Statistics
Spring 2023
Lecture 51

Feb 19-8:47 AM

Testing population standard deviation:

$H_0: \sigma = \sigma_0$ | $H_0: \sigma \le \sigma_0$ | $H_0: \sigma \ge \sigma_0$

$H_1: \sigma \ne \sigma_0$ | $H_1: \sigma > \sigma_0$ | $H_1: \sigma < \sigma_0$

TTT | RTT | LTT

P-Value Method

CTS $\chi^2 = \frac{(n-1)\cdot s^2}{\sigma^2}$

use χ^2cdf with df=n-1 to find the p-value.

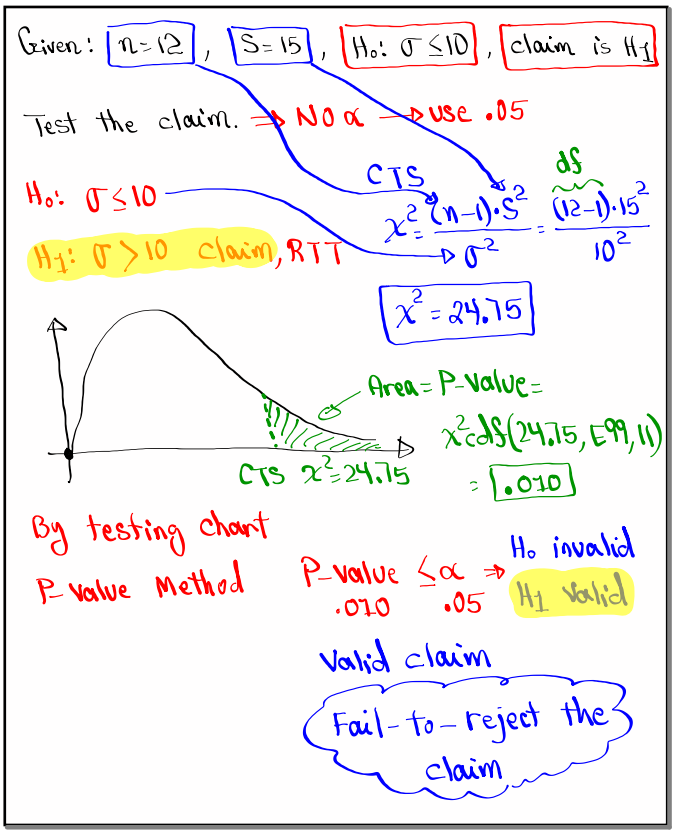
Drawing, shading, labeling required

use testing chart to learn about H_0 & H_1.

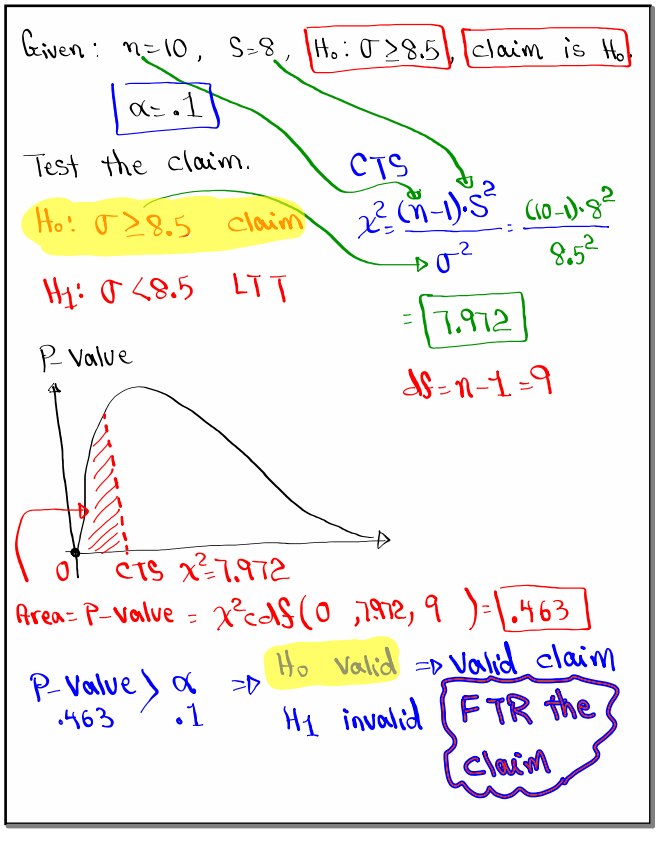
Draw final conclusion about the claim.

Reject the claim OR FTR the claim

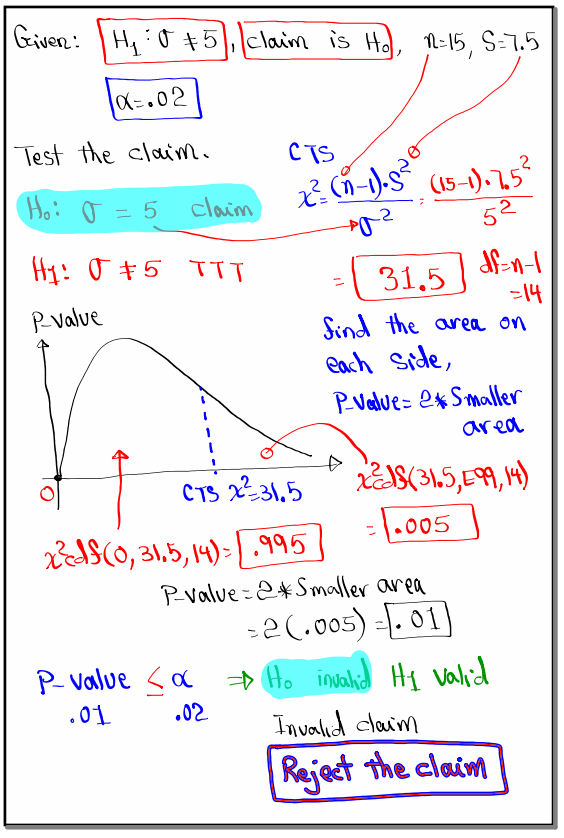
May 16-7:03 AM



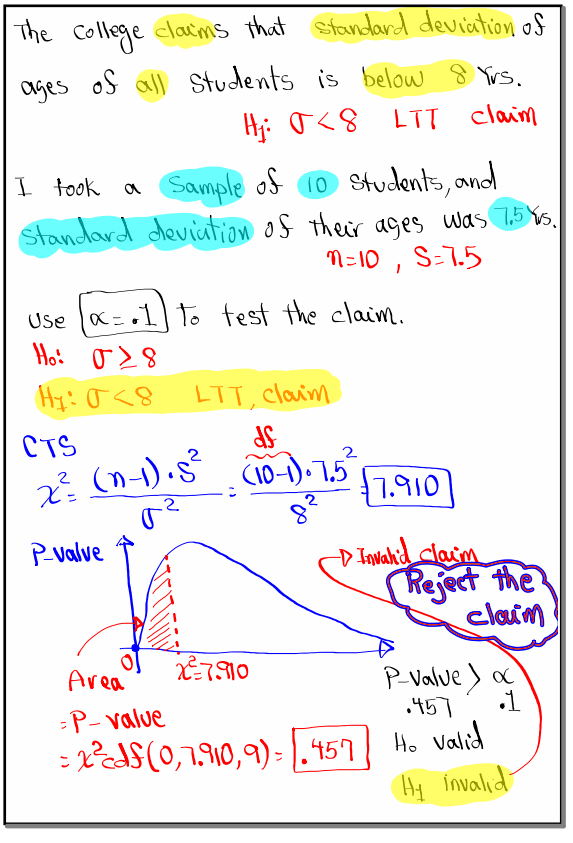
May 16-7:25 AM



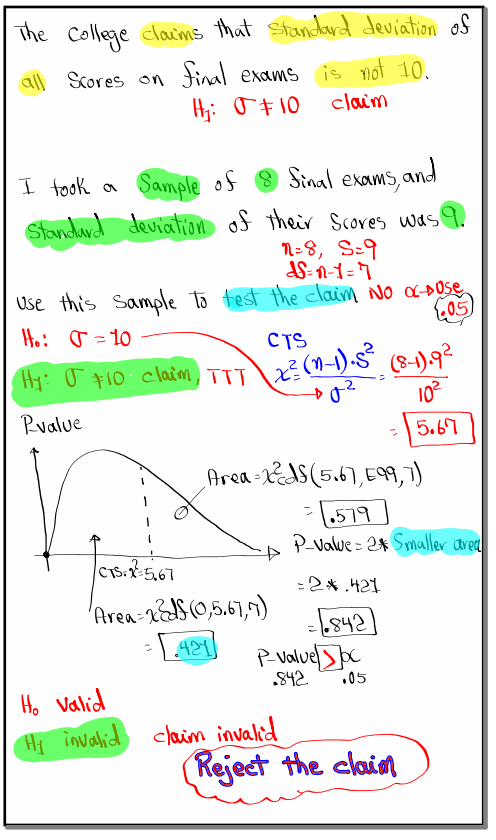
May 16-7:37 AM



May 16-7:47 AM



May 16-7:58 AM


The College claims that Standard deviation of all Scores on final exams is not 10.
H_1: $\sigma \neq 10$ claim
I took a Sample of 8 final exams, and Standard deviation of their Scores was 9.
$n=8$, $S=9$
$df = n-1 = 7$
Use this Sample to test the claim No α → Use .05
H_0: $\sigma = 10$
H_1: $\sigma \neq 10$ claim, TTT
CTS
$\chi^2 = \frac{(n-1)\cdot S^2}{\sigma^2} = \frac{(8-1)\cdot 9^2}{10^2}$
$= 5.67$
P-value
Area $= \chi^2_{cdf}(5.67, E99, 7)$
$= .579$
P-value = 2* Smaller area
CTS: $\chi^2 = 5.67$
Area $= \chi^2_{cdf}(0, 5.67, 7)$
$= .421$
$= 2 * .421$
$= .842$
P-value > α
.842 .05
H_0 valid
H_1 invalid
claim invalid
Reject the claim

May 16-8:10 AM