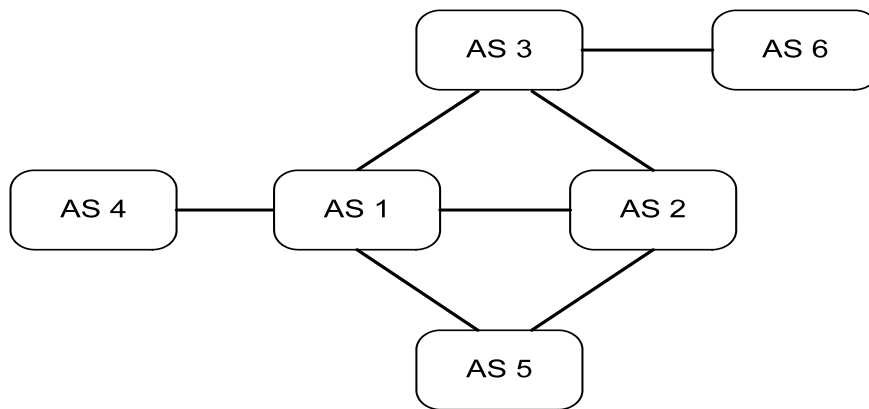# Assignment 5: Routing

Problem 1. Policy Based Routing in BGP
The figure shows a network with six autonomous systems. AS4 "owns" the prefix 10.0.1.0/24 and sends an advertisement to AS1 with the following prefix, and ORIGIN and AS-PATH attributes:
10.0.1.0/24, ORIGIN{AS4}, AS-PATH{AS4}.

a. Assume that no routing policies are employed (i.e., no advertised routes are selectively ignored and all known routes are advertised). Explain how the other autonomous systems process and disseminate the advertisement for prefix 10.0.1.0/24. Indicate which autonomous systems advertise the prefix to their neighboring autonomous systems. Provide the ORIGIN and AS-PATH attributes used in the advertisements.

b. Now consider that autonomous systems AS1, AS2, and AS3 are transit networks, and AS4, AS5, and AS6 are stub networks. For each autonomous system, explain how the processing and advertisement for prefix 10.0.1.0/24 should be changed (compared with your answer to (a)).

Consider the network shown in the figure below. The cost of each link is indicated in Figure 1.

Problem 2. Use the Dijkstra algorithm to find the least-cost path between node "1" and all other nodes.

Problem 3. Use the Distance Vector algorithm to find the least-cost paths between all nodes. (Assume that the nodes are destinations).

Figure 1