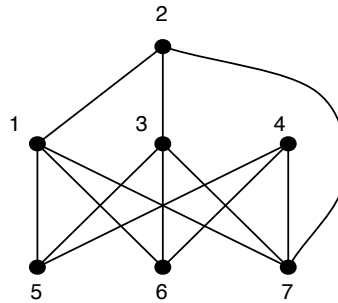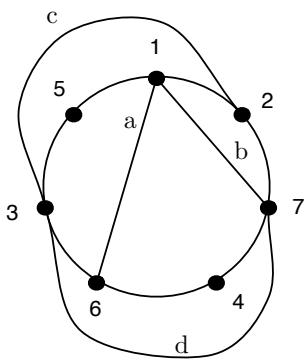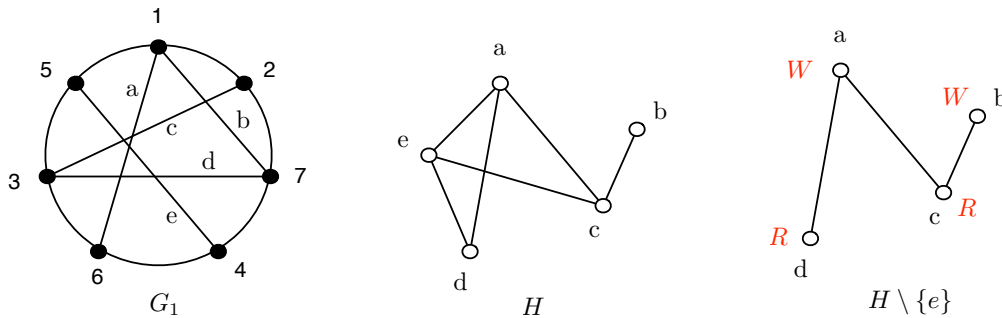► **Problem 13.3-12 (c)**
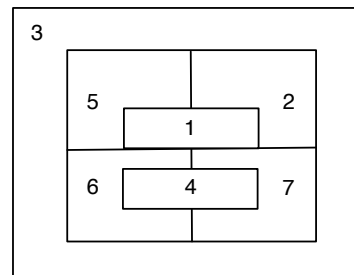
For the following relationship graph G, find a best possible feasible relationship graph and draw the corresponding floor plan.

Solution. The graph G_1 shown below is isomorphic to G and it contains a Hamiltonian cycle 12746351. From G_1, we can see that the set of chords is $\{a, b, c, d, e\}$. Let H be the intersection graph with respect to $\{a, b, c, d, e\}$. Clearly, H is not 2-colorable since it contains a triangle. If e is removed, we get the graph $H \setminus \{e\}$. Thus, the graph $G_1 \setminus \{e\}$ can be drawn as a plane graph and the desired plane layout is obtained.

G_1

H

$H \setminus \{e\}$

$G_1 \setminus \{e\}$ drawn as a plane graph

A plane layout

□

1