
MOMENTS, SKEWNESS, KURTOSIS AND RANDOM VARIABLE

PRANAVCHENDUR T K

15BCE1097

Aim:

To find moments, skewness and kurtosis data points.

Program:

```
> library(moments)

> data1<-c(2,3,7,8,10)

> moment(data1)
[1] 6

> all.moments(data1)
[1] 1.0 6.0 45.2

> moment(data1, order=3, absolute = TRUE)
[1] 378

> moment(data1, order=4, absolute = TRUE)
[1] 3318.8

> d<- all.moments(data1, order.max=4, central = FALSE, absolute = TRUE, na.rm = FALSE)

> d
[1] 1.0 6.0 45.2 378.0 3318.8

> # Moment about mean
> d<- all.moments(data1, order.max=4, central = TRUE, absolute = TRUE, na.rm = FALSE)

> d
[1] 1.0 2.8 9.2 32.8 122.0

> kurtosis(data1)
[1] 1.441399

> skewness(data1)
[1] -0.1290092
```

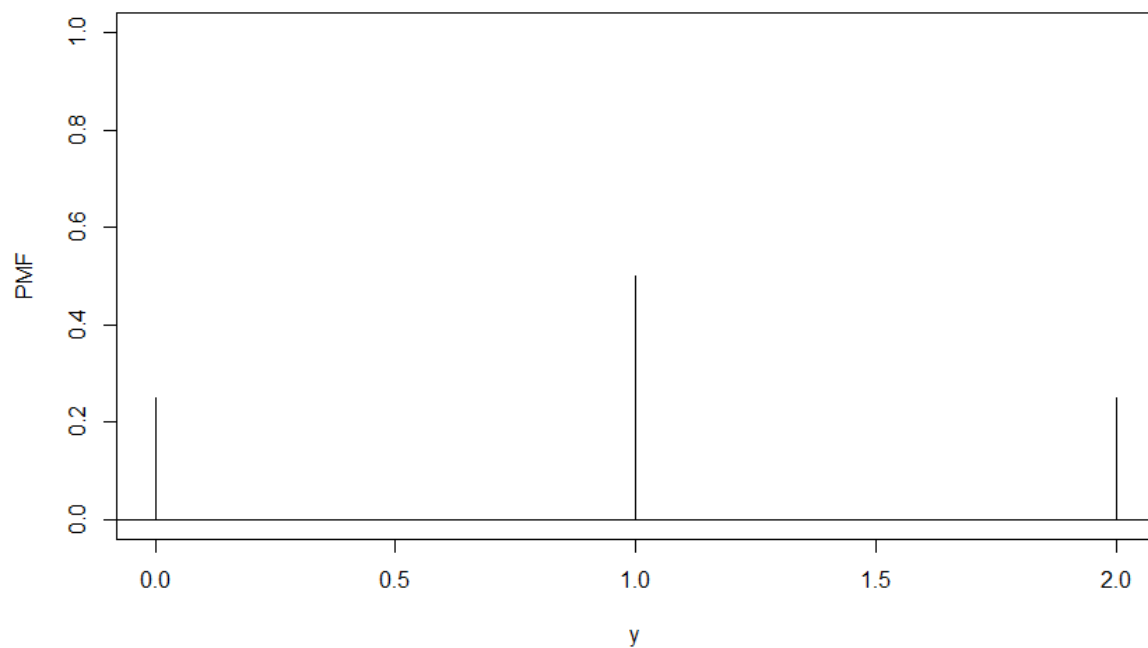
```
> moment(exer)
Subject    Age    Gender    Married    IncomeC    HealthC    childC    LifesatC    SES    Smoke    Spirit    Finish    Lifesat
10.50     21.30     0.55     0.45     9.45     49.40     0.60     26.75     35.90     0.30     39.40     0.70     33.80
Income
44.45

> all.moments(exer, order.max = 4, central = FALSE, absolute = FALSE, na.rm = FALSE)
      [,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10] [,11] [,12] [,13] [,14]
[1,]  1.0   1.0  1.00  1.00  1.00  1.0  1.0  1.00  1.0  1.0   1.0  1.0   1.0   1.00
[2,] 10.5  21.3  0.55  0.45  9.45  49.4  0.6  26.75  35.9  0.3   39.4  0.7   33.8   44.45
[3,] 143.5 487.9 0.55  0.45 185.55 2482.4 1.0  842.75 1386.5 0.3  1679.1 0.7  1215.8 2555.25
[4,] 2205.0 12010.5 0.55  0.45 4130.25 126647.0 1.8 30607.25 57022.1 0.3 77098.9 0.7 45915.5 166383.05
[5,] 36133.3 315349.9 0.55  0.45 98687.55 6547379.6 3.4 1234516.55 2475938.9 0.3 3776783.7 0.7 1800050.0 11582957.25
```

```
> #VAL 1
> y=c(0:2)

> prob = c(0.25,0.5,0.25)

> #Plot PMF
> plot(y,prob,type="h",xlab="y",ylab="PMF",ylim=c(0,1))
```

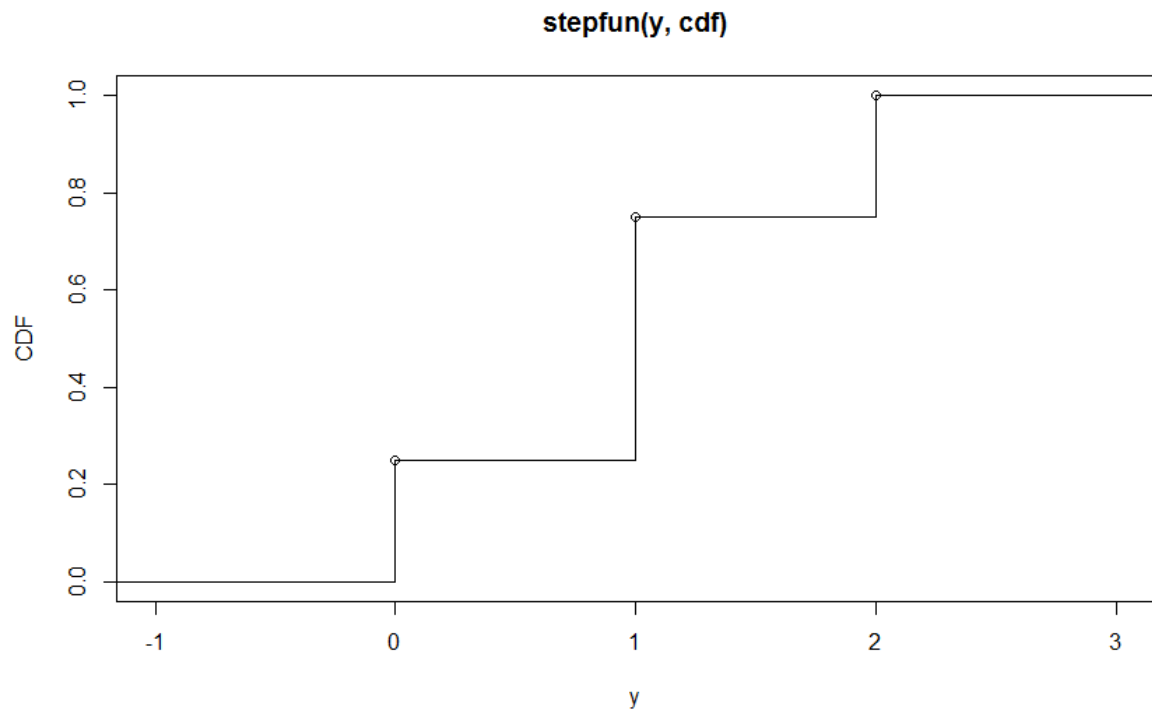


```
> abline(h=0)

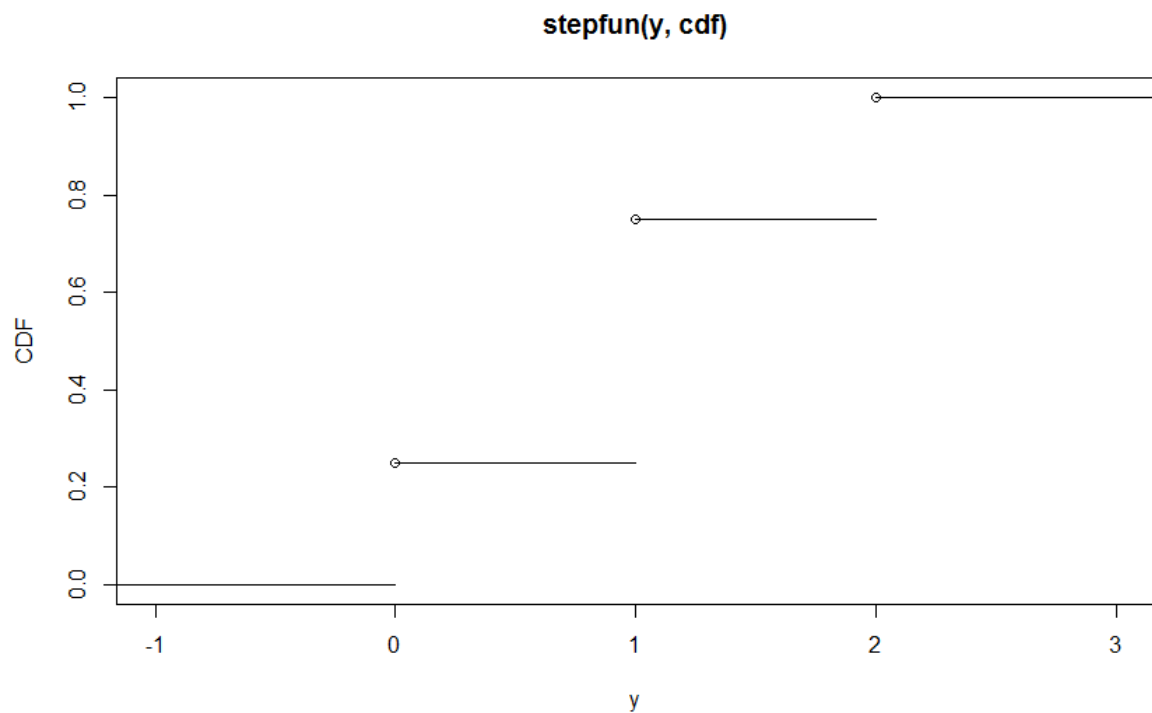
> # Plot CDF
> cdf=c(0,cumsum(prob))

> cdf.plot=stepfun(y,cdf)

> plot.stepfun(cdf.plot,xlab = "y", ylab = "CDF", do.points = TRUE)
```



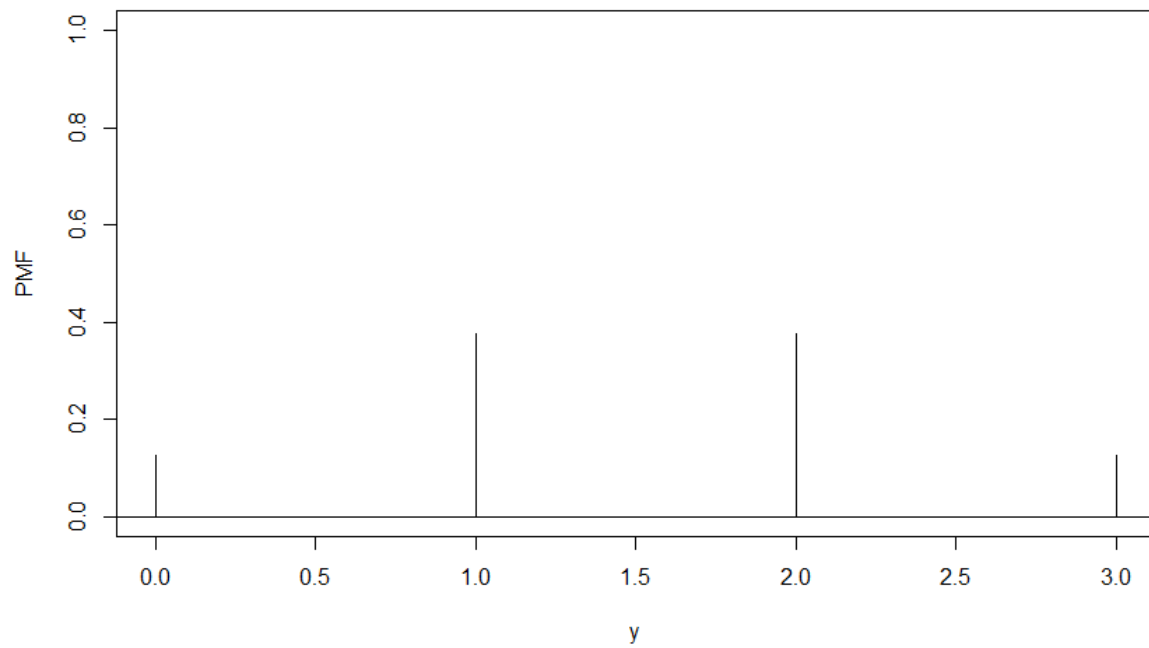
```
> plot.stepfun(cdf.plot,xlab = "y",ylab = "CDF", verticals = FALSE, do.points = TRUE)
```



```
> #val 2
> y=c(0:3)

> prob = c(1/8,3/8,3/8,1/8)

> #Plot PMF
> plot(y,prob,type="h",xlab="y",ylab="PMF",ylim=c(0,1))
```



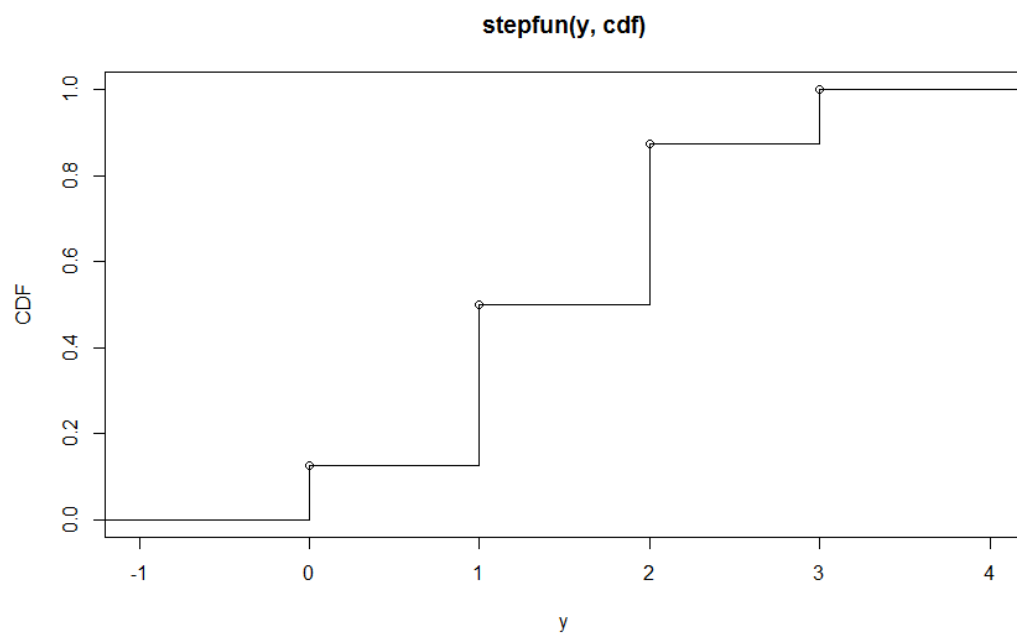
```
> abline(h=0)
```

```
> # Plot CDF
```

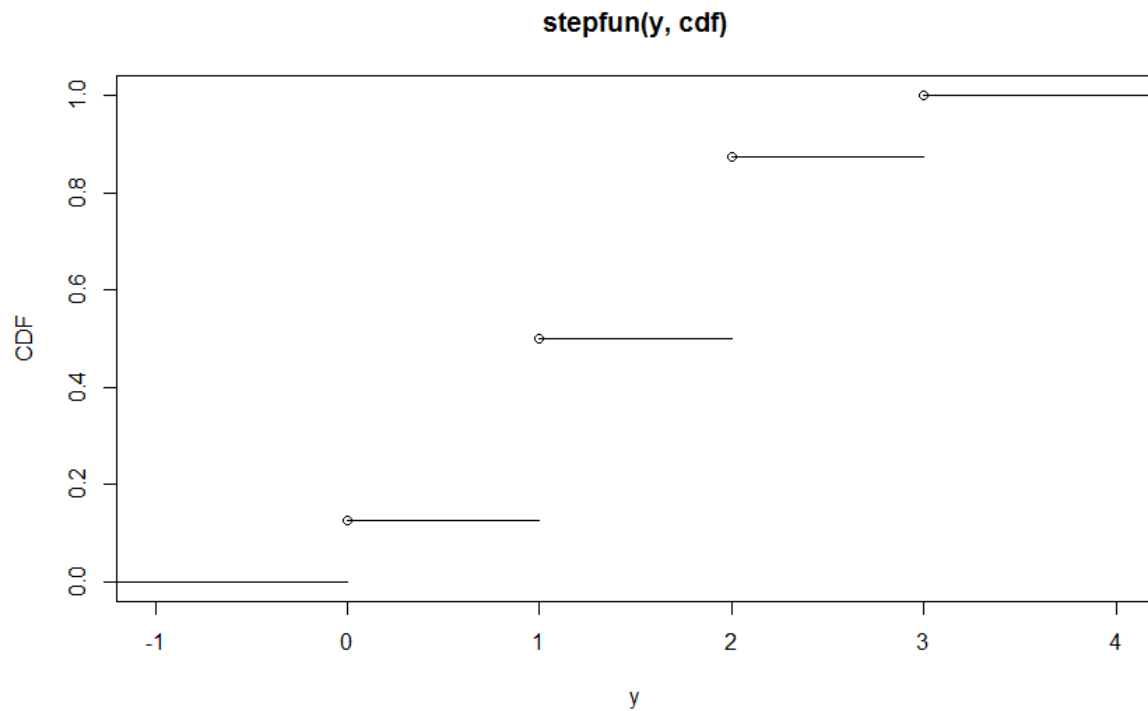
```
> cdf=c(0,cumsum(prob))
```

```
> cdf.plot=stepfun(y,cdf)
```

```
> plot.stepfun(cdf.plot,xlab = "y", ylab = "CDF", do.points = TRUE)
```



```
> plot.stepfun(cdf.plot,xlab = "y",ylab = "CDF", verticals = FALSE, do.points = TRUE)
```



```
> # Visualizing CRF
> x = seq(0,3-0.01,0.01)

> f1=x^2/9

> plot(x,f1,type="l",xlab = "y", ylab = "PDF", xlim = c(0,10))

> par(new=TRUE)

> x1 = seq(3,10,0.01)

> f2=0.0000000*x1

> plot(x1,f2,type="l",xlab = "y",ylab = "PDF", xlim = c(0,10))

> #Alternate
> x=seq(0.3,0.01)
> x0=seq(0.10,0.01)
> pdf=c(x^2/9,rep(0,700))
> plot(x0,pdf,type="l",xlab = "y", ylab = "PDF", xlim = c(0,10))
```

