Hypothesis testing for normal.

Notation: Confidence level c ; Significance level $\alpha = 1 - c$; Sample size is n

Some comments:

- If we can reject H_0 on level α, then we can reject it on any higher level. (The reverse is not true.)
- Theorem: (For two-sided test)

  A c-level CI includes $\mu_0 \Leftrightarrow$ Retain $H_0 : \mu = \mu_0$ with $\alpha = 1 - c \Leftrightarrow p - value > \alpha$

  A c-level CI doesn't include $\mu_0 \Leftrightarrow$ Reject $H_0 : \mu = \mu_0$ with $\alpha = 1 - c \Leftrightarrow p - value < \alpha$
- If we have a hopythesis testing with level α, then P(Type I error) = α.
- The standard error for normal case is $se = \frac{\hat{\sigma}^2}{n}$, where $\hat{\sigma}^2$ is the sample variance.