

Name: _____

MATH 108

Fall 2021

HW 7: Due 11/04

*"I like long walks, especially when they
are taken by people that annoy me."*

—Fred Allen

Problem 1. (10pt) Write down the tableau associated to the following linear programming problem:

$$\max z = 3x_1 + x_2$$

$$2x_1 + 3x_2 \leq 6$$

$$4x_1 + 2x_2 \leq 8$$

$$-3x_1 + 4x_2 \geq 2$$

$$x_1, x_2 \geq 0$$

Problem 2. (10pt) Assume the following is a tableau associated to a standard maximization problem. Write down the function being maximization and the system of constraints.

1	2	1	1	0	0	100
2	8	2	0	1	0	150
1	1	1	0	0	1	200
-5	-4	-5	0	0	0	100

Problem 3. (10pt) Solve the following linear programming problem:

$$\max z = x_1 + 6x_2 + 3x_3$$

$$x_1 + x_2 + 2x_3 \leq 4$$

$$x_1 + 2x_2 + x_3 \leq 4$$

$$x_1, x_2, x_3 \geq 0$$

Problem 4. (10pt) Find the dual problem to...

$$\min z = 5x_1 + 4x_2$$

$$x_1 + 7x_2 \geq 7$$

$$x_1 + 3x_2 \geq 9$$

$$x_1, x_2 \geq 0$$

Problem 5. (10pt) Solve the following linear programming problem:

$$\min z = 2x_1 + 3x_2$$

$$2x_1 + x_2 \geq 1$$

$$x_1 + 3x_2 \geq 1$$

$$x_1, x_2 \geq 0$$