Homework\_1

Anna Moeller

September 10, 2018

## Sec 1.6

### Problem 6

Toss 3 coins and estimate probability that all are heads or all tails.

nsim <- 1000000  
 set.seed(1003)  
 x <- rerun(nsim, sample(c(0,1), 3, replace = T)) %>%   
 map\_dbl(sum)   
 length(which(x %in% c(0,3))) / length(x)

## [1] 0.250271

Simulation estimates 0.250271 probability, which is similar to the calculated probability of 0.25.

## Sec 1.7

### Problem 6

Roll 6 dice. Estimate probability that all 6 are different.

nsim <- 1000000  
 out <- rep(NA, nsim)  
 set.seed(23049)  
 for(i in 1:nsim){  
 x <- sample(1:6, 6, replace = T)  
 out[i] <- length(unique(x)) == 6  
 }  
   
 sum(out)/nsim

## [1] 0.015317

Simulation estimates probability 0.015317, which is close to calculated probability of 0.0154321.