1. Consider the network shown below. Enumerate all the paths from A to F that do not contain any loops. For each path you list give the cost of the path.

![Network Diagram](image)

2. Consider the network fragment shown below. Switch X has only two attached neighbors, W and Y. W has a minimum-cost path to destination A (not shown) of 5, and Y has a minimum-cost path to A of 6. The complete paths from W and Y to A (and between W and Y) are not shown. All link costs in the network have strictly positive integer values.

![Network Fragment](image)

a) Give X’s distance table (row) entries for destinations W, Y, and A.
b) Give a link-cost change for either \( c(X,W) \) or \( c(X,Y) \) such that \( X \) will inform its neighbors of a new minimum-cost path to \( A \) as a result of executing the distance vector algorithm in the text.

c) Give a link-cost change for either \( c(X,W) \) or \( c(X,Y) \) such that \( X \) will not inform its neighbors of a new minimum-cost path to \( A \) as a result of executing the distance vector algorithm.

3. Compute the distance tables for \( X \), \( Y \), and \( Z \) shown in the rightmost column of the table below. After computation of the new distance tables, which nodes will send which updated values to which neighbors?

4. Consider a router that interconnects three subnets: Subnet 1, Subnet 2, and Subnet 3. Suppose all of the interfaces in each of these three subnets are required to have the prefix 223.1.17/24. Also suppose that Subnet 1 is required to support up to 125 interfaces, and Subnets 2 and 3 are each required to support up to 60 interfaces. Provide three network addresses (of the form a.b.c.d/x) for these subnets that satisfy these constraints.