How might we define graphs recursively?

Base case • one node is a graph

R1 – Two graphs connected by an arc joining a node from each is a graph.

R2 – Two graphs given by

(N_1, A_1, g_1)

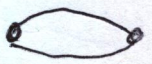
and

(N_2, A_2, g_2)

can be "joined" into

$(N_1 \cup N_2, A_1 \cup A_2, g_1 \cup g_2)$

How can I get R3's graph?



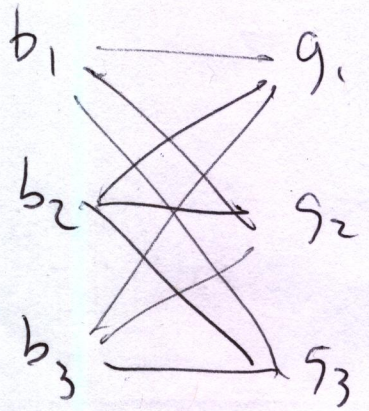
R3 - A graph generated by generating an arc between any two nodes of the graph is a graph.

K_n "complete"

$\frac{(n-1)n}{2}$ edges

K_4: 

$K_{3,3}$ "bipartite complete"



"houses + utilities" graph

$K_{m,n}$

$m \cdot n$ edges

Completing the isomorphism of Example 11, p. 412

$$a_4 \to t_3$$
$$a_5 \to t_8$$
$$a_6 \to t_7$$
$$a_7 \to t_4$$
$$a_8 \to t_5$$

(the soln is not unique!)