```
######## Binomial distribution
rm(list=ls(all=TRUE))
size=10000### number of success=x=0,1,2,...,size
prob=0.5####
m=1000### sample size
x=rbinom(m,size,prob)##rbinom(samplesize,size,prob)
x
p=dbinom(x,size,prob)### probability of x=0,1,2,3
x1=sort(x)
x1
F=pbinom(x1,size,prob)#### cumulative probability
F
x
plot(x,p,type='h')## to draw PMF
plot(x1,F,type='s')## to draw CDF
##################Poisson Distirbution
rm(list=ls(all=TRUE))
lambda=1000 ###
n=1000###sample size
x=rpois(n,lambda)### rpois(samplesize,lambda)
x
p=dpois(x,lambda)### to calculate the probabilities
p
x1=sort(x)
F=ppois(x1,lambda)#### CDF
```

```
F

x

plot(x,p,type='h')

plot(x1,F,type='s')


############### Inverse tranformation method from exponential disitrbution

rm(list=ls(all=TRUE))

rate=2##lambda

n=10000000

x=rexp(n,rate)

x

p=dexp(x,rate)###

x1=sort(x)

F=pexp(x1,rate)####CDF

F

x

plot(x,p,type='h')

plot(x1,F,type='s')

m=mean(x)##simulated mean

tm=1/rate##theoretical mean

m;tm;

s=sd(x)

v=s^2

v

1/rate
```

```
1/rate^2

###############

#Step1: Generate Uniform(0,1)namely u

#Step2: equate the CDF to this uniform random variable

# F(x)=u

#Solve for x

# 1-exp(-l*x)=u

#exp(-l*x)=1-u

#-l*x=log(1-u)

#x=(-1/l)*log(1-u)

rm(list=ls(all=TRUE))

l=0.2

u=runif(10,0,1)

x=-log(1-u)/l

x

hist(x,freq=F)

curve(dexp(x,l),add=T,lwd=2)


################ normal distribution

rm(list=ls(all=TRUE))

mean=5;sd=1;

n=1000

x=rnorm(n,mean,sd)

p=dnorm(x,mean,sd)###

x1=sort(x)
```

```
F=pnorm(x1,mean,sd)####CDF

F

x

plot(x,p)

plot(x1,F,type='s')

m=mean(x)

m

s=sd(x)

s

v=var(x)

v

z=(x-mean)/sd

z

plot(z,dnorm(z,0,1),type='h')
```