

Problema #1

$$P_0 \Rightarrow Z = 20000(x_1 + x_2 + x_3 + x_4)$$

Definición Variables

x_1 = Planchas a producir

x_2 = Dobladoras a producir

x_3 = Presadoras a producir

x_4 = Cortadoras a producir

Restricciones:

$$2x_1 + x_2 + x_3 + 2x_4 \leq 24$$

$$2x_1 + 2x_2 + x_3 \leq 20$$

$$2x_3 + 2x_4 \leq 20$$

$$4x_4 \leq 16$$

Función objetivo en forma estándar:

$$Z = 20000x_1 + 20000x_2 + 20000x_3 + 20000x_4$$

Usando Simplex

agregando holgura y exceso

$$2x_1 + x_2 + x_3 + 2x_4 + s_1 = 24$$

$$2x_1 + 2x_2 + x_3 + s_2 = 20$$

$$2x_3 + 2x_4 + s_3 = 20$$

$$4x_4 + s_4 = 16$$

Base	x_1	x_2	x_3	x_4	s_1	s_2	s_3	s_4	R
s_1	2	1	1	2	1	0	0	0	24
s_2	2	2	1	0	0	1	0	0	20
s_3	0	0	2	2	0	0	1	0	20
s_4	0	0	0	4	0	0	0	1	16
Z	-20000	-20000	-20000	-20000	0	0	0	0	0

Base	x_1	x_2	x_3	x_4	s_1	s_2	s_3	s_4	R
s_1	0	-1	0	1	1	-1	0	0	4
s_2	1	1	$1/2$	0	0	$1/2$	0	0	10
s_3	0	0	2	0	0	0	1	0	20
s_4	0	0	0	0	0	0	0	1	16
Z	0	-100	-1000	0	0	10000	0	0	0

Base	x_1	x_2	x_3	x_4	s_1	s_2	s_3	s_4	R
s_1	0	$-1/2$	0	1	$1/2$	$-1/2$	0	0	2
s_2	1	1	$1/2$	0	0	$1/2$	0	0	16
s_3	0	1	2	0	-1	1	1	0	16
s_4	0	2	0	0	-2	2	0	1	8
Z	0	-10000	-1000	0	10000	0	0	240000	0