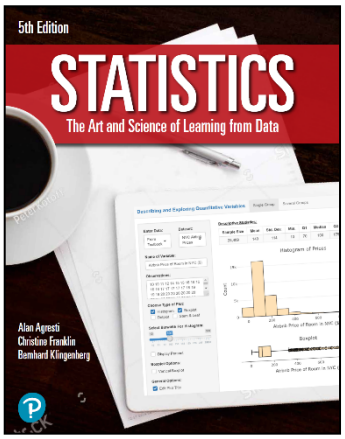

R Code for Examples in the book
"Statistics: The Art and Science of Learning from Data"
by Agresti, Franklin and Klingenberg, 5th edition

Chapter 10

Example 5: TV Watching - Significance Test Comparing Two Proportions

Reading in the data

```
x_1 <- 5
n_1 <- 88
x_2 <- 154
n_2 <- 619
```

To compute the sample proportions

```
phat_1 <- x_1 / n_1
phat_2 <- x_2 / n_2
```

Setting null hypothesis

```
p_0 <- 0
```

Computing pooled estimate of the common proportion p under the null hypothesis

```
phat <- (x_1 + x_2) / (n_1 + n_2)
```

To compute the standard error for the test

```
se_0 <- sqrt(phat * (1 - phat) * ((1 / n_1) + (1 / n_2)))
```

To find the test statistic

```
z <- ((phat_1 - phat_2) - p_0) / se_0
```

To compute the p value of the two sided hypothesis test

```
2 * pnorm(z)
```

```
## [1] 5.439141e-05
```

Alternatively, you can use the `prop.test()` function

```
prop.test(c(5, 154), c(88, 619), correct = FALSE)

##
##  2-sample test for equality of proportions without continuity
##  correction
##
## data:  c(5, 154) out of c(88, 619)
## X-squared = 16.289, df = 1, p-value = 5.439e-05
## alternative hypothesis: two.sided
## 95 percent confidence interval:
##  -0.2511242 -0.1328162
## sample estimates:
##     prop 1     prop 2
## 0.05681818 0.24878837
```