#1

#a Calc P(Z>= -1) = ?

one.a.ans = pnorm(q = -1, mean = 0, sd = 1, lower.tail = F)

print(one.a.ans)

#[1] 0.8413447

#b P(Z<= ?) = .20

#qnorm is the inverse of pnorm (cdf)

#Used to answer 'what is the Z-score of th epth quantile of the normal distribution?

one.b.ans = qnorm(.20)

print(one.b.ans) #is lower tail

#[1] -0.8416212

#2

#a P(F 6,24 >= ?) = 0.05

two.a.ans = qf(.05, df1 = 6, df2 = 24,lower.tail = F)

print(two.a.ans)

#[1] 2.508189

#b P(F 5,40 >= 2.9) = ?

two.b.ans = df(x = 2.9, df1 = 6, df2 = 24)

print(two.b.ans)

#[1] 0.0402719

#3

scores = c(0,2,5,6,3,3,3,1,4,3)

s.mean = mean(scores)

s.median = median(scores)

s.var = var(scores)

three.ans = c(s.mean,s.median,s.var)

print(three.ans)

#[1] 3.000000 3.000000 3.111111

#4

n = 32

samp\_mean= 30

samp\_sd = 11

CL = .99

alpha = .01/2

#CI = [samp\_mean +- t\_stat\*(samp\_sd/sqrt(32))]

t\_stat = abs(qt(p = (.01/2), df = (32-1) ))

print(t\_stat)

four.ans.CI = c((samp\_mean - t\_stat\*(samp\_sd)/sqrt(n)), (samp\_mean + t\_stat\*(samp\_sd)/sqrt(n)))

print(four.ans.CI)

#[1] 24.66409 35.33591

#5

sam\_dat = read.delim("C:\\Users\\danie\\Documents\\School\\Math\\Stat 308\\Hw\\salmonella.txt", header = F)

head(sam\_dat)

print(sam\_dat[1,1])

sam\_dat = unlist(sam\_dat)

#a H0 = .3, Ha < .3, mu = average population samonella level

null\_H = .3

alt\_H <= .3

sam\_mean = mean(sam\_dat)

sam\_sd = sd(sam\_dat)

sam\_n = length(sam\_dat)

degf = sam\_n - 1

t.alpha = qt(p= .05, df = degf)

t\_stat = (sam\_mean - null\_H)/(sam\_sd/sqrt(sam\_n))

p\_value = pt(t\_stat, df = degf, lower.tail = T)

print(p\_value)

#[1] 0.4482166

#?t.test()

t\_test = t.test(sam\_dat, mu = null\_H, alternative = "less", conf.level = .95)

print(t\_test)

#One Sample t-test

#data: sam\_dat

#t = -0.13098, df = 41, p-value = 0.4482

#alternative hypothesis: true mean is less than 0.3

#95 percent confidence interval:

# -Inf 0.3253898

#sample estimates:

# mean of x

#0.2978571

# Fail to reject the null as pvalue = .4482 > alpha = .05;

#Therefore, there is not enough evidence, currently, to state that the salmonella levels are safe ( less than .03).