Practica N° 6.2

Ejercicio (1)

X = El Numero de Huespedes diarios ∈ Dist Normal.

Datos 62, 69, 61, 60, 58, 63, 70, 76, 74, 70

$n_1 = 10$ dias

$\bar{X} = 67.3$

$\alpha = 5\%$

$\sigma^2 = ?$ Des.

$1 - \alpha = 95\%$

gl = v = 9

formula

$\bar{x} \mp t_{1-\alpha/2} S_{\bar{x}}$

$S = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$ $\quad S = \sqrt{\frac{518.1}{9}} = 7,5873$

$S_{\bar{x}} = \frac{7,5873}{\sqrt{10}} = 2,399$

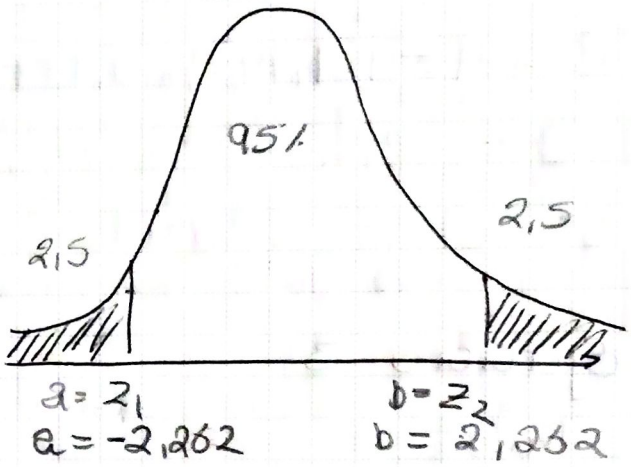
$P(a < \mu < b) = 95\%$

$a = 67.3 - |-2,262| \cdot 2,399$

$b = 67.3 + |-2,262| \cdot 2,399$

$a = 61,87$

$b = 72,72$.



∴ $P(61,87 < \mu < 72,72) = 95\%$.

∴ El Intervalo de Confianza para el promedio poblacional es de $P(61,87 < M < 72,72)$ de Huespedes diarios.

Ejercicio 2 X = tiempo de fermentación de Cerveza e dist Normal

Datos 2, 4, 6, 2, 4, 6, 2, 4, 6, 2, 4 y 6

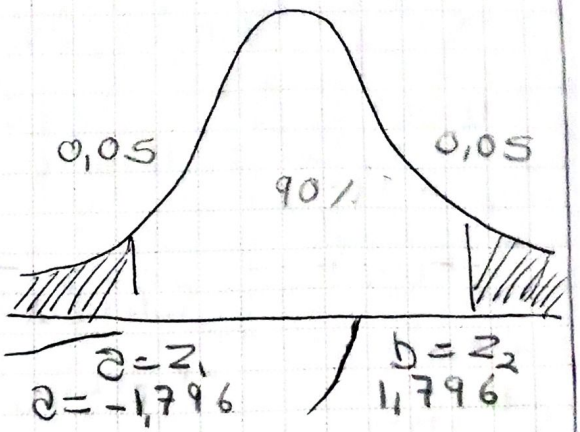
$1-\alpha = 90\%$

$n = 12$

$\bar{X} = 4$

Formula $\bar{X} \mp t_{12b}\, S_{\bar{X}}$

$V = 11$



$$S = \sqrt{\frac{\sum (x_i - \bar{x})}{n-1}}$$

$$S = \sqrt{\frac{36}{11}} = 1,8091$$

$$S_{\bar{x}} = \frac{1,80911}{\sqrt{12}} = 0,5222$$

$a = 4 - |-1,796| \cdot 0,5222$ $\quad b = 4 + |1,796| \cdot 0,5222$

$a = 3,062$ $\quad b = 4,9379$

∴ El intervalo de Confianza en semanas para el tiempo de fermentación es $P(3,06 < M < 4,94)$

Ejercicio 3. X = Niveles de Contaminación e dist Normal

Datos

Rio 1	Rio 2
$n_1 = 9$	$n_2 = 9$
$\bar{X}_1 = 15,56$	$\bar{X}_2 = 20,11$

$V = 16$

$$S = \sqrt{\frac{\sum (x_1 - \bar{x}_1}{n-1}} \qquad S_1 = 4,275$$

$$S = \sqrt{\frac{\sum (x_1 - \bar{x}_2)}{n-1}} \qquad S_2 = 7,132$$

Formula

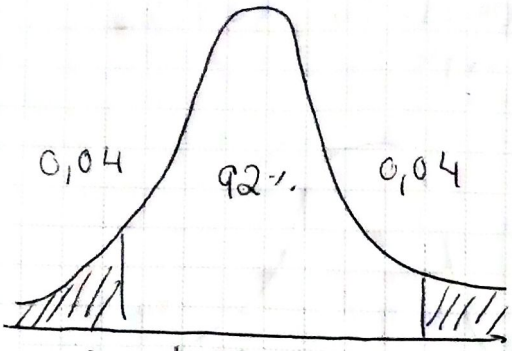
$$(\bar{X}_1 - \bar{X}_2) \mp t_{16} S_{\bar{X}_1 - \bar{X}_2}$$

$$S_{\bar{x}_1 - \bar{x}_2} = \sqrt{\frac{(4,275)^2}{9} + \frac{(7,132)^2}{9}}$$

$$S_{\bar{x}_1 - \bar{x}_2} = 2,772.$$

Tema:

Fecha: / /



Interpolar

x	y
0,025	-2.126
0,04	?
0,05	-1,746

$\hat{y} = -1,8956$

$a = (15,56 - 20,11) - |-1,8956| \cdot (2,772) = -9,805$

$b = (15,56 + 20,11) + (1,8956) \cdot (2,772) = 0,7046$

$\therefore \mu_2 > \mu_1$ El rio 2 tiene mas elevado la contaminacion $(-9,805 < \mu_1 - \mu_2 < 0,7046)$

Ejercicio 4

Datos

X = Nro de tensiones de rotura de una linea e dist Normal [a|b]

$n = 6$

$1 - \alpha = 95\%$

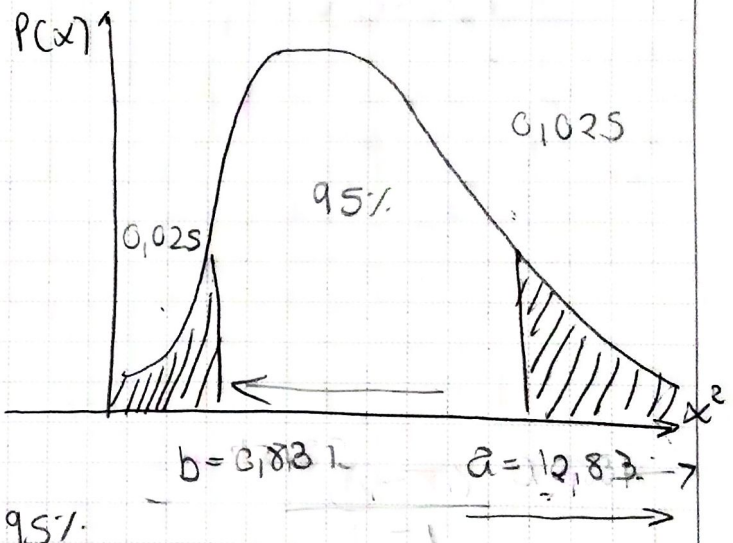
$\bar{X} = 30$

$V = n - 1$

$P(a < \sigma^2 < b)$

$V = 5$

$$P\left(\frac{(n-1)\cdot S^2}{\chi^2_{\frac{\alpha}{2};n-1}} \leq \sigma^2 \leq \frac{(n-1)S^2}{\chi_{1-\frac{\alpha}{2};(n-1)}}\right)$$



$$P\left(\frac{5 \cdot 11.6}{12,83} \leq \sigma^2 \leq \frac{5 \cdot 11.6}{0,831}\right)$$

$P(4,523 \leq \sigma^2 \leq 69,79) = 95\%$

$$S^2 = \frac{\sum (x_i - \bar{x})}{n-1}$$

$S^2 = 11.6$

Tema:

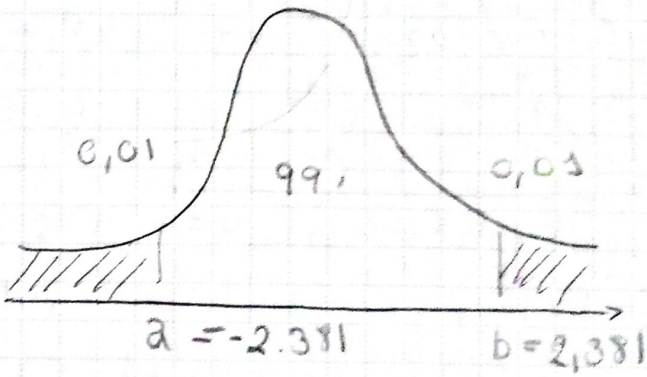
Fecha: / /

TOP

Ejercicio 5 X = Nro de ventas de las dos Cereales E dist Cualquiera

Datos

Cereal A	Cereal B
$\sigma = 180$ [Bs]	$\sigma = 125$ [Bs]
$\bar{x} = 1200$	$\bar{x} = 3200$
$n = 36$	$n = 36$
$V = 70$	



$1-\alpha = 99\%$

$$\sigma_{\bar{x}_1-\bar{x}_2} = \sqrt{\frac{180^2}{30} + \frac{125^2}{36}} = 36{,}52$$

formula

$$(\bar{x}_1 - \bar{x}_2) \mp Z_{tab} \cdot \sigma_{\bar{x}_1-\bar{x}_2}$$

$$a = (1200-3200) - 2{,}381 \cdot 36{,}52$$

$$b = (1200-3200) + 2{,}381 \cdot 36{,}52$$

$$a = -2086{,}95$$

$$b = -1913{,}05$$

$\therefore \mu_1 > \mu_2$

El cereal A se vendio mas que el Cereal B en los marcados