Sample mean

{sumx i}/{n}

Sample variance

{sum(x i-barx)^2}/{n-1}

Let  σ be the true population standard deviation .

given that,

sample size,n=8

significance level, α =0.031 (i.e. 3.1%)

We have

sample mean, x―=  ∑xin =1.00375

and

sample varinace,s2 = ∑(xi−x―)2n−1

Here,

 ∑xi = 8.03,n=8, ∑(xi−x―)2 =0.0085875

Therefore, s2 =

We have a 100(1- α) % confidence interval for population standard devtaion  σ  is,

(\sqrt{(s^2\*(n-1))/(chi^2L)},\sqrt{(s^2\*(n-1))/(chi^2R)})

# Chi-square left

chi^2alpha/2,n-1

#Chi\_square right

chi^2R=chi^2 1-alpha/2,n-1

Therefore the required confidence interval is

(\sqrt{(s^2\*(n-1))/(chi^2L)},\sqrt{(s^2\*(n-1))/(chi^2R)})

(sqrt{(0.0012\*(7))/(17.3105)},\sqrt{(0.0012\*(7))/(1.4342)})