$I(\underset{\sim}{X}) \quad f(x \mid \theta)$

$I(\underset{\sim}{x}) \qquad \underset{\sim}{X} = \underset{\sim}{x}$

$Pr(\theta \in I(\underset{\sim}{X})) = \gamma$

$Pr(\theta \in \underline{I(\underset{\sim}{x})}) = \begin{cases} 0, \\ 1. \end{cases}$

DETERMINÍSTICO

AFIRMAÇÃO PROB.
SOBRE UM
PROCEDIMENTO

UNILATERAL

UNICAUDAL / BICAUDAL

EX. UNILATERAL

NORMAL $\mu, \sigma^2 = ?$

BILATERAL

$$A(\underset{\sim}{X}) = \bar{X}_n - \frac{T^{-1}\left(\frac{1+\gamma}{2}; n-1\right) \cdot \hat{\sigma}'}{\sqrt{n}}$$

$$B(\underset{\sim}{X}) = \bar{X}_n + \frac{\quad}{\quad}$$

$$A'(X) = \bar{X}_n - \frac{T^{-1}(1-\gamma; n-1)\hat{\sigma}}{\sqrt{n}}$$

$\boxed{} = 1 - \gamma$

$\boxed{} = \gamma$

$\frac{1-\gamma}{2}$

$\gamma = 0.95$

$1 - 0.975$

$+ \frac{0.025}{\gamma}$

$$f_n(\underline{x}|\theta) = \underbrace{u(\underline{x})}_{y}\, v[r(\underline{x}), \theta]$$

Thm 28

$$r(V(X,\theta), \underline{X}) = g(\theta)$$

PROVA:

OBS 1:

TOME $V = f(\underline{X}, \theta)$

$\boxed{\text{MONOTONICIDADE}}$ $r(V_2, \underline{x}) > r(V_1, \underline{X})$

$V_2 > V_1$

$\Longrightarrow$

$$V(X,\theta) < c \iff g(\theta) < r(c, \underline{X})$$

$$r(V(X,\theta), \underline{X}) < r(c, \underline{X})$$

$$Pr(g(\theta) < r(V, \underline{X})) = G(c)$$

$$Pr(V(X,\theta) < c) =$$

$\boxed{\text{CONTINUIDADE}}$

$\Longrightarrow$

$$Pr(V(X,\theta) = c) = 0$$

$$Pr(r(V, \underline{X}) = g(\theta)) = 0$$

$$\Pr\left(A(\underline{x}) < g(\theta) < B(\underline{x}) \right) \geq \gamma$$

$$G(c) = \Pr(V \leq c)$$
$$= \Pr(V < c)$$

$$\Pr\left(A(\underline{x}) < g(\theta) < B(\underline{x}) \right)$$
$$=$$
$$\Pr(c_1 < V < c_2)$$

$$c_1 = G^{-1}(\gamma_1)$$
$$c_2 = G^{-1}(\gamma_2)$$
$$G(c_2) - G(c_1) = \gamma_2 - \gamma_1 = \gamma.$$

$$V(\underset{\sim}{X}, \mu) = \frac{\bar{X}_n - \mu}{\frac{\hat{\sigma}'}{\sqrt{n}}}$$

$$V \sim T(n-1)$$

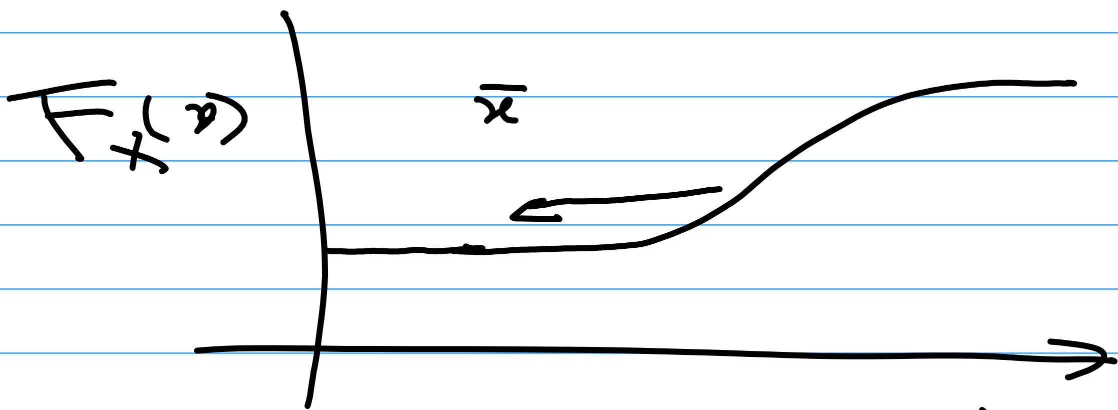
c_2, c_1 $\qquad F_T(c_2; n-1) = \gamma_2$

$\qquad F_T(c_1; n-1) = \gamma_1$

$\gamma_2 - \gamma_1 = \gamma$.

CDF È CONTINUA

CONT. ESOWERZA



$$\lim_{x \to \bar{x}} F_X(x) = F_X(\bar{x})$$

EXEMPLOS

a) $X_1, \ldots, X_n \sim \exp(\theta)$

$S := \sum_{i=1}^{n} X_i$

$S \sim GAMA(n, \theta)$

$Y(\underline{X}, \theta) = \theta S = h(S)$

$Y \sim GAMA(n, 1)$

$f_Y(y) = f_S(h^{-1}(y)) |J|$

$h^{-1}(y) = \frac{y}{\theta} \therefore \frac{1}{\theta} = |J|$

$f_Y(y) = \frac{1}{\theta} \left(\frac{y}{\theta}\right)^{n-1} \exp\left(-\theta \frac{y}{\theta}\right)$

$f_Y(y) \equiv GAMA(y; n, 1)$

$P_r(a < Y < b)$

$F_G(b; n, 1) - F_G(a; n, 1)$

$$Pr\left(\frac{a}{S} < \theta < \frac{b}{S}\right)$$

$$= F_G(b; n, 2) - F_G(a; n, 1)$$

$$\gamma = \gamma_2 - \gamma_1$$

$$V(X_n, \theta)$$

$$Pr(a < V(X, \theta) < b)$$

$$Pr(W(a, x) < \theta < W(b, \underline{X}))$$

b) NORMAL

b.1) $\mu = ?$ $\sigma^2 =$ CONHEC.

$$V = \frac{\bar{X}_n - \mu}{\sqrt{\frac{\sigma^2}{n}}} \sim NORMAL(0, 1)$$

$$\bar{X}_n \sim NORMAL\left(\mu, \frac{\sigma^2}{n}\right)$$

$$Z = \boxed{\bar{X}_n - \mu} \sim NORMAL\left(0, \frac{\sigma^2}{n}\right)$$

$$\sqrt{\frac{n}{\sigma^2}}\, Z$$

$$Var(Z) = \left(\sqrt{\frac{n}{\sigma^2}}\right)^2 Var(Z)$$

$$= \frac{n}{\sigma^2} \frac{\sigma^2}{n} = 1.$$

b.2) $\mu, \sigma = ?$

$$Q = \frac{\bar{X}_n - \mu}{\frac{\hat{\sigma}'}{\sqrt{n}}} \sim$$

STUDENT-T$(n-1)$