

Solve the following LP problem:

$$\begin{cases} x_1 + 2x_2 + x_3 + x_5 \leq 100 \\ x_2 + x_3 + x_4 + x_5 \leq 80 \\ x_1 + x_3 + x_4 \leq 50 \\ (x_1, x_2, x_3, x_4, x_5 \geq 0) \end{cases}$$

$$-2x_1 - x_2 - 3x_3 - x_4 - 2x_5 \rightarrow \min.$$

Solution:

	x_1	x_2	x_3	x_4	x_5	
x_6	1	2	1	0	1	100
x_7	0	1	1	1	1	80
x_8	1	0	1*	1	0	50
	-2	-1	-3	-1	-2	0

ratio

$$100/1$$

$$80/1 \rightarrow$$

$$\boxed{50/1}$$

	x_1	x_2	x_8	x_4	x_5	
x_6	0	2	-1	-1	1	50
x_7	-1	1	-1	0	1*	30
x_3	1	0	1	1	0	50
	1	-1	3	2	-2	150

ratio

$$50/1$$

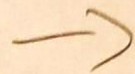
$$\boxed{30/1} \rightarrow$$

	x_1	x_2	x_3	x_4	x_5	
x_6	1*	1	0	-1	-1	20
x_5	-1	1	-1	0	1	30
x_3	1	0	1	1	0	50
	<u>-1</u>	1	1	2	2	210

ratio

20/1

50/1



	x_6	x_2	x_3	x_4	x_5	
x_1	1	1	0	-1	-1	20
x_5	1	2	-1	-1	0	50
x_3	-1	-1	1	2	1	30
	1	2	1	1	1	230

The minimum of the objective function is -230, and this value is attained

at $x_1 = 20, x_2 = 0, x_3 = 30, x_4 = 0, x_5 = 50$