Homework 4

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STAT 488-001

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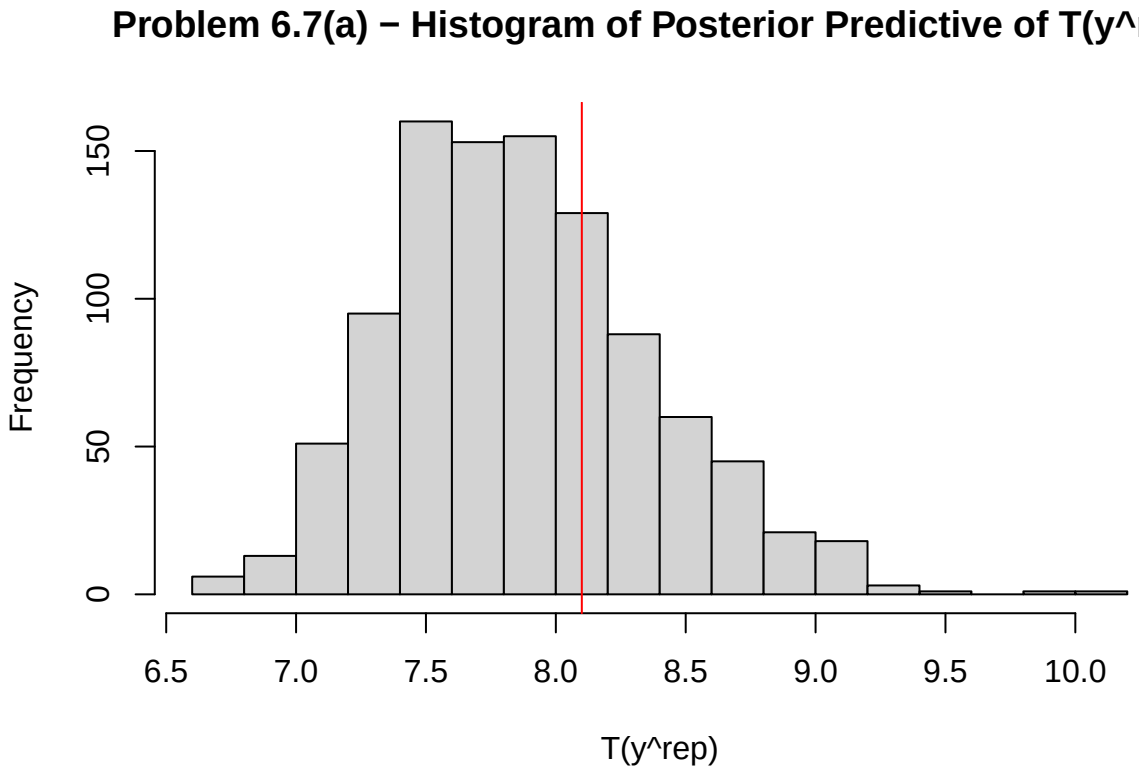
Problem 6.7

Problem 6.7(a)

```
rm(list=ls())
set.seed(286)
s<-(100-1)*1^2/rchisq(1,100-1)
ppd<-apply(replicate(1000,abs(rnorm(100,rnorm(1,5.1,sqrt(s/100)),sqrt(s)))),2,max)
hist(ppd,20,xlab="T(y^rep)",main="Problem 6.7(a) - Histogram of Posterior Predictive of T(y^rep)")
abline(v=8.1,col="red")
```

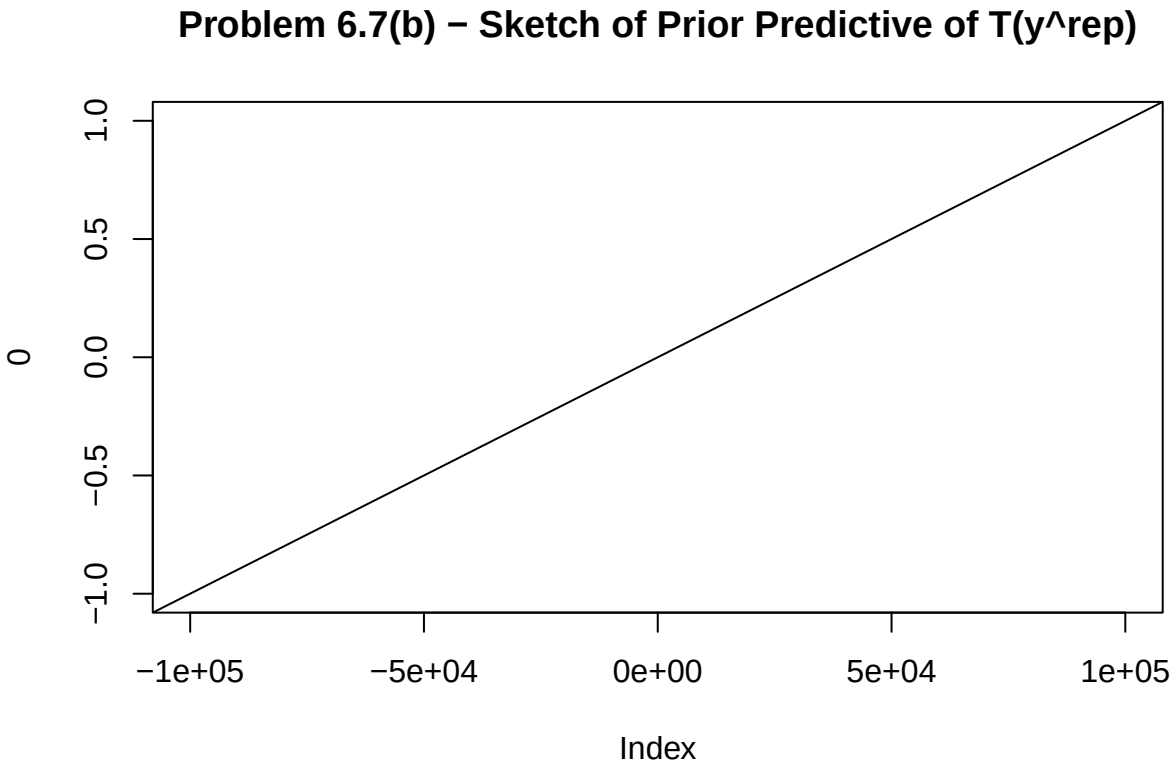


```r
mean(ppd>8.1)
```

```
## [1] 0.308
```

Problem 6.7(b)

```r
plot(0,type="n",xlim=c(-10^5,10^5),main="Problem 6.7(b) - Sketch of Prior Predictive of T(y^rep)")
abline(0,1/10^5)
```



Problem 6.7(c)

Yes, this makes sense conceptually. The problem stated the prior distribution $p(\theta) = \frac{1}{2*10^5}$ was "diffuse" and it had nearly no influence on the data, so it is reasonable that the data are closer to the posterior predictive distribution.