# Assignment 9.1

Q1. If Z is norm (mean = 0, sd = 1)

    a.  find P(Z > 2.64)
    b.  find P(|Z| > 1.39)

Answer a)

1 - pnorm(2.64)

[1] 0.004145301

Answer b)

[1] 0.08226444

Q2. 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 relations 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.

Answer:

#Critical Value

-qnorm(0.99)

[1] -2.326348

A <- as.data.frame(UCBAdmissions)

xtabs(Freq ~ Admit, data = A)

#Now we calculate the value of the test statistic.

y <- 1755/(1755 + 2771)

(y - 0.4)/sqrt(0.4 * 0.6/(1755 + 2771))

[1] -1.680919

Our test statistic is not less than −2.32, 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.