Quiz 6

Due Feb 23 at 11:59pm

Points 8

Questions 8

Available Feb 16 at 11:59pm - Feb 24 at 11:59pm 8 days

Time Limit 16 Minutes

Allowed Attempts 2

Take the Quiz Again

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	16 minutes	8 out of 8

(!) Answers will be shown after your last attempt

Score for this attempt: **8** out of 8 Submitted Feb 21 at 5:11pm This attempt took 16 minutes.

Question 2

1 / 1 pts

Which point maximizes the objective function:

$$max x + 5y$$

subject to the constraints

$$x + 2y \le 10$$

$$x, y >= 0$$

- (0,5)
- (2,4)
- (3,0)
- (1,3)
- (2,6)

Question 3

1 / 1 pts

The Acme Company produces four types of widgets: A, B, C and D. The profit per widget and the resource usage of each type of widget is given in the table below:

Widget Type	A	В	С	D
profit (\$)	10	15	7	8
Labor (hrs)	2	1	3	1.5
Material	3	2.5	6	5
(lbs)				

Water	10	12	0	0
(gallons)	10	12	О	9

There are 100 hours of labor, 500 lbs of material and 1000 gallons of water available. If the goal is to maximize the total profit then the objective function is: (the variables A, B, C & D are the number of widgets of each type produced)

- min 10A + 12B + 8C + 9D
- min 10A + 15B + 7C + 8D
- max 10A + 15B + 7C + 8D
- max A + B + C + D

Question 4 1 / 1 pts

The Acme Company produces four types of widgets: A, B, C and D. The profit per widget and the resource usage of each type of widget is given in the table below:

Widget Type	A	В	С	D
profit (\$)	10	15	7	8
Labor (hrs)	2	1	3	1.5
Material (lbs)	3	2.5	6	5
Water (gallons)	10	12	8	9

There are 100 hours of labor, 500 lbs of material and 1000 gallons of water available. The constraint associated with labor is:

2A + B + 3C + 1.5D <= 500
 A + B + C + D <= 100
 2A + B + 3C + 1.5D <= 100

Question 5

The solutions to a linear programming problem will always be integers?

True

False

Question 6 1 / 1 pts

Consider the following linear programming problem:

$$\max x + y + z$$

subject to

$$2x + 3y + z > 100$$

$$z, y >= 0$$

select the following that best describes it's solution(s).

- Infeasible
- One optimal solution
- Two optimal solutions

Question 7 1 / 1 pts

Consider the single-pair shortest path problem in a weighted directed graph G=(V, E) from a vertex \mathbf{s} to \mathbf{t} , where \mathbf{s} denotes the source vertex and \mathbf{t} represents the target/sink vertex. Let d_v denote the distance of any vertex v from the source vertex \mathbf{s} . Moreover, let w(u,v) represent the weight of the edge (u,v). For each vertex $z \neq \mathbf{s}$, consider the set Distances_z, where

Distances_z = { $d_{(u,z)}$ | where $d_{(u,z)}$ = d_u + w(u,z) for each edge (u,z) in E }

To solve the single-pair shortest path problem using linear programming, we create the following linear program:

maximize d_t

subject to

 d_v - d_u <= w(u,v) for each edge (u,v) in E

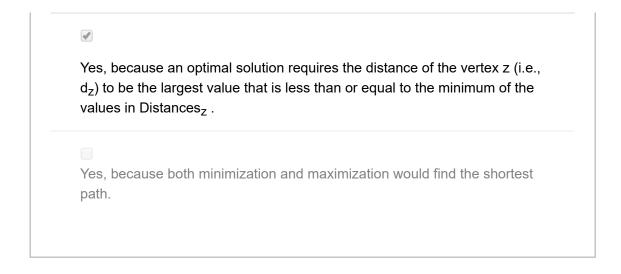
 $d_s = 0$

Is it ok that we maximize d_t ? Why?

Select all that applies.

Yes, because minimizing it would result in an optimal solution where the distances of all vertices would be zero.

No. We should formulate it as a minimization linear program.



Question 8	1 / 1 pts
Consider the following linear programming problem:	
max x+ y	
subject to	
x - y = < 20	
$x, y \ge 0$	
select the following that best describes it's solution(s).	
One optimal solution	
 Two optimal solutions 	
Unbounded	
Infeasible	

Quiz Score: 8 out of 8