Statistical Simulation Using R

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```
#Create a new object x that stores the values (2,4,3,5,7,9).Run the following commands on R. Also give
x<-c(2,4,3,5,7,9)
length(x)
```

```
## [1] 6
```

```
sum(x)
```

```
## [1] 30
```

```
mean(x)
```

```
## [1] 5
```

```
min(x)
```

```
## [1] 2
```

```
max(x)
```

```
## [1] 9
```

```
range(x)
```

```
## [1] 2 9
```

```
median(x)
```

```
## [1] 4.5
```

```
quantile(x)
```

```
##   0%  25%  50%  75% 100%
## 2.00 3.25 4.50 6.50 9.00
```

```r
summary(x)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##    2.00    3.25    4.50    5.00    6.50    9.00
```

```r
sort(x)
```

```
## [1] 2 3 4 5 7 9
```

```r
rev(sort(x))
```

```
## [1] 9 7 5 4 3 2
```

```r
order(x)
```

```
## [1] 1 3 2 4 5 6
```

```r
x[order(x)]
```

```
## [1] 2 3 4 5 7 9
```

```r
x[2]
```

```
## [1] 4
```

```r
x[c(2,4)]
```

```
## [1] 4 5
```

```r
x[-2]
```

```
## [1] 2 3 5 7 9
```

```r
x[-c(1,3)]
```

```
## [1] 4 5 7 9
```

```r
log(x)
```

```
## [1] 0.6931472 1.3862944 1.0986123 1.6094379 1.9459101 2.1972246
```

```r
log(x,base=10)
```

```
## [1] 0.3010300 0.6020600 0.4771213 0.6989700 0.8450980 0.9542425
```

```r
log(x,base = 2)
```

```
## [1] 1.000000 2.000000 1.584963 2.321928 2.807355 3.169925
```

```r
1+x
```

```
## [1]  3  5  4  6  8 10
```

```r
2*x
```

```
## [1]  4  8  6 10 14 18
```

```r
log(1+x)
```

```
## [1] 1.098612 1.609438 1.386294 1.791759 2.079442 2.302585
```

```r
log(2*x)
```

```
## [1] 1.386294 2.079442 1.791759 2.302585 2.639057 2.890372
```

```r
sqrt(x)
```

```
## [1] 1.414214 2.000000 1.732051 2.236068 2.645751 3.000000
```

```r
x^2
```

```
## [1]  4 16  9 25 49 81
```

```r
x^0.32
```

```
## [1] 1.248331 1.558329 1.421277 1.673672 1.863938 2.020029
```

```r
sum(x^0.32)
```

```
## [1] 9.785576
```

```r
sin(x)
```

```
## [1]  0.9092974 -0.7568025  0.1411200 -0.9589243  0.6569866  0.4121185
```

```r
cos(x)
```

```
## [1] -0.4161468 -0.6536436 -0.9899925  0.2836622  0.7539023 -0.9111303
```

```
tan(x)
```

```
## [1] -2.1850399  1.1578213 -0.1425465 -3.3805150  0.8714480 -0.4523157
```

```
170166719/31079
```

```
## [1] 5475.296
```

```
170166719%%31079
```

```
## [1] 9194
```

```
170166719%/%31079
```

```
## [1] 5475
```

$$I = \sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6}$$