

# Simplex with Table

$$\text{Max } Z = 4x_1 - x_2 + 2x_3 + 0S_1 + 0S_2 + 0S_3$$

s.t. :

$$2x_1 + x_2 + 2x_3 + S_1 = 6$$

$$x_1 - 4x_2 + 2x_3 + S_2 = 0$$

$$5x_1 - 2x_2 - 2x_3 + S_3 = 4$$

Basic	Z	x1	x2	x3	S1	S2	S3	Right	
Z0	1	-4	1	-2	0	0	0	0	
S1	0	2	1	2	1	0	0	6	3
S2	0	1	-4	2	0	1	0	0	0
S3	0	5	-2	-2	0	0	1	4	4/5

Pivot

Min is 0

Basic	Z	x1	x2	x3	S1	S2	S3	Right
Z0	1	0	-15	6	0	4	0	0
S1	0	0	9	-2	1	-2	0	6
x1	0	1	-4	2	0	1	0	0
S3	0	0	18	-12	0	-5	1	4

2/3

0

2/9

Pivot

Min is 2/9

( سطر x1 پیش تر محاسبه شده )

Basic	Z	x1	x2	x3	S1	S2	S3	Right	
Z0	1	0	0	-4	0	-1/6	5/6	10/3	
S1	0	0	0	4	1	1/2	-1/2	4	1
x1	0	1	0	-2/3	0	-1/9	2/9	8/9	-4/3
x2	0	0	1	-2/3	0	-5/18	1/18	2/9	2/9

Pivot

Min is 1

( سطر x1 منفی است و موارد منفی در Min محاسبه نمی شود )  
 ( سطر x2 پیش تر محاسبه شده )

Basic	Z	x1	x2	x3	S1	S2	S3	Right
Z0	1	0	0	0	1	1/3	1/3	22/3
x3	0	0	0	1	1/4	1/8	-1/8	1
x1	0	1	0	0	1/6	-1/36	5/36	14/9
x2	0	0	1	0	1/6	-7/36	-1/36	8/9

✓ done

Solution = (x1, x2, x3, S1, S2, S3) =  $(\frac{14}{9}, \frac{8}{9}, 1, 0, 0, 0)$

Optimal Z =  $\frac{22}{3}$