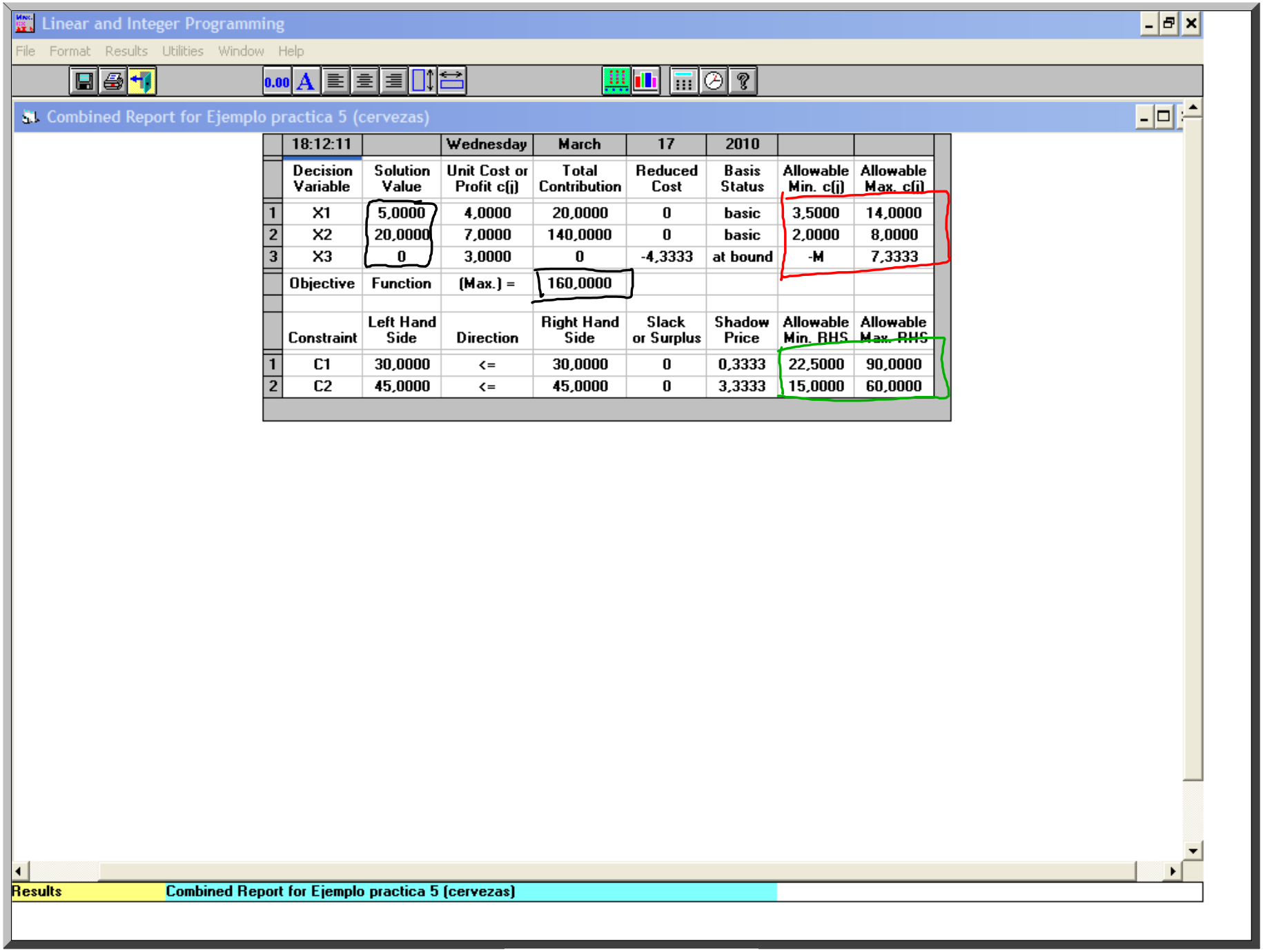
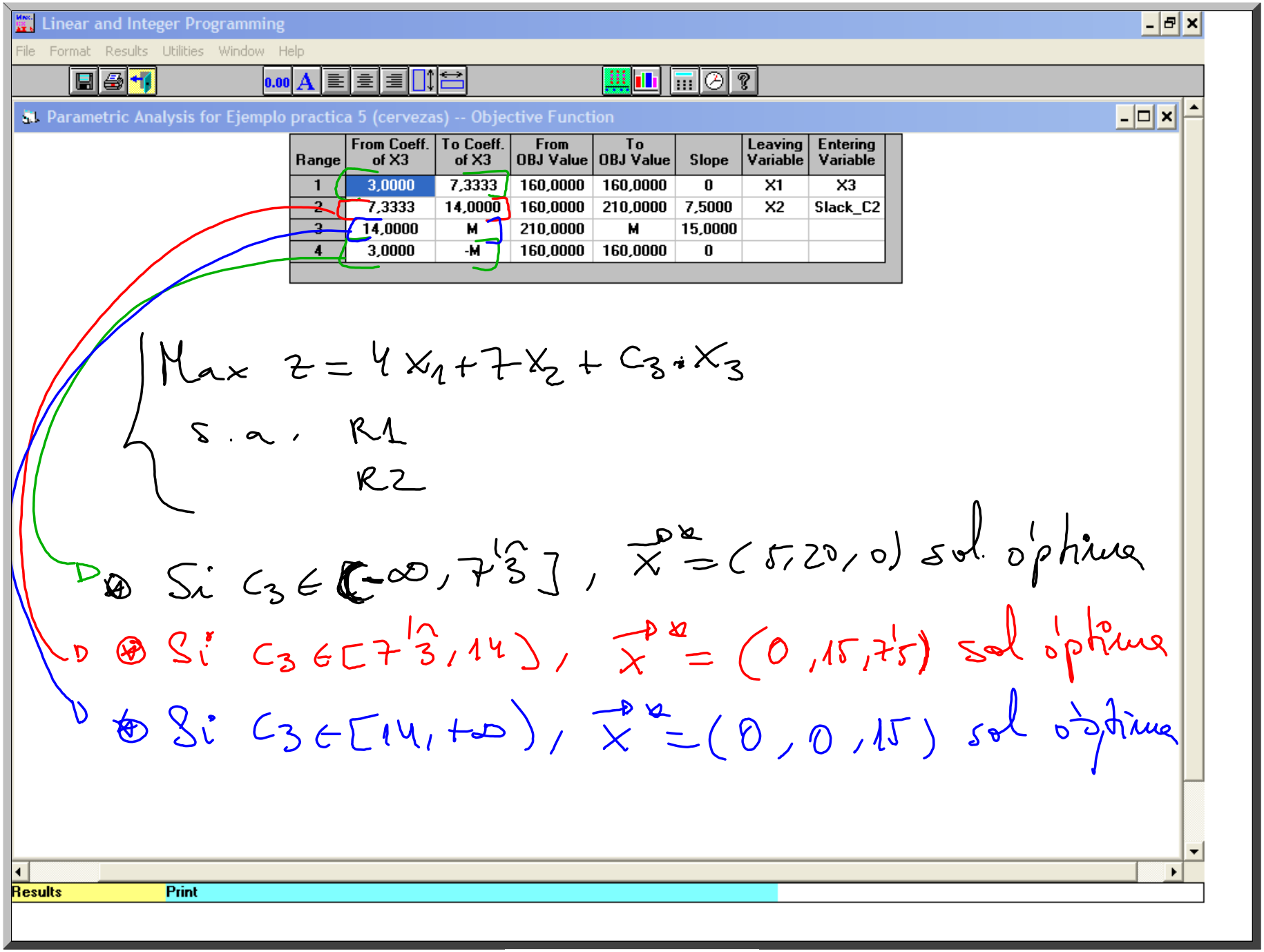


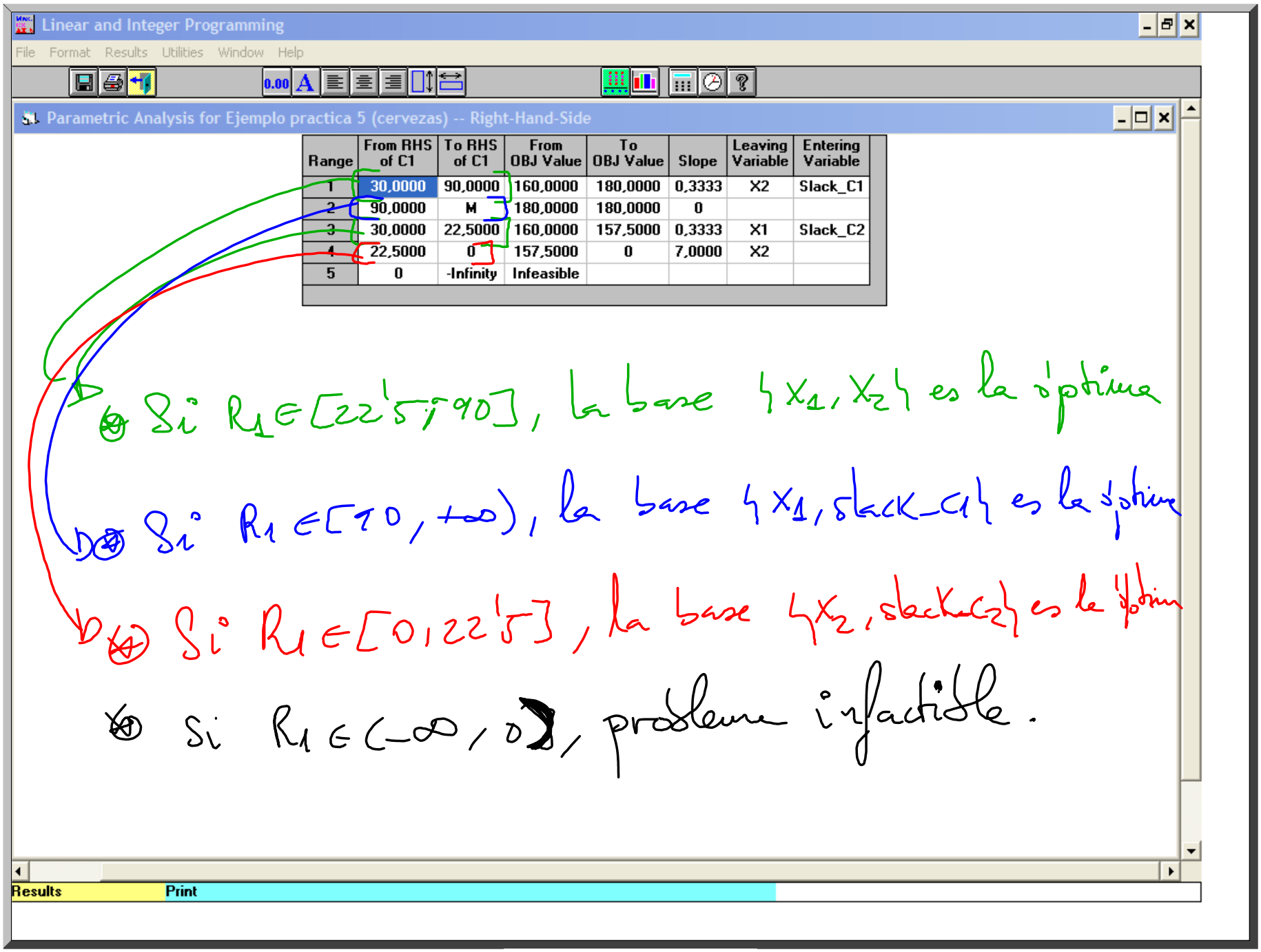
	18:12:11		Wednesday	March	17	2010		
	Decision Variable	Solution Value	Unit Cost or Profit c[j]	Total Contribution	Reduced Cost	Basis Status	Allowable Min. c[j]	Allowable Max. c[j]
1	X1	5,0000	4,0000	20,0000	0	basic	3,5000	14,0000
2	X2	20,0000	7,0000	140,0000	0	basic	2,0000	8,0000
3	X3	0	3,0000	0	-4,3333	at bound	-M	7,3333
	Objective	Function	(Max.) =	160,0000				
	Constraint	Left Hand Side	Direction	Right Hand Side	Slack or Surplus	Shadow Price	Allowable Min. RHS	Allowable Max. RHS
1	C1	30,0000	<=	30,0000	0	0,3333	22,5000	90,0000
2	C2	45,0000	<=	45,0000	0	3,3333	15,0000	60,0000

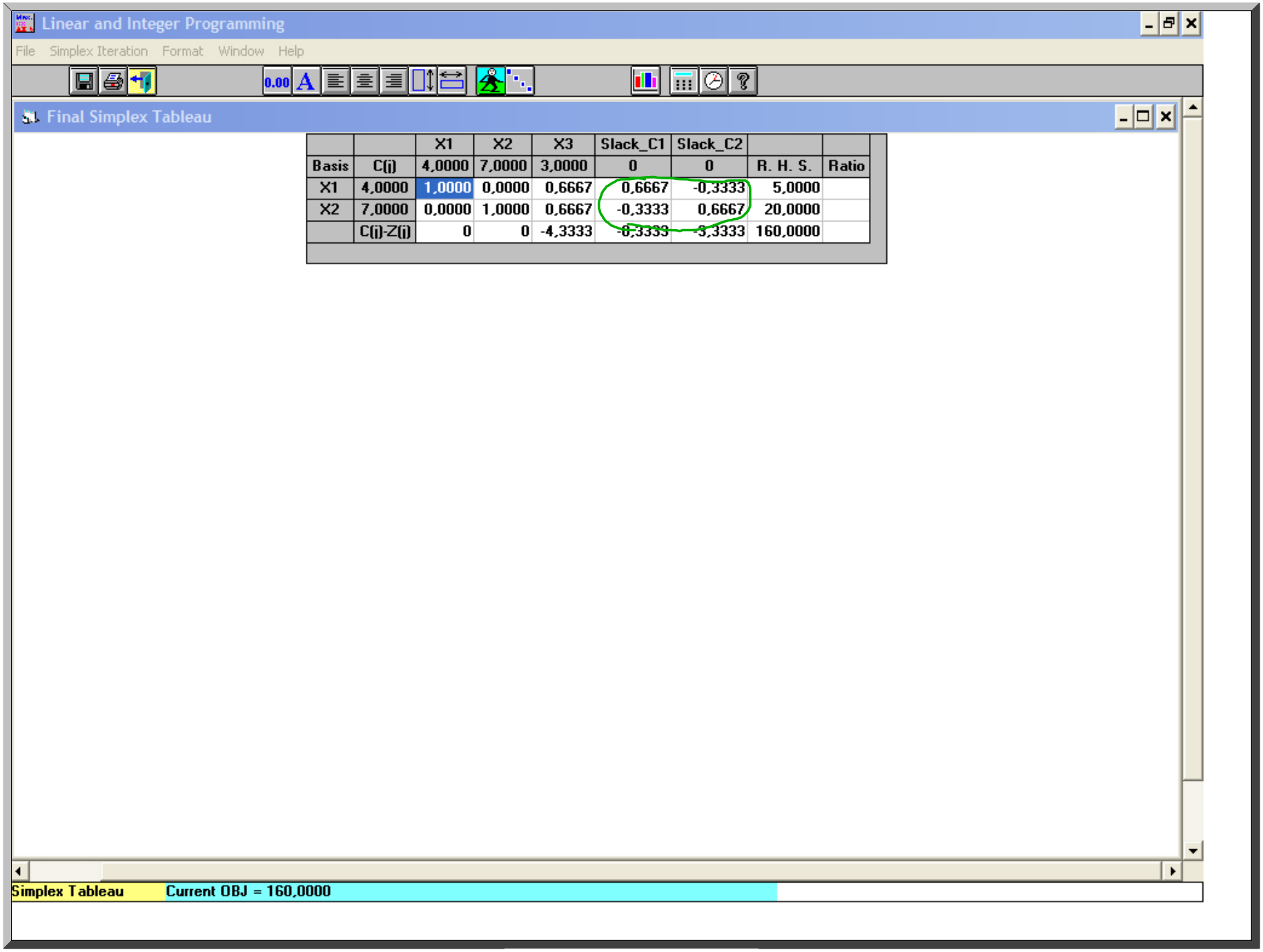


Range	From Coeff. of X3	To Coeff. of X3	From OBJ Value	To OBJ Value	Slope	Leaving Variable	Entering Variable
1	3,0000	7,3333	160,0000	160,0000	0	X1	X3
2	7,3333	14,0000	160,0000	210,0000	7,5000	X2	Slack_C2
3	14,0000	M	210,0000	M	15,0000		
4	3,0000	-M	160,0000	160,0000	0		

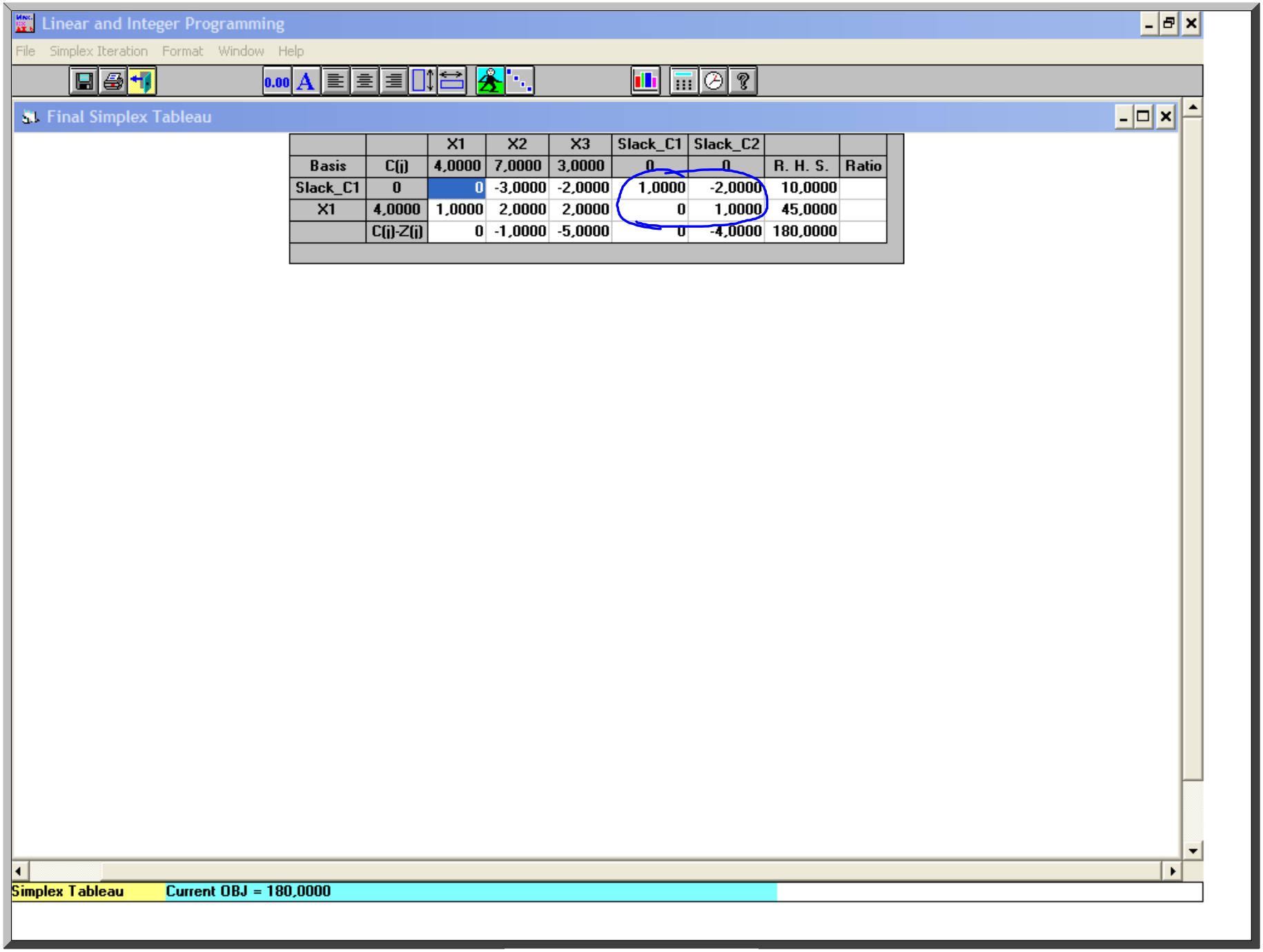
$$\begin{cases} \text{Max } z = 4x_1 + 7x_2 + c_3 \cdot x_3 \\ \text{s.a. } R1 \\ \quad\quad R2 \end{cases}$$

- Si $c_3 \in (-\infty, 7\hat{3}]$, $\vec{x}^* = (5, 20, 0)$ sol. óptima
- Si $c_3 \in [7\hat{3}, 14]$, $\vec{x}^* = (0, 15, 7\hat{5})$ sol óptima
- Si $c_3 \in [14, +\infty)$, $\vec{x}^* = (0, 0, 15)$ sol óptima

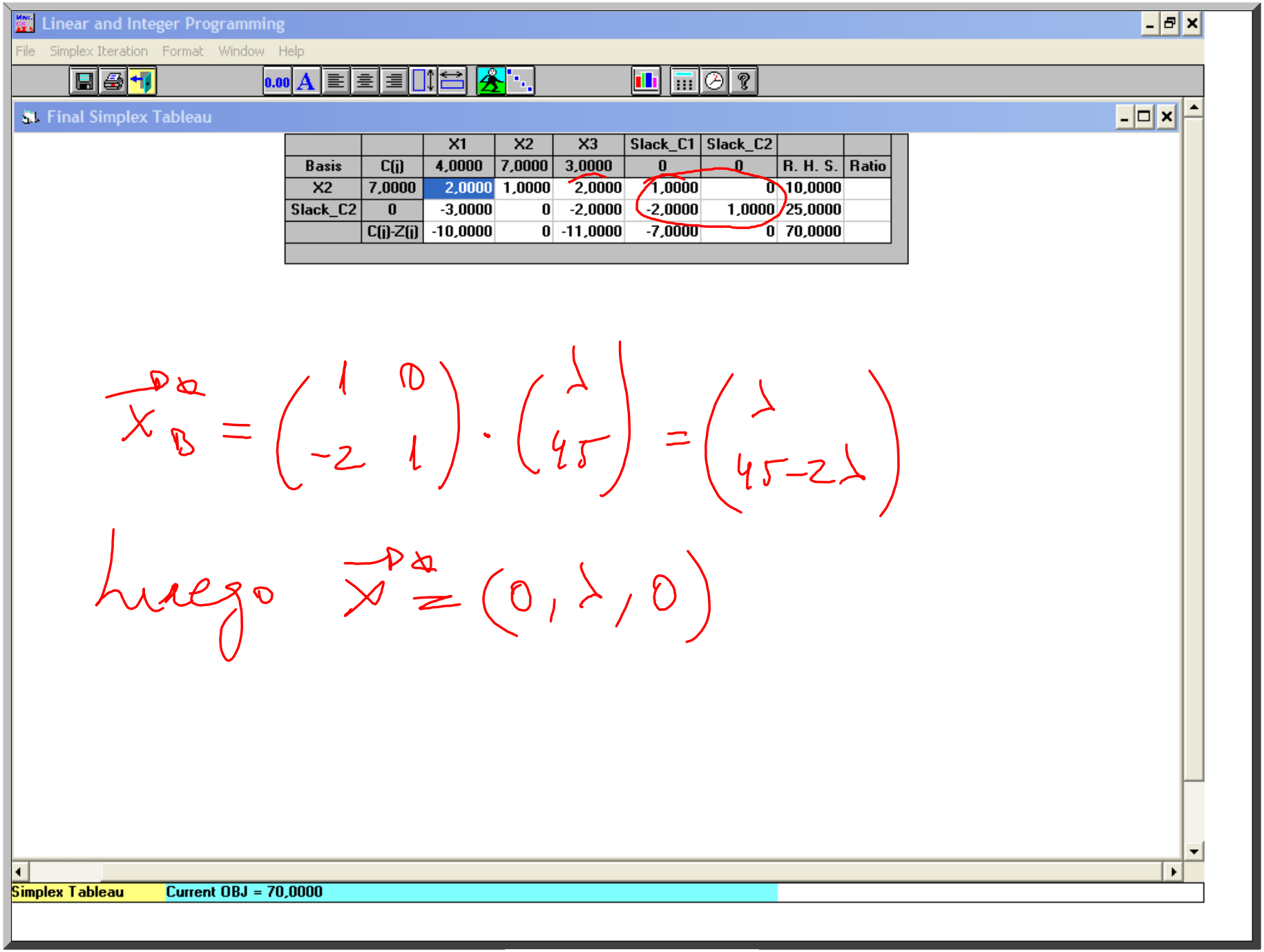

Linear and Integer Programming
File Format Results Utilities Window Help
Parametric Analysis for Ejemplo practica 5 (cervezas) -- Right-Hand-Side
Range | From RHS of C1 | To RHS of C1 | From OBJ Value | To OBJ Value | Slope | Leaving Variable | Entering Variable
1 | 30,0000 | 90,0000 | 160,0000 | 180,0000 | 0,3333 | X2 | Slack_C1
2 | 90,0000 | M | 180,0000 | 180,0000 | 0 | |
3 | 30,0000 | 22,5000 | 160,0000 | 157,5000 | 0,3333 | X1 | Slack_C2
4 | 22,5000 | 0 | 157,5000 | 0 | 7,0000 | X2 |
5 | 0 | -Infinity | Infeasible | | | |
Si R1 ∈ [22'5, 90], la base {X1, X2} es la óptima
Si R1 ∈ [90, +∞), la base {X1, slack_C1} es la óptima
Si R1 ∈ [0, 22'5], la base {X2, slack_C2} es la óptima
Si R1 ∈ (-∞, 0), problema infactible.
Results
Print



		X1	X2	X3	Slack_C1	Slack_C2		
Basis	C(j)	4,0000	7,0000	3,0000	0	0	R. H. S.	Ratio
X1	4,0000	1,0000	0,0000	0,6667	0,6667	-0,3333	5,0000	
X2	7,0000	0,0000	1,0000	0,6667	-0,3333	0,6667	20,0000	
	C(j)-Z(j)	0	0	-4,3333	-0,3333	-3,3333	160,0000	



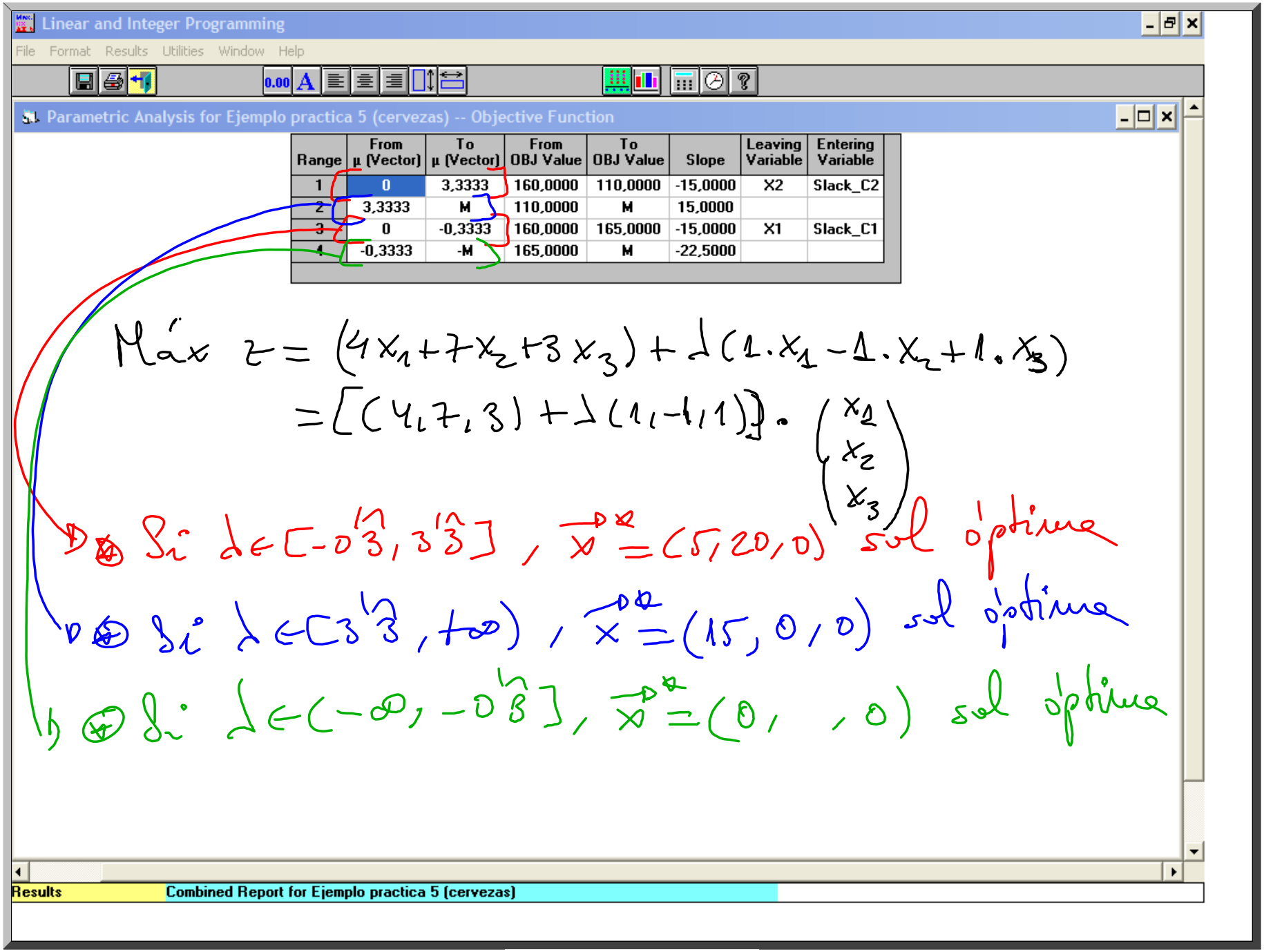
		X1	X2	X3	Slack_C1	Slack_C2		
Basis	C(j)	4,0000	7,0000	3,0000	0	0	R. H. S.	Ratio
Slack_C1	0	0	-3,0000	-2,0000	1,0000	-2,0000	10,0000	
X1	4,0000	1,0000	2,0000	2,0000	0	1,0000	45,0000	
	C(j)-Z(j)	0	-1,0000	-5,0000	0	-4,0000	180,0000	



		X1	X2	X3	Slack_C1	Slack_C2		
Basis	C(j)	4,0000	7,0000	3,0000	0	0	R. H. S.	Ratio
X2	7,0000	2,0000	1,0000	2,0000	1,0000	0	10,0000	
Slack_C2	0	-3,0000	0	-2,0000	-2,0000	1,0000	25,0000	
	C(j)-Z(j)	-10,0000	0	-11,0000	-7,0000	0	70,0000	

$$\vec{x}_B^* = \begin{pmatrix} 1 & 0 \\ -2 & 1 \end{pmatrix} \cdot \begin{pmatrix} \lambda \\ 45 \end{pmatrix} = \begin{pmatrix} \lambda \\ 45-2\lambda \end{pmatrix}$$

luego $\vec{x}^* = (0, \lambda, 0)$

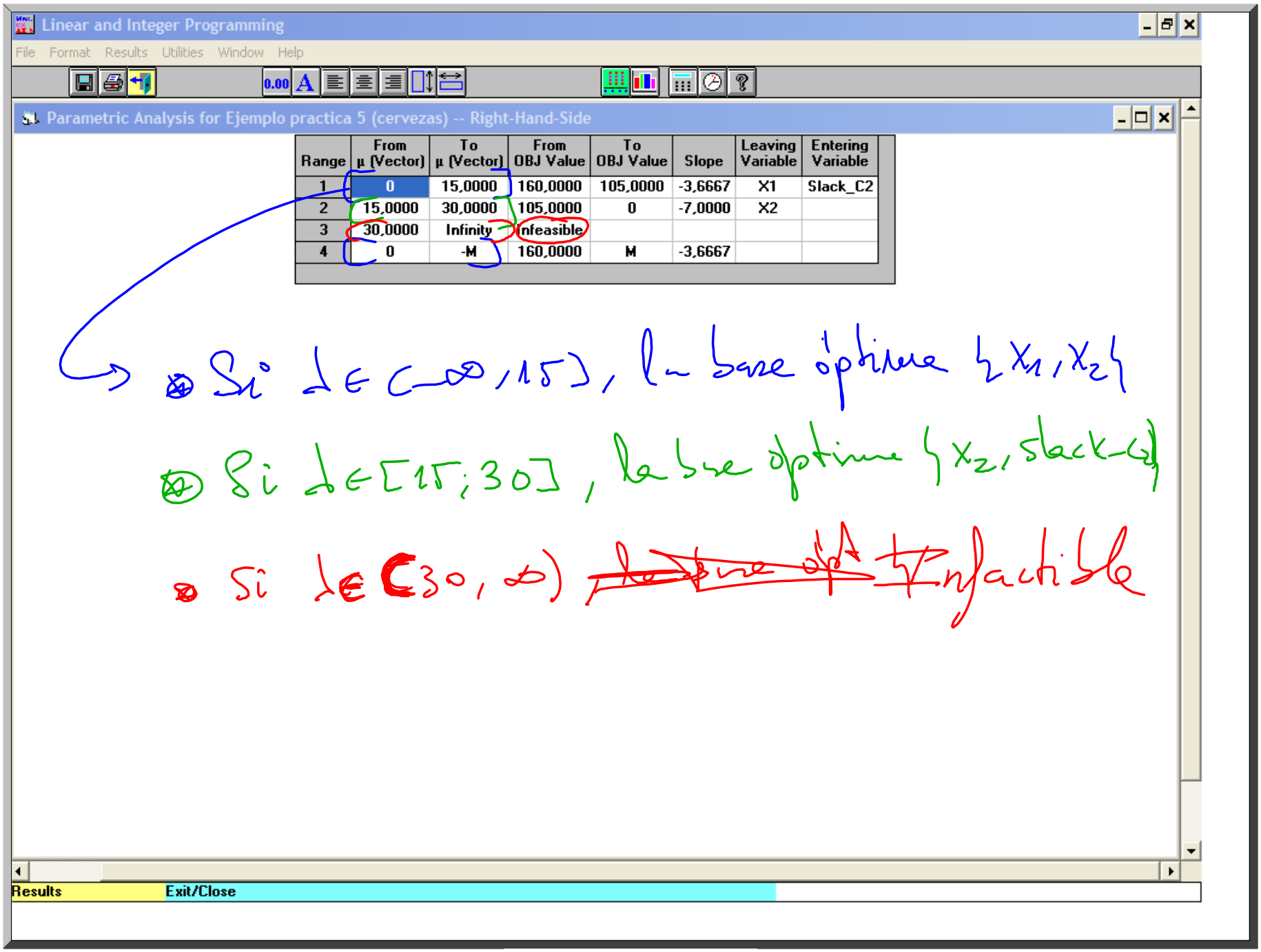


Range	From μ (Vector)	To μ (Vector)	From OBJ Value	To OBJ Value	Slope	Leaving Variable	Entering Variable
1	0	3,3333	160,0000	110,0000	-15,0000	X2	Slack_C2
2	3,3333	M	110,0000	M	15,0000		
3	0	-0,3333	160,0000	165,0000	-15,0000	X1	Slack_C1
4	-0,3333	-M	165,0000	M	-22,5000		

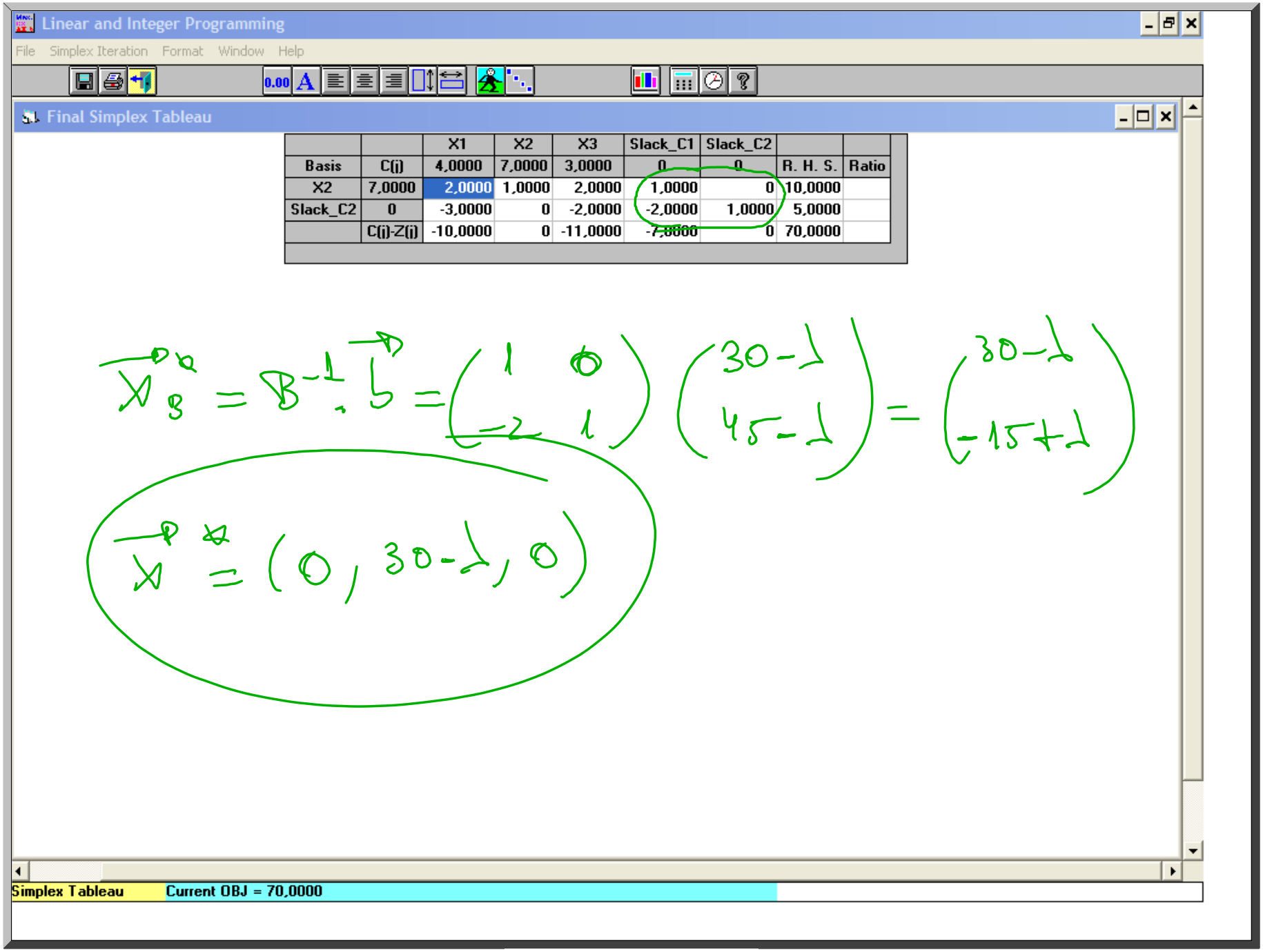
$$\text{Máx } z = (4x_1+7x_2+3x_3) + \lambda(1\cdot x_1 - 1\cdot x_2 + 1\cdot x_3)$$

$$= [(4,7,3) + \lambda(1,-1,1)] \cdot \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix}$$

- Si $\lambda \in [-0\hat{3}, 3\hat{3}]$, $\vec{x}^* = (5,20,0)$ sol óptima
- Si $\lambda \in [3\hat{3}, +\infty)$, $\vec{x}^* = (15,0,0)$ sol óptima
- Si $\lambda \in (-\infty, -0\hat{3}]$, $\vec{x}^* = (0, \ , 0)$ sol óptima



Range	From μ (Vector)	To μ (Vector)	From OBJ Value	To OBJ Value	Slope	Leaving Variable	Entering Variable
1	0	15,0000	160,0000	105,0000	-3,6667	X1	Slack_C2
2	15,0000	30,0000	105,0000	0	-7,0000	X2	
3	30,0000	Infinity	Infeasible				
4	0	-M	160,0000	M	-3,6667		



		X1	X2	X3	Slack_C1	Slack_C2		
Basis	C(j)	4,0000	7,0000	3,0000	0	0	R. H. S.	Ratio
X2	7,0000	2,0000	1,0000	2,0000	1,0000	0	10,0000	
Slack_C2	0	-3,0000	0	-2,0000	-2,0000	1,0000	5,0000	
	C(j)-Z(j)	-10,0000	0	-11,0000	-7,0000	0	70,0000	

$$\vec{X}_B^* = B^{-1}\cdot\vec{b} = \begin{pmatrix} 1 & 0 \\ -2 & 1 \end{pmatrix}\begin{pmatrix} 30-\lambda \\ 45-\lambda \end{pmatrix} = \begin{pmatrix} 30-\lambda \\ -15+\lambda \end{pmatrix}$$

$$\vec{X}^* = (0,\ 30-\lambda,\ 0)$$