

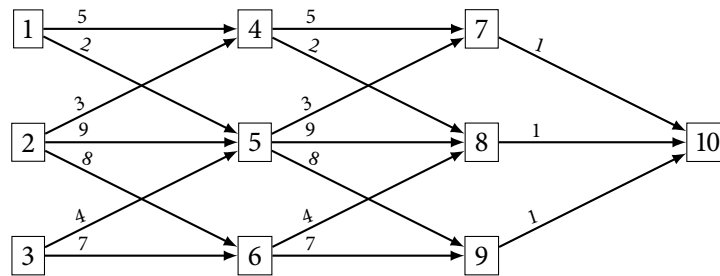
Quiz 7 – 3/24/2022

Instructions. You have 15 minutes to complete this quiz. You may not use any other materials (e.g., notes, homework, website).

Show all your work. To receive full credit, your solutions must be completely correct, sufficiently justified, and easy to follow.

| Problem | Weight | Score |
|---------|--------|-------|
| 1a | 1 | |
| 1b | 1 | |
| 1c | 1 | |
| 1d | 1 | |
| Total | | / 40 |

Problem 1. Consider the following directed graph. The edge labels correspond to edge lengths.



Let $f(i)$ be the length of a shortest path from node i to node 10 in the directed graph above.

Using the principle of optimality and recursion, we can solve for the values of $f(i)$. Fill in the blanks below.

a. $f(10) =$

b. $f(9) = \min \left\{ \text{[]} + f(\text{[]}) \right\} =$

$f(8) = 1$

$f(7) = 1$

$f(6) = 5$

c. $f(5) = \min \left\{ \text{[]} + f(\text{[]}), \text{[]} + f(\text{[]}), \text{[]} + f(\text{[]}) \right\} =$

$f(4) = 3$

$f(3) = 8$

$f(2) = 6$

d. $f(1) = \min \left\{ \text{[]} + f(\text{[]}), \text{[]} + f(\text{[]}) \right\} =$