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

**Find P(Z > 2.64)**

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

**pnorm(2.64, mean = 0, sd = 1, lower.tail = FALSE)**

**P(Z > 2.64) is 0.0041**

**------------------------**

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

**= 1 - P(-1.39 < X < 1.39)**

**1 - (pnorm(1.39, mean = 0, sd=1) - pnorm(-1.39, mean = 0, sd=1))**

**P(|Z| > 1.39) is 0.1645**

**------------------------**

**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 officer's claim, or do they provide evidence that the acceptance rate was significantly less than 40%? Use an alpha = 0.01 significance level.**

**View(UCBAdmissions)**

**class(UCBAdmissions)**

**Our null hypothesis, H0 is p= 0.40**

**Alternative Hypothesis, Ha is p < 0.4**

**-qnorm(0.99)**

**z alpha = -2.326348**

**A <- as.data.frame(UCBAdmissions)**

**head(A)**

**xtabs(Freq ~ Admit, data = A)**

**now we calculate the value of the test statistic.**

**phat <- 1755/(1755 + 2771)**

**(phat - 0.4)/sqrt(0.4 \* 0.6/(1755 + 2771))**

**t statistics is -1.680919**

**Our test statistic is not less than 2.32,**

**prop.test(1755, 1755 + 2771, p = 0.4, alternative = "less",**

**conf.level = 0.99, correct = FALSE)**

**p- value i.e. 0.046 is greater than alpha i.e. 0.01**

**library(IPSUR)**

**library(HH)**

**temp <- prop.test(1755, 1755 + 2771, p = 0.4, alternative = "less",**

**+ conf.level = 0.99, correct = FALSE)**

**plot(temp, "Hypoth")**

**so it does not fall into the critical region.**

**Therefore, we fail to reject the null hypothesis that the true proportion of students admitted to graduate school is less than 40% and say that the observed data are consistent with the officer's claim at the alpha = 0.01 significance level.**