4'

$\bar{x} = \$895/\text{mes}$

$\sigma = \$225$

$n = 180$

$H_0: \mu = \$900$

$H_a: \mu \neq \$900$

b

$$Z = \frac{895 - 900}{\frac{225}{\sqrt{180}}} = -0.2981$$

Valor-p = 0.3859

c

$\alpha = 0.01 \Rightarrow Z_\alpha = 2.33$

$1 - \alpha = 0.99$

* Si $0.3859 \leq 0.01$

evidencia muy fuerte en contra de la hipótesis nula

Error tipo 1

* La empresa tiene que hacer un estudio de los precios de ahora para mejorar la hipótesis

$H_0 = \mu = 15$

Si $\alpha = 0.01$ → Nivel de significancia.

$V_p > \alpha \Rightarrow 1.47 > 0.01$

∴ hipótesis ~~nula es verdadera~~.

Valor-P $= 0.0708$

$0.05 < 0.0708 \leq 0.1$

∴ hipótesis nula es falsa Error tipo I

$Z(\alpha) = Z(0.01) =$

$0.0708 \leq 0.01$ = false

↳ aceptamos la hipótesis nula.

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Estimadores y Pruebas de hipótesis

1)

$$H_0: \mu \leq 25$$
$$H_a: \mu > 25$$

Prueba de una cola

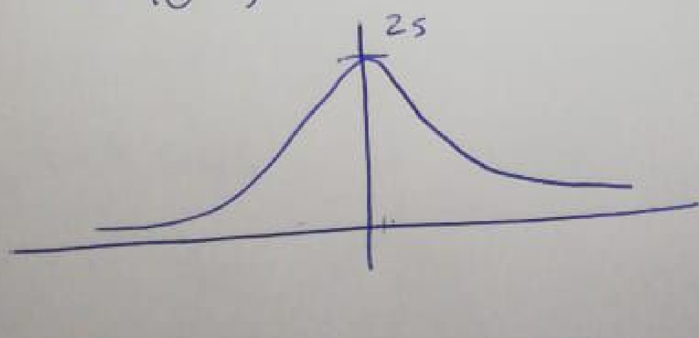
$n = 40$

$\bar{\eta} = 26.4 \Rightarrow \frac{x}{40} = 26.4 \qquad \sigma = 6$

1 Calcular el estadístico de prueba.

$$Z = \frac{\bar{x} - \mu_0}{(\sigma/\sqrt{n})}$$

$$z = \frac{26.4 - 25}{\left(\frac{6}{\sqrt{40}}\right)} = 1.47\cancel{8} = 1.476$$



Valor-P $\Rightarrow$ $z = 1.476 \Rightarrow$ Valor-P $= 0.4292$

$\Rightarrow$ No hay evidencia contra la hipótesis nula

$n = 65$

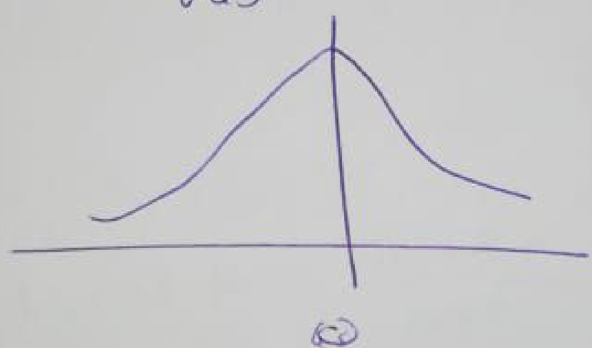
$\bar{x} = 19.5$

$\sigma = 5.2$

1) 90%

$$\bar{x} \pm z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

$$19.5 \pm 1.64 \frac{5.2}{\sqrt{65}} = 19.5 \pm 1.0577$$



(18.443, 20.557)

b)

$$\bar{x} \pm z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

$$19.5 \pm 2.58 \frac{5.2}{\sqrt{65}} = 19.5 \pm 1.6640$$

(17.836, 21.164)

4) $\bar{x} = \$4260$

$\sigma = \$900$

$n = 50$

$P(\$4260 \leq x \leq \$4510)$

b. $\bar{x}_n = \frac{1}{260} \sum_{i=1}^{29} x_i = \frac{1106635}{250} = 4402.54$

$P(\bar{x}) = \frac{4402.54}{4510} = 0.97$

c.

$x = \frac{1}{100} \sum_{i=1}^{100} x_i = \frac{435310}{100} = 4353.1$

$P(x) = \frac{4353.1}{4360} = 0.998$

5)

$\frac{1}{5} \sum_{i=1}^{5} x_i = (94 + 100 + 85 + 94 + 92) \frac{1}{5}$

$\rightarrow 93$ times.

$\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{N-1}} = \sqrt{\frac{1^2 + 7^2 + 8^2 + 11^2 + 1^2}{4}}$

$\sigma = 5.3$

2)

$H_0 = \mu = 15$

$H_a = \mu \neq 15$

$n = 50$ $\quad \sigma = 3$

$\bar{x} = 14.15$

$$Z = \frac{14.15 - 15}{3\left(\sqrt{50}\right)^{-1}} = \frac{14.15 - 15}{\frac{3}{\sqrt{50}}} = -2.003$$

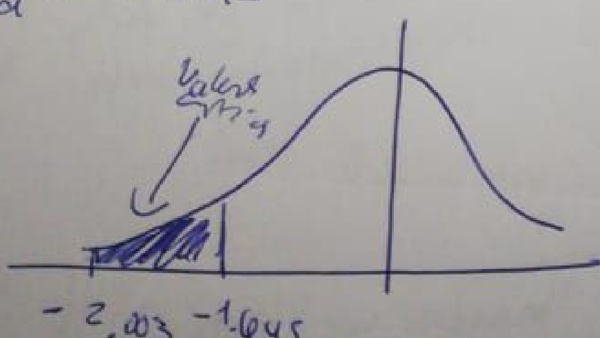
Valor - P = 0.0228

$\alpha = 0.05$

$0.0228 \leq 0.05 \rightarrow \therefore$ rechazamos la hipótesis nula

$(1 - \alpha) = 0.95$

$Z_\alpha = -1.645$



$\therefore$ rechazamos la hipótesis nula $\quad z \leq z_\alpha$