

```

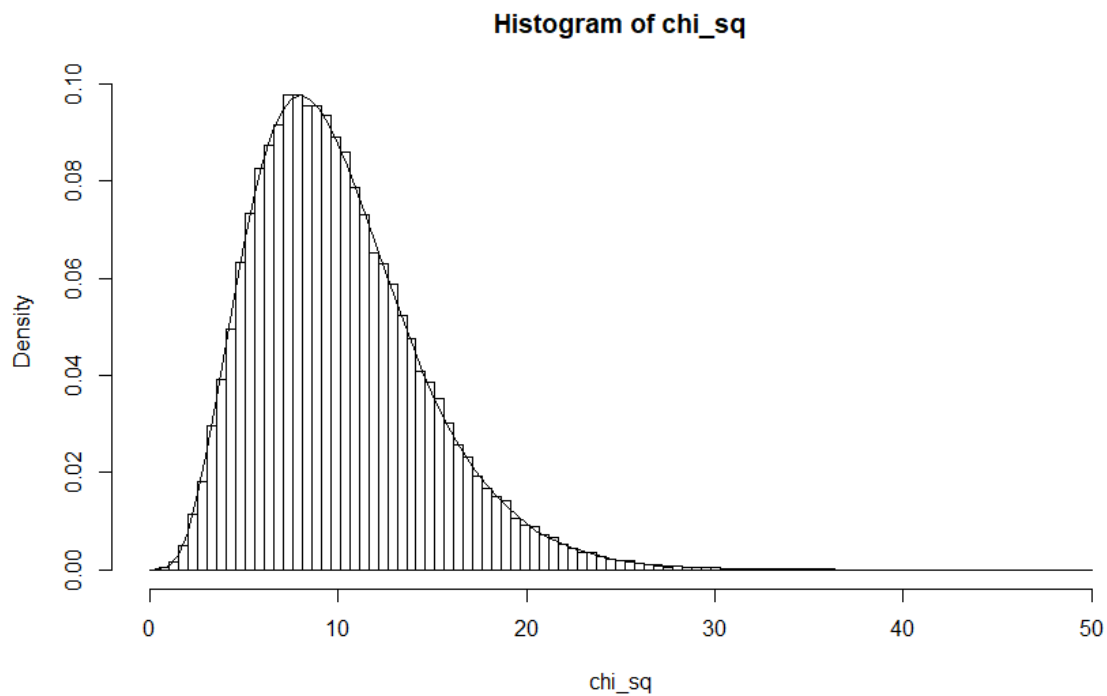
#Chi-square distribution
#課題 1
n=10
m=100000
chi_sq<-numeric(m)

for(i in 1:m){
  x<-rnorm(n)
  chi_sq[i]<-sum(x*x)}

hist(chi_sq,breaks=seq(0,50,length=100),freq=F)
curve(dchisq(x,10),add=T)

```

結果:



```

#課題 2
n<-10
m<-10000
t_dist_vector<-numeric(m)
#正規分布の乱数
X<-rnorm(m)
#カイ 2 乗分布の乱数
Y<-rchisq(m,n)

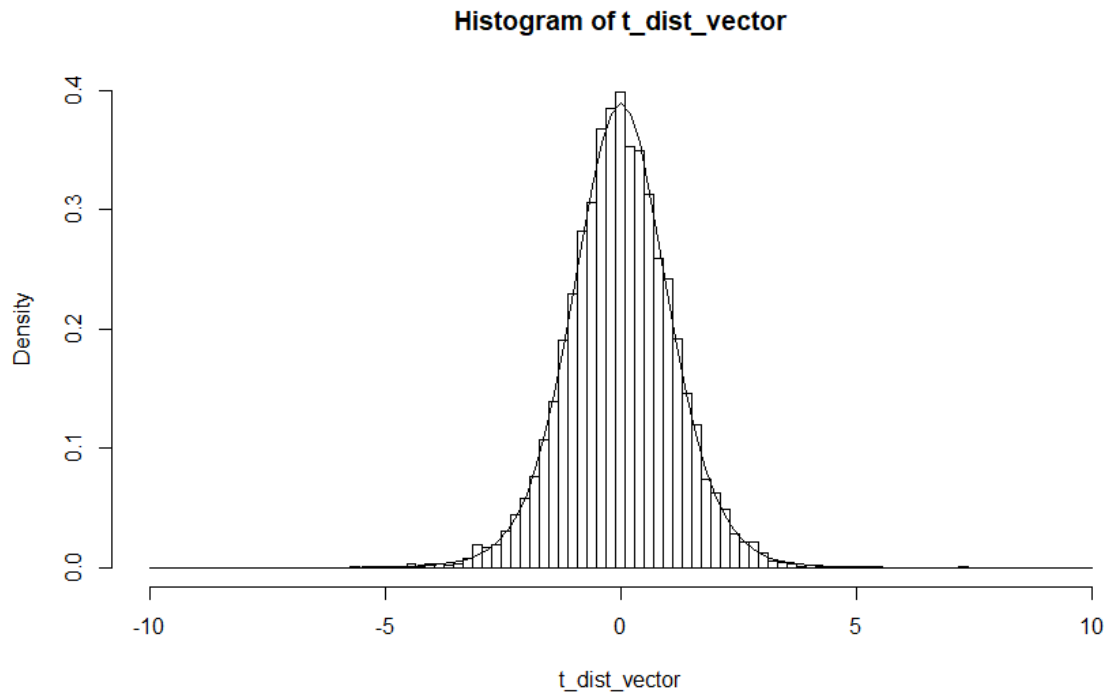
```

```
t_dist_vector<-X/sqrt(Y/n)
```

```
hist(t_dist_vector,breaks=seq(-10,10,length=100),freq=F)
```

```
curve(dt(x,10),add=T)
```

結果:



#課題 3

#一様分布の乱数

```
n<-c(3,7,10)
```

```
m<-10000
```

```
Y<-numeric(m)
```

```
for(i in 1:3){
```

```
  for(j in 1:m){
```

```
    Y[j]<-max(runif(n[i], min=0, max=1))
```

```
  }
```

```
  cat("n =", n[i],"\n")
```

```
  cat("var =", var(Y),"\n")
```

```
  cat("median =", median(Y),"\n")
```

}結果:

```
n = 3
```

```
var = 0.03799955  
median = 0.7925501  
n = 7  
var = 0.01174778  
median = 0.9066428  
n = 10  
var = 0.007040021  
median = 0.9346906
```