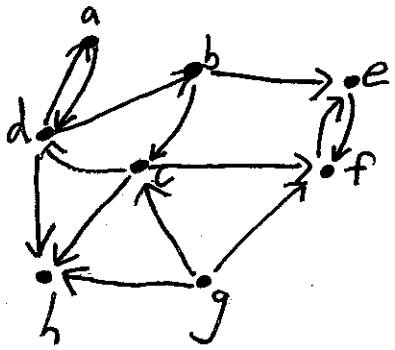
Name: Key

Math 55 Quiz 11
August 12, 2009
GSI: Rob Bayer

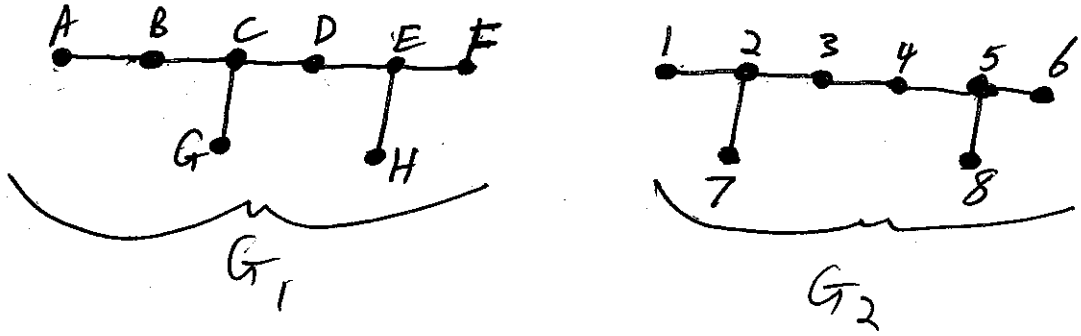
You have until 4:00 to complete this quiz. You must show your work.

1. (3 pts) Is the following directed graph strongly connected? If so, explain why. If not, find the strongly connected components.



SCC: {a, b, c, d}
{e, f}
{g}
{h}

2. (3 pts) Find an isomorphism between the following two graphs, or show that no isomorphism can exist:

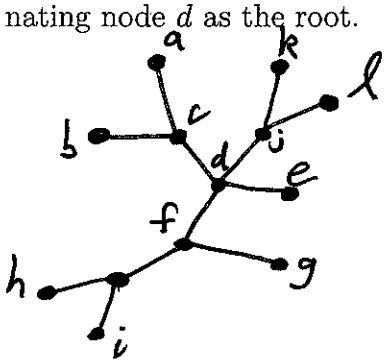


G_1 G_2

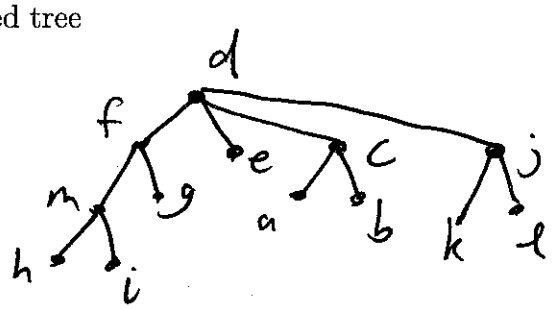
$G_1 \not\cong G_2$ b/c G_1 has a vertex adjacent to 2 degree-3 vertices, but G_2 does not.

(over)

3. Consider the tree pictured below and suppose we want to make this a rooted tree by designating node d as the root.



(a) Draw this rooted tree



(b) What is the height of this rooted tree?

3

(c) Find an m such that this is a full m-ary tree, or show that no such m can exist

No. d has 4 children, but c has 2.

(d) What are the child(ren) and parent(s) of the node f?

g, m d