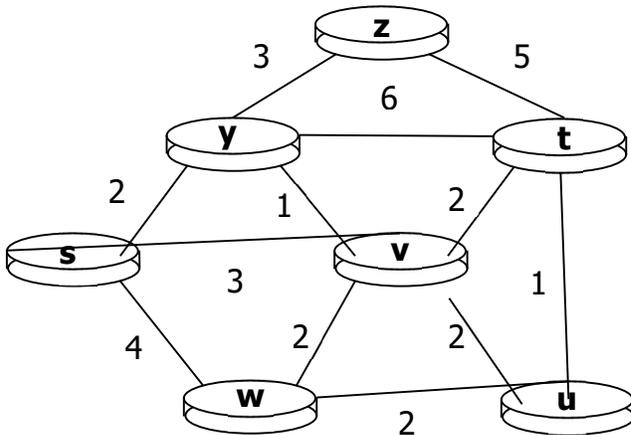# HW 3

Due: 2/23/2026

Problem 1 (15 points): Consider the following network. With the indicated link costs, use Dijkstra's shortest-path algorithm to compute the shortest path from *s* to all network nodes. Show how the algorithm works by computing a table similar to our lecture slide.

Problem 2 (15 pts): Consider the network shown below, and assume that each node initially only knows the costs to each of its neighbors. Consider the distance-vector algorithm and show how the distance table entries at node *z* evolve.
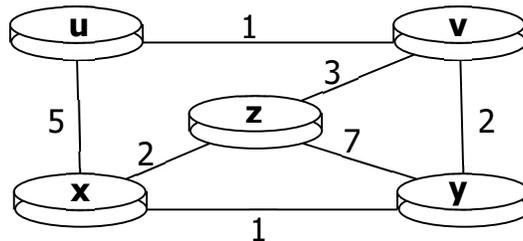
Problem 3 (15 pts) Consider that a TCP sender, Host A, wants to send a 10,000,000-bit MP3 file to Host B. The slowest link between Host A and Host B is 2 Mbps, the RTT (including transmission delays) is 100 ms, and the TCP MSS is 11,680 bits. The operating system of Host B sets a default receiver window of 16 segments and ssthresh to 16 segments. What is the network utilization in the first round trip time? What is the TCP/Reno throughput in the 5th round-trip time when the sender detects a packet loss using 3 duplicate ACKs during the 4th RTT?

Problem 4 (55 pts) Wireshark http://www.cs.utexas.edu/~lili/classes/S26-CS356R/HW/Wireshark_TCP_v6.0.pdf