# Laboratorio_5.R

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# Laboratorio.5
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# Ejercicio.1 ------------------------------------------------------------
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#Importar datos
anscombe <- read.csv("Anscombe.csv")

summary(anscombe)
```

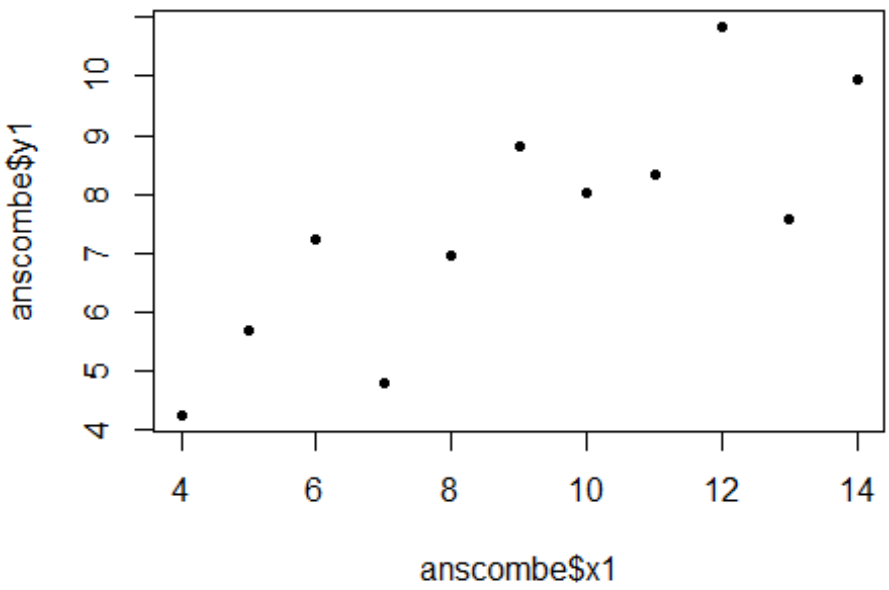
```
##        x1              y1               x2              y2
x3
##  Min.   : 4.0   Min.   : 4.260   Min.   : 4.0   Min.   :3.100   Min.
: 4.0
##  1st Qu.: 6.5   1st Qu.: 6.315   1st Qu.: 6.5   1st Qu.:6.695   1st
Qu.: 6.5
##  Median : 9.0   Median : 7.580   Median : 9.0   Median :8.140   Median
: 9.0
##  Mean   : 9.0   Mean   : 7.501   Mean   : 9.0   Mean   :7.501   Mean
: 9.0
##  3rd Qu.:11.5   3rd Qu.: 8.570   3rd Qu.:11.5   3rd Qu.:8.950   3rd
Qu.:11.5
##  Max.   :14.0   Max.   :10.840   Max.   :14.0   Max.   :9.260   Max.
:14.0
##        y3              x4           y4
##  Min.   : 5.39   Min.   : 8   Min.   : 5.250
##  1st Qu.: 6.25   1st Qu.: 8   1st Qu.: 6.170
##  Median : 7.11   Median : 8   Median : 7.040
##  Mean   : 7.50   Mean   : 9   Mean   : 7.493
##  3rd Qu.: 7.98   3rd Qu.: 8   3rd Qu.: 8.190
##  Max.   :12.74   Max.   :19   Max.   :12.500
```

```
#Para establecer si tenemos una hipotesis nula nuestro p-value será
#mayor a 0.05 y si es alternativa será menor a 0.05.

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

plot(anscombe$x1, anscombe$y1, pch=20)
```



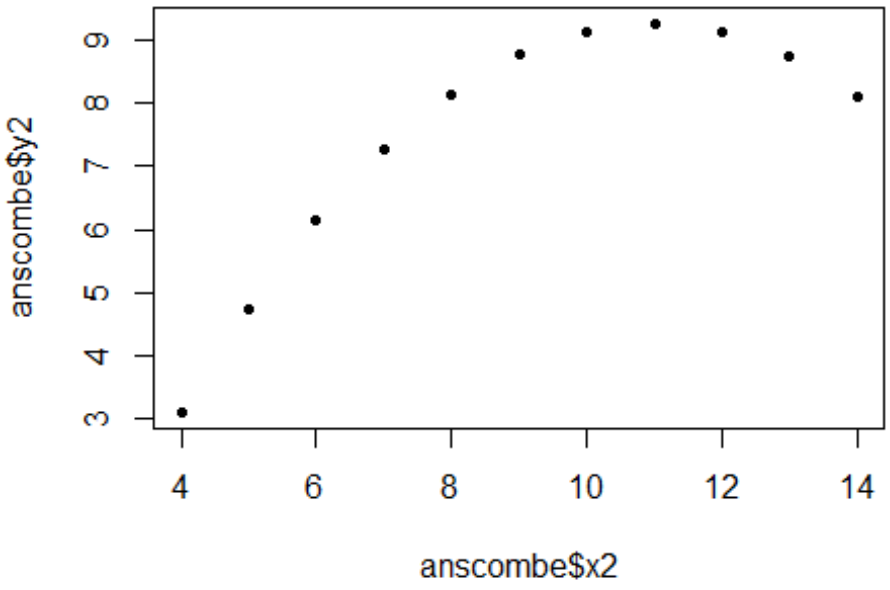

```
#grados de libertad = 9
#relación lineal positiva
#Correlación = 0.81
#p=0.002
#hay significancia por lo que se acepta la hipotesis alternativa

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

plot(anscombe$x2, anscombe$y2, pch=20)
```



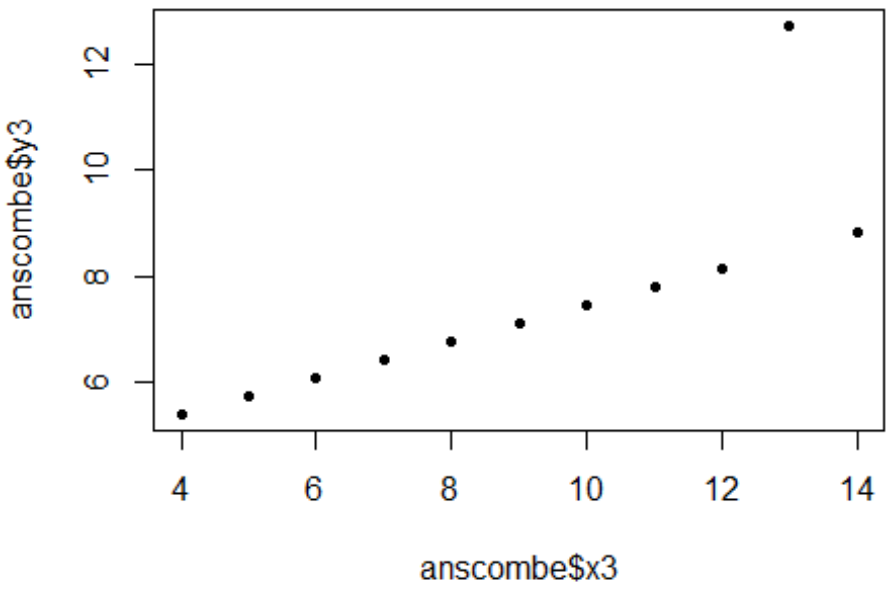

```
#grados de libertad = 9
#Existe una relación pero no es lineal
#Correlación = 0.81
#p=0.002
#hay significancia por lo que se acepta la hipotesis alternativa

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

plot(anscombe$x3, anscombe$y3, pch=20)
```

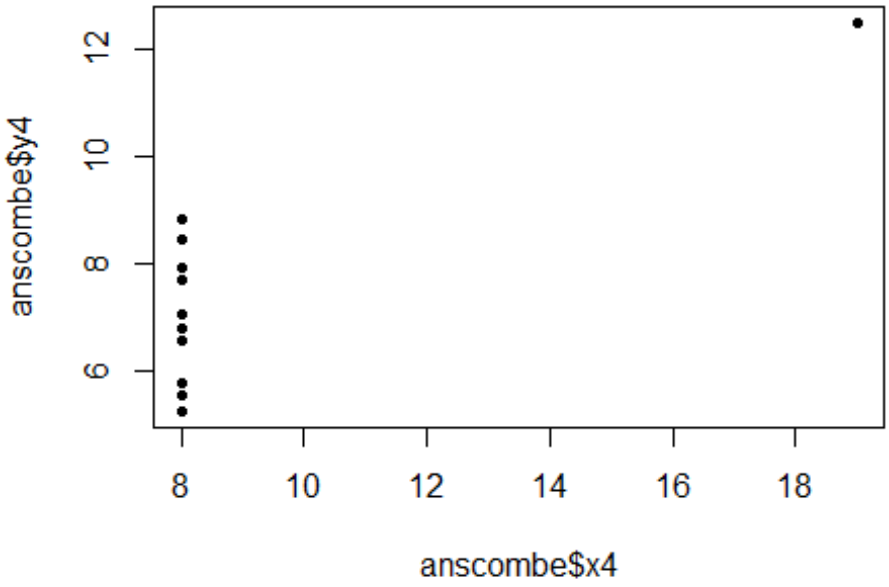



```
#grados de libertad = 9
#Existe una relación lineal con diferente regresión
#Correlación = 0.81
#p=0.002
#hay significancia por lo que se acepta la hipotesis alternativa

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

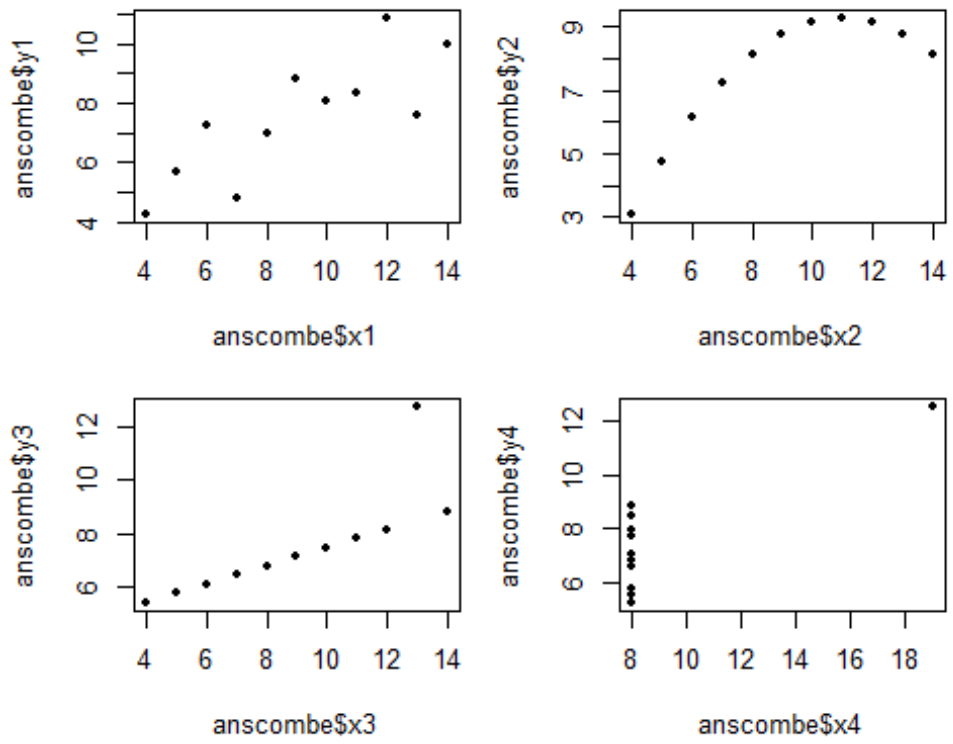
##
##  Pearson's product-moment correlation
##
## data:  anscombe$x4 and anscombe$y4
## t = 4.2458, df = 9, p-value = 0.002156
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.4250704 0.9507729
## sample estimates:
##       cor
## 0.8166967

plot(anscombe$x4, anscombe$y4, pch=20)
```




```r
#grados de libertad = 9
#No existe ninguna relación
#Correlación = 0.81
#p=0.002
#hay significancia por lo que se acepta la hipotesis alternativa

# Graficar en un cuadro de 2x2
op = par(mfrow = c(2, 2), mar = c(4.5, 4, 1, 1))
plot(anscombe$x1, anscombe$y1, pch = 20)
plot(anscombe$x2, anscombe$y2, pch = 20)
plot(anscombe$x3, anscombe$y3, pch = 20)
plot(anscombe$x4, anscombe$y4, pch = 20)
```




```
par(op)

# los cuatro pares de las variables xy tienen básicamente la misma
correlación
# de 0.816. Pero no todos tienen diagramas de dispersión en los que los
puntos
# se agrupan alrededor de una línea
```