Exercise 3 a full m -ary tree for some positive integer m ?

11.1 pg. 755 # 9

Draw the subtree of the tree in Exercise 3 that is rooted at

- a) a .
- b) c .
- c) e .

11.1 pg. 756 # 17

How many edges does a tree with 10000 vertices have?

11.1 pg. 756 # 19

How many edges does a full binary tree with 1000 internal vertices have?

11.1 pg. 756 # 21

Suppose 1000 people enter a chess tournament. Use a rooted tree model of the tournament to determine how many games must be played to determine a champion, if a player is eliminated after one loss and games are played until only one entrant has not lost. (Assume there are no ties.)