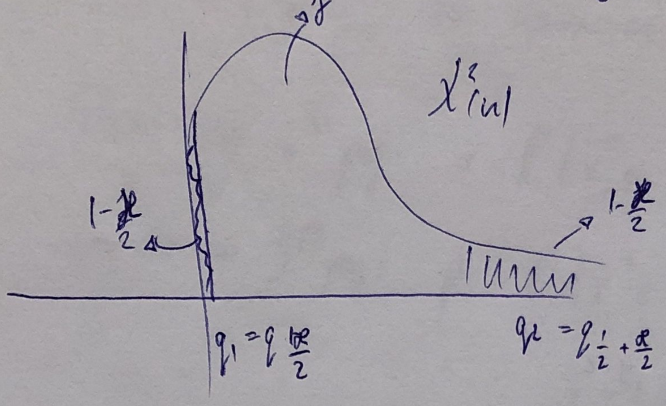
⊕ $X \in N(\mu, \sigma^2)$ знаем μ $\quad \hat{\sigma}^2 = \frac{1}{n}\sum_{j=1}^{n}(x_j - \mu)^2$

$$T = \frac{n\hat{\sigma}^2}{\sigma^2} = \sum_{j=1}^{n} \underbrace{\left(\frac{x_j - \mu}{\sigma}\right)^2}_{Z_j^2} = \sum_{j=1}^{n} Z_j^2 \in \chi^2(n)$$

$Z_j \in N(0,1)$

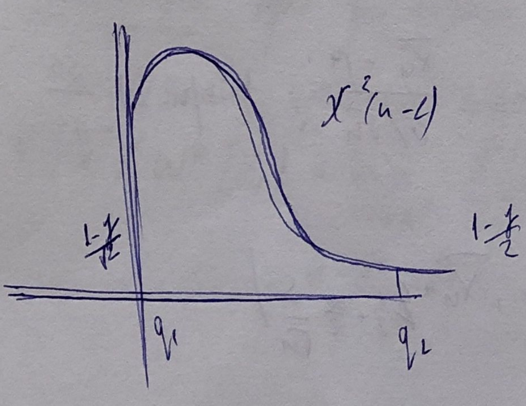


$$\gamma = P(q_1 < T < q_2) = P\left(\frac{n\hat{\sigma}^2}{q_2} < \sigma^2 < \frac{n\hat{\sigma}^2}{q_1}\right)$$

$I_1 = \frac{n\hat{\sigma}^2}{q_2} \qquad I_2 = \frac{n\hat{\sigma}^2}{q_1}$

⊕ $X \in N(\mu, \sigma^2)$ не знаем μ $\quad \frac{(n-1)S^2}{\sigma^2} = \sum_{j=1}^{n}(x_j - \bar{X}_n)^2$

От твърдение $T = \frac{(n-1)S^2}{\sigma^2} \in \chi^2(n-1) \Rightarrow T$ е ц.с



$$\gamma = P\left(q_1 < \frac{(n-1)S^2}{\sigma^2} < q_2\right) = P\left(\frac{(n-1)S^2}{q_2} < \sigma^2 < \frac{(n-1)S^2}{q_1}\right)$$

Проверки на хипотези

X; $F(x, \theta)$ $\qquad H_0: \theta = \theta_0$ → нулева хипотеза

$\qquad\qquad\qquad H_1: \theta = \theta_1$ → алтернативна

$W \subseteq \mathbb{R}^n \quad \vec{X} \in W$

Прости хипотези $\theta = \theta_i$

Сложни хип. $\theta > \theta_i$; $\theta \neq \theta_i$; $\theta \in I$