Physics 241 - Lecture 14

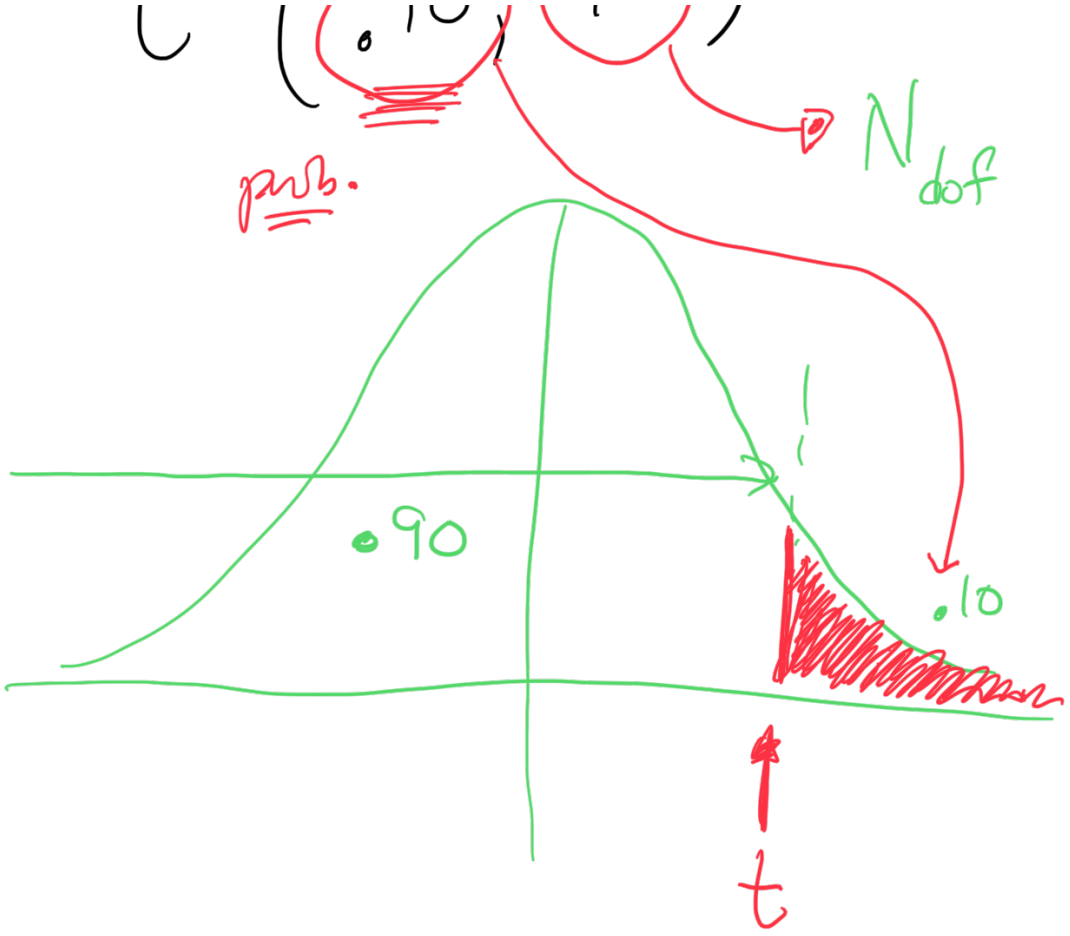
Happy Friday!

Assignment 3

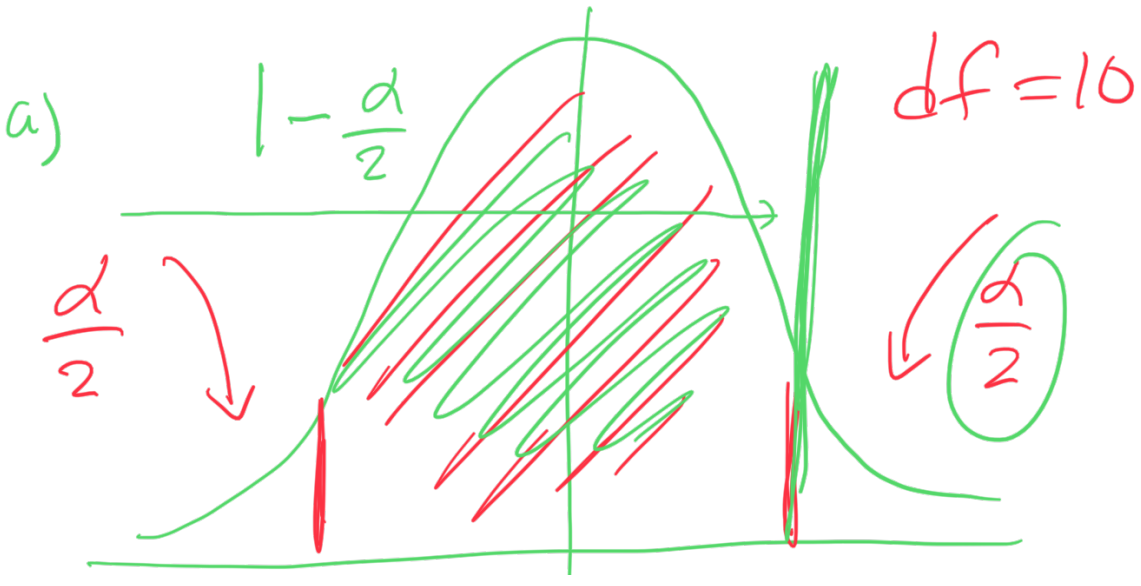
General themes:

① What does WebAssign, your boss / your prof, your Mom want?

Communication → ② Pictures are CRUCIAL



stats.t.ppf($1-\alpha$, N_{dof}



95%

.95

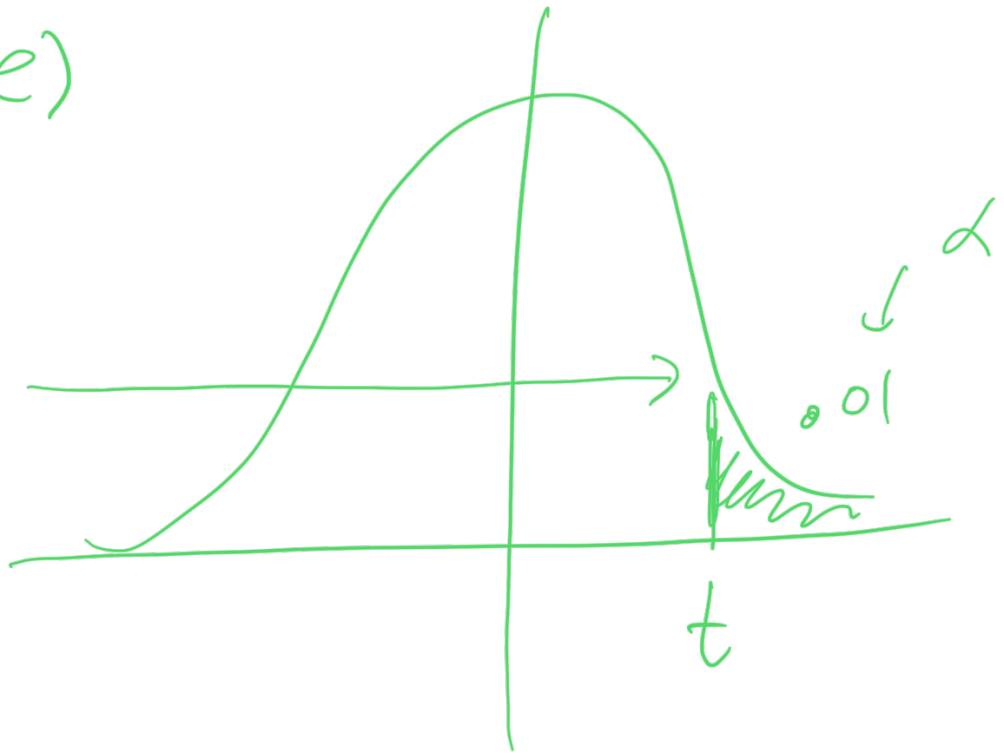
t

$N_{dof} = N-1$

$df = N-1$

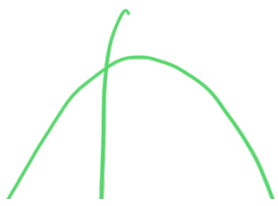
$(1 - \text{central area}) = \alpha$ $\quad \nu = N-1$

e)



ppf(1−α)

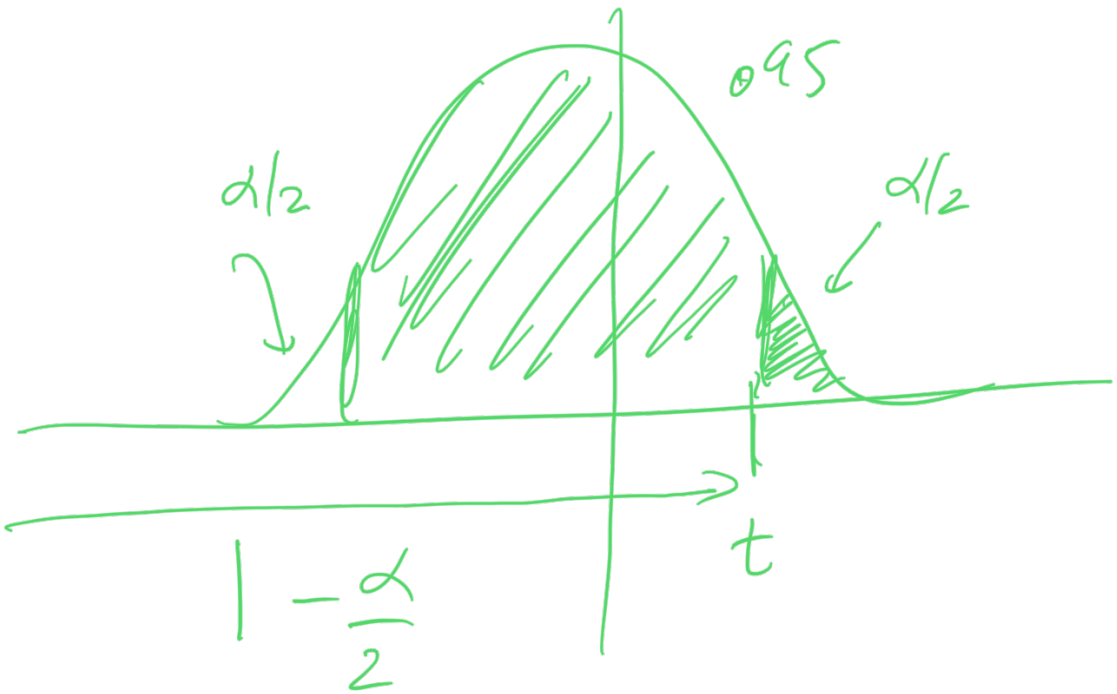
f



ppf(.025)

Q3 ; confidence level = 95%.

Control. area = .95



4. $n = 8$

sample mean $\rightarrow \bar{x} = 32.6$

sample standard deviation $\rightarrow s = 3.3$

Pop. μ (σ) ↑ do not know!

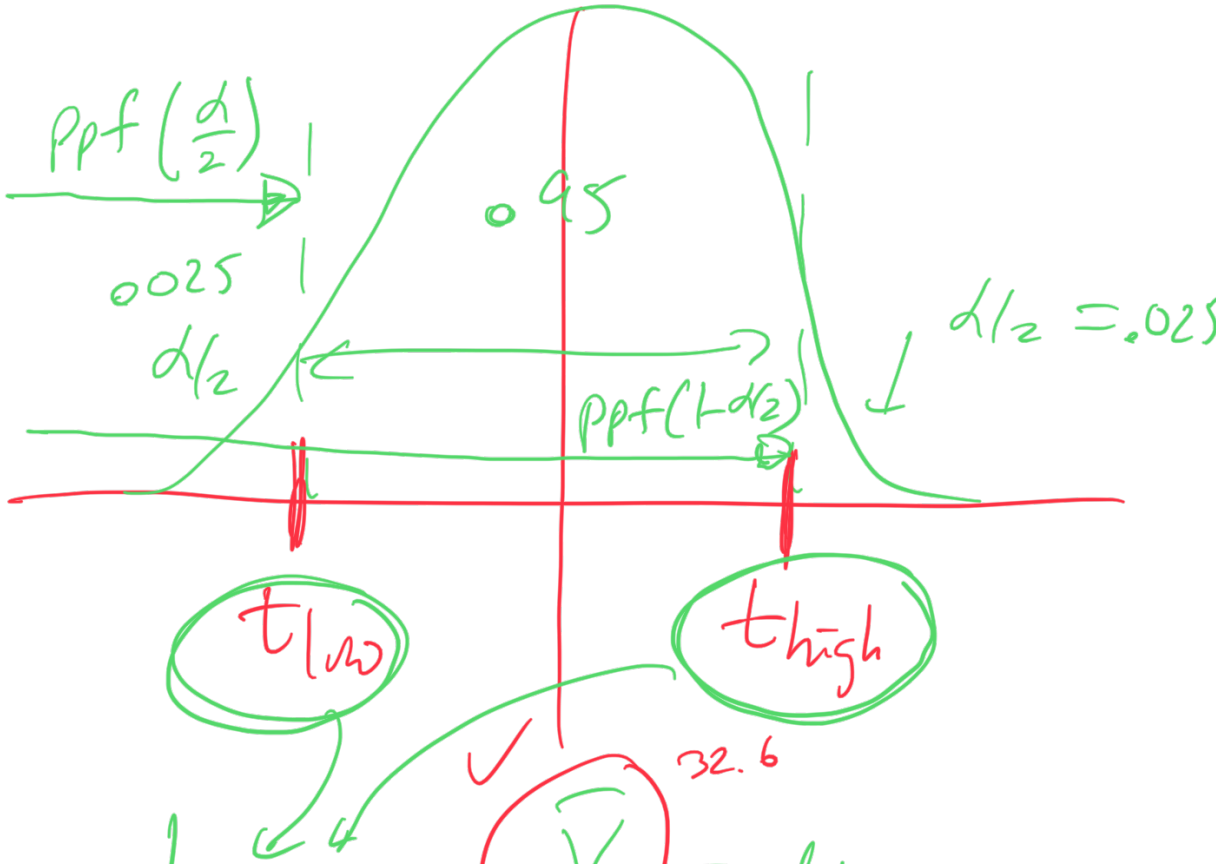
95% CI on "μ"

t-distribution

$df = n - 1$

$CL = .95$

$\alpha = 1 - CL$



$$t_{data} \equiv \frac{\bar{x} - \mu}{s/\sqrt{N}}$$

32.6

Std. Err. in Mean (SEM)

$$t_{high} \quad t_{low} = \frac{\bar{x} - \mu_1}{s/\sqrt{N}}$$

μ_2

SEM

-Ve

$$\mu_{low} = \bar{x} + t_{low} \cdot SEM$$

$$\mu_{high} = \bar{x} + t_{high} \cdot SEM$$

+ve

$$\mu_{low} = 29.84$$

$$\mu_{high} = 35.36$$

] 95% confident

$$\bar{x} = 32.6$$

Estimate of μ, based on 8 data pts.

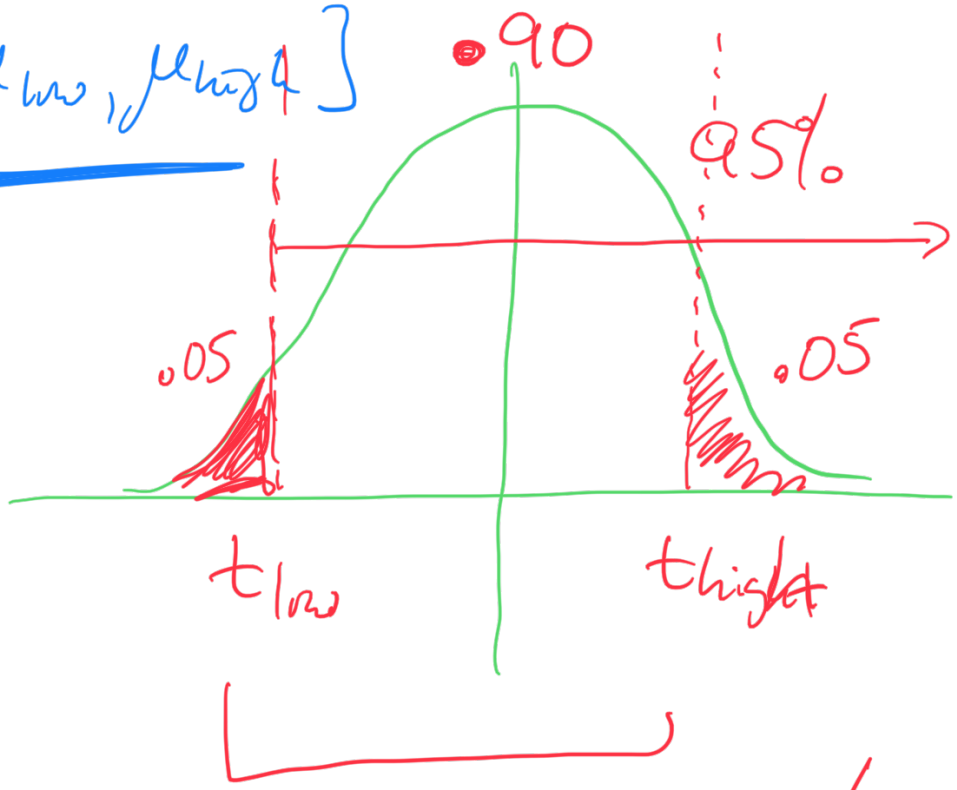
Will it be on the test?

$n = 14$, $\alpha = 0.05$

$S = .66$

a) "95% lower confidence bound.

$[\mu_{low}, \mu_{high}]$



Stats. te interval (.90, df,

$\bar{x}$, SE

(μ_{low}, μ_{high})

$t_{.}$ (7 7

v t.o.t.

b) **single joint**

$$t = \frac{\bar{x} - \mu}{s}$$

single joint

~~SEM~~

stats.t.interval (cl, df, $\bar{x}$, s)

Philosophy

$n = 14$

$s = 0.66$

1. Take another data pt.

b) I will ...

15th data pt.

Use a value of s based on 15 data pts.

(n+1)

$$s_{future} = s_{original} \cdot \sqrt{\frac{n+1}{n}}$$

$$2 \cdot \sqrt{\frac{15}{14}}$$

6.85

6.89