Problem Session 1

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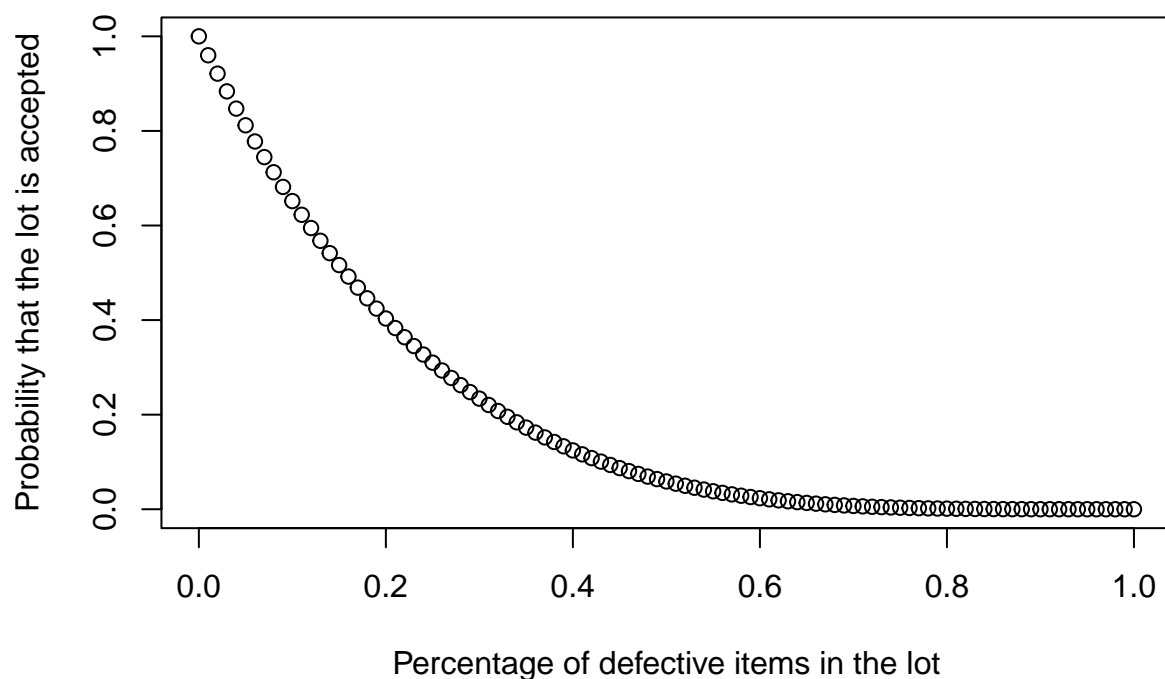
Chapter 1

17.

```r
#define the probability of accepting the lot as a function of k
prob_accept <- function(k){
  my_prob <- (choose(100-k,4))/choose(100,4)
  return(my_prob)
}

#define possible values of k and compute probabilities of accepting for each
ks <- 0:100
accept <- prob_accept(ks)

#plot
percentages <- ks/100
plot(percentages,accept,
     xlab="Percentage of defective items in the lot",
     ylab = "Probability that the lot is accepted")
```

Bonus

```r
#define the probability of accepting the lot as a function of k
prob_accept <- function(k){
  my_prob <- (choose(100-k,4)+k*choose(100-k,3))/choose(100,4)
  return(my_prob)
}

#define possible values of k and compute probabilities of accepting for each
ks <- 0:100
accept <- prob_accept(ks)

#plot
percentages <- ks/100
plot(percentages,accept,
     xlab="Percentage of defective items in the lot",
     ylab = "Probability that the lot is accepted")
```
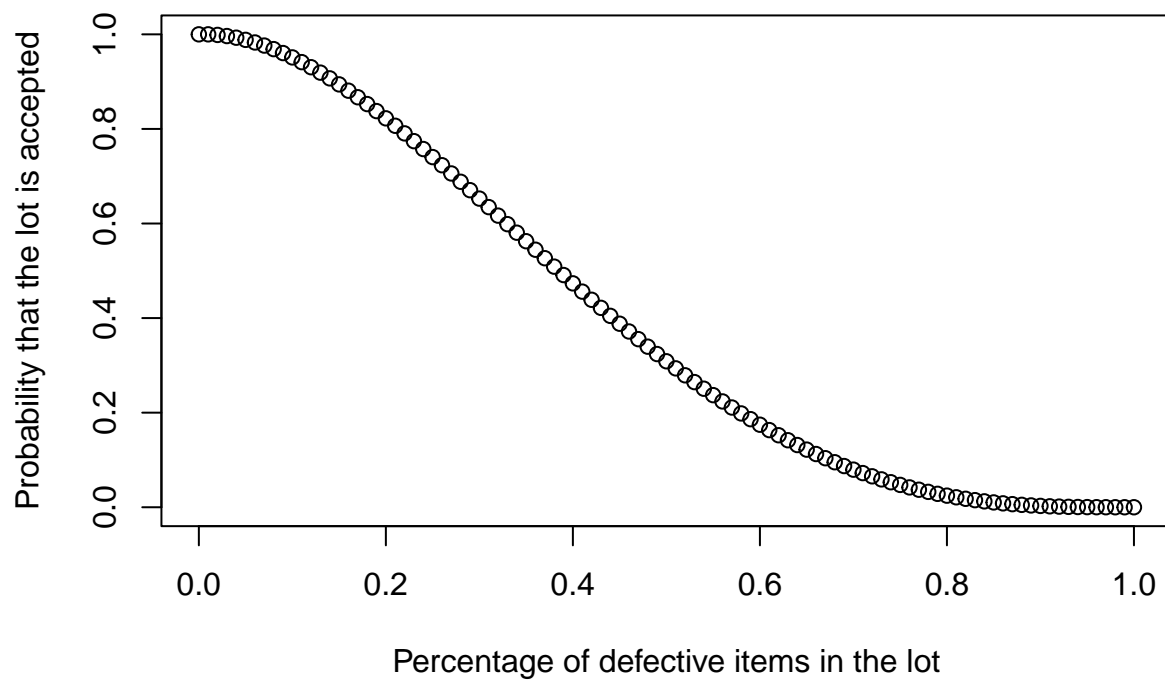
Chapter 2

66.

```
#define F^-1
inverse <- function(x,a) {
  y <- (1-x)^(-1/a)
  return(y)
}

#generate values from the standard uniform distribution
U <- runif(100)

#generate values with F cdf for different values of alpha
X1 <- inverse(U,1)
X2 <- inverse(U,2)
X10 <- inverse(U,10)
```