Max. $Z = 2x - 5y$

      s.a.

$r_1: 4x + 8y \leqslant 75$

$r_2: x + 3y \leqslant 40$

$r_3: 7x + 3y \leqslant 50$

$r_4: x \geqslant 0$

$r_5: y \geqslant 0$

① $4x + 8y + h_1 = 75$ $Z_j = 2x - 5y + \emptyset h_1 + \emptyset h_2 + \emptyset h_3$

② $x + 3y + h_2 = 40$

③ $7x + 3y + h_3 = 50$

	x	y	h_1	h_2	h_3		
h_1	4	8	1	0	0	75	$75/4 \approx 18.75$
h_2	1	3	0	1	0	40	40
h_3	7	3	0	0	1	50	$50/7 \approx 7.14$
Z_j	-2	5	0	0	0	0	

$-4x + h_1$	0	$44/7$	1	$\emptyset$	$-4/7$	$325/7$
$-x + h_2$	0	$18/7$	0	1	$-1/7$	$230/7$
x	1	$3/7$	0	0	$1/7$	$50/7$
$+2x + Z_j$	$\emptyset$	$41/7$	0	0	$2/7$	$100/7$

$x = 50/7$; $y = \emptyset$; $h_1 = {}^{325}/7$; $h_2 = {}^{230}/7$; $h_3 = \emptyset$; $Z_j = 100/7$

Max $(50/7, \emptyset)$

$r_1 = x = 75/4$ $y = 75/8$

$r_2 = x = 40$ $y = 40/3$

$r_3 = x = 50/7$ $y = 30/3$

$Z = cte = \emptyset$

$2x + 5y = 0$

$y = \dfrac{-2x}{5}$
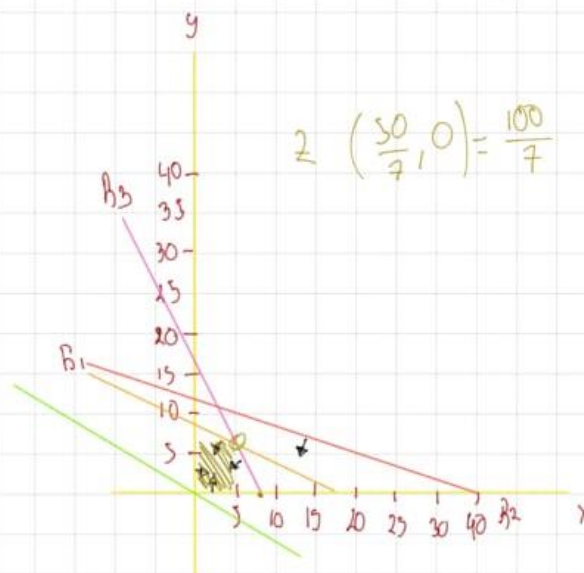
$Z\left(\dfrac{50}{7}, 0\right) = \dfrac{100}{7}$

2. Min $z = a + b$

S.a.

$r_1: 3a + 3b \leq 25$ ① $3a + 3b + h_1 = 25$

$r_2: 2a + b \geq 4$ ② $-2a - b + h_2 = 4$

$r_3: 5a + b \geq 2$ ③ $-5a - b + h_3 = 2$

$r_4: a \geq 0$

$r_5: b \geq 0$ $z = a + b + \emptyset h_1 + \emptyset h_2 + \emptyset h_3$

	a	b	h_1	h_2	h_3	
h_1	3	3	1	0	0	25
h_2	-2	-1	0	1	0	4
h_3	-5	-1	0	0	1	2
z_j	1	1	0	0	0	0

$a = \emptyset$ $b = \emptyset$ $h_1 = 25$ $h_2 = 4$ $h_3 = 2$ $z_j = 0$

$z = cte = \emptyset$

$a + b = 0 \rightarrow b = -a$
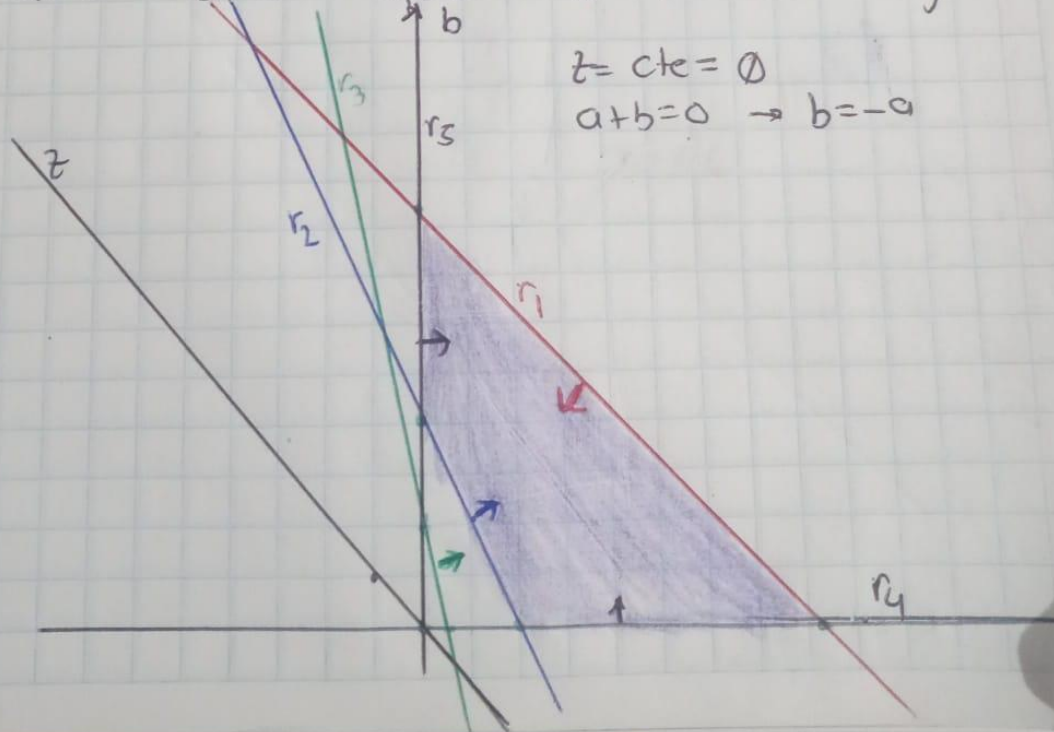
3. Máx $Z = s + t$

s.a.
$$r1: 2s + t \le 30$$
$$r2: s + 2t \le 35$$
$$r3: s \le 5$$
$$r4: s \ge 1 \qquad r4: -s \le -1$$
$$r5\ t \ge 0$$

$s=5,\ t=15,\ h_1=5,\ h_2=0,\ h_3=0,\ h_4=4,\ z_j=20$

$r_1: 2s+t+h_1=30 \quad\longrightarrow\quad 10+15+5=30$ ✓

$r_2: s+2t+h_2=35 \qquad 5+30+0=35$ ✓

$r_3: s+h_3=5 \qquad\qquad 5+0=5$ ✓

$r_4: -s+h_4=-1 \qquad\quad -5+4=-1$ ✓

$z_j: s+t+0h_1+0h_2+0h_3+0h_4=0 \quad 5+15=20$ ✓

MAX

	s	t	h_1	h_2	h_3	h_4				
h_1	2	1	1	0	0	0	30	30		
h_2	1	2	0	1	0	0	35	35/2		
h_3	1	0	0	0	1	0	5	∞		
h_4	-1	0	0	0	0	1	-1	∞		
z_j	-1	-1	0	0	0	0	0			
h_1	3/2	0	1	-1/2	0	0	25/2		$h_1 - t$	25/3
t	1/2	1	0	1/2	0	0	35/2		$h_2(1/2)$	35
h_3	1	0	0	0	1	0	5			5
h_4	-1	0	0	0	0	1	-1		$z_j + t$	1
z_j	-1/2	0	0	1/2	0	0	35/2			
h_1	0	0	1	-1/2	0	3/2	11		$h_1 - \frac{3}{2}s$	33/2
t	0	1	0	1/2	0	1/2	17		$t - \frac{1}{2}s$	17/2
h_3	0	0	0	0	1	1	4		$h_3 - s$	4
s	1	0	0	0	0	-1	1		$h_4(-1)$	-1
z_j	0	0	0	1/2	0	-1/2	18		$z_j + \frac{1}{2}s$	

	s	t	h_1	h_2	h_3	h_4		
h_1	0	0	1	$-\frac{1}{2}$	$-\frac{1}{2}$	0	5	$h_1 - \frac{3}{2} h_4$
t	0	1	0	$\frac{1}{2}$	$-\frac{1}{2}$	0	15	$t - \frac{1}{2} h_4$
h_4	0	0	0	0	1	1	4	$s + h_4$
s	1	0	0	0	1	0	5	$z_j + \frac{1}{2} h_4$
z_j	0	0	0	$\frac{1}{2}$	$\frac{1}{2}$	0	20	

$\rightarrow$ No hay más negativo

MAX $(s, t) = (5, 15)$

$s = 5,\ t = 15,\ h_1 = 5,\ h_2 = \emptyset,\ h_3 = \emptyset,\ h_4 = 4,\ z_j = 20$

$Z = s + t = 5 + 15 = 20$ ✓

Comprobación Método Gráfico.
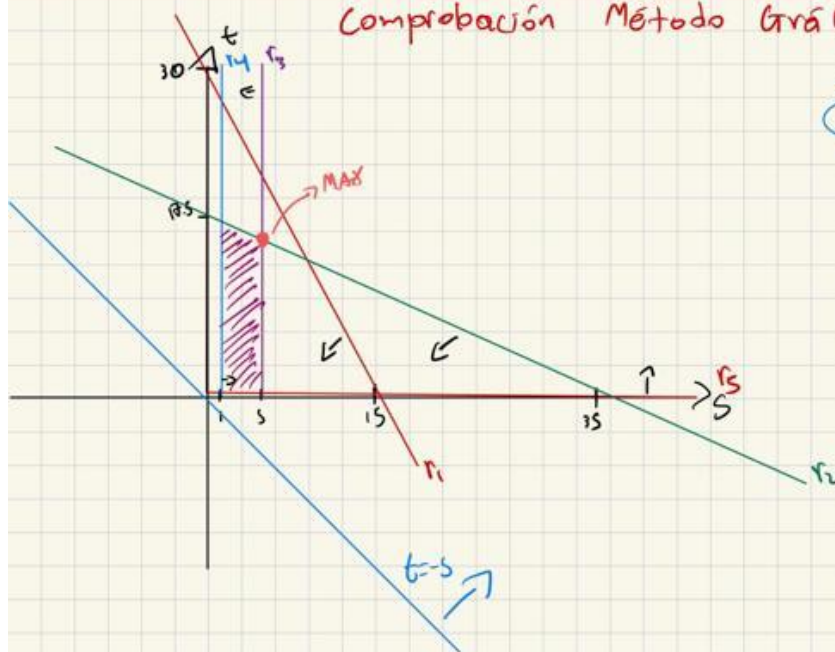
$s + t = \emptyset$ $m < \emptyset$
$t = -s$ Pendiente abajo - arriba

MAX r_2 y r_3

$\begin{cases} s + 2t = 35 \\ s = 5 \end{cases}$

$\rightarrow s + 2t = 35$
$2t = 35 - s$
$2t = 30$
$t = 15$

$\therefore$ MAX $= (s, t) = (5, 15)$

$Z = s + t = 5 + 15 = 20$