National Taiwan Normal University
Department of Computer Science and Information Engineering

CSC0056 - Data Communication

Homework 5

(Due on 12/13/2019, 11:59 PM. Submit your answer via Moodle)

1. (100 points) Consider the following OD pair with two paths, each having capacity 3 and 5, respectively. Given the input flow $r = 3$ and the cost function D(x), answer the following two questions:
   2a. (50 points) Explain why $(x_1, x_2) = (0, 3)$ is not an optimal routing.
   2b. (50 points) Compute the optimal routing (x_1, x_2).
   Hint: You may use the reasoning in Example 5.7 as well as that in my illustration in the lecture note.

$$D(x) = D_1(x_1) + D_2(x_2)$$
$$D_1(x_1) = (c_1 - x_1)^{-1}$$
$$D_2(x_2) = (c_2 - x_2)^{-1}$$