MAT168 HW4

Andrew Jowe

November 20, 2022

(1)

Iteration 1

Draw out original problem

l								
				$\boxed{0}$		$\boxed{0}$		
	u			6		8		
		ζ	$=$	$-x_1$	$+$	x_2	$=$	0
$-\infty$	5	w_1	$=$	$-x_1$	$+$	x_2	$=$	0
$-\infty$	9	w_2	$=$	x_1	$-$	$2x_2$	$=$	0

Determine entering variable

x_2 has positive coefficient and is at lower bound, x_2 enters.

Determine leaving variable

As $x_2 \to 8$:
$w_1 \to -\infty \leq x_2 \leq 5 \to x_2 = 5$
$w_2 \to -\infty \leq -2x_2 \leq 9 \to x_2 = \infty$

w_1 leaves.

Iteration 2

Rewriting equation

l				$-\infty$		0		
	u			$\boxed{5}$		$\boxed{8}$		
		ζ	$=$	w_1	$+$	$0x_2$	$=$	5
0	6	x_1	$=$	$-w_1$	$+$	x_2	$=$	3
$-\infty$	9	w_2	$=$	$-w_1$	$-$	x_2	$=$	-13

Optimal

This is optimal since w_1 has positive coefficient and upper bound is chosen, and x_2 has coefficient of 0.

(2)

Dual

Collaboration

Academic Integrity

On my personal integrity as a student and member of the UCD community, I have not given, nor received any unauthorized assistance on this assignment.

Andrew