9.13)

A hitting set is a set where each subset of a collection contains at least one element from the collection. This problem can be reduced from the vertex cover problem, where a graph with a set of vertices and edges with an integer k must be coverable by the edges. For example, if a graph contains 3 vertices and 2 edges, then the cover for the graph is the two edges. To solve this, the collection will be all of the connectors (the edges) and the subsets of each will be the elements (the vertices). In order for this problem to be NP-complete, it must be solved similar to the cover problem. In order to solve it, each subset S must contain at least one element (one vertex) that is present in the collection (attached to an edge in the graph). If every subset satisfies this constraint, then the graph is covered, the hitting set is true and the problem is NP-complete.