

$$\bar{X} = \frac{1}{n} (X_1 + X_2 + \dots + X_n)$$

$$E\bar{X} = \mu \quad \text{var } \bar{X} = \frac{\sigma^2}{n}$$

$$S^2 = \frac{1}{n-1} \sum_{i=1}^n (X_i - \bar{X})^2$$

$$E\left(\frac{1}{n} \sum (X_i - \bar{X})^2\right) = \frac{n-1}{n} \sigma^2$$

pro 11-14:08

$$X \sim N(\mu, \sigma^2) \quad f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

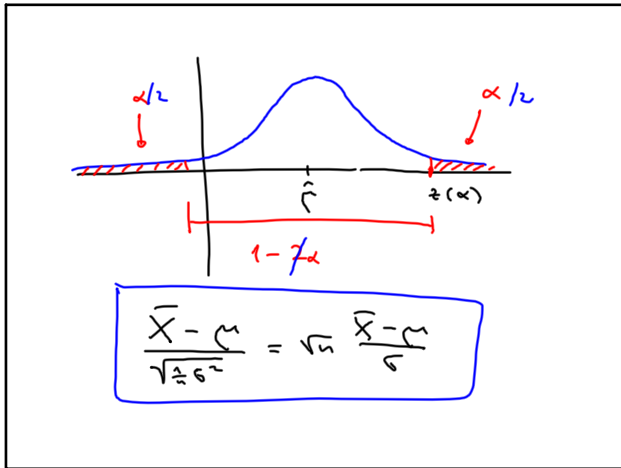
$$\bar{X} = \frac{1}{n} (X_1 + \dots + X_n) \sim N\left(\mu, \frac{1}{n} \sigma^2\right)$$

$$\chi^2_n: z_1^2 + \dots + z_n^2$$

$$z_i = \frac{X_i - \mu}{\sigma} \leftarrow \text{var } \left(\frac{1}{\sigma}\right) \sigma^2$$

$$\frac{\bar{X} - \mu}{\frac{\sigma}{\sqrt{n}}} \sim t_{n-1}$$

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pro 11-14:50

$$\text{var } \bar{X} = \frac{1}{n} \sigma^2 \quad E\bar{X} = \mu$$

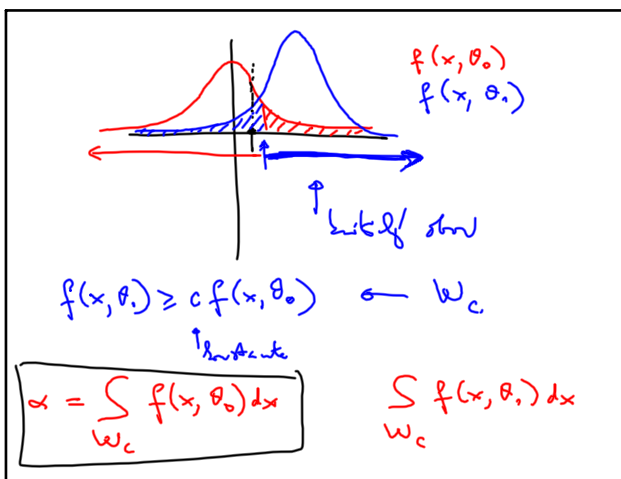
$$\left| \sqrt{n} \frac{\bar{X} - \mu}{\sigma} \right| < z(\alpha/2)$$

$$\bar{X} > \mu: \bar{X} - \frac{\sigma z(\alpha/2)}{\sqrt{n}} < \mu$$

$$\bar{X} < \mu: \mu < \bar{X} + \frac{\sigma z(\alpha/2)}{\sqrt{n}}$$

$0,575 \times 2 = 0,95$
 $(1,96)$
 $(2,57)$

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pro 11-15:28