

428

Ex Use two phase simplex method to

$$\text{Max } z = 3x_1 - x_2$$

$$\text{s.t. } 2x_1 + x_2 \geq 2$$

$$x_1 + 3x_2 \leq 2$$

$$x_2 \leq 4$$

$$\text{Max } z^* = -A_1$$

$$\text{s.t. } 2x_1 + x_2 - x_3 + x_4 = 2$$

$$x_1 + 3x_2 + x_5 = 2$$

$$x_2 + x_6 = 4$$

B	C _B	x _B	y ₁	y ₂	y ₃	y ₄	y ₅	y ₆	Min
y ₄	-1	2	2	1	-1	1	0	0	↖
y ₅	0	2	1	3	0	0	1	0	
y ₆	0	4	0	1	0	0	0	1	
z _j			-2	-2	-1	1	0	0	

B	C _B	x _B	y ₁	y ₂	y ₃	y ₄	y ₅	y ₆	Min
y ₁	0	1	1	1/2	-1/2	1/2	0	0	
y ₅	0	1	0	5/2	1/2	-1/2	1	0	
y ₆	0	4	0	1	0	0	0	1	
z _j			0	0	0	0	0	0	

Since all $z_j - C_j \geq 0$

2 Max $Z = 6$

All, we see that

Basic do not contain artificial variables

Then,

			3	-1	0	0	0	
B	C_B	x_B	y_1	y_2	y_3	y_4	y_5	y_6
y_1	3	1	1	$\frac{1}{2}$	$-\frac{1}{2}$	0	0	
y_3	0	1	0	$\frac{5}{2}$	$\frac{1}{2}$	1	0	
y_6	0	4	0	1	0	0	1	
		3	0	$\frac{5}{2}$	$-\frac{3}{2}$	0	0	

			3	-1	0	0	0	
B	C_B	x_B	y_1	y_2	y_3	y_4	y_5	y_6
y_1	3	2	1	3	0	1	0	
y_3	0	2	0	5	1	2	0	
y_6	0	4	0	1	0	0	1	
		6	0	10	0	3	0	

$x_1 = 2, x_2 = 0, \text{Max } Z = 6$