**1. If Z is norm (mean = 0, sd = 1)**

**Find P(Z > 2.64)**

**Find P(|Z| > 1.39)**

***Ans:***

#P(Z > 2.64)

#We need to take the whole of the right hand side (area 0.5)

#and subtract the area from z = 0 to z = 2.64, which we get from the z-table.

#the probability value of z =2.64 in table is 0.4959

#so P(Z > 2.64)=0.5-P( 0 < z < 2.64)=0.5-0.4959=0.0041

#or we can do like this

1 - pnorm(2.64, mean=0, sd=1)

#0.004145301

#P(|Z| > 1.39)

#we can find by pnorm function too

pnorm(1.39)

#0.9177356

pnorm(-1.39)

#0.08226444

#1-(pnorm(1.39)-pnorm(-1.39))

#1-(0.9177356-0.08226444)

#1-0.8354712

#0.1645288 #answer

#or by this

#1 - P(-1.39<X<1.39)

#The probability for z = 1.39 is 0.4177; the probability for z = -1.39 is 0.4177 hence The

#solution of P (-1.39<X<1.39) is obtained by summing the probabilities.

# 0.4177 (probability of a value between the mean and 1.39) +

# 0.4177 (probability of a value between the mean and -1.39)

# 0.8354 (probability of a value between -1.39 and 1.39)

#thus our final answer would be 1 - P(-1.39<X<1.39)

#which is 1-0.8354

#0.1646

**2. Suppose p = the proportion of students who are admitted to the graduate school of the University of**

**California at Berkeley, and suppose that a public relation officer boasts that UCB has historically had a**

**40% acceptance rate for its graduate school. Consider the data stored in the table UCBAdmissions from**

**1973. Assuming these observations constituted a simple random sample, are they consistent with the**

**officerâ..s claim, or do they provide evidence that the acceptance rate was significantly less than 40%?**

**Use an Î± = 0.01 significance level.**

***Ans:***

#to check for wheather there is consistency with the officers claim or do they provide evidence

#that the acceptance rate was significantly less than 40%

#thus defining the null hypo as Ho:p is equal to 0.40

#and Ha:p less than 0.40

#Ho : p = 0.4

#Ha : p < 0.4

#alpha = 0.01

#Thus to find we use qnorm() function

-qnorm(0.99)

#-2.326348

#Now to find out our test statistic

newucb\_data <- as.data.frame(UCBAdmissions)

View(newucb\_data)

dim(newucb\_data)

summary(newucb\_data$Admit)

phat <- 12/(24)

t <- (phat-0.4)/sqrt(0.4\*0.6/(24))

t

#1

#by calculations it is clear that our test statistic is not less than -2.326348

#So we accept our null hypothesis Ho

#hence we say that the observed data are consistent with the officer's claim at alpha = 0.01(Level of Significance)