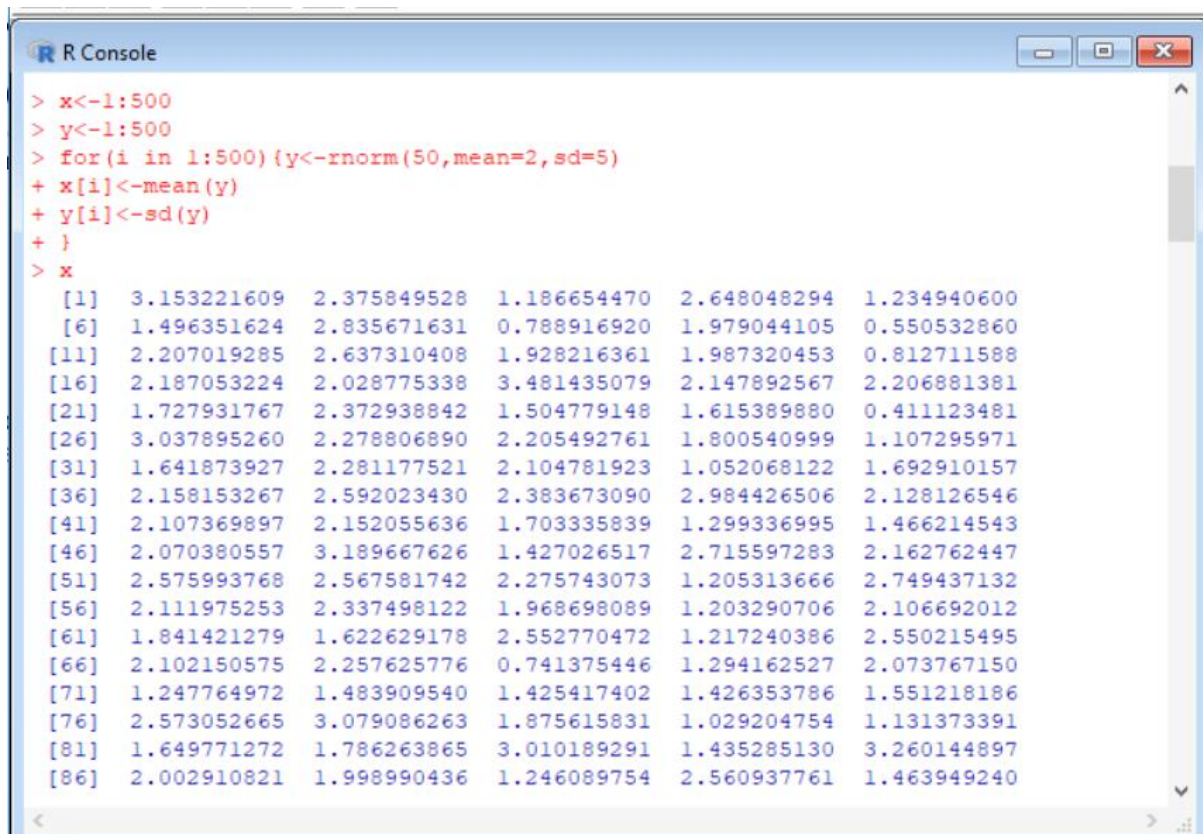# MAT 2001- STATISTICS FOR ENGINEERS LAB

EXPERIMENT-4

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- **Reg No.: - 18BCI0173**
- **Faculty: - PROF. RAJESH MOHARANA**
- **SLOT :- L13+L14**

1. Generate 500 sets of 50 data from normal distribution with scale parameter 2 and location parameter 5. Find the average values of mean and standard deviation, and justify your answer.

Sol:-


```
R R Console                                              ⎯ ⧉ ✕

> x<-1:500
> y<-1:500
> for(i in 1:500){y<-rnorm(50,mean=2,sd=5)
+ x[i]<-mean(y)
+ y[i]<-sd(y)
+ }
> x
  [1]  3.153221609  2.375849528  1.186654470  2.648048294  1.234940600
  [6]  1.496351624  2.835671631  0.788916920  1.979044105  0.550532860
 [11]  2.207019285  2.637310408  1.928216361  1.987320453  0.812711588
 [16]  2.187053224  2.028775338  3.481435079  2.147892567  2.206881381
 [21]  1.727931767  2.372938842  1.504779148  1.615389880  0.411123481
 [26]  3.037895260  2.278806890  2.205492761  1.800540999  1.107295971
 [31]  1.641873927  2.281177521  2.104781923  1.052068122  1.692910157
 [36]  2.158153267  2.592023430  2.383673090  2.984426506  2.128126546
 [41]  2.107369897  2.152055636  1.703335839  1.299336995  1.466214543
 [46]  2.070380557  3.189667626  1.427026517  2.715597283  2.162762447
 [51]  2.575993768  2.567581742  2.275743073  1.205313666  2.749437132
 [56]  2.111975253  2.337498122  1.968698089  1.203290706  2.106692012
 [61]  1.841421279  1.622629178  2.552770472  1.217240386  2.550215495
 [66]  2.102150575  2.257625776  0.741375446  1.294162527  2.073767150
 [71]  1.247764972  1.483909540  1.425417402  1.426353786  1.551218186
 [76]  2.573052665  3.079086263  1.875615831  1.029204754  1.131373391
 [81]  1.649771272  1.786263865  3.010189291  1.435285130  3.260144897
 [86]  2.002910821  1.998990436  1.246089754  2.560937761  1.463949240
```

```
R R Console                                                              ─ □ ✖

[416]   2.834809571   2.087398141   2.351378265   0.599812268   1.243598143
[421]   2.011127173   2.467098889   2.975480363   2.860127333   2.326739789
[426]   1.756452731   1.924362333   3.295971448   1.633388459   0.690390893
[431]   2.141746130   2.499878239   2.289935733   1.492055617   1.937596566
[436]   1.264662562  -0.065738563   4.098115147   1.215864435   1.859194287
[441]   1.485973113   2.408109747   1.686856445   0.994825217   2.546312042
[446]   1.231845158   2.280785545   1.857831012   2.074073820   2.190343524
[451]   1.422863784   2.103274758   2.163237793   0.838252405   2.122084545
[456]   2.966443587   1.507542587   1.993268113   1.880077229   1.505666129
[461]   1.270244469   2.832680196   2.673740525   2.657885961   2.494630324
[466]   1.886746334   2.331597093   1.118652838   1.611086320   2.124148822
[471]   1.304903395   2.176456324   2.366764708   2.949561850   1.818853224
[476]   1.911037713   2.175157960   1.706598084   1.891271825   2.457760522
[481]   1.812184070   2.291282337   1.731160422   0.655530554   0.691049931
[486]   2.984335453   1.987783655   1.381433016   1.037213354   2.166022217
[491]   2.481713056   2.735264029   2.779088447   1.907848016   1.153449227
[496]   2.554686298   3.071136605   0.392970043   1.850839617   1.621357594
> y
  [1]   3.94560102  -1.05980538   1.71882813   4.12549494  -2.59813722  -0.60858950
  [7]  -0.07531929   2.12005265   1.75444696   3.44841122  -4.45242638  -8.28241949
 [13]  -1.05083235   1.60697556   8.50655828  -2.98868735  -1.05460070   0.80891946
 [19]  -4.96154271   4.93963030  -6.11736026   4.30702211   5.84147032  -4.12883730
 [25]  10.36469241  -3.16554484   8.16617425  -3.48018584   6.10112980   4.15123289
 [31]   4.76168452  -3.28841107   4.00279938   2.53377823   7.39039413  -0.38028822
 [37]  -0.45718798  -0.30335441   8.66541714   0.38746869  -0.24697385   5.30520280
```
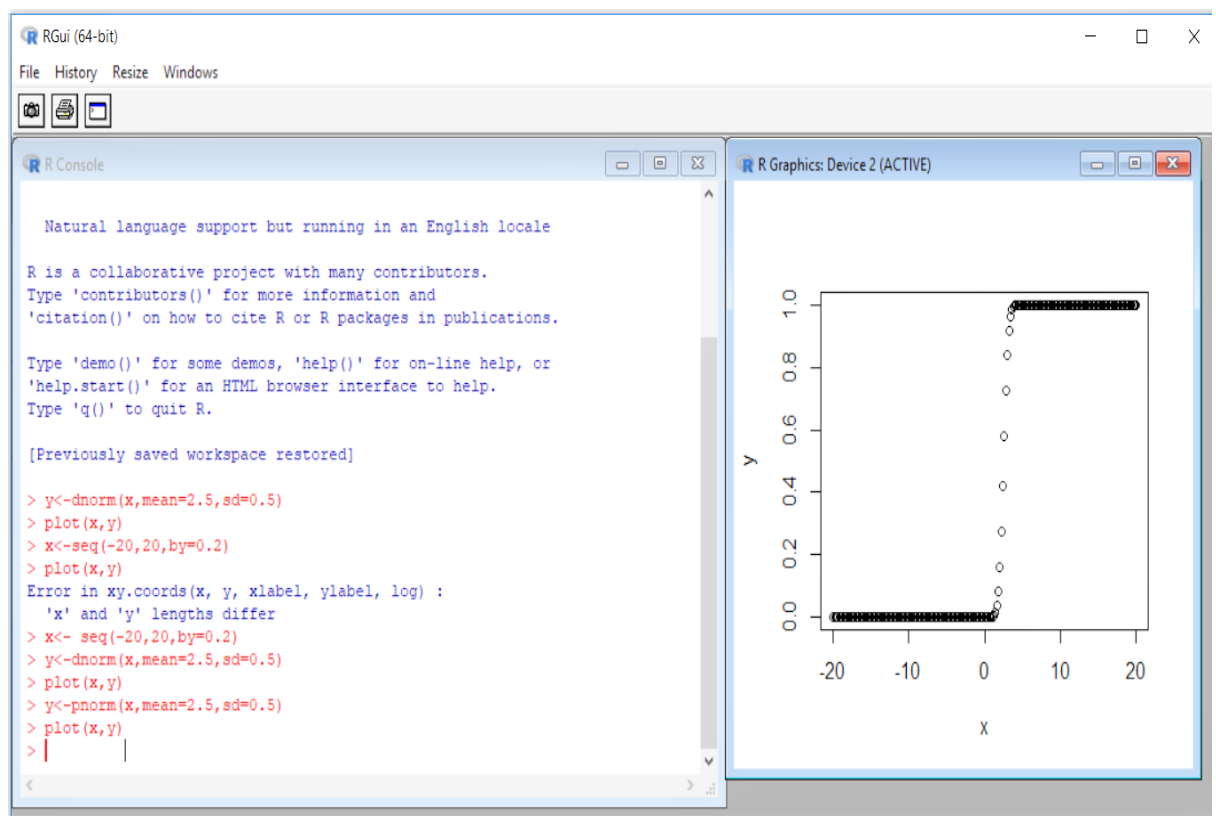
Mean: -

```
R R Console

> mean(x)
[1] 1.943881
```

2. Plot a normal distribution having mean as 2.5 and standard deviation as 0.5. For the domain of the graph create a sequence of numbers between -20 and 20 incrementing by 0.2.

Sol: -
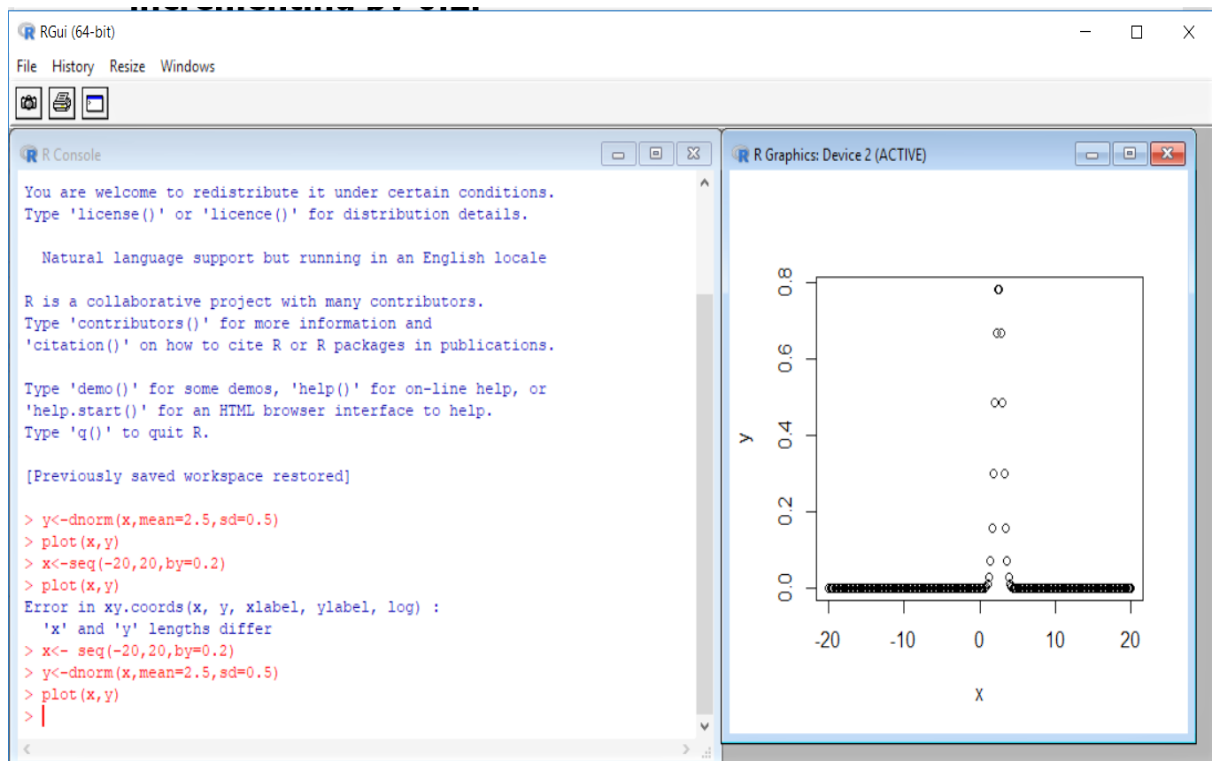
3. For the above problem plot the graph of cumulative distribution function.
   Sol: -

----------------------------Thank You-------------------------------------