

Sista 5

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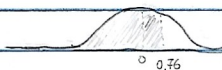
1) $\mu_{\bar{x}} = \mu_x = 6803$

$n = 9$

$s_x = 1125$

$s_{\bar{x}} = \frac{1125}{\sqrt{9}} = 375$

$P(t < 0,76)$



$t = \frac{\bar{x} - \mu_{\bar{x}}}{s_{\bar{x}}} = \frac{7088 - 6803}{375} = 0,76$

$GL = 8$

$J = 0,250$

$\therefore P \approx 0,75$

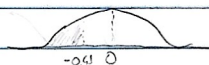
2) $\mu_x = 2870$

$\sigma_x = 900$

a) $x = 2500$

$z = \frac{2500 - 2870}{900} = -0,41$

$P(z < -0,41)$



$0,5 - 0,3593$

$\therefore P = 0,1407$

b) $n = 25$

$\bar{x} = 2500$

$P(t < -2,05)$

$s_x = \frac{900}{\sqrt{25}} = 180$

$t = \frac{2500 - 2870}{180} = -2,05$



$GL = 24$

$\therefore P = 0,025$

c) comparando as duas probabilidades é possível perceber que a chance do médio dos 25 ser menor que 2500 é bem menor do que quando é selecionado uma pessoa isoladamente

$$3) \sigma = 100$$

$$n = 52$$

$$GL = 33$$

$$G^2 = 30000$$

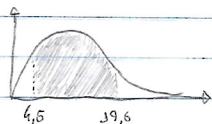
$$\chi^2 = \frac{(n-1) \cdot s^2}{\sigma^2}$$

↑
p.p.

$$\chi^2 = \frac{(52-1) \cdot 4358,91}{30000} = 4,5148 \rightarrow P(\chi^2) = 0,95$$

$$\chi^2 = \frac{(52-1) \cdot 37886,65}{30000} = 39,6762 \rightarrow P(\chi^2) = 0,05$$

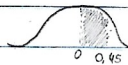
$$P(4,5148 < \chi^2 < 39,6762)$$



$$0,95 - 0,05$$

$$\therefore P = 0,90$$

4) a)



$$\therefore P = 0,3736$$

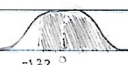
b)



$$0,4972 - 0,3907$$

$$\therefore P = 0,1065$$

c)



$$0,5 + 0,4066$$

$$\therefore P = 0,9066$$

d)



$$0,5 - 0,4066$$

$$\therefore P = 0,0934$$

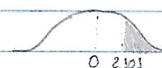
e)



$$0,5 + 0,3531$$

$$\therefore P = 0,8531$$

f)



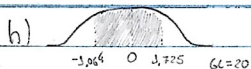
$$\therefore P = 0,025$$

GL = 18



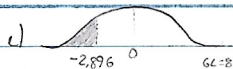
$$0,5 - 0,300$$

$$\therefore P = 0,40$$

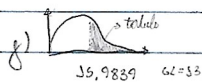


$$1 - 0,150 = 0,850$$

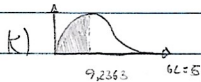
$$\therefore P = 0,80$$



$$\therefore P = 0,01$$

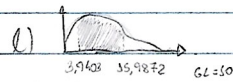


$$\therefore P = 0,25$$



$$1 - 0,1$$

$$\therefore P = 0,90$$



$$1 - 0,95 = 0,05$$

$$\therefore P = 0,85$$

$$5) \quad n = 100$$

$$\mu_{\bar{x}} = 3$$

$$s_x = 0,5$$

$$c = 95\%$$

$$\alpha = 5\% = 0,05$$

$$\alpha/2 = 0,025$$

$$IC(\mu)_{95\%} = \bar{x} \pm e$$

$$e = z_{\alpha/2} \cdot \frac{s}{\sqrt{n}}$$

$$e = 1,96 \cdot \frac{0,5}{\sqrt{100}} = 0,098$$

$$\therefore IC(\mu)_{95\%} = 3 \pm 0,098$$

$$6) \quad \alpha = 0,05$$

$$\alpha/2 = 0,025$$

$$n = 25$$

$$\bar{x} = 170$$

$$s = 30$$

$$IC(\mu)_{95\%} = \bar{x} \pm e$$

$$e = t_{\alpha/2} \cdot \frac{s}{\sqrt{n}}$$

$$e = 2,064 \cdot \frac{30}{\sqrt{25}} = 12,388$$

$$\therefore IC(\mu)_{95\%} = 170 \pm 12,388$$

$$7) m = 100$$

$$3,5\% \text{ a } p_{\text{max}}$$

$$\hat{p} = \frac{35}{100} = 0,35$$

$$\alpha = 0,05$$

$$\alpha_2 = 0,025$$

$$e = Z_{\alpha_2} \cdot \sqrt{\frac{\hat{p}(1-\hat{p})}{m}}$$

$$1,96 \cdot \sqrt{\frac{0,35 \cdot 0,65}{100}} = 0,093$$

$$\therefore IC(p)_{95\%} = 0,35 \pm 0,093$$

$$8) m = \frac{Z_{\alpha_2}^2 \cdot \hat{p}(1-\hat{p})}{e^2}$$

$$c = 97\%$$

$$\alpha = 0,03$$

$$\alpha_2 = 0,015 \Rightarrow Z_{0,015} = 2,17$$

$$e = 0,03$$

$$\therefore m = 10713$$

$$\rightarrow \frac{2,17^2 \cdot 0,35 \cdot 0,65}{0,03^2} = 10712,74$$

$$9) c = 95\%$$

$$\alpha = 0,05$$

$$\alpha_2 = 0,025 \Rightarrow Z_{0,025} = 1,96$$

$$e = 0,02$$

$$\hat{p} = \frac{9}{100} = 0,09$$

$$\therefore m = 787$$

$$m = \frac{1,96^2 \cdot 0,09 \cdot 0,91}{0,02^2} = 786,56$$

$$10) m = 30$$

$$IC(\sigma^2) = \frac{(m-1)s^2}{\chi^2_R} < \sigma^2 < \frac{(m-1)s^2}{\chi^2_L}$$

$$s^2 = 3600$$

$$c = 90\%$$

$$\alpha = 0,1$$

$$\alpha_2 = 0,05$$

$$\chi^2_R = \frac{1-c}{2} = 0,05$$

$$\chi^2_L = \frac{1+c}{2} = 0,95$$

$$\therefore IC(\sigma^2)_{90\%} = 2453,19 < \sigma^2 < 5895,51$$

$$\frac{29 \cdot 3600}{42,5569} = 2453,19$$

$$\text{e } IC(\sigma)_{90\%} = 49,53 < \sigma < 76,78$$

$$\frac{29 \cdot 3600}{17,7084} = 5895,51$$