

SESSION 9: Statistical Inference

Assignment 1

Problem Statement

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

find $P(Z > 2.64)$

find $P(|Z| > 1.39)$

$P(4 \leq X \leq 7)$ transforms to $P(3.5 < X < 7.5)$ $P(3.5 < X < 7.5) = P(3.5 - 6/\sqrt{3} < X - 6/\sqrt{3} < 7.5 - 6/\sqrt{3}) = P(-1.443 < Z < 0.866)$ where $Z \sim N(0, 1) = 0.732$

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 $\hat{\alpha} = 0.01$ significance level.

```
-qnorm(0.99)
```

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

```
head(A)
```

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

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

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