

Clase-18.R

maria

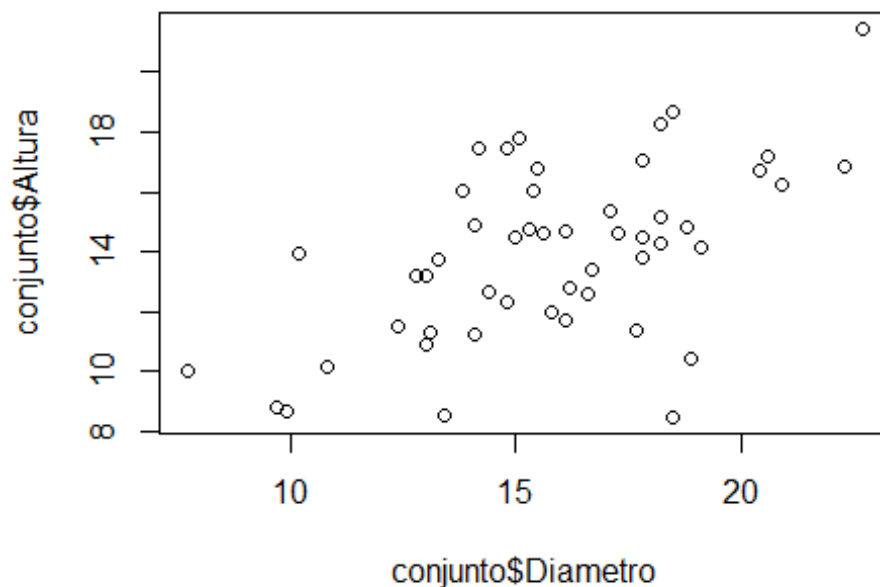
2021-05-22

```
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# Fecha: 18.03.2021  
# EJERCICIOS DE CORRELACION
```

```
conjunto <-  
read.csv("https://raw.githubusercontent.com/MariaRamirez12/PRINCIPIOS_ESTADIS  
TICA2021/main/DBH_1.csv.csv")  
head(conjunto)
```

##	Arbol	Fecha	Especie	Posicion	Vecinos	Diametro	Altura
## 1	1	12	F	C	4	15.3	14.78
## 2	2	12	F	D	3	17.8	17.07
## 3	3	9	C	D	5	18.2	18.28
## 4	4	9	H	S	4	9.7	8.79
## 5	5	7	H	I	6	10.8	10.18
## 6	6	10	C	I	3	14.1	14.90

```
plot(conjunto$Diametro, conjunto$Altura)
```



```
# Correlacion de Pearson"s
```

```
cor.test(conjunto$Diametro, conjunto$Altura)
```

```
##
```

```
## Pearson's product-moment correlation
```

```
##
```

```
## data: conjunto$Diametro and conjunto$Altura
```

```
## t = 4.7755, df = 48, p-value = 1.724e-05
```

```
## alternative hypothesis: true correlation is not equal to 0
```

```
## 95 percent confidence interval:
```

```
## 0.3434347 0.7304827
```

```
## sample estimates:
```

```
## cor
```

```
## 0.5675298
```

```
data("iris")
```

```
head(iris)
```

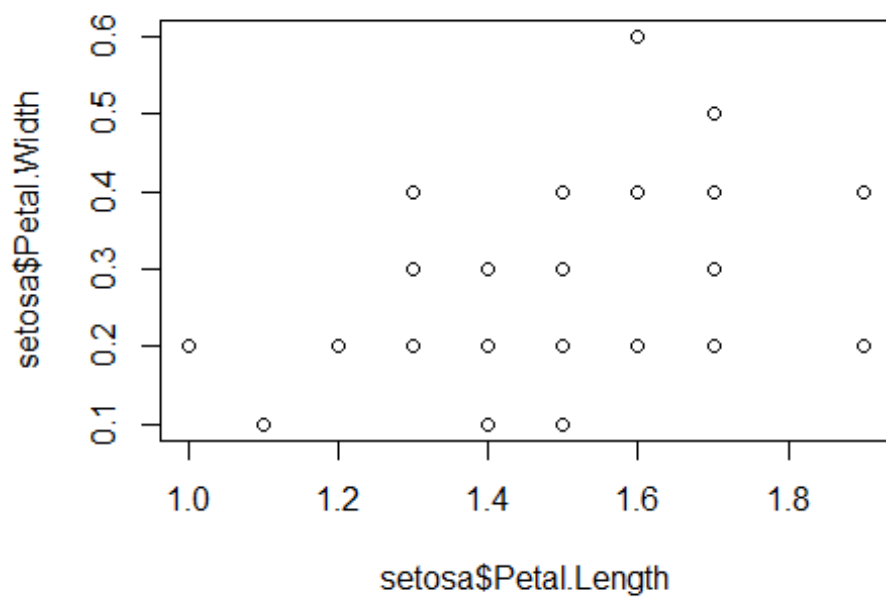
```
## Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1 5.1 3.5 1.4 0.2 setosa
## 2 4.9 3.0 1.4 0.2 setosa
## 3 4.7 3.2 1.3 0.2 setosa
## 4 4.6 3.1 1.5 0.2 setosa
## 5 5.0 3.6 1.4 0.2 setosa
## 6 5.4 3.9 1.7 0.4 setosa
```

```
summary(iris)
```

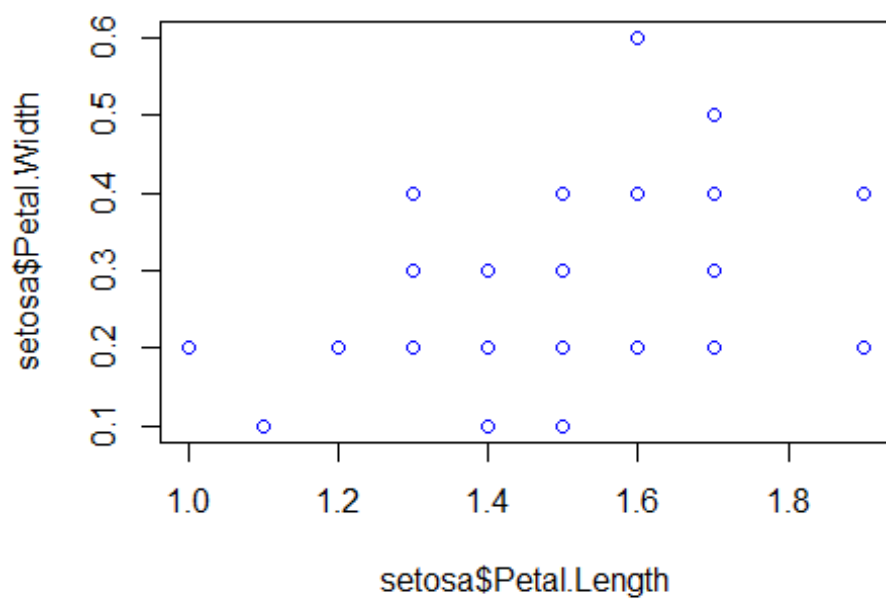
```
## Sepal.Length Sepal.Width Petal.Length Petal.Width
## Min. :4.300 Min. :2.000 Min. :1.000 Min. :0.100
## 1st Qu.:5.100 1st Qu.:2.800 1st Qu.:1.600 1st Qu.:0.300
## Median :5.800 Median :3.000 Median :4.350 Median :1.300
## Mean :5.843 Mean :3.057 Mean :3.758 Mean :1.199
## 3rd Qu.:6.400 3rd Qu.:3.300 3rd Qu.:5.100 3rd Qu.:1.800
## Max. :7.900 Max. :4.400 Max. :6.900 Max. :2.500
## Species
## setosa :50
## versicolor:50
## virginica :50
##
##
##
```

```
setosa <- subset(iris, Species == "setosa")
```

```
plot(setosa$Petal.Length, setosa$Petal.Width)
```



```
plot(setosa$Petal.Length, setosa$Petal.Width, col = "blue")
```

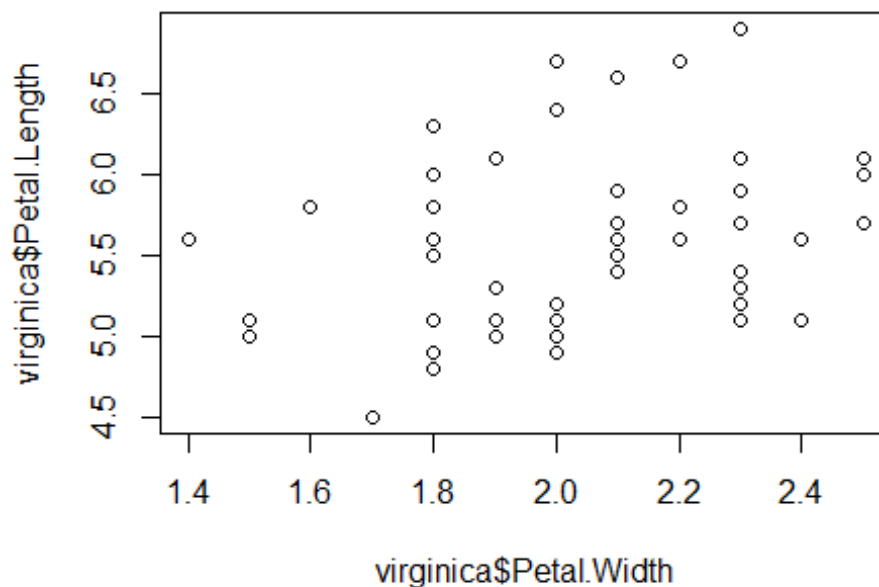


```
cor.test(setosa$Petal.Length, setosa$Petal.Width)
```

```
##
## Pearson's product-moment correlation
##
## data: setosa$Petal.Length and setosa$Petal.Width
## t = 2.4354, df = 48, p-value = 0.01864
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## 0.05870091 0.55842995
## sample estimates:
## cor
## 0.33163

virginica <- subset(iris, Species == "virginica")

plot(virginica$Petal.Width, virginica$Petal.Length)
```

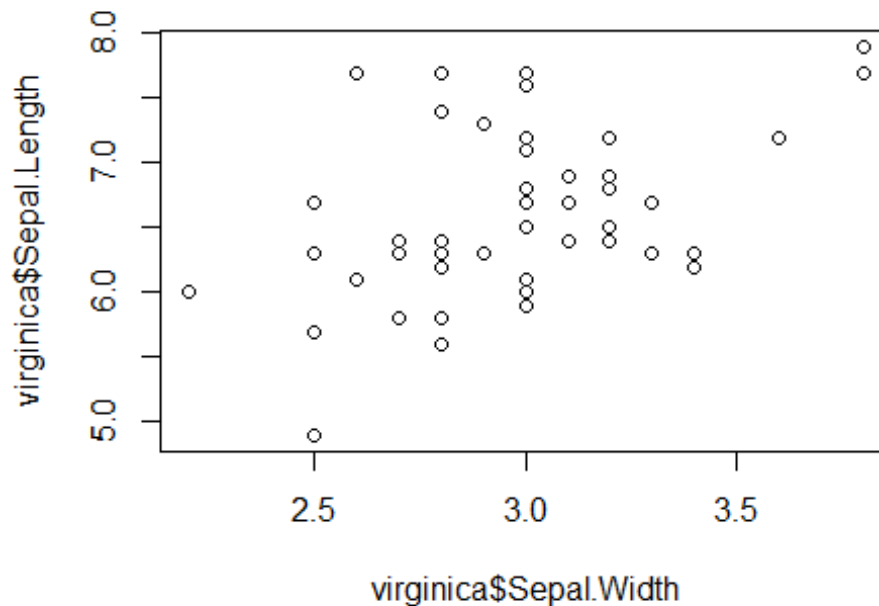


```
cor.test(virginica$Petal.Length, virginica$Petal.Length)

##
## Pearson's product-moment correlation
##
## data: virginica$Petal.Length and virginica$Petal.Length
## t = 328764948, df = 48, p-value < 2.2e-16
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## 1 1
## sample estimates:
```

```
## cor
## 1

plot(virginica$Sepal.Width, virginica$Sepal.Length)
```



```
cor.test(virginica$Sepal.Length, virginica$Sepal.Width)

##
## Pearson's product-moment correlation
##
## data: virginica$Sepal.Length and virginica$Sepal.Width
## t = 3.5619, df = 48, p-value = 0.0008435
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## 0.2049657 0.6525292
## sample estimates:
## cor
## 0.4572278
```

24 de marzo correlacion -----

```
data("anscombe")
anscombe
```

```
##   x1 x2 x3 x4   y1  y2   y3   y4
## 1 10 10 10  8  8.04 9.14  7.46  6.58
## 2  8  8  8  8  6.95 8.14  6.77  5.76
## 3 13 13 13  8  7.58 8.74 12.74  7.71
```

```
## 4  9  9  9  8  8.81 8.77  7.11  8.84
## 5 11 11 11  8  8.33 9.26  7.81  8.47
## 6 14 14 14  8  9.96 8.10  8.84  7.04
## 7  6  6  6  8  7.24 6.13  6.08  5.25
## 8  4  4  4 19  4.26 3.10  5.39 12.50
## 9 12 12 12  8 10.84 9.13  8.15  5.56
## 10 7  7  7  8  4.82 7.26  6.42  7.91
## 11 5  5  5  8  5.68 4.74  5.73  6.89
```

```
summary(anscombe[,1:4])
```

```
##           x1           x2           x3           x4
## Min.      : 4.0      Min.      : 4.0      Min.      : 4.0      Min.      : 8
## 1st Qu.: 6.5      1st Qu.: 6.5      1st Qu.: 6.5      1st Qu.: 8
## Median : 9.0      Median : 9.0      Median : 9.0      Median : 8
## Mean     : 9.0      Mean      : 9.0      Mean      : 9.0      Mean      : 9
## 3rd Qu.:11.5      3rd Qu.:11.5      3rd Qu.:11.5      3rd Qu.: 8
## Max.     :14.0      Max.       :14.0      Max.       :14.0      Max.       :19
```

```
sd(anscombe$x1)
```

```
## [1] 3.316625
```

```
sd(anscombe$x2)
```

```
## [1] 3.316625
```

```
summary(anscombe[, 5:8])
```

```
##           y1           y2           y3           y4
## Min.      : 4.260      Min.      :3.100      Min.      : 5.39      Min.      : 5.250
## 1st Qu.: 6.315      1st Qu.:6.695      1st Qu.: 6.25      1st Qu.: 6.170
## Median : 7.580      Median :8.140      Median : 7.11      Median : 7.040
## Mean     : 7.501      Mean      :7.501      Mean      : 7.50      Mean      : 7.501
## 3rd Qu.: 8.570      3rd Qu.:8.950      3rd Qu.: 7.98      3rd Qu.: 8.190
## Max.     :10.840      Max.       :9.260      Max.       :12.74      Max.       :12.500
```

```
sd(anscombe$y1)
```

```
## [1] 2.031568
```

```
sd(anscombe$y3)
```

```
## [1] 2.030424
```

```
cor.test(anscombe$x1, anscombe$y1)
```

```
##
```

```
## Pearson's product-moment correlation
```

```
##
```

```
## data: anscombe$x1 and anscombe$y1
```

```
## t = 4.2415, df = 9, p-value = 0.00217
```

```
## alternative hypothesis: true correlation is not equal to 0
```

```

## 95 percent confidence interval:
## 0.4243912 0.9506933
## sample estimates:
##      cor
## 0.8164205

cor.test(anscombe$x2, anscombe$y2)

##
## Pearson's product-moment correlation
##
## data:  anscombe$x2 and anscombe$y2
## t = 4.2386, df = 9, p-value = 0.002179
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## 0.4239389 0.9506402
## sample estimates:
##      cor
## 0.8162365

cor.test(anscombe$x3, anscombe$y3)

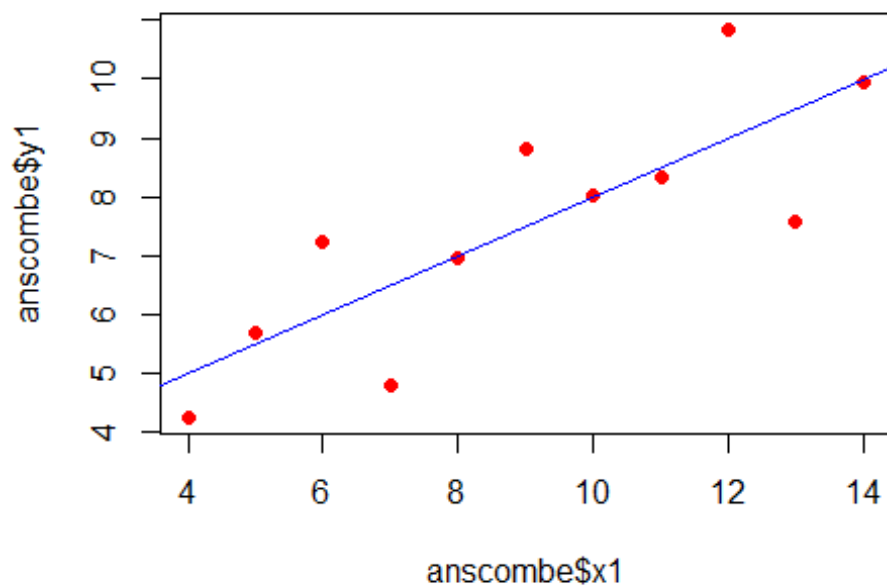
##
## Pearson's product-moment correlation
##
## data:  anscombe$x3 and anscombe$y3
## t = 4.2394, df = 9, p-value = 0.002176
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## 0.4240623 0.9506547
## sample estimates:
##      cor
## 0.8162867

cor.test(anscombe$x4, anscombe$y4)

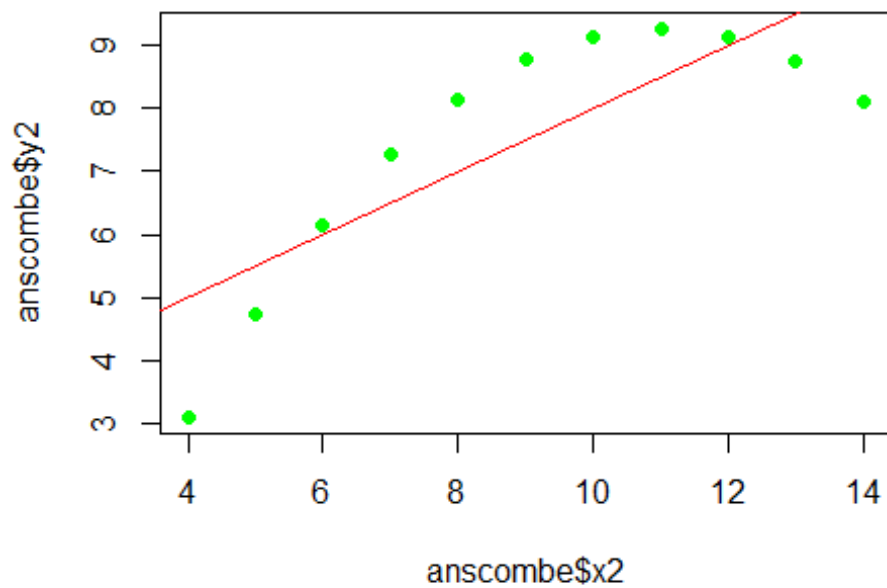
##
## Pearson's product-moment correlation
##
## data:  anscombe$x4 and anscombe$y4
## t = 4.243, df = 9, p-value = 0.002165
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
## 0.4246394 0.9507224
## sample estimates:
##      cor
## 0.8165214

# pch cambia los puntos
plot(anscombe$x1, anscombe$y1, pch=16, col = "red")
abline(lm(anscombe$y1~ anscombe$x1), col= "blue")

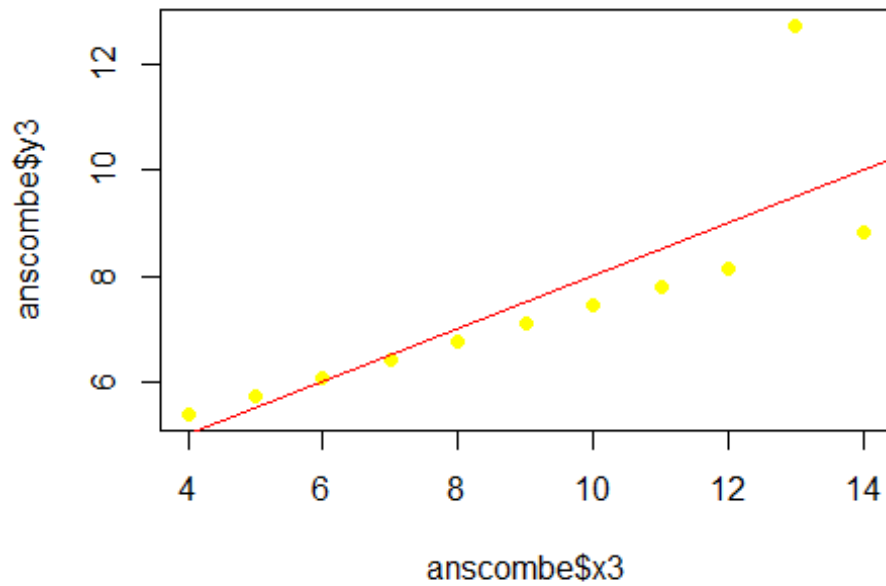
```



```
plot(anscombe$x2, anscombe$y2, pch=16, col = "green")  
abline(lm(anscombe$y2~ anscombe$x2), col = "red")
```




```
plot(anscombe$x3, anscombe$y3, pch= 16, col= "yellow")  
abline(lm(anscombe$y3~ anscombe$x3), col= "red")
```



```
plot(anscombe$x4, anscombe$y4, pch=16, col= "purple")  
abline(lm(anscombe$y4~ anscombe$x4), col= "red")
```

