R Notebook

```
t.test(cars, conf.level = 0.95) #conduct t test with 95% confidence
```

```
##
##  One Sample t-test
##
## data:  cars
## t = 12.625, df = 99, p-value < 2.2e-16
## alternative hypothesis: true mean is not equal to 0
## 95 percent confidence interval:
##  24.60221 33.77779
## sample estimates:
## mean of x
##     29.19
```

```
n = 14
for(i in 1:n){ #create a for loop
  print(qt(0.07, df=i, lower=F) - qt(0.14, df=i, lower=F))
}
```

```
## [1] 2.348635
## [1] 0.9161277
## [1] 0.6800451
## [1] 0.5892257
## [1] 0.5418715
## [1] 0.5129628
## [1] 0.4935265
## [1] 0.4795796
## [1] 0.4690916
## [1] 0.4609214
## [1] 0.4543787
## [1] 0.4490224
## [1] 0.444557
## [1] 0.4407778
```

```
for(i in 1:n){
  print(qt(0.14, df=i, lower=F) - qt(0.21, df=i, lower=F))
}
```

```
## [1] 0.8359159
## [1] 0.4603424
## [1] 0.3827818
## [1] 0.3503983
## [1] 0.3327641
## [1] 0.3217039
## [1] 0.3141291
## [1] 0.3086202
## [1] 0.304435
## [1] 0.3011484
## [1] 0.2984994
## [1] 0.2963192
## [1] 0.2944935
## [1] 0.2929424
```

```r
pt(1, df=2) - pt(-1, df=2)
```

```
## [1] 0.5773503
```

```r
pt(1, df=3, lower=T) - pt(-1, df=3, lower=T)
```

```
## [1] 0.6089978
```

```r
qt(0.08, df=1, lower=F)
```

```
## [1] 3.894743
```

```r
qt(0.07, df=1, lower=F) - qt(0.14, df=1, lower=F)
```

```
## [1] 2.348635
```

```r
qt(0.14, df=1, lower=F) - qt(0.21, df=1, lower=F)
```

```
## [1] 0.8359159
```

```r
#If you look at a bottle of ibuprofen, it will likely list the amt of medicine per pill (usally 200mg).
#this is only an avg, and if you carefully measured the amt from pill to pill you would get a normal di
#The spread of this distribution is very important because giving too much or too little medicine can b
#Suppose that the sd = 10mg based on current manufacturing processes. You've come up with a new way to
#that you believe will increase the precision of the dosage. To check this claim, you produce a bunch o
#select some to measure the dosage. You get values c(206.5, 198.9, 205.2, 192, 199.5, 182.5, 191.9, 197
#187.3, 192)

data = c(206.5, 198.9, 205.2, 192, 199.5, 182.5, 191.9, 197.6, 190.7, 186.8, 187.3, 192)
mean = mean(data)
t.test(data, alternative = "greater", mu = mean, conf.level = 0.96)
```

```
##
##  One Sample t-test
##
## data:  data
## t = 0, df = 11, p-value = 0.5
## alternative hypothesis: true mean is greater than 194.2417
## 96 percent confidence interval:
##  190.1286      Inf
## sample estimates:
## mean of x
##  194.2417
```