

ENVR 303, Take Home Final Exam. Spring 1998

set := rnd(100)
set = 19.18368

Generate data for problems

Data for question #1.

true := 11.84·%

std := 0.3·%

N := 6

i := 1, 2 .. N

Data Points:

error := rnorm(1, 0, std·2)

data := rnorm(N, true + error₁, std)

data = $\begin{bmatrix} 12.79219 \\ 13.07570 \\ 12.52106 \\ 12.62448 \\ 11.93725 \\ 12.39676 \end{bmatrix}$ ·%

Data analysis:

AVERAGE

x := mean(data)

x = 12.55791·%

STD (N-1)

s := Stdev(data)

s = 0.38470·%

CI := 95·%

$s_m(CI) := qt\left(CI + \frac{1 - CI}{2}, \sqrt{N} - 1\right) \cdot \frac{s}{\sqrt{N}}$

$s_m(CI) = 0.99247$ ·%

Comparison to true value:

$t_{\text{experimental}} := \frac{|x - \text{true}|}{s} \cdot \sqrt{N}$

$t_{\text{experimental}} = 4.57108$

$t_{\text{critical}}(CI) := qt\left(CI + \frac{1 - CI}{2}, N - 1\right)$

$t_{\text{critical}}(95\%) = 2.57058$