

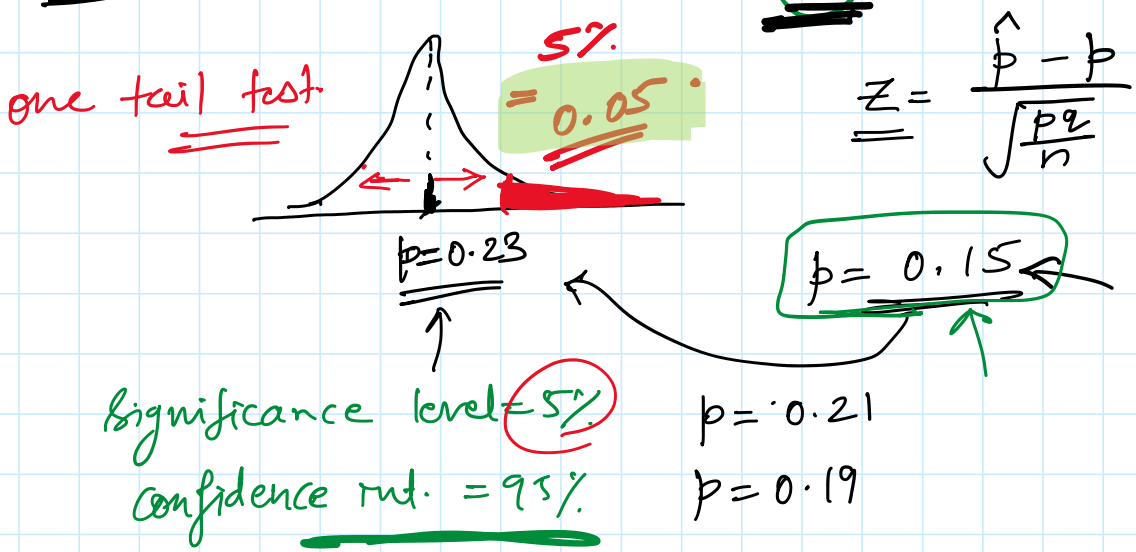
Level of significance

Thursday, March 25, 2021 4:23 PM

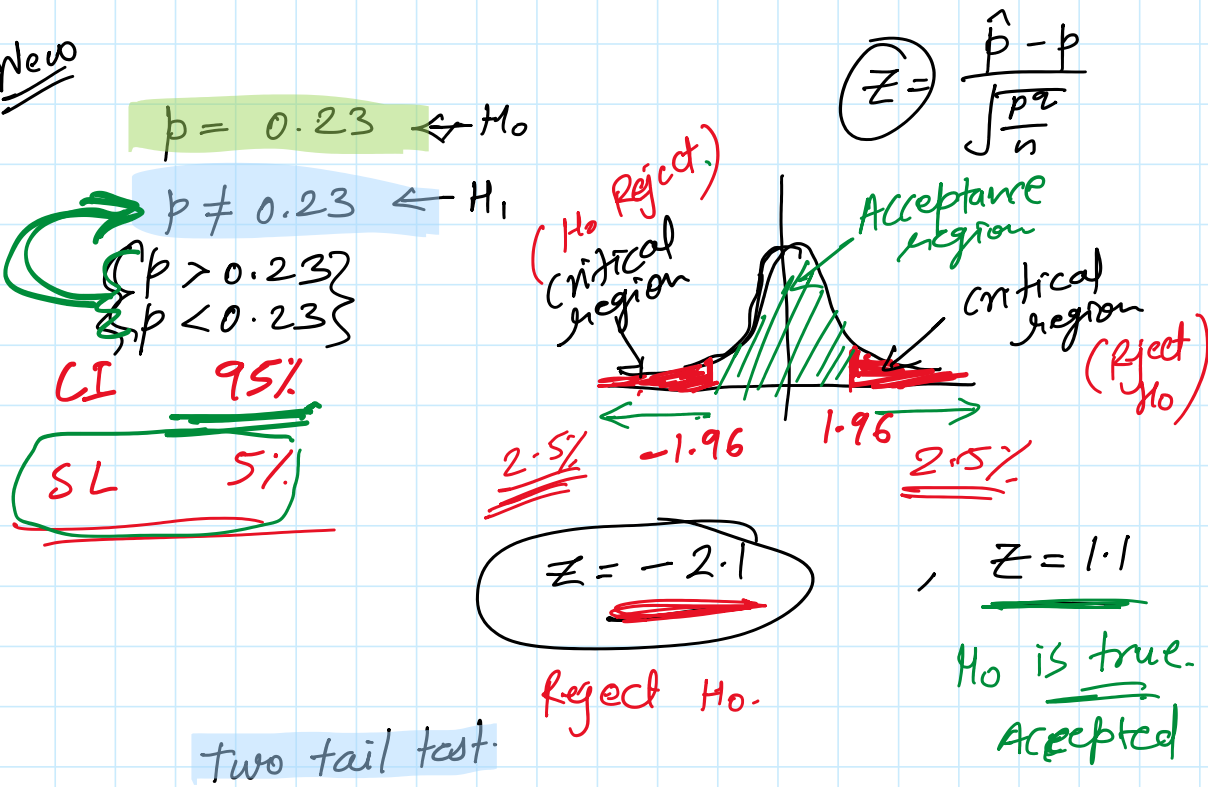
$H_0 \leftarrow$ Null Hypothesis \leftarrow we don't prove it.
 $H_1 \leftarrow$ Alternative Hypo. \leftarrow Research Hypo.

1) $\underline{p = 0.23} \leftarrow H_0$ }
 $\underline{p > 0.23} \leftarrow H_1 \leftarrow$ Research Hypo.

X - discrete random variable $\leftarrow \hat{p}$



New



② H_0 Not rejected. at 5% LOS.

proportion has not increased.

③ $H_0: \lambda = 0.45$ $H_1: \lambda \neq 0.45$

④ H_0 is rejected at 5% LOS.

H_1 is accepted.

Ex 8.2 we always test Null Hypothesis (H_0)

1) Binomial

$n = 10$, $H_0: p = 0.5$ against $H_1: p \neq 0.5$

5% LOS

Two tail test:

find the critical region of Exact significance level.

$X \sim B(10, 0.5)$ 2.5% from both end. 0.025

$X \rightarrow 0, 1, 2, 3, \dots, 10$

$\left\{ \begin{array}{l} p(X=0) = 0.00097 < 0.025 \\ p(X \leq 1) = 0.01067 < 0.025 \end{array} \right\}$

$\left\{ \begin{array}{l} p(X \leq 1) = 0.01067 < 0.025 \\ p(X \leq 2) = 0.054 > 0.025 \end{array} \right\}$

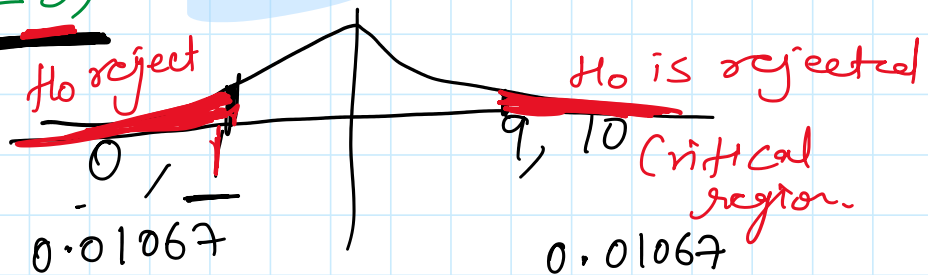
~~$p(X \leq 2) = 0.054 > 0.025$~~

$$P(X=10) = 0.00097 < 0.025$$

0,1 9,10

$$P(X \geq 9) = 0.01067 < 0.025$$

$$X \quad P(X \geq 8) = 0.054 > 0.025$$



$$LOS = 0.02134$$

$$= 2.1\%$$

$$0.054 + 0.054$$

$$= 0.108$$

$$= 10.8\%$$

2)

$$n=10, H_0: p=0.5, H_1: p < 0.5$$

one tail test

critical region: includes 0 and 1.

Exact level of 1.1%
Significance.

3)

$$2\% = 0.02$$

$$0.01$$

Two tail test.

critical region: 0 & 10.

critical region: 0 & 10.

0.2%

①

one tail test.

$\lambda = 8.5$

critical region:

$P(X \geq \underline{10}) = 0.34703$

$P(X \geq 15) = 0.02742$

Exact level of significance = 2.7%

critical region = includes 15 and higher.

