

UNIVERSIDAD MAYOR DE SAN SIMÓN

ECONOMIA DE EMPRESAS II

EXAMEN DE MESA

NOMBRE:.....

1.-  $500 = 3X_1 * X_2$

$P_1 = 20$

$P_2 = 8$

$C = ?$

3.- Dada la siguiente ecuación:

$$Pt = \frac{1}{4} X_1^3 X_2 + \frac{27}{16} X_1^2 X_2^2 + \frac{9}{64} X_1 X_2^3$$

$X_2 = 4$

Para 6 productores



$$500 = 3x_1 \cdot x_2$$

$$P_1 = 20$$

$$P_2 = 8$$

$$C = ?$$

$$C = 20x_1 + 8x_2$$

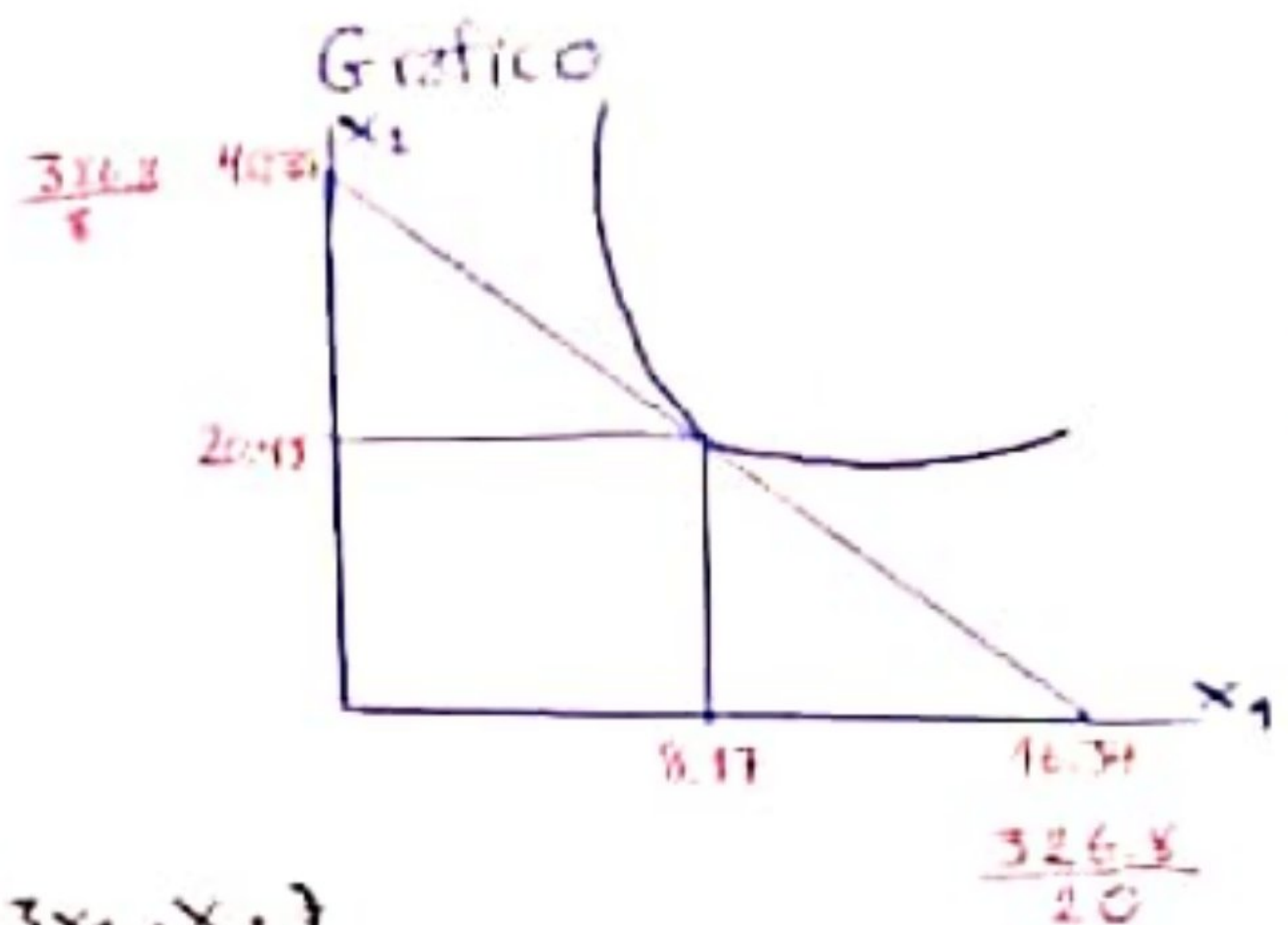
$$500 - (3x_1 \cdot x_2) = 0$$

$$Z = 20x_1 + 8x_2 + \lambda (500 - (3x_1 \cdot x_2))$$

$$\frac{dz}{dx_1} = 20 - \lambda 3x_2 \Rightarrow \lambda = \frac{20}{3x_2} //$$

$$\frac{dz}{dx_2} = 8 - \lambda 3x_1 \Rightarrow \lambda = \frac{8}{3x_1} //$$

$$\frac{dz}{d\lambda} = 500 - (3x_1 x_2) = 0 //$$



$$\frac{20}{3x_2} = \frac{8}{3x_1}$$

$$20(3x_1) = 8(3x_2)$$

$$60x_1 = 24x_2$$

$$\frac{60x_1}{24} = x_2$$

$$2.5x_1 = x_2 //$$

$$x_2 = 2.5x_1$$

$$x_2 = 2.5 \cdot 8.17$$

$$x_2 = 20.43 //$$

$$500 - (3x_1 \cdot 2.5x_1) = 0$$

$$500 - (7.5x_1^2) = 0$$

$$500 - 7.5x_1^2 = 0$$

$$500 = 7.5x_1^2$$

$$\frac{500}{7.5} = x_1^2$$

$$\sqrt{66.67} = \sqrt{x_1^2}$$

$$8.17 = x_1 //$$

$$C = 20x_1 + 8x_2$$

$$C = 20(8.17) + 8(20.43)$$

$$C = 163.4 + 163.4$$

$$C = 326.8 //$$



### EXAMEN DE MESA

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①  $PT = -\frac{1}{4} x_1^3 x_2 + \frac{27}{16} x_1^2 x_2^2 + \frac{9}{64} x_1 x_2^3$

$x_2 = 4$ ; Para 5 productores

$PT = -\frac{1}{4} x_1^3 (4) + \frac{27}{16} x_1^2 (4)^2 + \frac{9}{64} x_1 (4)^3$

$PT = -1x_1^3 + 27x_1^2 + 9x_1 //$

$x_2$	$x_1$	PT	PMe	PMg
4	1	35	35	—
4	2	118	59	83
4	3	243	81	125
4	4	404	101	161
4	5	595	119	191

$PT = -1(x_1)^3 + 27(x_1)^2 + 9(x_1)$

$= -1(1)^3 + 27(1)^2 + 9(1) = 35$

$PT = -1(2)^3 + 27(2)^2 + 9(2) = 118$

$PT = -1(3)^3 + 27(3)^2 + 9(3) = 243$

$PT = -1(4)^3 + 27(4)^2 + 9(4) = 404$

$PT = -1(5)^3 + 27(5)^2 + 9(5) = 595$

$PMe = \frac{PT}{x_1}$

$35/1 = 35$

$118/2 = 59$

$243/3 = 81$

$404/4 = 101$

$595/5 = 119$

$PMg = \frac{118 - 35}{2 - 1} = 83$

$\frac{243 - 118}{3 - 2} = 125$

$\frac{404 - 243}{4 - 3} = 161$

$\frac{595 - 404}{5 - 4} = 191$

$PMe = \frac{PT}{x_1} = \frac{-1x_1^3 + 27x_1^2 + 9x_1}{x_1}$

$PMe = -1x_1^2 + 27x_1 + 9 //$

$\frac{dPMe}{dx_1} = 2x_1 + 27 = 0$

$x = 13,5 //$

$PMg = \frac{dPT}{dx_1} = -3x_1^2 + 54x_1 + 9$

$PMg = -3(13,5)^2 + 54(13,5) + 9 = 191,25 //$

$PMe = -1(13,5)^2 + 27(13,5) + 9 = 191,25 //$

Producto Total Máximo

$PT = -x^3 + 27x^2 + 9x_1$

$\frac{dPT}{dx_1} = -3x^2 + 54x + 9 = 0 (-1)$

$3x^2 - 54x - 9 = 0$

a      b      c

$x_1 = \frac{-(-54) \pm \sqrt{(54)^2 - 4(3)(-9)}}{2 \cdot 3}$

$x_1 = \frac{54 \pm \sqrt{2916 + 108}}{6}$

$x_1 = \frac{54 \pm \sqrt{3024}}{6}$

$x_1 = \frac{54 \pm 54,99}{6}$

$x_1 = \frac{54 \pm 54,99}{6}$   
 $x_1 = 18,17 \checkmark$   
 $x_1 = -0,17$

- Reemplazando en el original

$PT = -1(18,17)^3 + 27(18,17)^2 + 9(18,17)$

$PT = 3078,74 //$