

# Stat 5309 Lab 0

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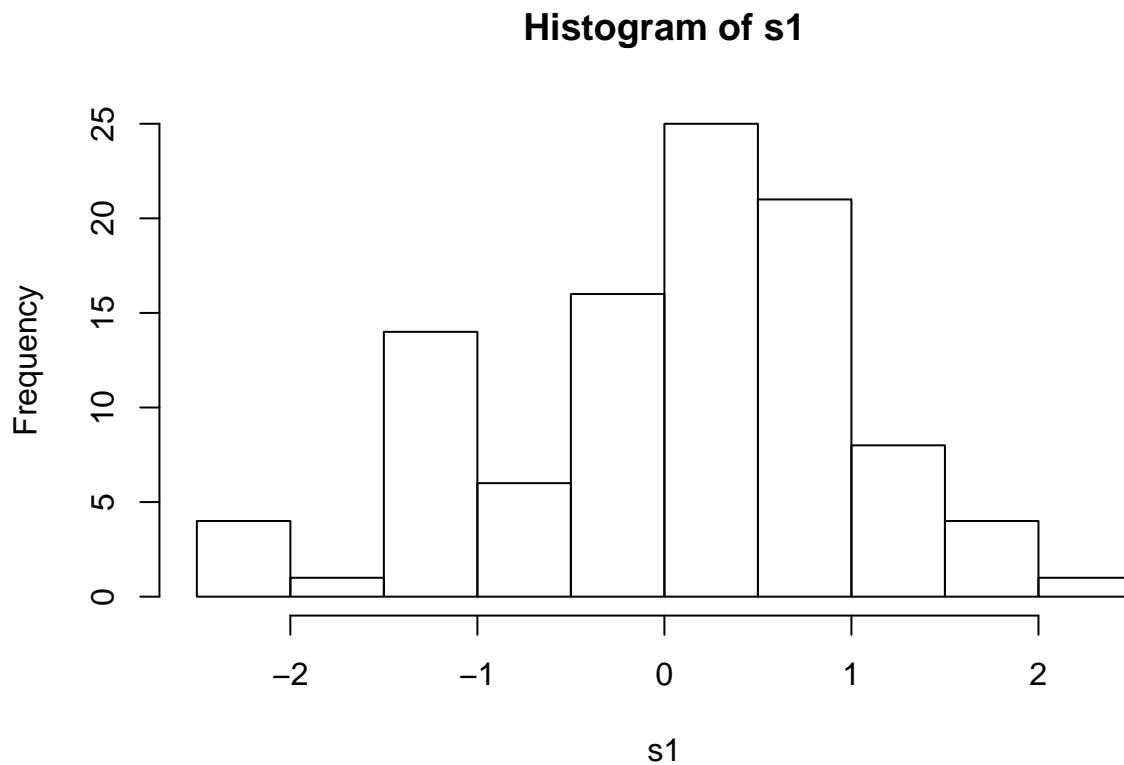
*January 18, 2019*

## Exercise 1.

### Distributions

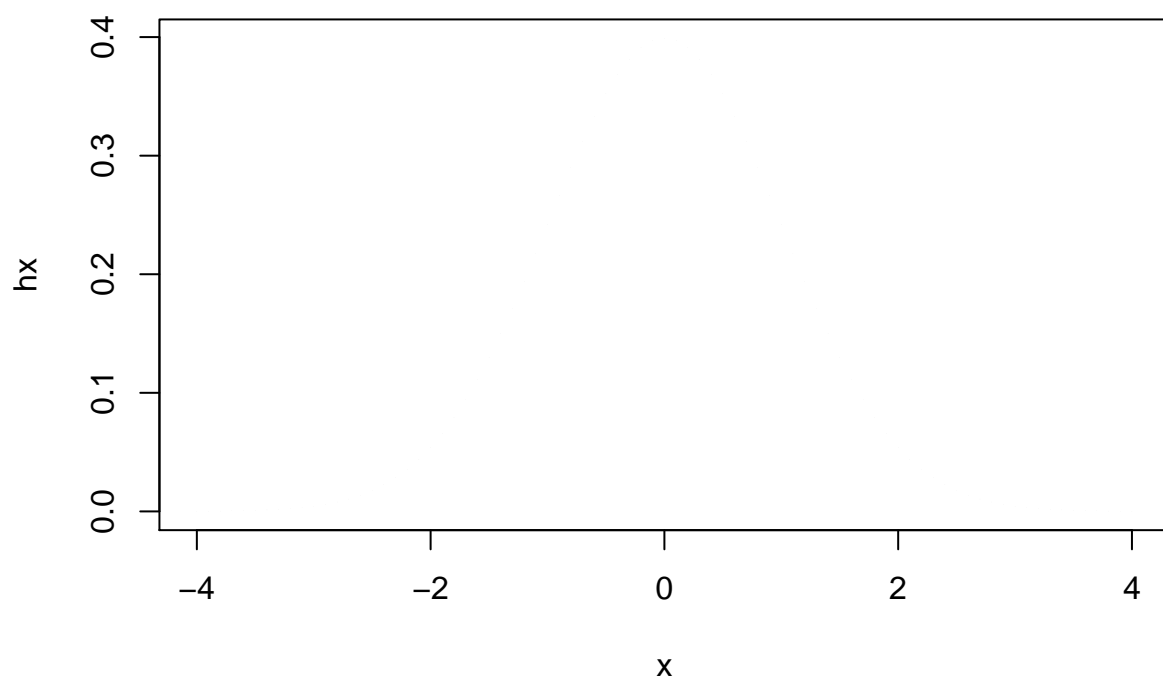
Histogram of normally distributed sample data

```
s1 <- rnorm(100,0,1)
hist(s1)
```



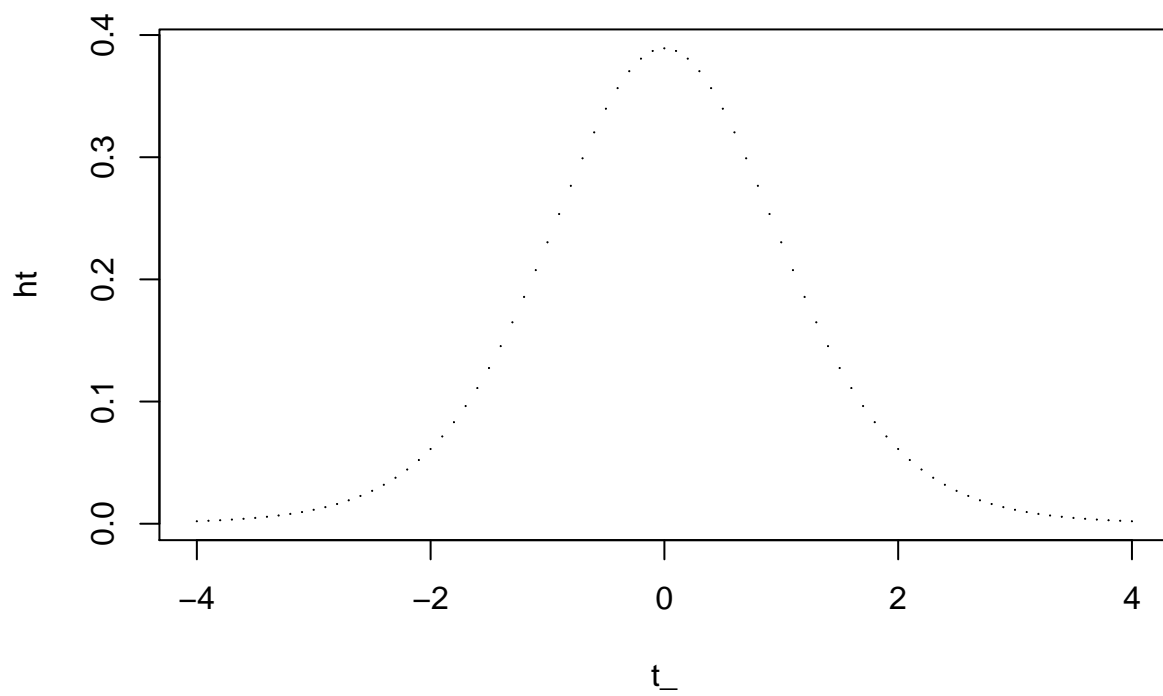
density curve of normal distribution

```
x <- seq(-4,4,0.1)
hx <- dnorm(x,0,1)
plot(x,hx,pch=16,cex=0.01)
```



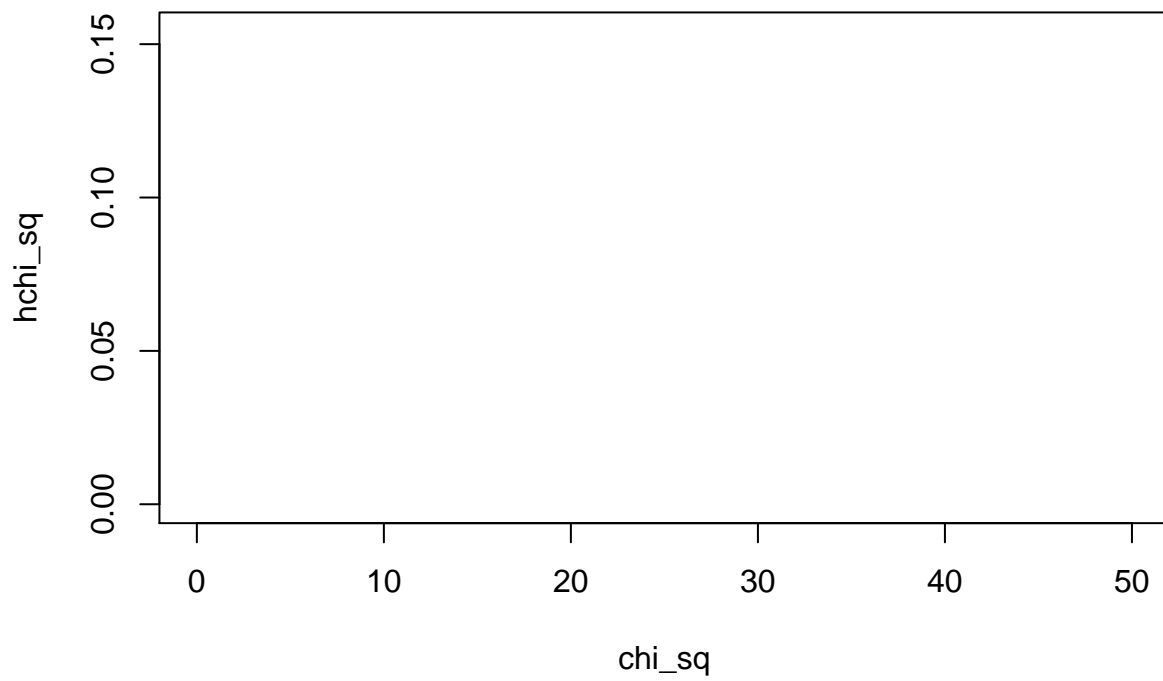
density curve of some t-distribution

```
t_ <- x  
ht <- dt(t_,10)  
plot(t_,ht,cex=0.01)
```



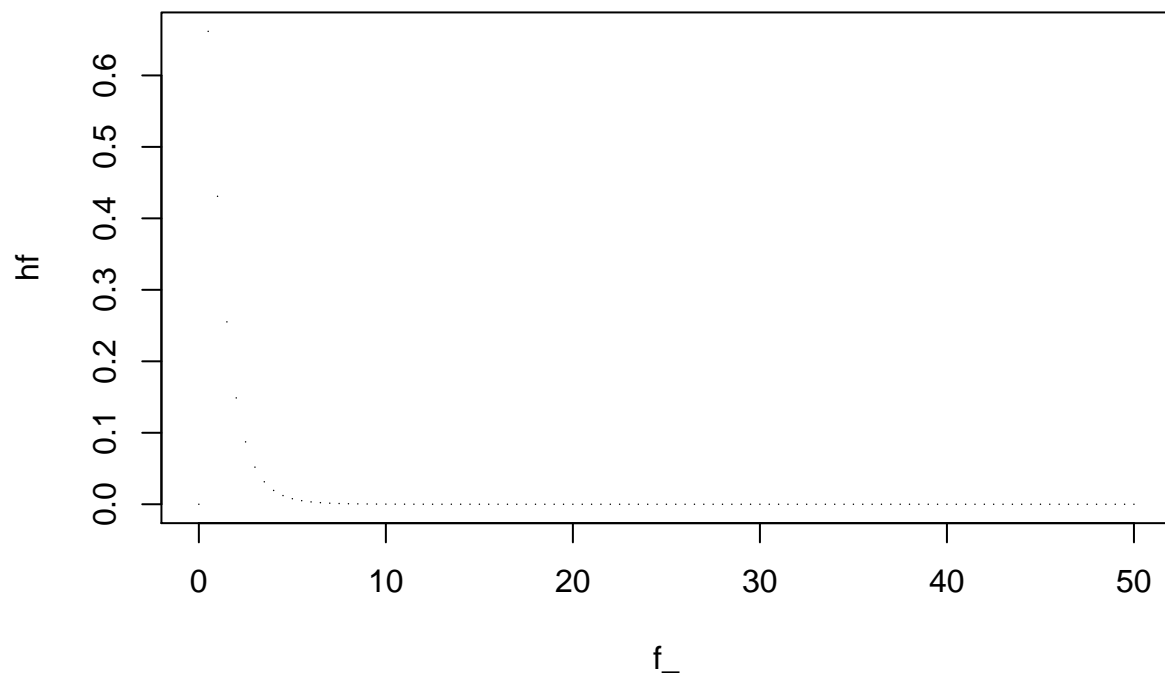
density curve of some chi-squared distributions

```
chi_sq <- seq(0,50,0.5)
hchi_sq <- dchisq(chi_sq,5)
plot(chi_sq,hchi_sq,pch=16,cex=0.01)
```



density curve of some F-distributions

```
f_ <- seq(0,50,0.5)
hf <- df(f_,3,20)
plot(f_,hf,pch=16,cex=0.1)
```



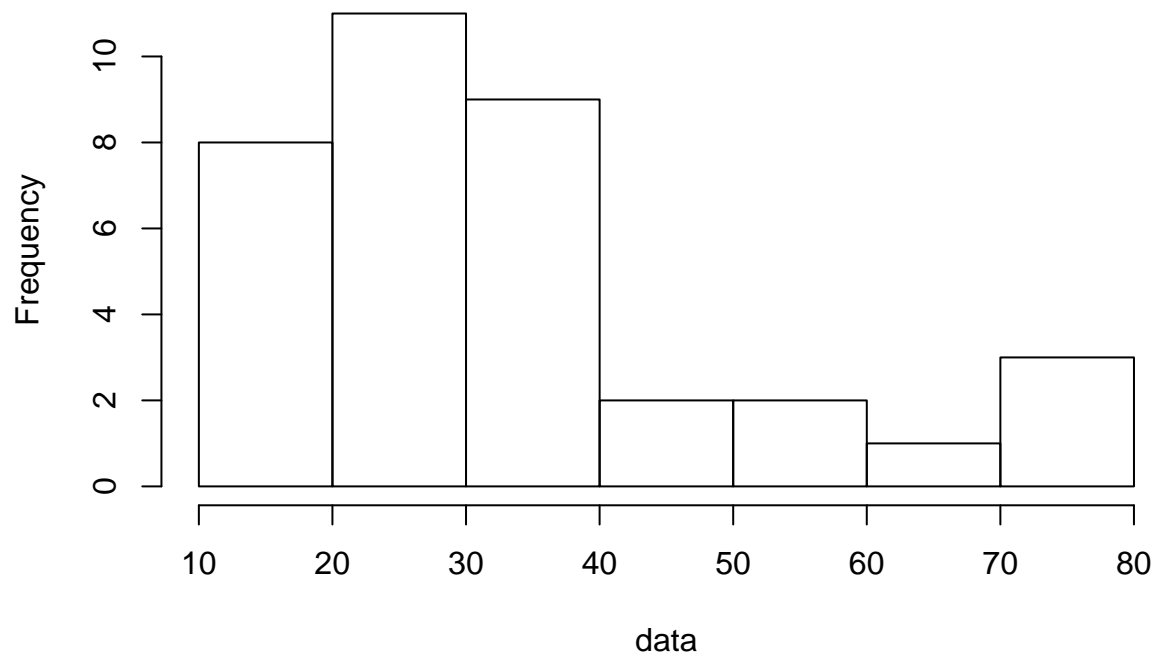
## Exercise 2.

Check normality of data

```
data <- c( 26.4  
,23.5  
,25.4  
,22.9  
,25.2  
,39.2  
,25.5  
,31.9  
,26.0  
,44.6  
,35.5  
,38.6  
,30.1  
,31.0  
,30.8  
,32.8  
,47.7  
,39.1  
,55.3
```

```
,50.7
,73.8
,71.1
,68.4
,77.1
,19.4
,19.3
,18.7
,19.0
,23.2
,21.3
,23.2
,19.9
,18.9
,19.8
,19.6
,21.9
)
hist(data)
```

**Histogram of data**



```
data_s <- sort(data)
rank_data <- rank(data_s)
size_data <- length(data_s)
p_ <- (rank_data-0.5)/size_data
z_quantile <- qnorm(p_)
plot(z_quantile,data_s,pch=16)
```

