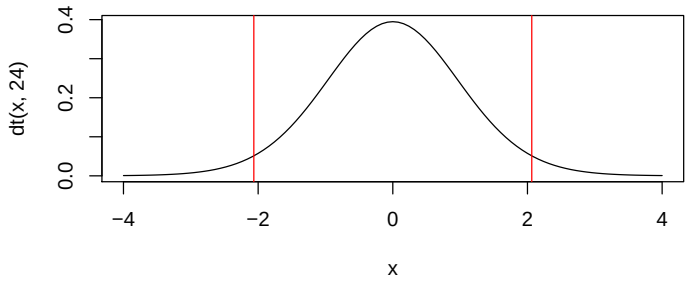
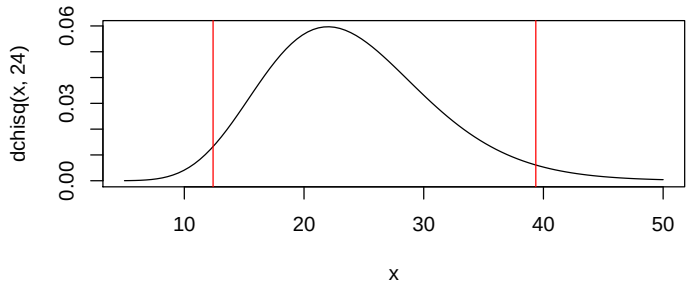
```
> x<-scan()
1.53 1.65 1.72 1.83 1.62 1.75 1.72 1.68 1.65 1.61
1.70 1.60 1.73 1.61 1.52 1.81 1.72 1.50 1.51 1.65
1.58 1.82 1.65 1.72 1.65

> #item a
> xraya<-mean(x) #estimador de la media
> scuad<-var(x)  #estimador de la varianza
> xraya

[1] 1.6612

> scuad

[1] 0.008669333

> #item b
> #subitem i
> n<-length(x)
> sigma<-0.01
> intervalo<-c(xraya-sigma/sqrt(n)*qnorm(0.975),xraya+sigma/sqrt(n)*qnorm(0.975))
> intervalo

[1] 1.65728 1.66512

> ####otra forma:
> library(TeachingDemos)
> z.test(x,sd=0.01,conf.level = 0.95)

        One Sample z-test

data:  x
z = 830.6, n = 25.000, Std. Dev. = 0.010, Std. Dev. of the sample mean
= 0.002, p-value < 2.2e-16
alternative hypothesis: true mean is not equal to 0
95 percent confidence interval:
 1.65728 1.66512
sample estimates:
mean of x
   1.6612

> #subitem ii
> #para entender un poco miramos la densidad de una t con 24 grados de libertad
> curve(dt(x,24),-4,4)
> L1<-qt(0.025,24)
> L2<-qt(0.975,24)
> abline(v=L1,col=2)
> abline(v=L2,col=2)
```




```
> L1

[1] -2.063899

> L2

[1] 2.063899

> #calculamos el intervalo
> s<-sqrt(scuad) # o, lo que es lo mismo
> s<-sd(x)
> intervalo<-c(xraya-s/sqrt(n)*qt(0.975,n-1),xraya+s/sqrt(n)*qt(0.975,n-1))
> intervalo

[1] 1.622766 1.699634

> ###otra forma:
> t.test(x,conf.level = 0.95)

        One Sample t-test

data:  x
t = 89.207, df = 24, p-value < 2.2e-16
alternative hypothesis: true mean is not equal to 0
95 percent confidence interval:
 1.622766 1.699634
sample estimates:
mean of x
   1.6612

> #item c
> #para entender un poco miramos la densidad de una chi cuadrado con
> #24 grados de libertad
> curve(dchisq(x,24),5,50)
```

```
> L1<-qchisq(0.025,24)
> L2<-qchisq(0.975,24)
> abline(v=L1,col=2)
> abline(v=L2,col=2)
```




```
> L1

[1] 12.40115

> L2

[1] 39.36408

> intervalosigma<-c(scuad*(n-1)/L2,scuad*(n-1)/L1)
> intervalosigma

[1] 0.005285631 0.016777799

> #intervalo para sigma:
> sqrt(intervalosigma)

[1] 0.07270235 0.12952914
```