

Corrección Control 3º Evaluación - Matemáticas (C.S.S. 2)

18-04-2018

1) leyenda

X = peso de Andrés
y = peso de Benny
z = peso de Carlos.

$$\begin{cases} X+y=173 \\ X+z=152 \\ y+z=165 \end{cases}$$

$$X = \frac{\begin{vmatrix} 173 & 1 & 0 \\ 152 & 0 & 1 \\ 165 & 1 & 1 \end{vmatrix}}{-2} = \frac{-160}{-2} = \boxed{80}$$

Matriz Asociado

$$A = \begin{pmatrix} 1 & 1 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{pmatrix}$$

Matriz Ampliada

$$A^* = \begin{pmatrix} 1 & 1 & 0 & 173 \\ 1 & 0 & 1 & 152 \\ 0 & 1 & 1 & 165 \end{pmatrix}$$

$$|A| = (0+0+0) - (0+1+1) = -2 \neq 0$$

$\text{rang } A = \text{rang } A^* = 3 \Rightarrow$ Sistema Compatible Determinado

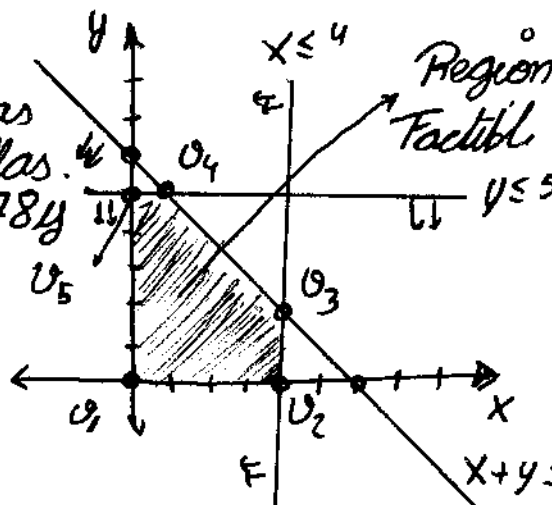
$$y = \frac{\begin{vmatrix} 1 & 173 & 0 \\ 1 & 152 & 1 \\ 0 & 165 & 1 \end{vmatrix}}{-2} = \frac{-186}{-2} = \boxed{93}$$

$$z = \frac{\begin{vmatrix} 1 & 1 & 173 \\ 1 & 0 & 152 \\ 0 & 1 & 165 \end{vmatrix}}{-2} = \frac{-144}{-2} = \boxed{72}$$

2) leyenda

X = hectáreas de papas
y = " " " " rebollas.
 $\max z = f(x,y) = 55x + 78y$

$$\text{s.a.} \begin{cases} X+y \leq 6 \\ X \leq 4 \\ y \leq 5 \\ X, y \geq 0 \end{cases}$$



$$\begin{aligned} O_1(0,0) &\rightarrow z_1 = 0 \\ O_2(4,0) &\rightarrow z_2 = 220 \\ O_3(4,2) &\rightarrow z_3 = 376 \\ O_4(0,4) &\rightarrow z_4 = 445 \\ O_5(0,5) &\rightarrow z_5 = 390 \end{aligned}$$

Hay que dedicar una hectárea a las papas y 5 a las rebollas

3) leyenda

X = precio del paquete A
y = " " " " B
z = " " " " C

$$\begin{cases} 5X+4Y+3Z = 8600 \\ 2X+7Y+4Z = 7300 \\ 8X+13Y+5Z = 15900 \end{cases}$$

Matriz Asociada

$$A = \begin{pmatrix} 5 & 4 & 3 \\ 2 & 7 & 4 \\ 8 & 13 & 5 \end{pmatrix}$$

Matriz Ampliada

$$A^* = \begin{pmatrix} 5 & 4 & 3 & 8600 \\ 2 & 7 & 4 & 7300 \\ 8 & 13 & 5 & 15900 \end{pmatrix}$$

$$|A| = (175 + 78 + 128) - (168 + 40 + 260) = -87 \neq 0$$

$$\text{rang } A = \text{rang } A^* = 3 \Rightarrow \text{SCD}$$

$$x = \frac{\begin{vmatrix} 8600 & 4 & 3 \\ 7300 & 7 & 4 \\ 15900 & 13 & 5 \end{vmatrix}}{-87} = \frac{-87000}{-87} = \boxed{1000} \quad y = \frac{\begin{vmatrix} 5 & 8600 & 3 \\ 2 & 7300 & 4 \\ 8 & 15900 & 5 \end{vmatrix}}{-87} = \frac{-76100}{-87} = \boxed{300} \quad z = \frac{\begin{vmatrix} 5 & 4 & 8600 \\ 2 & 7 & 7300 \\ 8 & 13 & 15900 \end{vmatrix}}{-87} = \frac{-69600}{-87} = \boxed{800}$$

4) leyenda

X = paquetes tipo 1

Y = " " 2.

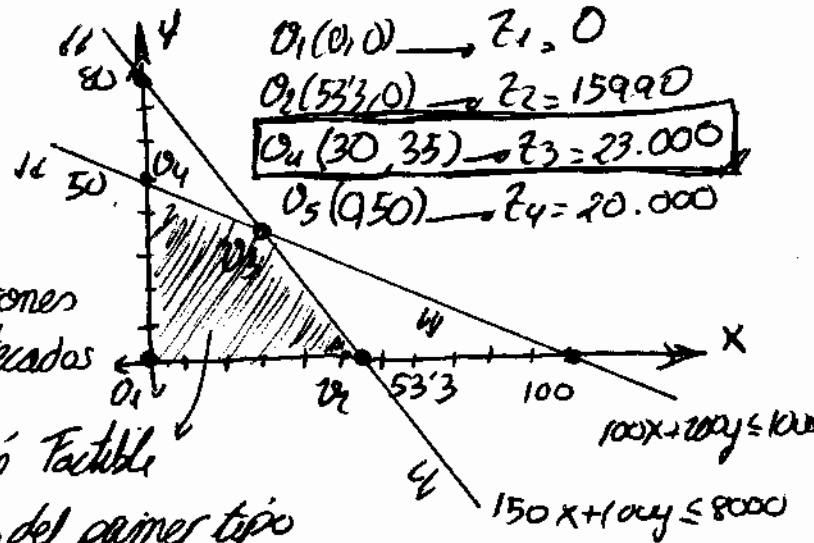
$$\max z = f(x, y) = 300x + 400y$$

sa:

$$100x + 200y \leq 10.000 \quad \left. \begin{array}{l} \text{personas} \\ \text{mantecados} \end{array} \right\}$$

$$150x + 100y \leq 8.000$$

$$x, y \geq 0$$



Hay que preparar 30 paquetes del primer tipo

y 35 del 2º para obtener unos ingresos máximos de 23.000

5) leyenda:

X = personas altas

Y = " " medianas

Z = " " bajos

Matriz Asociada

$$A = \begin{pmatrix} 1 & 1 & 1 \\ 2 & -1 & -1 \\ 1 & 2 & -2 \end{pmatrix}$$

Matriz Ampliada

$$A^* = \begin{pmatrix} 1 & 1 & 1 & 60 \\ 2 & -1 & -1 & 0 \\ 1 & 2 & -2 & 0 \end{pmatrix}$$

$$\left. \begin{array}{l} X + Y + Z = 60 \\ Y + Z = 2X \\ X + 2Y = 2Z \end{array} \right\}$$

$$Y + Z = 2X$$

$$X + 2Y = 2Z$$

$$\left. \begin{array}{l} X + Y + Z = 60 \\ 2X - Y - Z = 0 \\ X + 2Y - 2Z = 0 \end{array} \right\}$$

$$2X - Y - Z = 0$$

$$X + 2Y - 2Z = 0$$

$$|A| = (2 + 4 - 1) - (-1 - 2 - 4) = 12 \neq 0$$

$$\text{rang } A = \text{rang } A^* = 3 \Rightarrow \text{Sistema Compatible Determinado}$$

$$x = \frac{\begin{vmatrix} 60 & 1 & 1 \\ 0 & -1 & -1 \\ 0 & 2 & -2 \end{vmatrix}}{12} = \frac{240}{12} = \boxed{20}$$

$$y = \frac{\begin{vmatrix} 1 & 60 & 1 \\ 2 & 0 & -1 \\ 1 & 0 & -2 \end{vmatrix}}{12} = \frac{180}{12} = \boxed{15}$$

$$z = \frac{\begin{vmatrix} 1 & 1 & 60 \\ 2 & -1 & 0 \\ 1 & 2 & 0 \end{vmatrix}}{12} = \frac{300}{12} = \boxed{25}$$