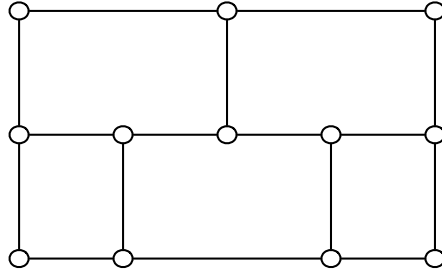
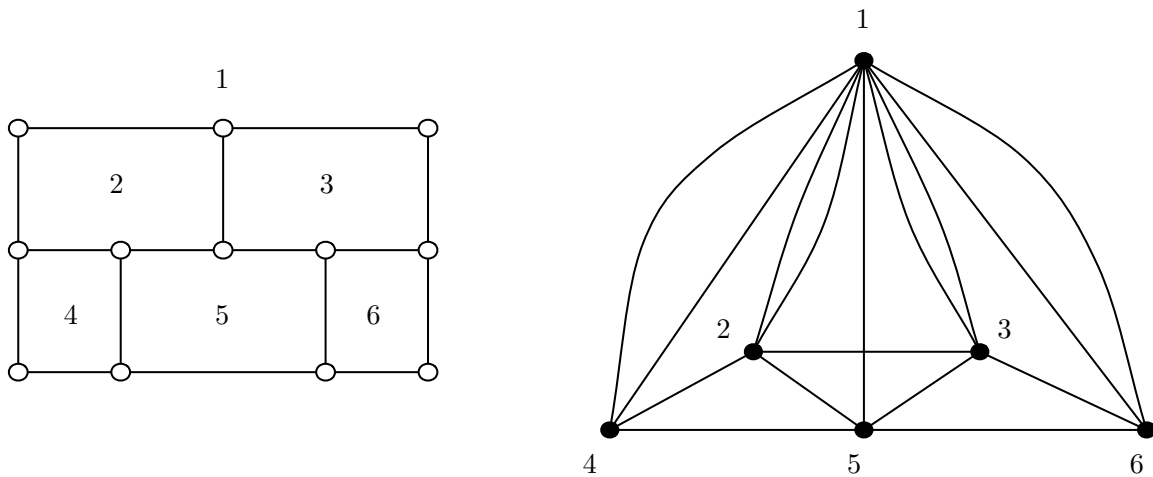


► **Problem 10.1-14 [Glenys's Room Problem]**

Does there exist any sort of route in and around the figure that crosses every edge exactly once? Explain your answer.



**Solution.** We label the six regions determined by this figure as follows. Then, we draw a pseudograph whose vertices correspond to these regions and where each edge signifies the crossing of an edge in the given figure in a route which passes between the corresponding regions.



Now, we can see that the specified route exists if and only if the pseudograph has an Eulerian circuit or trail. Since the pseudograph contains odd vertices, there is no Eulerian circuit. Moreover, since it contains more than two odd vertices, there is no Eulerian trail either. Thus, no route of the desired sort exists. □