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**Lecture**

Lecture questions due Oct 04, 2016 at 19:30 IST

**Recitation****Problem Set 4**

Homework 4 due Oct 04, 2016 at 19:30 IST



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## Facility Location 1 Exercise

(1/1 point)

Suppose that students are not required to dine, and let  $v_s$  be the number of such students. If a student at location  $s$  chooses not to dine, then the disutility for that student is  $g_s$ . How would the model change if this possibility were permitted? Select one objective and two constraints.

☒ New objective:  $\sum_{d \in D} f_d y_d + \sum_{s \in S} \sum_{d \in D} c_{sd} x_{sd} + \sum_{s \in S} g_s v_s$  ✓

☐ New objective:  $\sum_{d \in D} f_d y_d + \sum_{s \in S} \sum_{d \in D} c_{sd} x_{sd} - \sum_{s \in S} g_s v_s$ 
☒ New constraint:  $\sum_{d \in D} x_{sd} + v_s = n_s$  for  $s \in S$  ✓

☐ New constraint:  $\sum_{d \in D} x_{sd} + v_s \leq n_s$  for  $s \in S$ 
☐ New constraint:  $\sum_{d \in D} x_{sd} + v_s = n_s$  for  $d \in D$ 
☐ New constraint:  $v_s \geq 0$  for  $d \in D$

✓ New constraint:  $v_s \geq 0$  for  $s \in S$  ✓



## EXPLANATION

### Solution

The correct answer is:

- New objective:  $\sum_{d \in D} f_d y_d + \sum_{s \in S} \sum_{d \in D} c_{sd} x_{sd} + \sum_{s \in S} g_s v_s$ . We are minimizing, and so we should add the disutility.
- New constraint:  $\sum_{d \in D} x_{sd} + v_s = n_s$  for  $s \in S$ . For each location  $s \in S$ ,  $v_s$  is equal to the number of students at location  $s$  who do not dine at one of the facilities.
- New constraint:  $v_s \geq 0$  for  $s \in S$ .

*You have used 2 of 2 submissions*

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