

min Z = 4.0X1 + 3.0X2 + 1.0X3 + 1.0X4

S.A.R

6.0X1 + 3.0X2 + 8.0X3 + 0.0X4 = 27.0

7.0X1 + 0.0X2 + 6.0X3 + 1.0X4 >= 30.0

0.0X1 + 8.0X2 + 0.0X3 + 8.0X4 <= 40.0

6.0X1 + 4.0X2 + 1.0X3 + 1.0X4 = 20.0

4.0X1 + 3.0X2 + 5.0X3 + 6.0X4 >= 10.0

6.0X1 + 3.0X2 + 8.0X3 + 0.0X4 + 1X5 + 0X6 + 0X7 + 0X8 + 0X9 + 0X10 + 0X11 = 27.0

7.0X1 + 0.0X2 + 6.0X3 + 1.0X4 + 0X5 - 1X6 + 1X7 + 0X8 + 0X9 + 0X10 + 0X11 = 30.0

0.0X1 + 8.0X2 + 0.0X3 + 8.0X4 + 0X5 + 0X6 + 0X7 + 1X8 + 0X9 + 0X10 + 0X11 = 40.0

6.0X1 + 4.0X2 + 1.0X3 + 1.0X4 + 0X5 + 0X6 + 0X7 + 0X8 + 1X9 + 0X10 + 0X11 = 20.0

4.0X1 + 3.0X2 + 5.0X3 + 6.0X4 + 0X5 + 0X6 + 0X7 + 0X8 + 0X9 - 1X10 + 1X11 = 10.0

Z - 4.0X1 - 3.0X2 - 1.0X3 - 1.0X4 - 1.0MX5 + 0X6 - 1.0MX7 + 0X8 - 1.0MX9 + 0X10 - 1.0MX11 = 0

Variables de Holgura: ['X10', 'X6', 'X8']

Variables Artificiales: ['X9', 'X11', 'X5', 'X7']

Solución Óptima

X1 = 5/2

X10 = 57/2

X3 = 3/2

X4 = 7/2

X8 = 12

Z = 15

V.B	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	bi
X	6	3	8	0	1	0	0	0	0	0	0	27
X	7	0	6	1	0	-1	1	0	0	0	0	30
X	0	8	0	8	0	0	0	1	0	0	0	40
X	6	4	1	1	0	0	0	0	1	0	0	20
X	4	3	5	6	0	0	0	0	0	-1	1	10
Z	-4	-3	-1	-1	-M	0	-M	0	-M	0	-M	0

V.B	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	bi
X5	6	3	8	0	1	0	0	0	0	0	0	27
X7	7	0	6	1	0	-1	1	0	0	0	0	30
X8	0	8	0	8	0	0	0	1	0	0	0	40
X9	6	4	1	1	0	0	0	0	1	0	0	20
X11	4	3	5	6	0	0	0	0	0	-1	1	10
Z	23M - 4	10M - 3	20M - 1	8M - 1	0	-M	0	0	0	-M	0	87M

V.E = X1 V.S = X11 Pivote = 4

V.B	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	bi
X5	0	-3/2	1/2	-9	1	0	0	0	0	3/2	-3/2	12
X7	0	-21/4	-11/4	-19/2	0	-1	1	0	0	7/4	-7/4	25/2
X8	0	8	0	8	0	0	0	1	0	0	0	40
X9	0	-1/2	-13/2	-8	0	0	0	0	1	3/2	-3/2	5
X1	1	3/4	5/4	3/2	0	0	0	0	0	-1/4	1/4	5/2
Z	0	-29M/4	-35M/4 + 4	-53M/2 + 5	0	-M	0	0	0	19M/4 - 1	-23M/4 + 1	59M/2 + 10

$V.E = X10$ $V.S = X9$ $Pivote = 3/2$

V.B	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	bi
X5	0	-1	7	-1	1	0	0	0	-1	0	0	7
X7	0	-14/3	29/6	-1/6	0	-1	1	0	-7/6	0	0	20/3
X8	0	8	0	8	0	0	0	1	0	0	0	40
X10	0	-1/3	-13/3	-16/3	0	0	0	0	2/3	1	-1	10/3
X1	1	2/3	1/6	1/6	0	0	0	0	1/6	0	0	10/3
Z	0	-17M/3 - 1/3	71M/6 - 1/3	-7M/6 - 1/3	0	-M	0	0	-19M/6 + 2/3	0	-M	41M/3 + 40/3

$V.E = X3$ $V.S = X5$ $Pivote = 7$

V.B	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	bi
X3	0	-1/7	1	-1/7	1/7	0	0	0	-1/7	0	0	1
X7	0	-167/42	0	11/21	-29/42	-1	1	0	-10/21	0	0	11/6
X8	0	8	0	8	0	0	0	1	0	0	0	40
X10	0	-20/21	0	-125/21	13/21	0	0	0	1/21	1	-1	23/3
X1	1	29/42	0	4/21	-1/42	0	0	0	4/21	0	0	19/6
Z	0	-167M/42 - 8/21	0	11M/21 - 8/21	-71M/42 + 1/21	-M	0	0	-31M/21 + 13/21	0	-M	11M/6 + 41/3

$V.E = X4$ $V.S = X7$ $Pivote = 11/21$

V.B	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	bi
X3	0	-27/22	1	0	-1/22	-3/11	3/11	0	-3/11	0	0	3/2
X4	0	-167/22	0	1	-29/22	-21/11	21/11	0	-10/11	0	0	7/2
X8	0	756/11	0	0	116/11	168/11	-168/11	1	80/11	0	0	12
X10	0	-1015/22	0	0	-159/22	-125/11	125/11	0	-59/11	1	-1	57/2
X1	1	47/22	0	0	5/22	4/11	-4/11	0	4/11	0	0	5/2
Z	0	-36/11	0	0	-M - 5/11	-8/11	-M + 8/11	0	-M + 3/11	0	-M	15

Solución Optima

$X1 = 5/2$

$X10 = 57/2$

$X3 = 3/2$

$X4 = 7/2$

$X8 = 12$

$Z = 15$