

A Maximization Problem in Standard Form – Class Notes for Session 10

Maximize $5x_1 + 7x_2 + 0s_1 + 0s_2 + 0s_3$

s.t. $x_1, x_2, s_1, s_2, s_3 \geq 0$ and

$1x_1 + 0x_2 + 1s_1 + 0s_2 + 0s_3 = 6$

$2x_1 + 3x_2 + 0s_1 + 1s_2 + 0s_3 = 19$

$1x_1 + 1x_2 + 0s_1 + 0s_2 + 1s_3 = 8$

Partial Initial Simplex Tableau

5	7	0	0	0	
1	0	1	0	0	6
2	3	0	1	0	19
1	1	0	0	1	8

Initial Simplex Tableau

<i>Basis</i>		c_B	x_1	x_2	s_1	s_2	s_3		Ratio b_i/a_{i2}
s_1		0	1	0	1	0	0	6	∞
s_2		0	2	3	0	1	0	19	19/3
s_3		0	1	1	0	0	1	8	8
		z_j	0	0	0	0	0	0	
		$c_j - z_j$	5	7	0	0	0		

First Iteration:

<i>Basis</i>		c_B	x_1	x_2	s_1	s_2	s_3		Ratio b_i/a_{i1}
s_1		0	1	0	1	0	0	6	6
x_2		7	2/3	1	0	1/3	0	19/3	19/2
s_3		0	1/3	0	0	-1/3	1	5/3	5
		z_j	14/3	7	0	7/3	0	133/3	
		$c_j - z_j$	1/3	0	0	-7/3	0		

Second Iteration:

<i>Basis</i>		c_B	x_1	x_2	s_1	s_2	s_3	
s_1		0	0	0	1	1	-3	1
x_2		7	0	1	0	1	-2	3
x_1		5	1	0	0	-1	3	5
		z_j	5	7	0	2	1	46
		$c_j - z_j$	0	0	0	-2	-1	