Homework 3. March 29, 2021

1. Consider the network of Fig. 5-12(a). Distance vector routing is used, and the following vectors have just come in to router *C*: from *B*: (5, 0, 8, 12, 6, 2); from *D*: (16, 12, 6, 0, 9, 10); and from *E*: (7, 6, 3, 9, 0, 4). The cost of the links from *C* to *B*, *D*, and *E* are 6, 3, 5, respectively. What is the *C*'s new routing table? Give both the outgoing line to use and the cost.
2. For hierarchical routing with 4800 routers, what region and cluster sizes should be chosen to minimize the size of the routing table for a three-layer hierarchy?
3. Looking at the subnet of Fig. 5-6, how many packets are generated by a broadcast from B, using

   (a) reverse path forwarding?

   (b) the sink tree?

4. Consider the network of Fig. 5-15(a). Imagine that one new line is added between *F* and *G*, but the sink tree of Fig. 5-15(b) remains unchanged. What changes occur to Fig. 5-15(c)?
5. Suppose that node B in Fig. 5-20 has just rebooted and has no routing information in its table. It suddenly needs a route to H. It sends out broadcasts with TTL set to 1, 2, 3, and so on. How many rounds does it take to find a route?