

TI83

Computing areas under normal curves:

use 2nd VARS to get to the DISTR menu:

option 2 **normalcdf(lower limit, upper limit, mean, standard deviation)**
will give area between lower and upper limits
(mean=0 and St.dev=1 are default values)

Ex1 To find area between 1 and 1.7 under $N(0,1)$ use
 $\text{normalcdf}(1,1.7,0,1)=.1141$

Ex2 To find area under $N(0,1)$ left of 2.3 use
 $\text{normalcdf}(-1000000, 2.3,0,1)=.9893$
(use any large negative number as lower limit)

Ex3 To find area right of 2.11 under $N(0,1)$ use
 $\text{normalcdf}(2.11,1000000,0,1)=.0174$
(use any large positive number as upper limit)

Ex4 To find area under curve $N(12,3)$ between 10 and 16 use
 $\text{normalcdf}(10, 16, 12,3)=.6563$

Finding points from under the normal curves when area is given.

use 2nd VARS to get to the DISTR menu:

option 3 **invNorm(area to the left, mean, standard deviation)**
(mean=0 and St.dev=1 are default values)

Ex5 To find third decile of $N(0,1)$ use $\text{invNorm}(.3,0,1)=-.52$

Ex6 To find 95th percentile of $N(0,1)$ (or to find $Z_{.05}$) use
 $\text{invNorm}(.95,0,1)=1.645$

Ex7 To find third quartile on $N(12,3)$ use $\text{invNorm}(.75,12,3)=14.02$

Computing Confidence Intervals for one population Mean:

Z interval procedure:

(σ is known , normal population or a large sample)

use STAT menu then TESTS
option7 is Zinterval

Ex8 To find 90% CI for μ if $\bar{X} = 17$ $n=10$ and $\sigma = 4$ use

ZInterval

Inpt: Stats

σ :4

\bar{X} :17

n:10

C-Level: .90

hit Enter interval is:(14.919,19.081)

T interval procedure:

(σ is unknown , normal population or a large sample)

use STAT menu then TESTS
option8 is TInterval

Ex9 To find 90% CI for μ if $\bar{X} = 17$ $n=10$ $S=3.7$ and use
TInterval

Inpt: Stats

\bar{X} :17

S:3.7

n:10

C-Level: .90

hit Enter interval is:(14.855,19.145)

Ex10 To find 90% CI for μ when σ is unknown if you have data given: 45,34,71,39

Use STAT menu then EDIT then input your data on any list (for ex L1)
Then use STAT menu then TESTS

Option8 is Tinterval

Inpt: Data

List:L1 (use 2nd 1 to input L1)

Freq:1

C-Level: .90

hit Enter interval is:(27.882,66.618)

Ex11 To find 90% CI for μ when σ is unknown if you have data given in a frequency table :

<i>x</i>	<i>frequency</i>
34	2
45	15
67	3
23	11
11	4

Use STAT menu then EDIT then input your data on any two lists (for ex x on L1 and frequency on L2)

Then use STAT menu then TESTS

Option8 is Tinterval

Inpt: Data

List:L1 (use 2nd 1 to input L1)

Freq:L2 (use 2nd 2 to input L2)

C-Level: .90

hit Enter interval is:(30.95,39.964)

Data option will work in a similar way for Zinterval procedure.

Conducting hypothesis tests for one population Mean:

Z test procedure:

(σ is known , normal population or a large sample)

use STAT menu then TESTS

option 1 is Z-test

Ex12 Test $H_0 \mu=15$ vs $H_a \mu>15$, use $\alpha=.05$,
data gives $\bar{X} =17$ $n=10$ and $\sigma =4$, use

Z-test

Inpt: Stats

$\mu_0 = 15$

$\sigma:4$

$\bar{X} :17$

$n:10$

$\mu: >\mu_0$

hit Enter, you get $z=1.58$, $p=.056$ (p-value), do not reject H_0 since $p>.05$

T test procedure:

(σ is unknown , normal population or a large sample)

use STAT menu then TESTS

option 2 is T-test

Ex13 Test $H_0 \mu=15$ vs $H_a \mu>15$, use $\alpha=.05$,
data gives $\bar{X} =17$ $n=10$ and $S=2.7$, use

T-test

Inpt: Stats

$\mu_0 = 15$

$S_x : 2.7$

$\bar{X} : 17$

n:10

$\mu : >\mu_0$

hit Enter, you get $t=2.34$, $p=.022$ (p-value), reject H_0 since $p<.05$

Data option for Z-Interval and T-interval will work similar to the same option in the CI procedures (Ex 10 and 11)

Computing probabilities for a Binomial Random Variable.

Let X be binomial random variable, $p=.43$, $n=25$ (X = number of successes in 25 Bernoulli trials with probability of success $p=.43$)

use 2nd VARS to get to the DISTR menu:

option 10: **binompdf(n, p,k)** computes probability that $X=k$

option A: **binomcdf(n,p,k)** computes probability of $X \leq k$

Ex 14 a) Compute $P(X=5)= \text{binompdf}(25, .43, 5)=.01024$

b) Compute $P(X \leq 5)= \text{binomcdf}(25, .43, 5)=.0144$

c) Compute $P(X>5)=1- P(X \leq 5)= 1-\text{binomcdf}(25, .43, 5)=.9856$