Ejercicios_de_correlacion.R

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2021-04-28

```
# Ejercicios de correlación
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# 18.03.2021

esp.url <-
paste0("https://raw.githubusercontent.com/mgtagle/PrincipiosEstadistica2021/main/cuadro1.csv")
Conjunto <- read.csv(esp.url)
plot(Conjunto$Diametros, Conjunto$Altura)
```
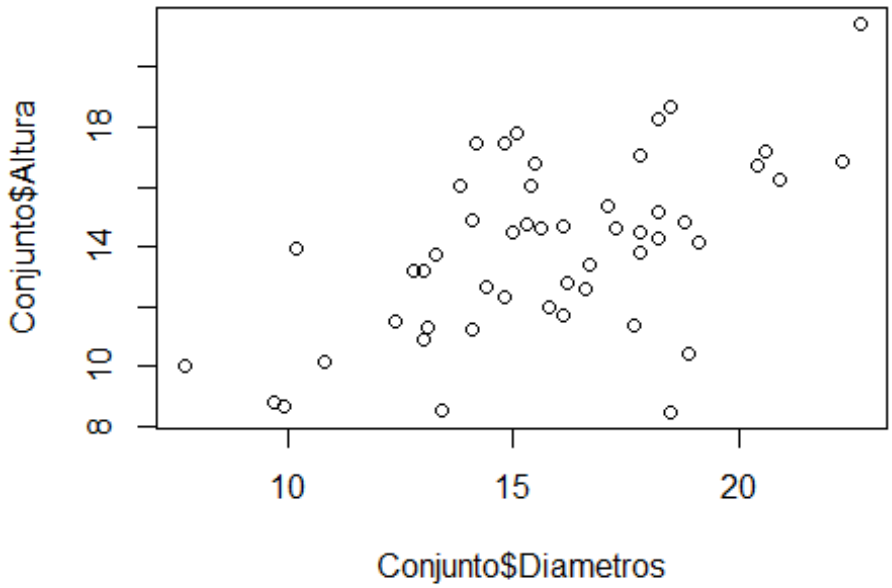
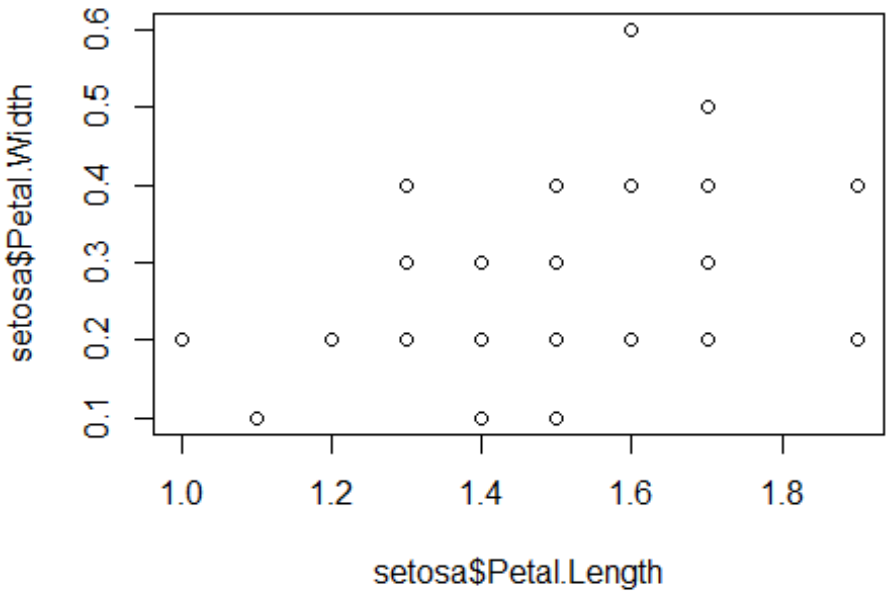
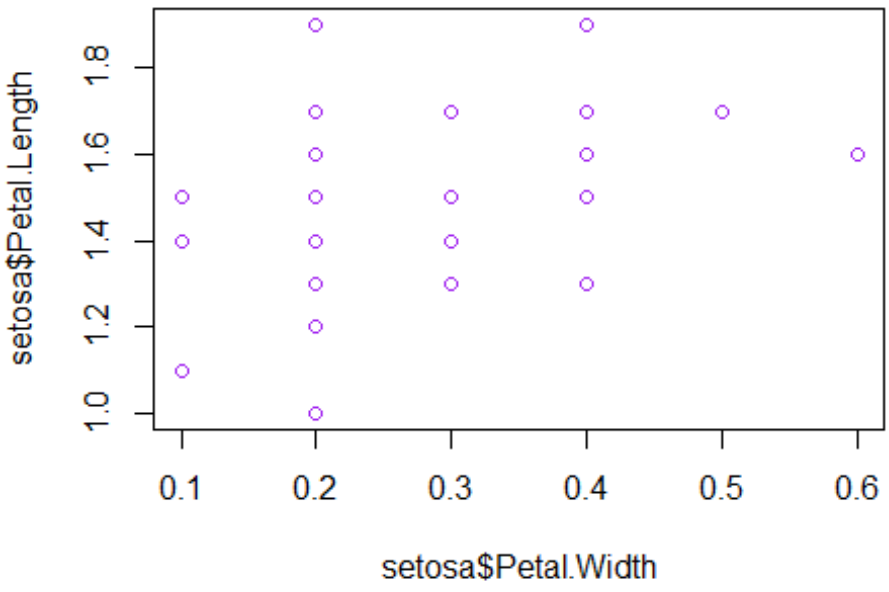




```
cor.test(Conjunto$Diametros, Conjunto$Altura)

##
##  Pearson's product-moment correlation
##
## data:  Conjunto$Diametros and Conjunto$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)
```



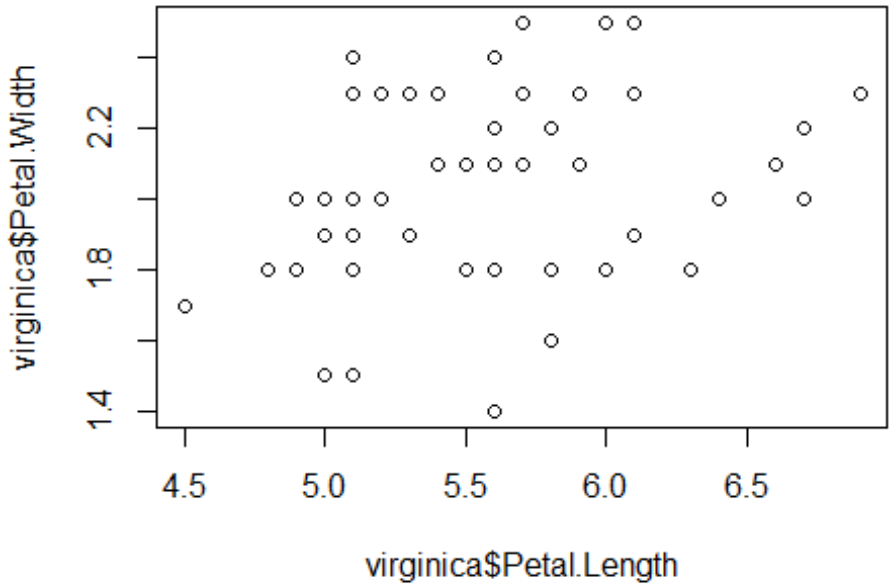

```
plot(setosa$Petal.Width, setosa$Petal.Length, col="purple")
```



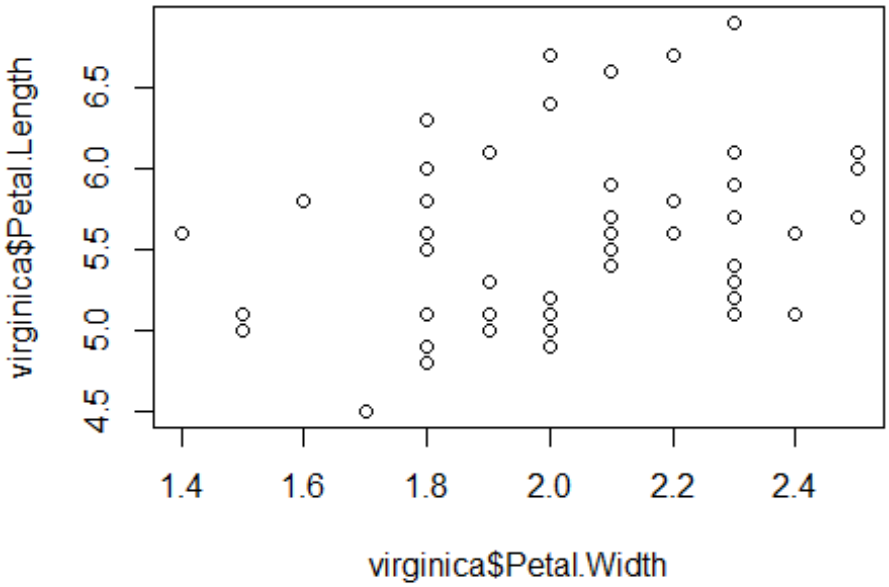

```
cor.test(setosa$Petal.Length, setosa$Petal.Width)
```

```
##
##  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
```

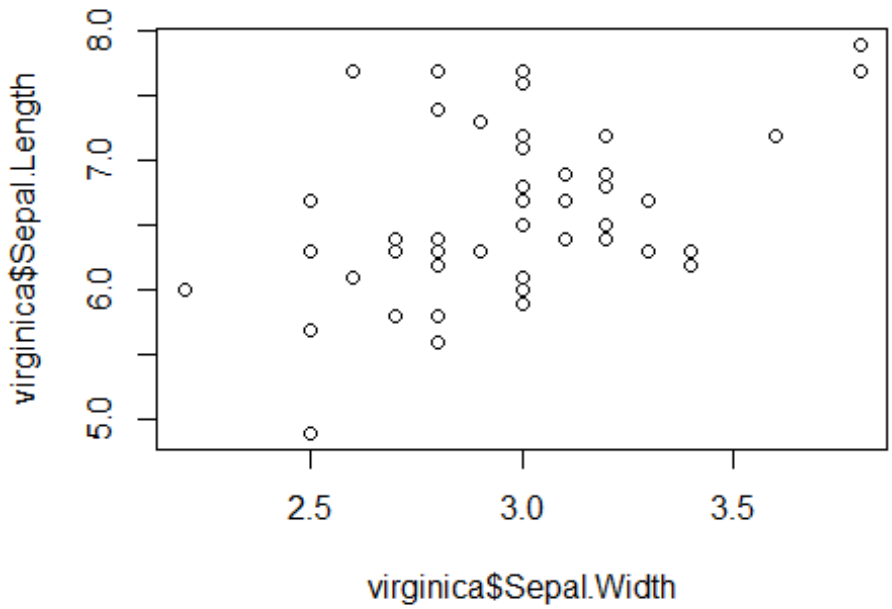
```
virginica <- subset(iris, Species == "virginica")
plot(virginica$Petal.Length, virginica$Petal.Width)
```




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




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

##
##  Pearson's product-moment correlation
##
## data:  virginica$Petal.Width and virginica$Petal.Length
## t = 2.3573, df = 48, p-value = 0.02254
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.0480704 0.5510499
## sample estimates:
##       cor
## 0.3221082

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




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

##
##  Pearson's product-moment correlation
##
## data:  virginica$Sepal.Width and virginica$Sepal.Length
## 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

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
```

```r
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
```

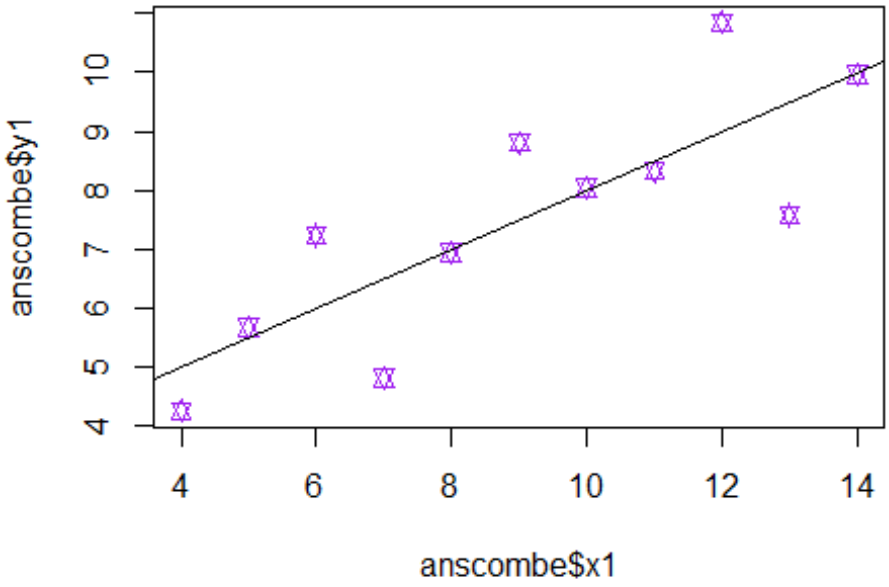
```r
cor.test(anscombe$x3, anscombe$y3)
```

```
##
##  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
```

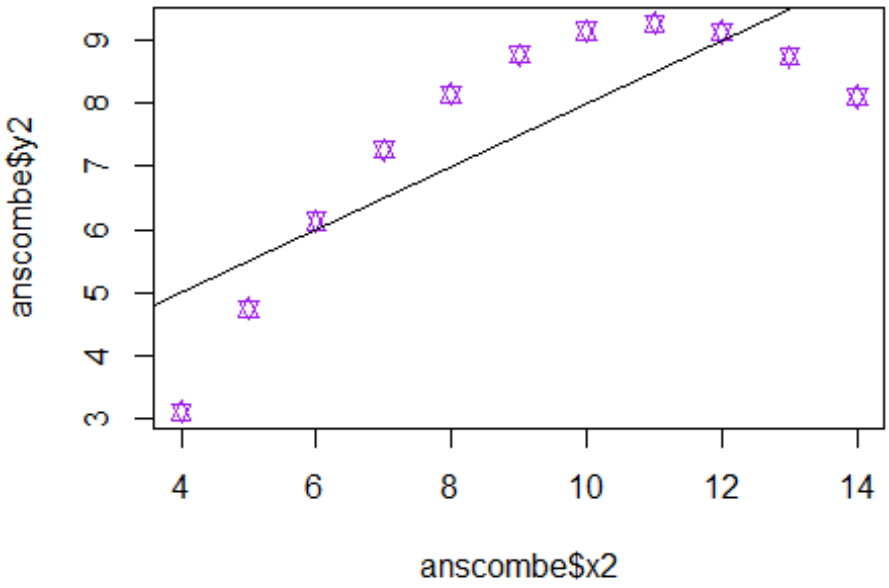
```r
cor.test(anscombe$x4, anscombe$y4)
```

```
##
##  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
```

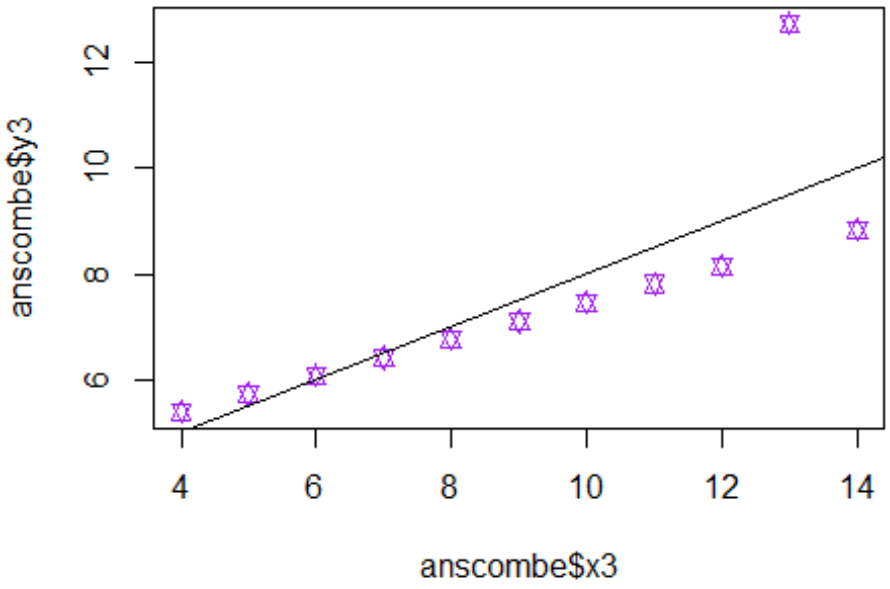
```r
plot(anscombe$x1, anscombe$y1, pch=11, col = "purple")
abline(lm(anscombe$y1~ anscombe$x1))
```



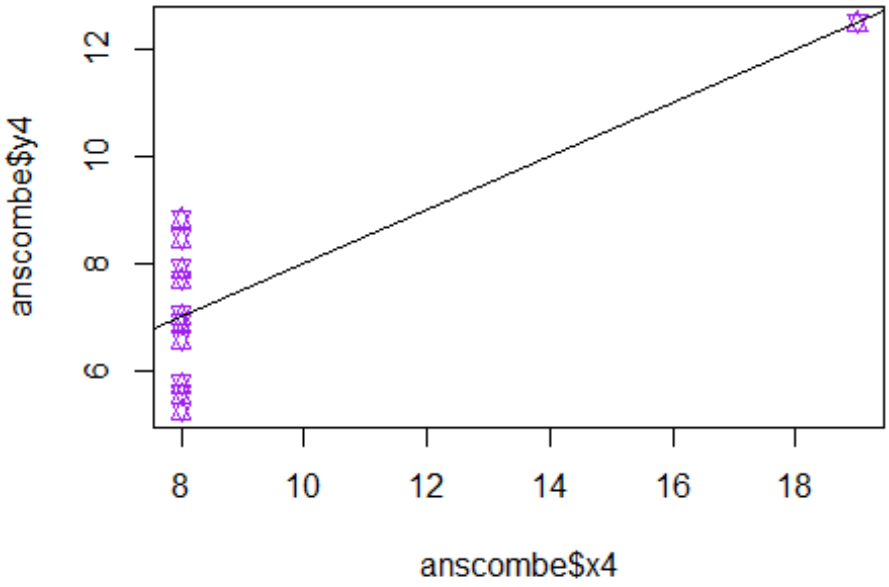

```
plot(anscombe$x2, anscombe$y2, pch=11, col = "purple")
abline(lm(anscombe$y1~ anscombe$x1))
```



```
plot(anscombe$x3, anscombe$y3, pch=11, col = "purple")
abline(lm(anscombe$y3~ anscombe$x3))
```




```
plot(anscombe$x4, anscombe$y4, pch=11, col = "purple")
abline(lm(anscombe$y4~ anscombe$x4))
```


anscombe$y4
6
8
10
12
8
10
12
14
16
18
anscombe$x4