

Math 209 Dual problem of LP.

Form the dual problem of the following Linear programming problem.

$$\text{Minimize } C = 6x_1 - 3x_2$$

Subject to:

$$\begin{cases} 3x_1 - 2x_2 \geq 4 \\ 2x_1 + 3x_2 \geq 5 \\ -x_1 - x_2 \geq -5 \\ x_1, x_2 \geq 0 \end{cases}$$

Solution:

$$A =$$

3	-2	4
2	3	5
-1	-1	-5
6	-3	1

$$A^T =$$

3	2	-1	6
-2	3	-1	-3
4	5	-5	1

The dual programming is

$$\text{Maximize } P = 4y_1 + 5y_2 - 5y_3$$

Subject to

$$\begin{cases} 3y_1 + 2y_2 - y_3 \leq 6 \\ -2y_1 + 3y_2 - y_3 \leq -3 \\ y_1, y_2 \geq 0 \end{cases}$$