Quiz 3 R Script

```
> library(NCStats)
> plt <- FALSE
>
> ## Probability Questions
> mn <- 45; s <- 28
> ( distrib(55,mean=mn,sd=s/sqrt(40),lower.tail=FALSE,plot=plt) )
```

```
[1] 0.0119489
```

```
> ( ab <- distrib(55,mean=mn,sd=s/sqrt(60),plot=plt))
```

```
[1] 0.9971662
```

```
> ( a <- distrib(50,mean=mn,sd=s/sqrt(60),plot=plt))
```

```
[1] 0.9166995
```

```
> ab-a
```

```
[1] 0.0804667
```

```
> ( distrib(50,mean=mn,sd=s/sqrt(10),plot=plt))
```

```
[1] 0.7138585
```

```
> ( distrib(0.25,mean=mn,sd=s/sqrt(50),type="q",plot=plt) )
```

```
[1] 42.32916
```

```
> (distrib(0.75,mean=mn,sd=s/sqrt(50),type="q",plot=plt) )
```

```
[1] 47.67084
```

```
> ## First p-value and conf. regions
> xbar1 <- 145; mu01 <- 120
> sigma1 <- 30; n1 <- 20; SE1=sigma1/sqrt(n1)
> ( pval1 <- 2*distrib(xbar1,mean=mu01,sd=SE1,lower.tail=FALSE,plot=plt) )
```

```
[1] 0.000194
```

```
> ( zstar1 <- distrib(0.95,type="q",plot=plt))
```

```
[1] 1.644854
```

```
> ( LCI1 <- xbar1-zstar1*SE1 )
```

```
[1] 133.966
```

```
> ( UCI1 <- xbar1+zstar1*SE1 )
```

```
[1] 156.034
```

```
> ## Sample size calculation
> me <- 3; sigma3 <- 15
> ( zstar3 <- distrib(0.975,type="q",plot=plt) )
```

```
[1] 1.959964
```

```
> ( trees <- (zstar3*sigma3/me)^2 )
```

```
[1] 96.03647
```

```
> ceiling(trees)
```

```
[1] 97
```

```
> ## Second p-value and conf. regions
> xbar2 <- 110.4; mu02 <- 120
> sigma2 <- 42; n2 <- 30; SE2=sigma2/sqrt(n2)
> ( pval2 <- distrib(xbar2,mean=mu02,sd=SE2,plot=plt) )
```

```
[1] 0.1052964
```

```
> ( zstar2 <- distrib(0.90,type="q",plot=plt))
```

```
[1] 1.281552
```

```
> ( UCB2 <- xbar2+zstar2*SE2 )
```

```
[1] 120.2271
```

```
> ## Calc beta
> mua <- 100
> ( rejreg <- round(distrib(0.01,mean=mu01,sd=SE1,type="q",plot=plt),3) )
```

```
[1] 104.394
```

```
> ( beta <- round(distrib(rejreg,mean=mua,sd=SE1,lower.tail=FALSE,plot=plt),3) )
```

```
[1] 0.256
```