QUEREMOS MOSTRAR:

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

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

NOTE QUE, COMO JÁ VIMOS ANTES,

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

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

$\Rightarrow QQ(n-1)$

$\hookrightarrow$ OBS 16 DOS SLIDES

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

$\Rightarrow \left(\dfrac{\bar{X}_n - \mu}{\sigma}\right)^2 \sim QQ(1)$

$+ \Rightarrow \dfrac{X}{\sigma^2} \sim QQ(n - 1 + 1)$ //