



**Instituto Tecnológico de Tijuana**  
**Ingeniería en Tecnologías de la información y**  
**comunicaciones**

**Nombre de la Materia:**

**Minería de datos**

**Actividad:**

**Practica 1**

**Profesor:**

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Test the Law Of Large Numbers for N random normally distributed numbers with mean = 0, stdev=1:

Create an R script that will count how many of these numbers fall between -1 and 1 and divide

by the total quantity of N

You know that  $E(X) = 68.2\%$

Check that  $\text{Mean}(X_n) \rightarrow E(X)$  as you rerun your script while increasing N

Hint:

1. Initialize sample size
2. Initialize counter
3. loop for(i in rnorm(size))
4. Check if the iterated variable falls
5. Increase counter if the condition is true
6. return a result <- counter / N

```
1 x <- rnorm(10)
2 y <- dnorm(x, mean = 0, sd = 1)
3 plot(x,y)
4
5 count <- 0
6 res <- 0
7
8 for(i in rnorm(10))
9 {
10   count <- count + 1
11   print(count)
12
13   if(i <= 1 && i >= -1)
14   {
15     print(i)
16     print("It is between -1 y 1")
17     res <- res + 1
18   }
19   else
20   {
21     print(i)
22     print("Out of range")
23   }
24 }
25
26 Res <- res / count
27 print(Res)
```

```
[1] 1
[1] 1.017615
[1] "Out of range"
[1] 2
[1] 0.538024
[1] "It is between -1 y 1"
[1] 3
[1] -0.4527825
[1] "It is between -1 y 1"
[1] 4
[1] 1.812666
[1] "Out of range"
[1] 5
[1] 1.261837
[1] "Out of range"
[1] 6
[1] -0.9816242
[1] "It is between -1 y 1"
[1] 7
[1] -1.622013
[1] "Out of range"
[1] 8
[1] -1.147485
[1] "Out of range"
[1] 9
[1] 1.327037
[1] "Out of range"
[1] 10
[1] 0.3460797
[1] "It is between -1 y 1"
> Res <- res / count
> print(Res)
[1] 0.4
```



Values	
contador	68419
count	10
i	0.346079666152303
res	4
Res	0.4
size	1e+05
x	num [1:10] -2.503 1.557 -1.016 0.367 -0.11 ...
y	num [1:10] 0.0174 0.1187 0.2382 0.373 0.3965 ...

