

QUEREMOS MOSTRAR:

$$a) X = \frac{\sum_{i=1}^n (X_i - \mu)^2}{\sigma^2} \sim \text{QUI-QUADRADO}(n)$$

$$b) Y = \frac{\sum_{i=1}^n (X_i - \bar{X}_n)^2}{\sigma^2} \sim \text{QUI-QUADRADO}(n-1)$$

NOTA QUE, COMO JÁ VIAMOS ANTES,

$$\sum_{i=1}^n (X_i - \mu)^2 = \sum_{i=1}^n (X_i - \bar{X}_n)^2 + n(\bar{X}_n - \mu)^2$$

$$\frac{X}{\sigma^2} = \boxed{\frac{Y}{\sigma^2}} + \boxed{\frac{n(\bar{X}_n - \mu)^2}{\sigma^2}}$$

$\Rightarrow \text{QQ}(n-1)$

\hookrightarrow OBS 16
DOS 52 OBS

$$\sqrt{n} \frac{\bar{X}_n - \mu}{\sigma} \sim N(0,1)$$

$$\boxed{\text{green}} + \boxed{\text{red}} \Rightarrow \frac{X}{\sigma^2} \sim \text{QQ}(n-1+1) //$$