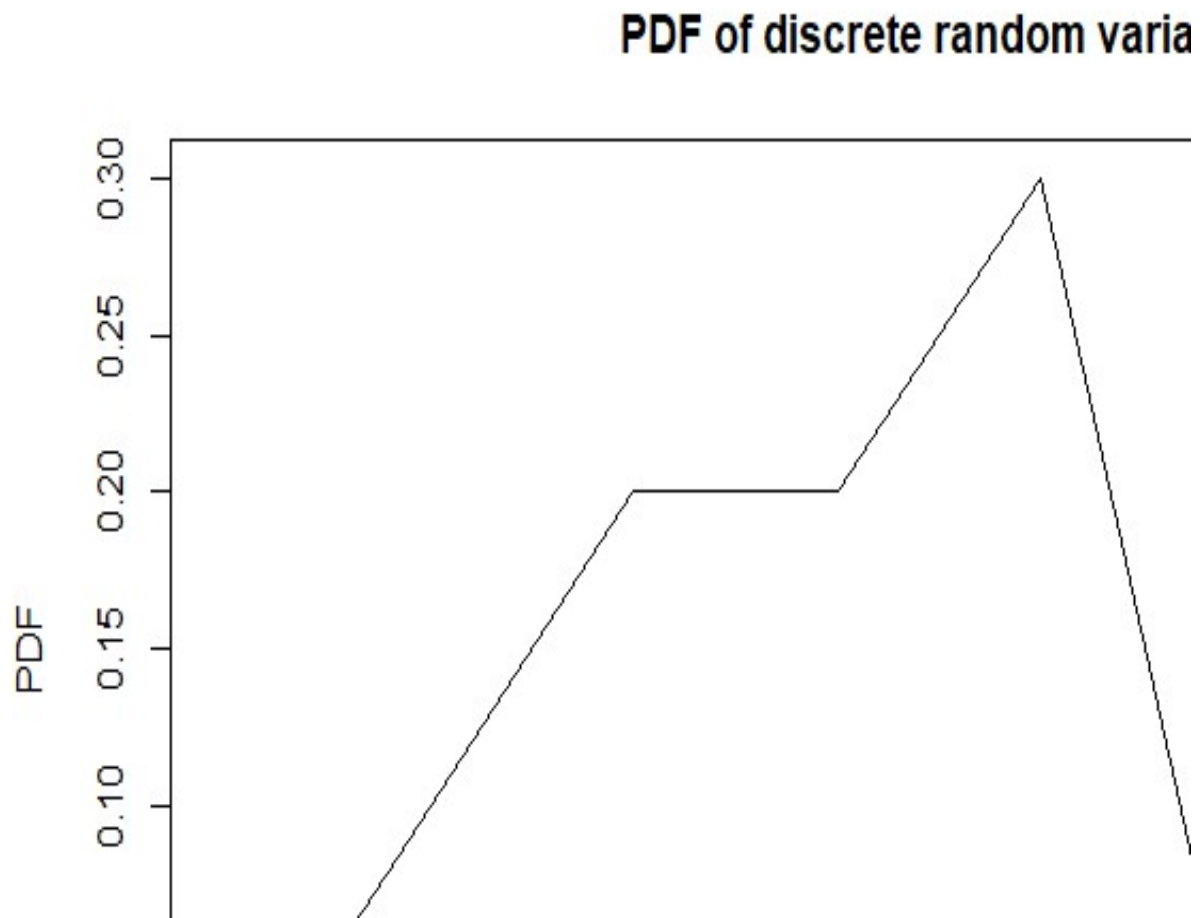# LAB 5: ASSIGNMENT

## QUESTION 1:

- ### FIND MEAN AND VARIANCE USING THE FORMULA

```
> x=c(0,1,2,3,4,5,6,7)
> p=c(0,1/10,2/10,2/10,3/10,1/100,2/100,17/100)
> mean=sum(x*p)
> mean
[1] 3.66
> variance=sum(x^2*p)-(mean^2)
> variance
[1] 3.4044
```
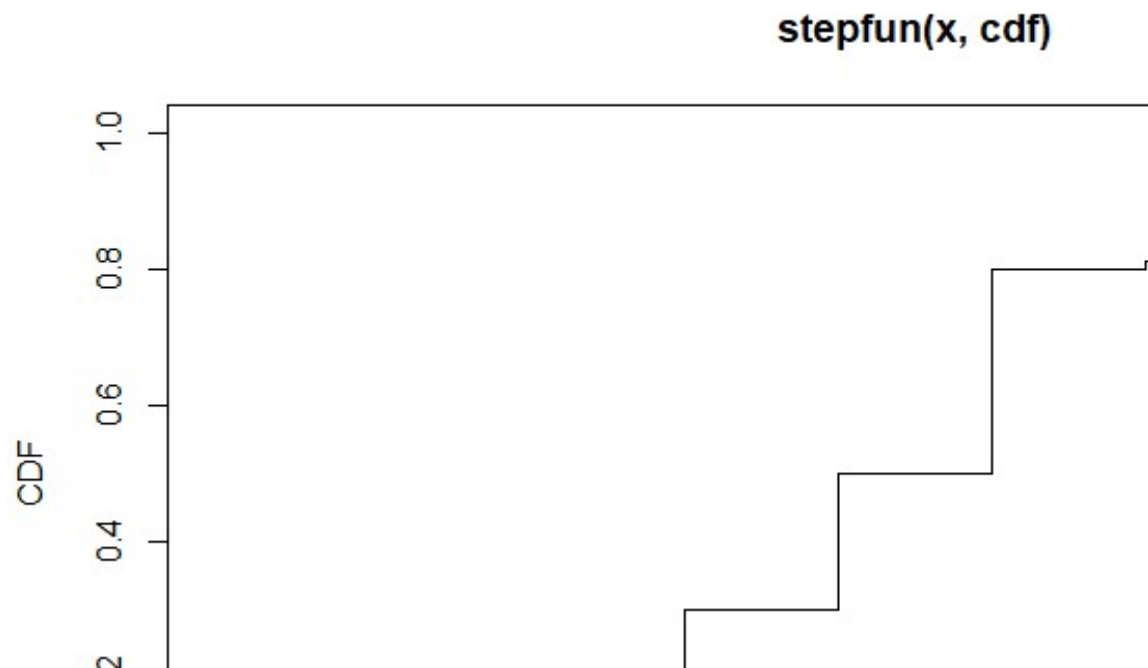
- ### VISUALISE THE 'PDF' AND 'CDF'

### PDF:

```
> x=c(0,1,2,3,4,5,6,7)
> p=c(0,1/10,2/10,2/10,3/10,1/100,2/100,17/100)
> plot(x,p,type="l",main="PDF of discrete random
variable",xlab="x",ylab="PDF")
```

CDF:

```
> cumsum(p)
[1] 0.00 0.10 0.30 0.50 0.80 0.81 0.83 1.00
> cdf=c(0,cumsum(p))
> cdf
[1] 0.00 0.00 0.10 0.30 0.50 0.80 0.81 0.83 1.00

> stepfun(x,cdf)
Step function
Call: stepfun(x, cdf)
 x[1:8] =        0,        1,        2, ...,        6,        7
9 plateau levels =         0,        0,      0.1, ...,     0.83,        1
> cdf.plot=stepfun(x,cdf)
> plot.stepfun(cdf.plot,xlab="x",ylab="CDF",do.points=FALSE)
```

stepfun(x, cdf)



QUESTION 2:

VISUALISE 'PDF' AND 'CDF' FOR THE FUNCTION

```
> x=seq(0,1,0.01)
> f1=6*x*(1-x)
> x1=seq(-1,0,0.01)
> f2=0*x1
> x2=seq(1,2,0.01)
> f3=0*x2
> plot(x,f1,type='l',main="PDF for continuous distribution",xlab="x",
  ylab="PDF",xlim=c(-1,2),ylim=c(0,2))
> par(new=TRUE)
> plot(x1,f2,type='l',main="PDF for continuous distribution",xlab="x",
  ylab="PDF",xlim=c(-1,2),ylim=c(0,2))
> par(new=TRUE)
> plot(x2,f3,type='l',main="PDF for continuous distribution",xlab="x",
  ylab="PDF",xlim=c(-1,2),ylim=c(0,2))
```

## PDF for continuous distributi
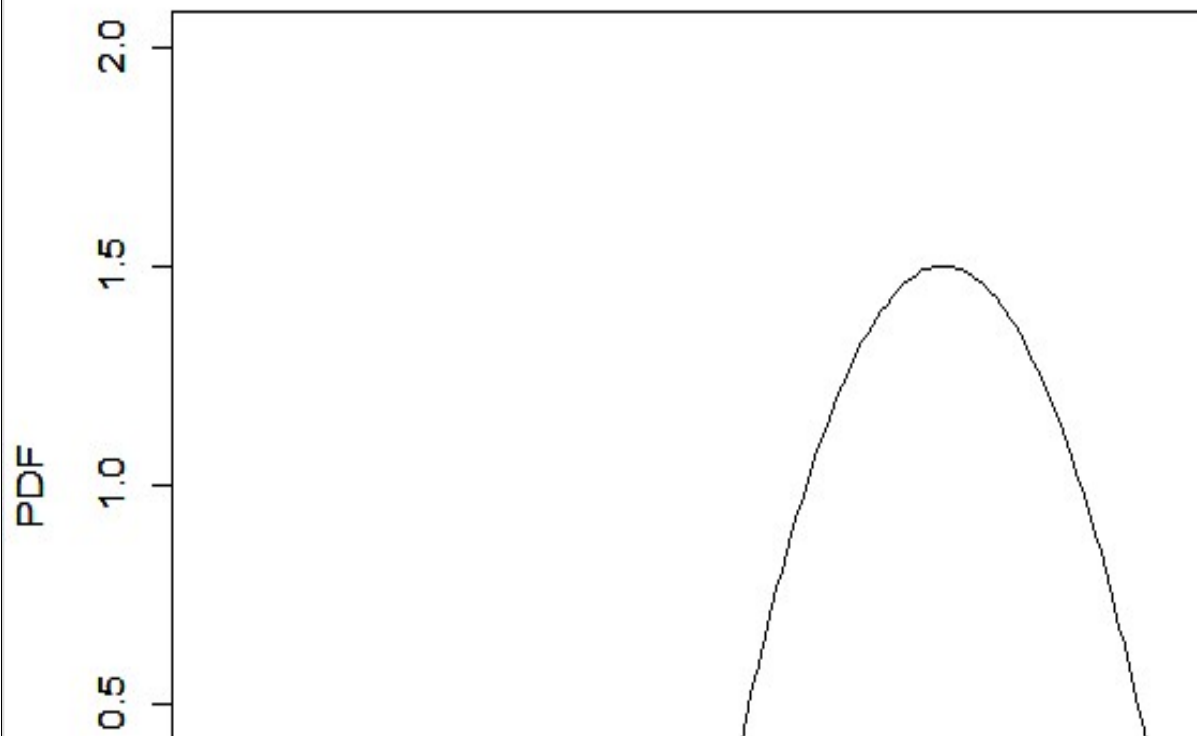


```
> y=seq(0,1,0.01)
> cdf=c(rep(0,50),6*y*(1-y),rep(1,50))
> y0=seq(-0.50,1.50,0.01)
> cdf=c(rep(0,50),3*(y^2)-2*(y^3),rep(1,50))
> plot(y0,cdf,type='l',main="CDF for continuous distribution",
  xlab="x",ylab="CDF",ylim=c(0,2))
```

CDF for continuous distributi