**ASSIGNMENT 5**

**> #q1**

> x=c(70000, 78000, 62000, 66000, 61000, 72000, 58000, 64000, 60000, 73000, 74000, 76000)

> t.test(x,mu=73000,alternative="less")

One Sample t-test

data: x

t = -2.6191, df = 11, p-value = 0.01193

alternative hypothesis: true mean is less than 73000

95 percent confidence interval:

-Inf 71376.02

sample estimates:

mean of x

67833.33

> #conclusion: p-value<0.05, reject Ho.

**> #q2**

> x=c(20, 16, 26, 27, 23, 22, 25)

> y=c(27, 33, 42, 35, 32, 34, 38, 29, 40)

> var.test(x,y,alternative="less",conf.level=0.95)

F test to compare two variances

data: x and y

F = 0.6002, num df = 6, denom df = 8, p-value = 0.2752

alternative hypothesis: true ratio of variances is less than 1

95 percent confidence interval:

0.000000 2.488896

sample estimates:

ratio of variances

0.6001961

> #conclusion: pv>alpha, accept Ho

**> #q3**

> x=c(57, 60, 54, 52, 58, 61, 59, 54, 57, 62)

> t.test(x,mu=52,alternative="greater",conf.level=0.95)

One Sample t-test

data: x

t = 5.2177, df = 9, p-value = 0.0002755

alternative hypothesis: true mean is greater than 52

95 percent confidence interval:

55.50283 Inf

sample estimates:

mean of x

57.4

> #conclusion: pv<alpha, reject Ho

**> #q4**

> xb=105;n=100;sd=20;muo=120

> z=(xb-muo)/(sd/sqrt(n))

> pnorm(z,0,1)

[1] 3.190892e-14

> #conclusion: p<alpha, reject Ho

**> #q5**

> x=c(70,120,110,101,88,83,95,89,107,125)

> t.test(x,mu=100,alternative="two.sided")

One Sample t-test

data: x

t = -0.22158, df = 9, p-value = 0.8296

alternative hypothesis: true mean is not equal to 100

95 percent confidence interval:

86.54903 111.05097

sample estimates:

mean of x

98.8

> #conclusion: pv>alpha, accept Ho

**#q6**

> n=100;sd=8.9;xb=71.8;muo=70

> z=(xb-muo)/(sd/sqrt(n))

> pv=pnorm(z,0,1)

> pnorm(z,0,1,lower.tail=F)

[1] 0.02125638

> #conclusion: p<alpha, reject Ho

**#q7**

> sd=0.5;n=50;xb=7.8;muo=8

> z=(xb-muo)/(sd/sqrt(n))

> pv=2\*pnorm(abs(z),0,1,lower.tail=F)

> pv

[1] 0.004677735

> #conclusion: pv<alpha, reject Ho

**> #q8**

> x=c(6,9,4,1,9,9,3,4,10)

> y=c(5,7,4,1,8,7,4,3,9)

> var.test(x,y,alternative="greater",conf.level=0.95)

F test to compare two variances

data: x and y

F = 1.572, num df = 8, denom df = 8, p-value = 0.2684

alternative hypothesis: true ratio of variances is greater than 1

95 percent confidence interval:

0.4572339 Inf

sample estimates:

ratio of variances

1.572016

> #conclusion: p>alpha, accept Ho

**> #q9**

> xb=43260;n=30;sd=5230;muo=42000

> z=(xb-muo)/(sd/sqrt(n))

> pnorm(z,0,1,lower.tail=F)

[1] 0.09349081

> #conclusion: p>alpha, accept Ho

**> #q10**

> x=c(13, 15, 18, 20, 22, 9, 16)

> y=c( 21, 18, 20, 16, 9)

> var.test(x,y,conf.level=0.95)

F test to compare two variances

data: x and y

F = 0.8433, num df = 6, denom df = 4, p-value = 0.8099

alternative hypothesis: true ratio of variances is not equal to 1

95 percent confidence interval:

0.09168959 5.25135051

sample estimates:

ratio of variances

0.8432977

> #conclusion: p>alpha, accept Ho