

# Hypothesis Testing: Critical Value Method

Idea, Proposition, Advertized Value, etc.

## Hypotheses (1)

CLAIM			
$H_0$ :	$\geq$	$=$	$\leq$
$H_1$ :	$<$	$\neq$	$>$
$\alpha$ in	left tail	two tails	right tail

If claim includes "equality", it becomes

If claim does not include "equality", it becomes

all these can simply be  $=$

for two tails,  $\alpha/2$  goes in each.

Parameter

## Test Statistic (2)

$\mu$	$\frac{\bar{x} - \mu_0}{S/\sqrt{n}}$	$\mu_0$ is from $H_0$ :
$p$	$\frac{\hat{p} - p_0}{\sqrt{\frac{p_0 q_0}{n}}}$	$p_0$ and $q_0$ from $H_0$ :
$\sigma$	$\frac{(n-1)S^2}{\sigma_0^2}$	$\sigma_0$ is from $H_0$ :

## (3) Critical Region Picture

based on $t$ with $(n-1)$ d.f.
based on $Z$
based on $\chi^2$ with $(n-1)$ d.f.

## (4)

compare calculated value of the test statistic to the critical region picture to conclude either:

- Do Not reject  $H_0$ :
- Reject  $H_0$ :

see next 3 pages for pictures.

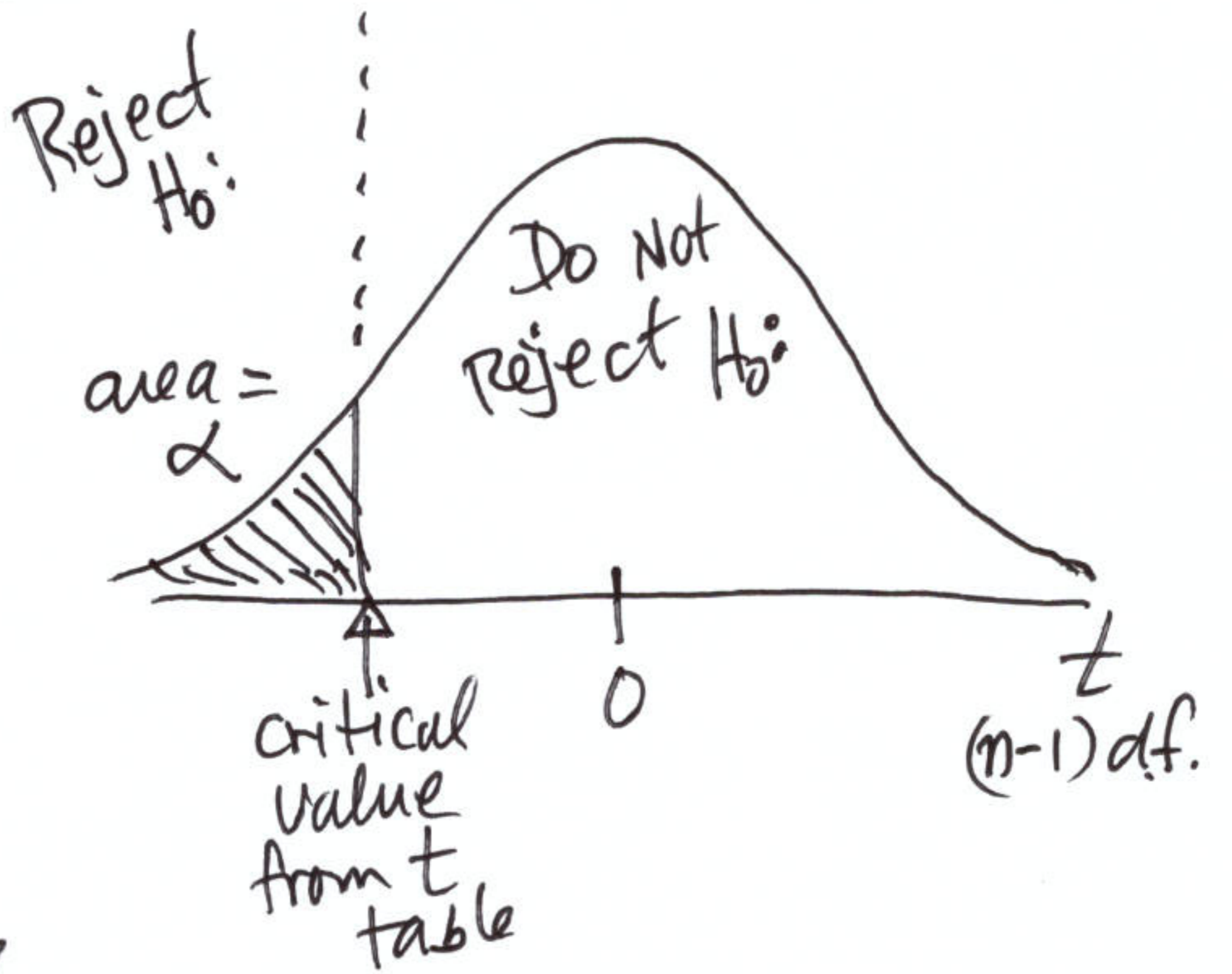
# Tests for $\mu$

$H_0: \mu \geq \text{value}$   
OR  $\mu = \text{value}$

$H_1: \mu < \text{value}$

$\alpha$  in left tail

Left Tail Test

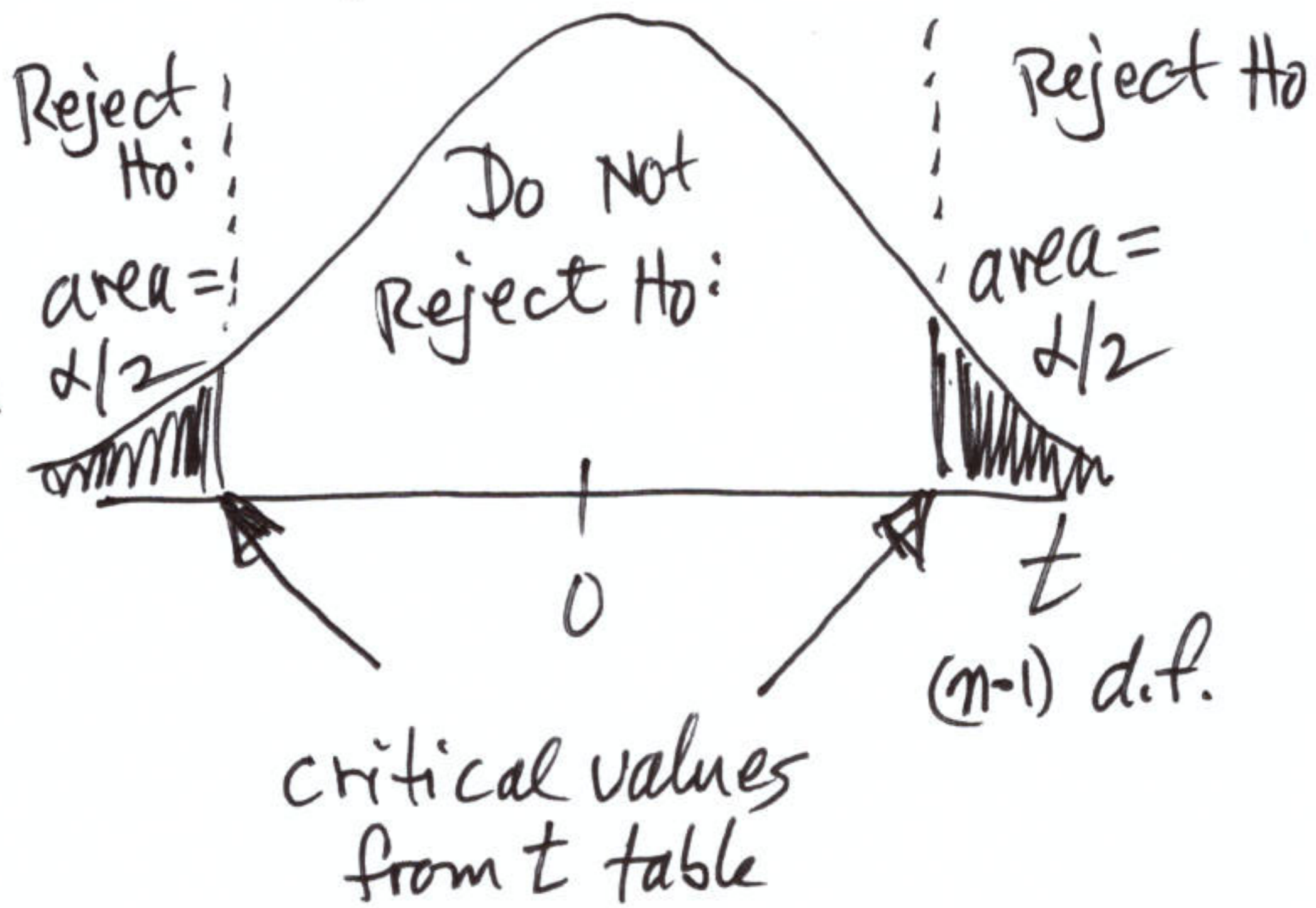


$H_0: \mu = \text{value}$

$H_1: \mu \neq \text{value}$

$\alpha/2$  in each tail

Two Tailed Test

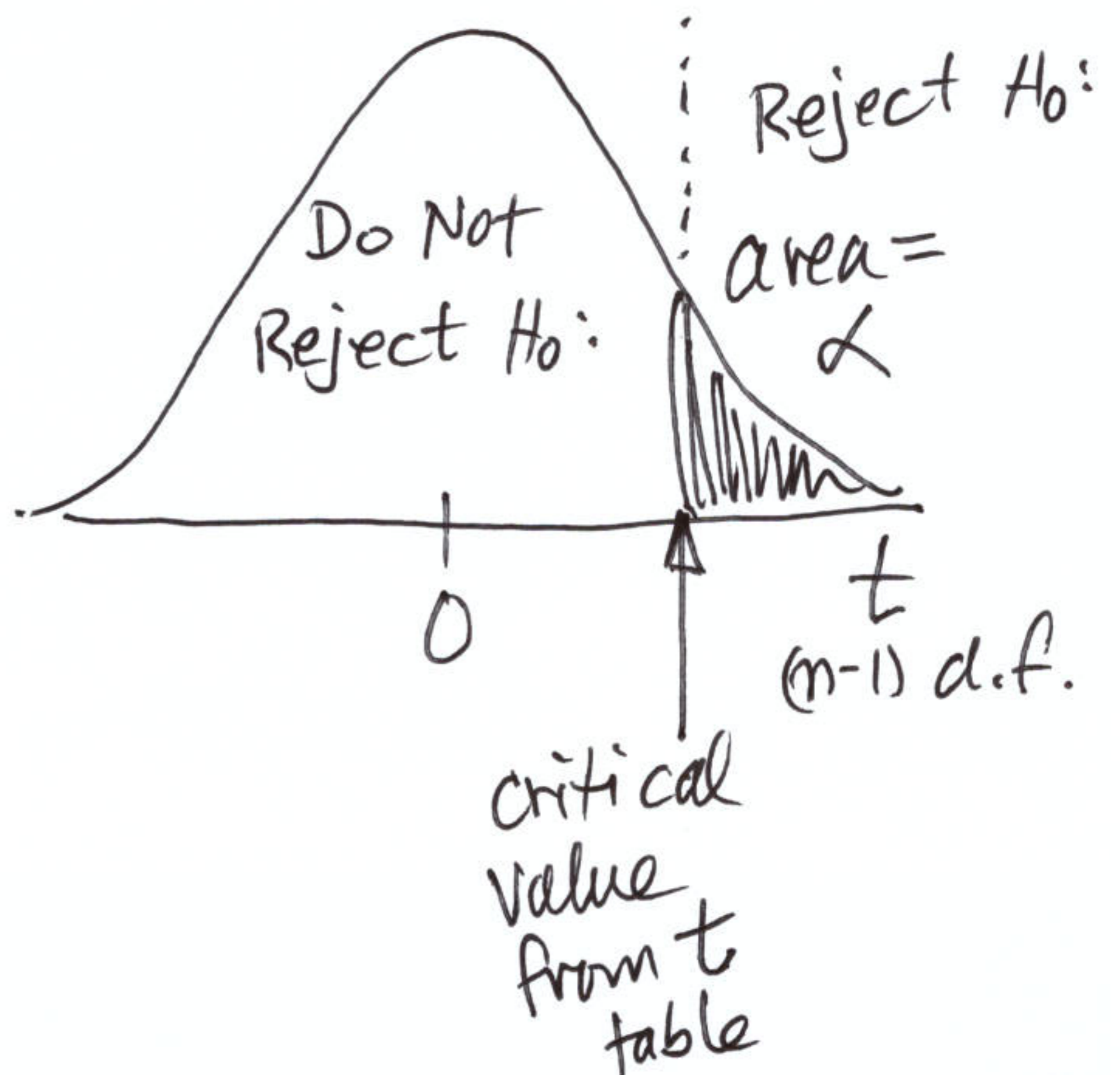


$H_0: \mu \leq \text{value}$   
OR  $\mu = \text{value}$

$H_1: \mu > \text{value}$

$\alpha$  in right tail

Right Tail Test



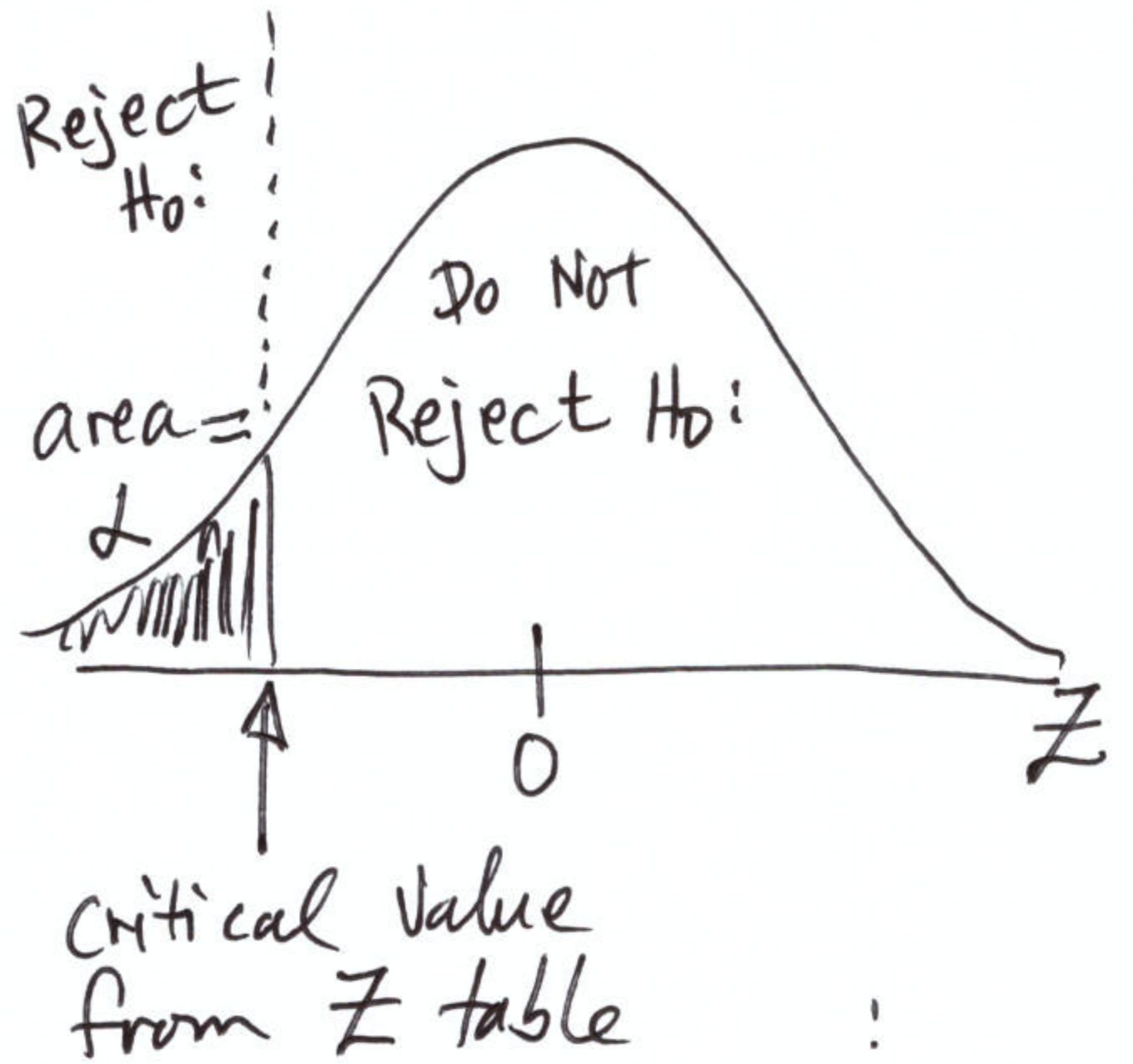
# Tests for $\rho$

$H_0: \rho \geq \underline{\text{value}}$

$H_1: \rho < \underline{\text{value}}$

$\alpha$  in left tail

Left tail test

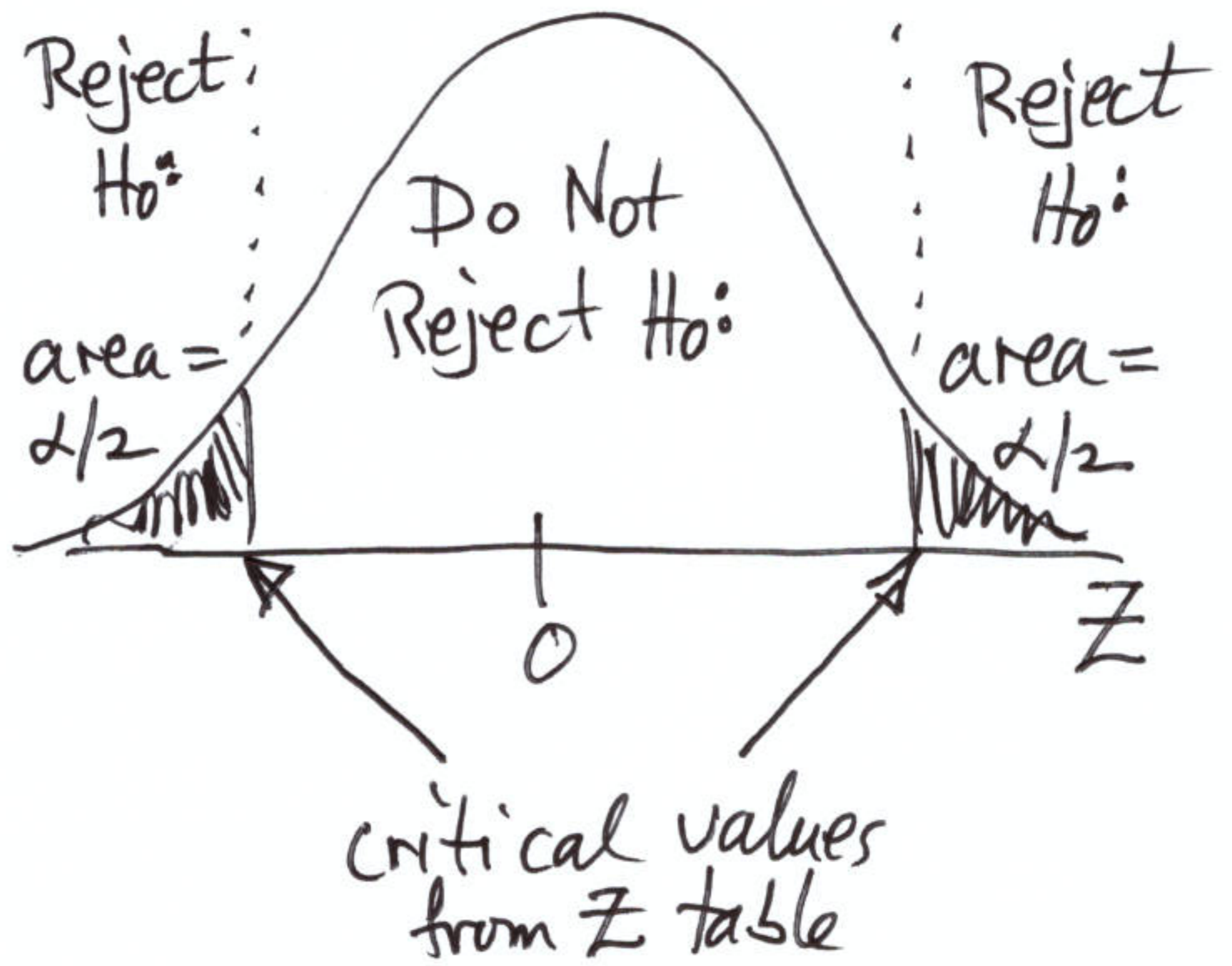


$H_0: \rho = \underline{\text{value}}$

$H_1: \rho \neq \underline{\text{value}}$

$\alpha/2$  in each tail

two tailed test

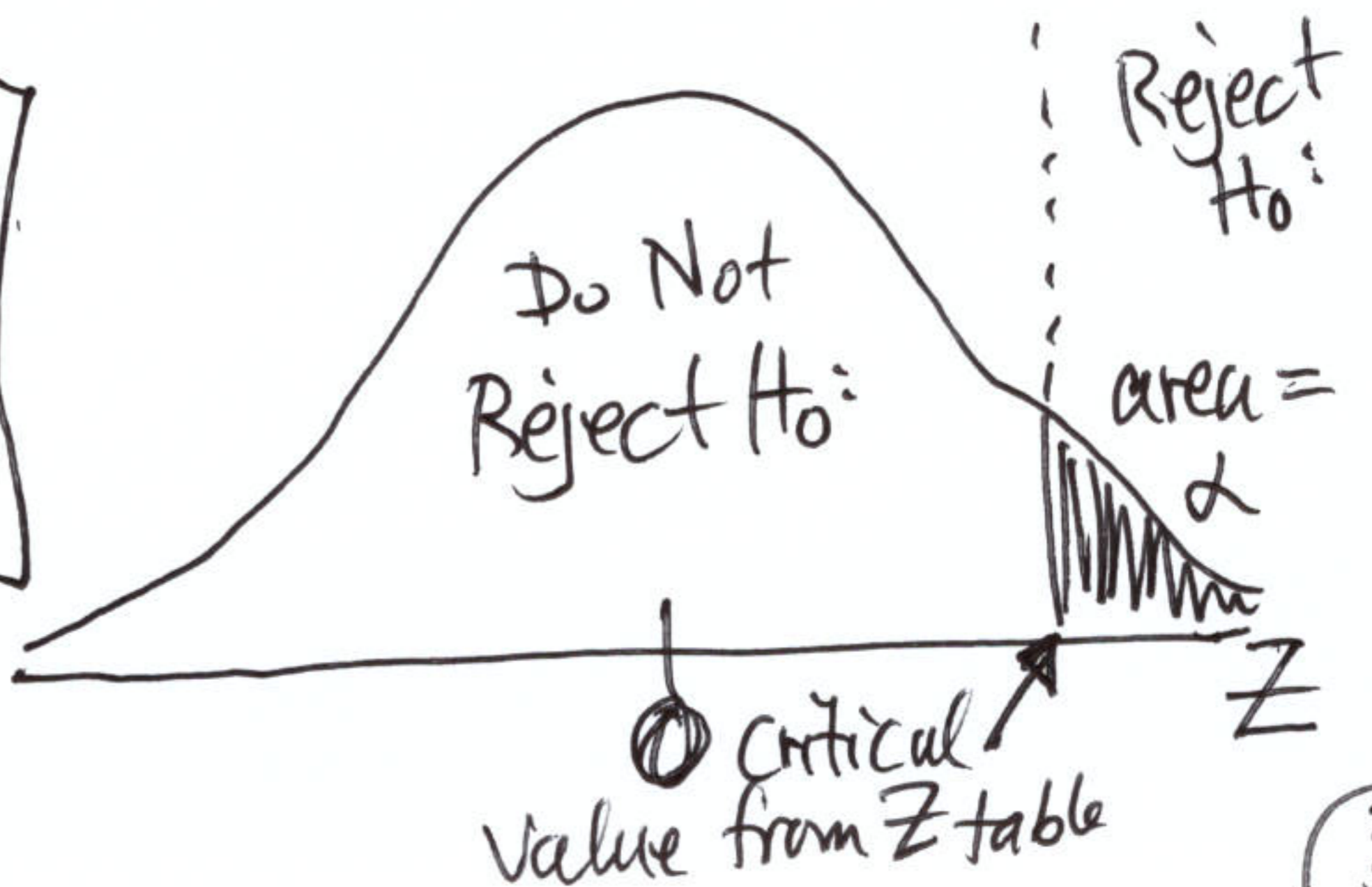


$H_0: \rho \leq \underline{\text{value}}$

$H_1: \rho > \underline{\text{value}}$

$\alpha$  in right tail

Right tail test



# Test for $\sigma$

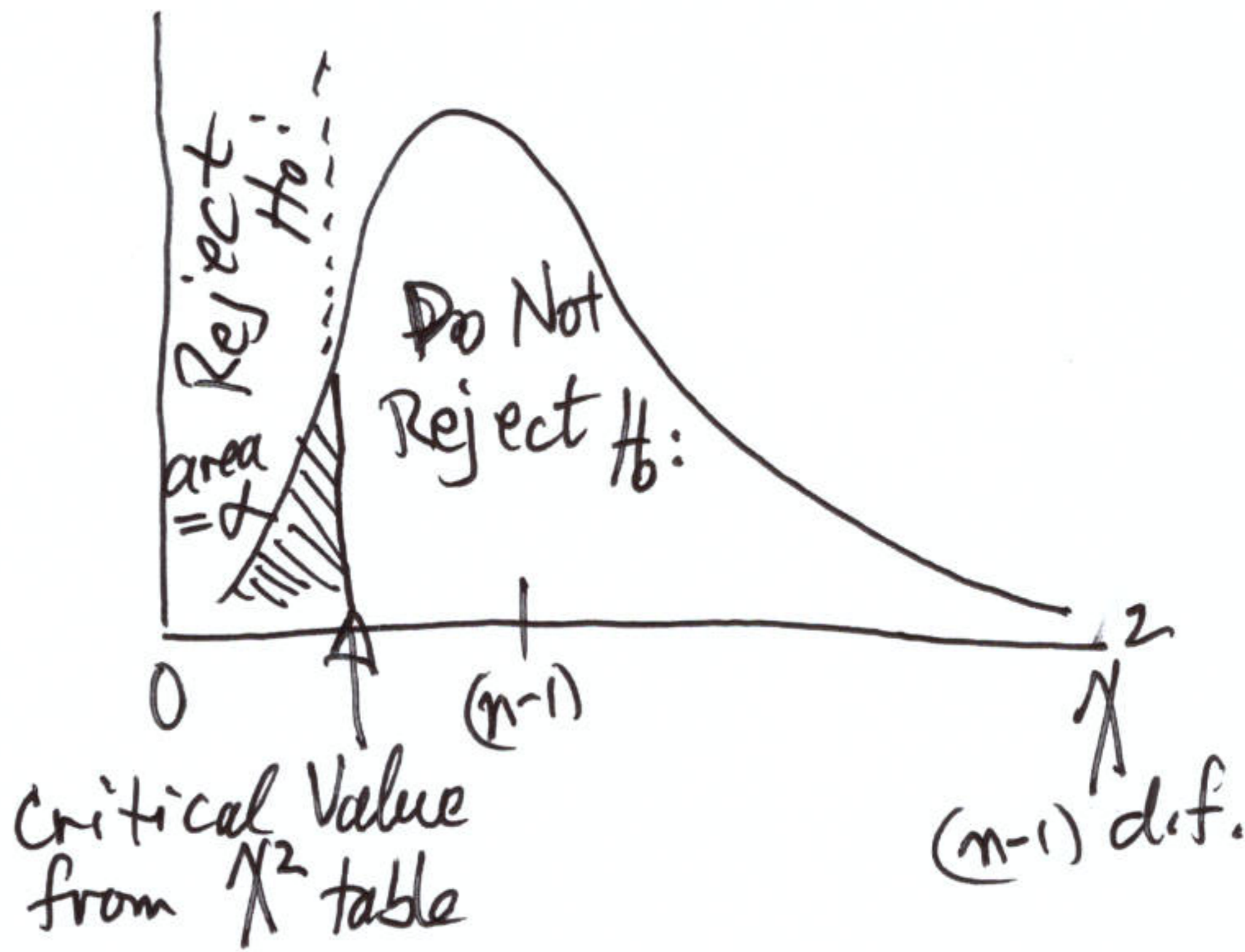
$H_0: \sigma \geq \underline{\text{value}}$   
 or  $=$

$H_1: \sigma < \underline{\text{value}}$

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$\alpha$  in left tail

Left  
tail  
test



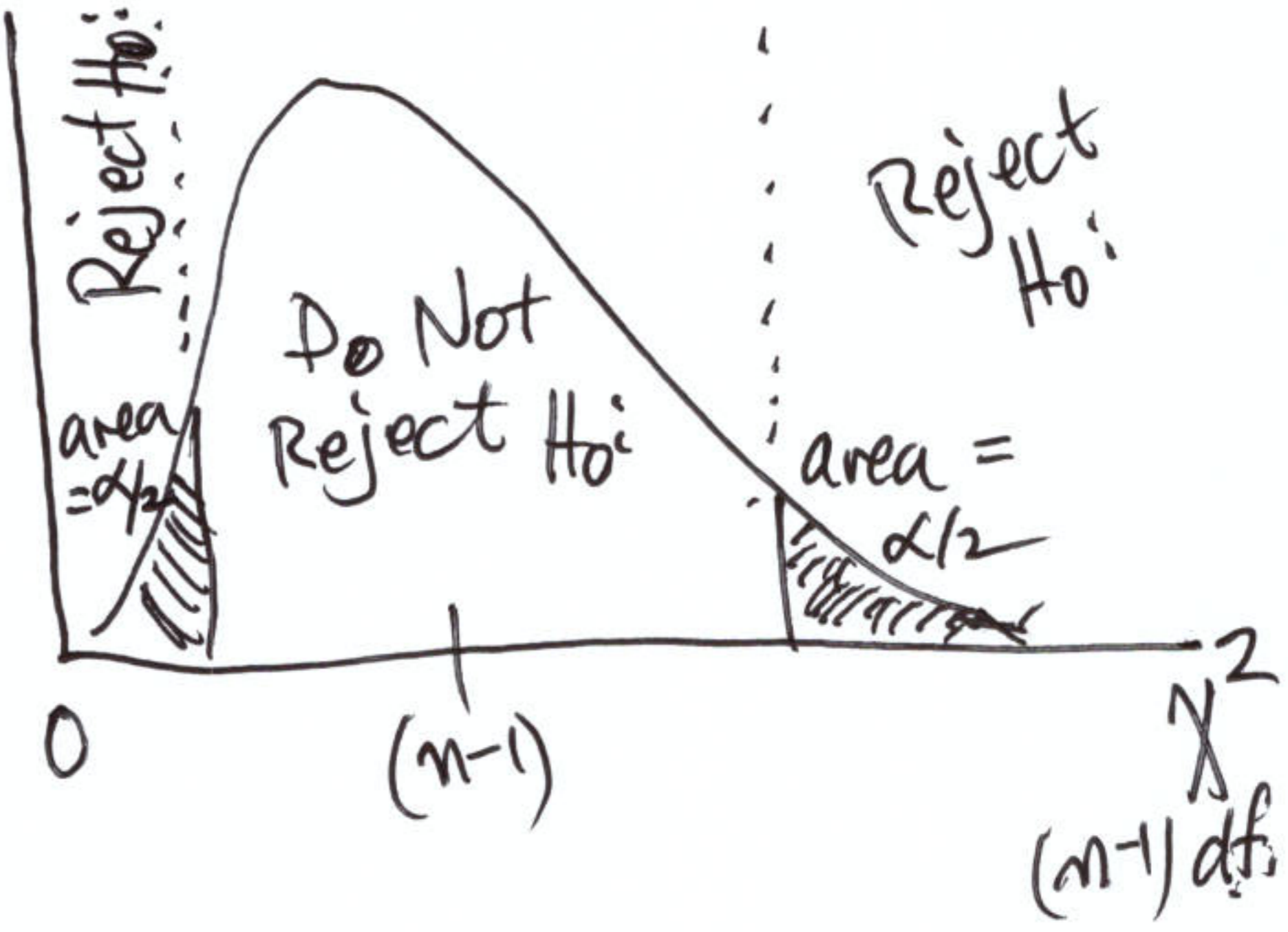
$H_0: \sigma = \underline{\text{value}}$

$H_1: \sigma \neq \underline{\text{value}}$

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$\alpha/2$  in each tail

Two  
tailed  
test



$H_0: \sigma \leq \underline{\text{value}}$   
 or  $=$

$H_1: \sigma > \underline{\text{value}}$

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$\alpha$  in right tail

Right  
tailed  
test.

