MCS-236 Homework 9

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If two or more graphs belong to an isomorphism class, you can show a correspondence between their vertices using a table with one column per graph. In each row of the table you show a vertex from the first graph together with the corresponding vertices in the other graphs. For example, the isomorphisms illustrated in the textbook's Figures 3.2 and 3.3 on pages 55 and 56 can be shown using the following table:

H_1	H_2	H_3
u_1	u_2	u_3
v_1	w_2	v_3
w_1	y_2	x_3
x_1	v_2	w_3
y_1	x_2	y_3

There are six graph drawings on the next page, each of which has the degree sequence 3, 3, 2, 2, 1, 1. You are to do the following tasks:

1. Partition the set of graphs $\{A, B, C, D, E, F\}$ into isomorphism classes.

2. For each isomorphism class that contains more than one graph, give a table showing corresponding vertices.

3. For each isomorphism class, state one property that all the graphs in that class share and none of the graphs in the other classes do.

4. Draw another graph with the same degree sequence that is not isomorphic to any of the given graphs.

$A:$

a_2 a_1

a_3 a_0

a_4 a_5

$B:$

b_2 b_1

b_3 b_0

b_4 b_5

$C:$

c_2 c_1

c_3 c_0

c_4 c_5

$D:$

d_2 d_1

d_3 d_0

d_4 d_5

$E:$

e_2 e_1

e_3 e_0

e_4 e_5

$F:$