

SIMPLEX ALGORITHM (COMPUTATION DETAILS CONTD)

TABLEAU I

BASIC	Z	x_1	x_2	s_1	s_2	s_3	s_4	SOLUTION
Z	1	-3	-2	0	0	0	0	0
s_1	0	1	2	1	0	0	0	6
s_2	0	2	1	0	1	0	0	8
s_3	0	-1	1	0	0	1	0	1
s_4	0	0	1	0	0	0	1	2

← Z equation

$$6/1 = 6$$

$$8/2 = 4$$

CANNOT DIV. BY -VE

" " BY 0

PIVOT ELEMENT

↑ x_1 entering variable; this column is the entering column.

Leaving variable; s_2 reaches zero when $x_1 = 4$; for other variables either x_1 can be larger or the equation has no bearing. This row is the PIVOT EQUATION.

• Divide Pivot Eq. by the PIVOT ELEMENT.

• DO NECESSARY COMPUTATION TO MAKE ALL OTHER ELEMENTS IN ENTERING COLUMN ZERO

TABLEAU II

BASIC	Z	x_1	x_2	s_1	s_2	s_3	s_4	SOLUTION
Z	1	0	-1/2	0	3/2	0	0	12
s_1	0	0	3/2	1	-1/2	0	0	2
x_1	0	1	1/2	0	1/2	0	0	4
s_3	0	0	3/2	0	1/2	1	0	5
s_4	0	0	1	0	0	0	1	2

← [ALSO NOTE: WHICHEVER VAR IS BASIC HAS A ZERO COEF. IN Z]

$$2/(3/2) = 4/3$$

$$4/1/2 = 8$$

$$5/(3/2) = 10/3$$

$$2/1 = 2$$

leaving variable

↑ entering variable

TABLEAU III

BASIC	Z	x_1	x_2	s_1	s_2	s_3	s_4	SOLUTION
Z	1	0	0	1/3	4/3	0	0	12 2/3
x_2	0	0	1	2/3	-1/3	0	0	4/3
x_1	0	1	0	-1/3	2/3	0	0	10/3
s_3	0	0	0	-1	1	1	0	3
s_4	0	0	0	-2/3	1/3	0	1	2/3

← No element has a negative sign. This implies that Z cannot go beyond 12 2/3.

$$x_1^* = 10/3, x_2^* = 4/3, z^* = 12 \frac{2}{3}$$

NOTE: THE Z COLUMN NEVER CHANGES. HENCE IN THE REST WE IGNORE THIS COLUMN