ATIVIDADE 2

$\text{Min } z = 1200x_1 + 850x_2 \Leftrightarrow \text{Max } z' = -1200x_1 - 850x_2 - Mx_4 - Mx_6$

s.a

$x_1 + 2x_2 \geq 5000$

$5x_1 + 3x_2 \geq 12000$

$x_1 \geq 0,\ x_2 \geq 0$

$\rightarrow$

$x_1 + 2x_2 - x_3 + x_4 = 5000$

$5x_1 + 3x_2 - x_5 + x_6 = 12000$

$x_j \geq 0,\ j = 1, \ldots, 6$

x_3, x_5 - surplus

x_4, x_6 - artificiais

		-1200 x_1	-850 x_2	0 x_3	-M x_4	0 x_5	-M x_6	b	
	x_4 -M	1	2	-1	1	0	0	5000	(1)
←	x_6 -M	(5)	3	0	0	-1	1	12000	(2)
	$z_j - c_j$	-6M +1200	-5M +850	M	0	M	0	-17000M	

↑

SBNA: $x = (0, 0, 0, 5000, 0, 12000) \rightarrow z = -17000M$

		-1200 x_1	-850 x_2	0 x_3	-M x_4	0 x_5	-M x_6	b
←	x_4 -M	0	(7/5)	-1	1	1/5	-1/5	2600
	x_1 -1200	1	3/5	0	0	-1/5	1/5	2400
	$z_j - c_j$	0	-7/5 M +130	M	0	-1/5 M +240	6/5 M - 240	-2600M -2880000

↑

$(2)' = \frac{1}{5}(2)$

SBNA: $x = (2400, 0, 0, 2600, 0, 0) \rightarrow z' = -2600M - 2880000$

$(1)' = (1) - (2)'$

		-1200 x_1	-850 x_2	0 x_3	-M x_4	0 x_5	-M x_6	b
	x_2 -850	0	1	-5/7	5/7	1/7	-1/7	$13000/7 = 1857$
	x_1 -1200	1	0	3/7	-3/7	-2/7	2/7	$9000/7 = 1286$
	$z_j - c_j$	0	0	650/7	M - 650/7	1550/7	M - 1550/7	$-21850000/7 = -3121429$

Quadro ótimo pois todos os valores da linha $z_j - c_j \geq 0$.

$(1)'' = \frac{5}{7}(1)$

$(2)'' = (2)' - \frac{3}{5}(1)''$

SBA: $x^* = (9000/7, 13000/7, 0, 0, 0, 0) \rightarrow z^* = 3121429$

$9000/7 = 1857{,}143$

$13000/7 = 1285{,}714$

$z^* = -z'^* = 3121429$