Homework 8 Davin Lott

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1 Answers

6.1.1
a. Total degree: 14
b. Neighbors of vertex 5: 1,2,3,4,6
c. Degree of vertex 6: 1
d. Vertices adjacent vertex 3: 2,5
e. No, this is not a regular graph. Vertex 5 has degree 5 while vertex 6 has degree 1. Since those two don't have the same degree, this graph can't be regular
f. Yes. Vertices 2,3,5 make a K_3 graph
g. No

6.1.4
a. There are 12 edges. $K_{3,4}$ is not a regular graph
b. There are 20 edges in a K_5 graph. It is regular
c. 3 is the biggest n such that $K_n = C_n$
d. Yes, they are regular graphs.The total degrees would be n $*$ the number of vertices. Each individual degree would just be n.

6.2.1

a.

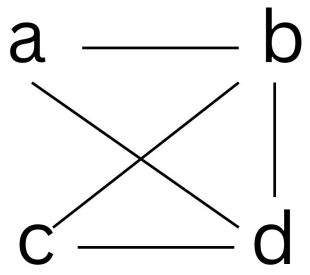

Figure 1: 6.2.1(a)

b.

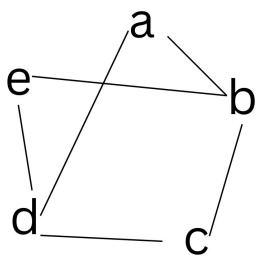

Figure 2: 6.2.1(b)

c.

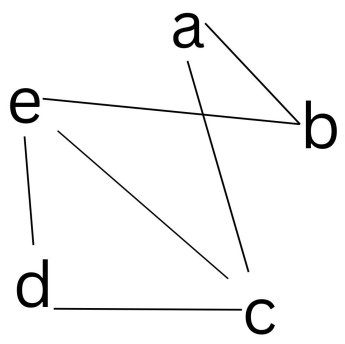

Figure 3: 6.2.1(c)

6.3.1
I didn't know how they wanted this "proved," and it doesn't show how to do this in the book, but I figured out which nodes equal each other in the two different graphs. 1 = c, 2 = f, 3 = b, 4 = e, 5 = a, 6 = d. These are the edges that are equal to each other. (1,2) = (c,f), (1,5) = (c,a), (2,5) = (f,a), (2,3) = (f,b), (3,6) = (b,d), (3,5) = (b,a), (4,5) = (e,a), (2,4) = (f,e), (5,6) = (a,d). This is my version of the adjacency list that is show in the chapter, which shows the different edges, without worrying about which way it is going.

6.4.2(a,b)
a. Max path length = 9. C, I, F, D, A, B, H, G, E
b. Max cycle length = 10. C, I, F, D, A, B, H, G, E, C

6.5.2(b)
Edge connectivity: 3
Vertex connectivity: 1

7.1.1(a,b,c,h)
a. m,h,l,p
b. f,g,e,d,a,b,c
c. q,j,n,a,b,c,e,g,k
h. l,k

7.2.1(a)

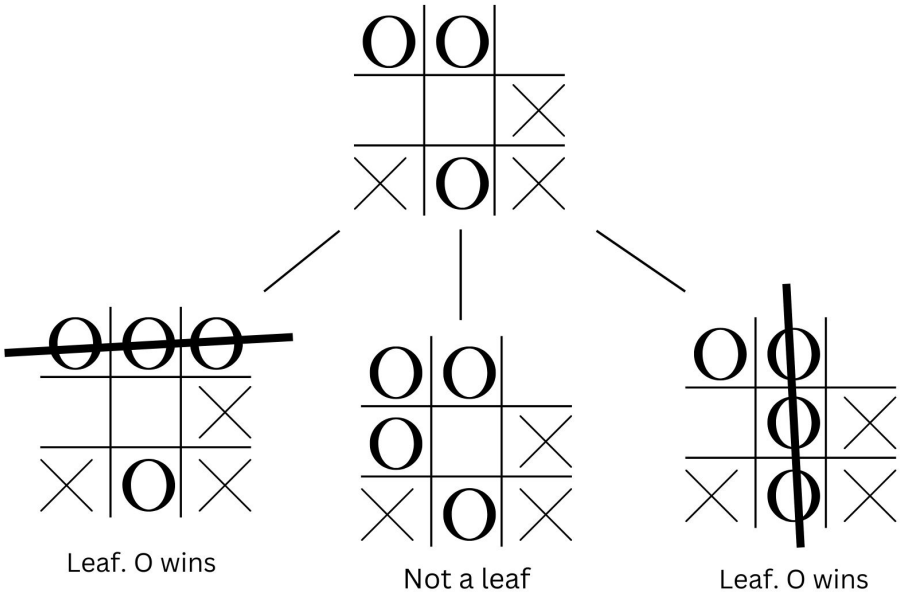

Figure 4: 7.2.1(a) diagram

7.2.2(c)
Answer: "den."

7.3.2(b)

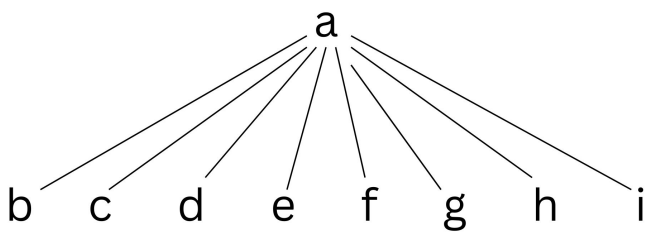

Figure 5: 7.3.2(b)

7.4.1
a. Post-order: f,i,h,e,b,g,c,a,d
b. Pre-order: d,f,b,i,h,e,a,c,g

7.5.1

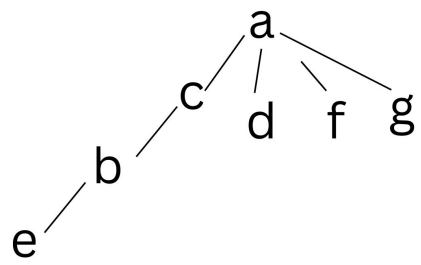

Figure 6: 7.5.1 BFS

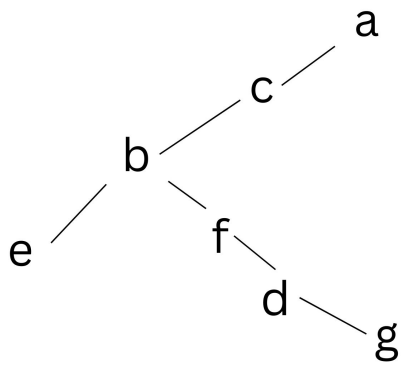

Figure 7: 7.5.1 DFS