

IQ2 - Duality

Due Oct 12 at 11:59pm

Points 100

Questions 5

Time Limit 10 Minutes

Instructions

This Individual Quiz has 5 multiple selection questions regarding Duality. Each Question is worth 20 points (for a total of 100 points).

Attempt History

	Attempt	Time	Score
LATEST	<u>Attempt 1</u>	4 minutes	100 out of 100

Score for this quiz: **100** out of 100

Submitted Oct 12 at 4:33pm

This attempt took 4 minutes.

Question 1

20 / 20 pts

Consider the following LP with two variables:

$$\text{Maximize } z = 2x_1 + 3x_2$$

$$s. t. \quad 2x_1 + x_2 \leq 4$$

$$x_1 + 2x_2 \geq 5$$

$$x_1 + x_2 = 6$$

$$x_1 \geq 0$$

$$x_2 \leq 0$$

The dual variable associated with the first constraint should be:

Correct!

☒ non-negative

- ☐ non-positive
- ☐ free (i.e., unrestricted)
- ☐ There is not enough information to determine this

Question 2**20 / 20 pts**

Consider the following LP with two variables:

$$\text{Maximize } z = 2x_1 + 3x_2$$

$$s. t. \quad 2x_1 + x_2 \leq 4$$

$$x_1 + 2x_2 \geq 5$$

$$x_1 + x_2 = 6$$

$$x_1 \geq 0$$

$$x_2 \leq 0$$

The dual variable associated with the second constraint should be:

Correct!

- ☒ non-positive
- ☐ non-negative
- ☐ free (i.e., unrestricted)
- ☐ There is not enough information to determine this

Question 3**20 / 20 pts**

Consider the following LP with two variables:

$$\text{Maximize } z = 2x_1 + 3x_2$$

$$s. t. \quad 2x_1 + x_2 \leq 4$$

$$x_1 + 2x_2 \geq 5$$

$$x_1 + x_2 = 6$$

$$x_1 \geq 0$$

$$x_2 \leq 0$$

The dual variable associated with the third constraint should be:

Correct!

- ☒ free (i.e., unrestricted)
- ☐ non-positive
- ☐ non-negative
- ☐ There is not enough information to determine this

Question 4

20 / 20 pts

Consider the following LP with two variables:

$$\text{Maximize } z = 2x_1 + 3x_2$$

$$s. t. \quad 2x_1 + x_2 \leq 4$$

$$x_1 + 2x_2 \geq 5$$

$$x_1 + x_2 = 6$$

$$x_1 \geq 0$$

$$x_2 \leq 0$$

The dual constraint associated with x_1 should be:

Correct!

- ☒ greater than or equal to (the associated value of the cost vector)
- ☐ less than or equal to (the associated value of the cost vector)

- ☐ equal to (the associated value of the cost vector)
- ☐ There is not enough information to determine this

Question 5**20 / 20 pts**

Consider the following LP with two variables:

Maximize $z = 2x_1 + 3x_2$

s. t. $2x_1 + x_2 \leq 4$

$x_1 + 2x_2 \geq 5$

$x_1 + x_2 = 6$

$x_1 \geq 0$

$x_2 \leq 0$

The dual constraint associated with x_2 should be:

Correct!

- ☒ less than or equal to (the associated value of the cost vector)
- ☐ greater than or equal to (the associated value of the cost vector)
- ☐ equal to (the associated value of the cost vector)
- ☐ There is not enough information to determine this

Quiz Score: **100** out of 100