

**Cátedra:**

INVESTIGACION DE OPERACIONES I

**Catedrático:**

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**Actividad:**

Discusión 1 – Periodo 3

**Integrantes:**

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**Fecha de Entrega: Domingo, 31 de octubre 2021**

①  $z_{\min} = 0.06x_1 + 0.03x_2 + 0.05x_3$

subject to:

$$0.25x_1 + 0.45x_2 + 0.30x_3 \geq 85,000$$

$$x_1 \geq 10,000$$

$$-2x_1 - 2x_2 + x_3 \geq 0$$

$$x_1, x_2, x_3 \geq 0$$

Primal Dual	$x_1$	$x_2$	$x_3$	71
$y_1$	0.25	0.45	0.30	85,000
$y_2$	1			10,000
$y_3$	-2	-2	1	0
$\leq$	0.06	0.03	0.05	

$$z_{\max} = 85,000y_1 + 10,000y_2$$

subject to:

$$0.25y_1 + y_2 - 2y_3 \leq 0.06$$

$$0.45y_1 + y_2 - 2y_3 \leq 0.03$$

$$0.30y_1 + y_2 + y_3 \leq 0.05$$

$$y_1, y_2, y_3 \geq 0$$

②

$$Z_{\min} = 90x_1 + 60x_2 + 30x_3$$

$$\text{Sujeto a: } \begin{aligned} x_1 + x_2 + x_3 &\geq 55 \\ x_1 - 2(x_2 + x_3) &\geq 10 \end{aligned}$$

$$x_1, x_2, x_3 \geq 0$$

Primal \ Dual	$x_1$	$x_2$	$x_3$	$\geq$
$y_1$	1	1	1	55
$y_2$	1	1	1	10
$\leq$	90	60	30	

$$Z_{\max} = 55y_1 + 10y_2$$

Sujeto a:

$$y_1 + y_2 \leq 90$$

$$y_1 + y_2 \leq 60$$

$$y_1 + y_2 \leq 30$$

$$y_1, y_2, y_3 \geq 0$$

$$z_{\max} = 18,000,000 j_1$$

Subjeto a:

$$150,000 j_1 + j_2 \leq 22,500$$

$$300,000 j_1 - 2 j_2 \leq 28,000$$

$$j_1, j_2 \geq 0$$

Primal			
	$j_1$		$j_2$
$x_1$	150,000	1	22,500
$x_2$	300,000	-2	28,000
$\leq$	18,000,000		

$$z_{\min} =$$

$$22,500 x_1 + 28,000 x_2$$

Subjeto a:

$$150,000 x_1 + x_2 \leq 18,000,000$$

$$300,000 x_1 - 2 x_2 \leq 18,000,000$$

$$x_1, x_2 \geq 0$$

4

$$z_{\min} = 12x_1 + 7x_2$$

Sujeto a:

$$\begin{aligned} 4x_1 + 2x_2 &\geq 80 \\ 3x_1 + 4x_2 &\geq 90 \end{aligned}$$

$$x_1, x_2 \geq 0$$

Primal			
Dual	$x_1$	$x_2$	$z$
$y_1$	4	2	80
$y_2$	3	4	90
$\leq$	12	7	

$$z_{\max} =$$

$$80y_1 + 90y_2$$

Sujeto a:

$$4y_1 + 3y_2 \leq 12$$

$$2y_1 + 4y_2 \leq 7$$

$$y_1, y_2 \geq 0$$

⑤

$$z_{\min} \quad 10x_1 + 30x_2$$

$$\text{Sujeto a: } \begin{aligned} x_1 + 5x_2 &\geq 75 \\ 5x_1 + x_2 &\geq 15 \end{aligned}$$

$$x_1, x_2 \geq 0$$

Primal			
Dual	$x_1$	$x_2$	$75$
$y_1$	1	5	75
$y_2$	5	1	15
$\leq$	10	30	

$$z_{\max} =$$

$$15y_1 + 15y_2$$

$$\text{Sujeto a:}$$

$$y_1 + 5y_2 \leq 10$$

$$5y_1 + y_2 \leq 30$$

$$y_1, y_2 \geq 0$$







