



Quiz 1

3/3 questions correct

Excellent!

Retake

Next (/learn/approximation-algorithms-part-2/supplement/S7JWC/comment)



1.

Consider the following linear program.

$$\min 3x_1 + 2x_2 + 5x_3$$

s.t.

$$(\text{Constraint 1}) \ x_1 - x_3 \geq 5$$

$$(\text{Constraint 2}) \ -2x_1 + x_2 - x_3 \geq 2$$

$$(\text{Constraint 3}) \ 2x_1 + x_2 + 2x_3 \geq 3$$

$$(\text{Constraint 4,5,6}) \ x_1, x_2, x_3 \geq 0$$

What is the value of the optimal solution?

39

Well done!



2.

Consider the following linear program.

$$\min 3x_1 + 2x_2 + 5x_3$$

s.t.

$$(\text{Constraint 1}) \ x_1 - x_3 \geq 5$$

$$(\text{Constraint 2}) \ -2x_1 + x_2 - x_3 \geq 2$$

$$(\text{Constraint 3}) \ 2x_1 + x_2 + 2x_3 \geq 3$$

$$(\text{Constraint 4,5,6}) \ x_1, x_2, x_3 \geq 0$$

Pick all the constraints that belong to the dual of this LP.

☐

$$y_1 - 2y_2 + 2y_3 \leq 3$$

Well done!

☐

$$y_1 - 2y_2 + 2y_3 \geq 3$$

Well done!

☐

$$3y_1 + 2y_2 + 5y_3 \leq 5$$

Well done!

☐

$$-y_1 - y_2 + 2y_3 \leq 5$$

Well done!



3.

Consider the following linear program.

$$\min 3x_1 + 2x_2 + 5x_3$$

s.t.

(Constraint 1) $x_1 - x_3 \geq 5$

(Constraint 2) $-2x_1 + x_2 - x_3 \geq 2$

(Constraint 3) $2x_1 + x_2 + 2x_3 \geq 3$

(Constraint 4,5,6) $x_1, x_2, x_3 \geq 0$

What is the value of the optimal solution of the dual of this LP?

39

Well done!

