Graficos

Curso de Estadística Descriptiva

22/12/2018

Gráficos con la función `plot`

```
x = c(2,6,4,9,-1)
y = c(1,8,4,-2,4)
plot(x,y)
```

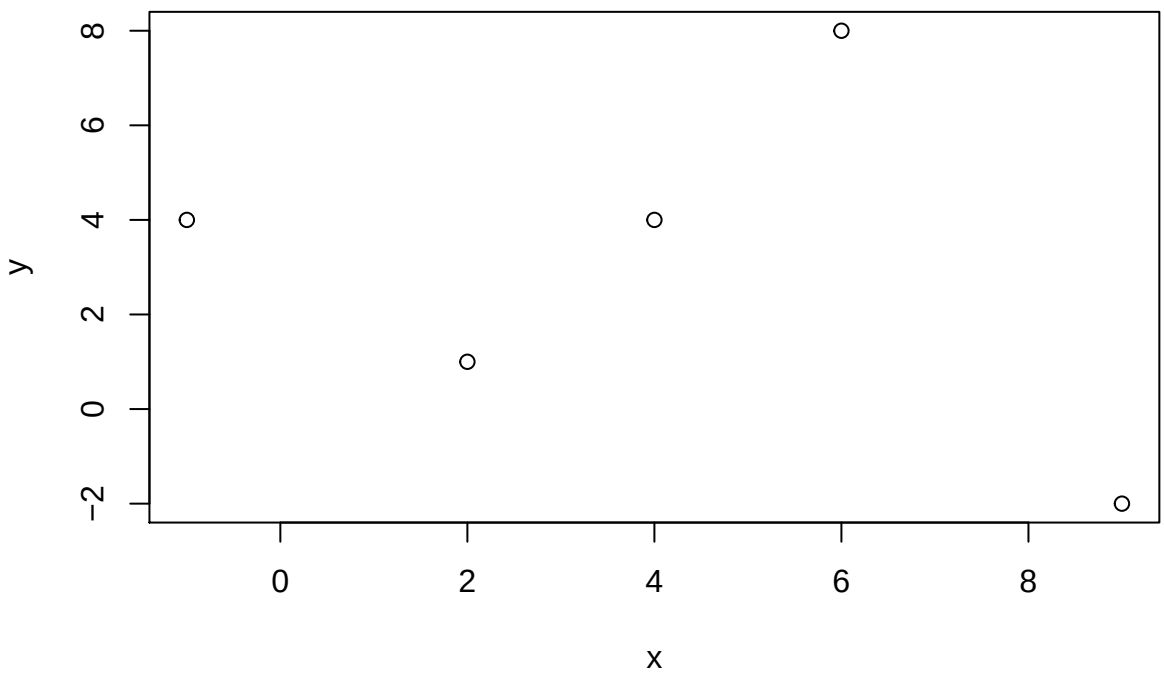
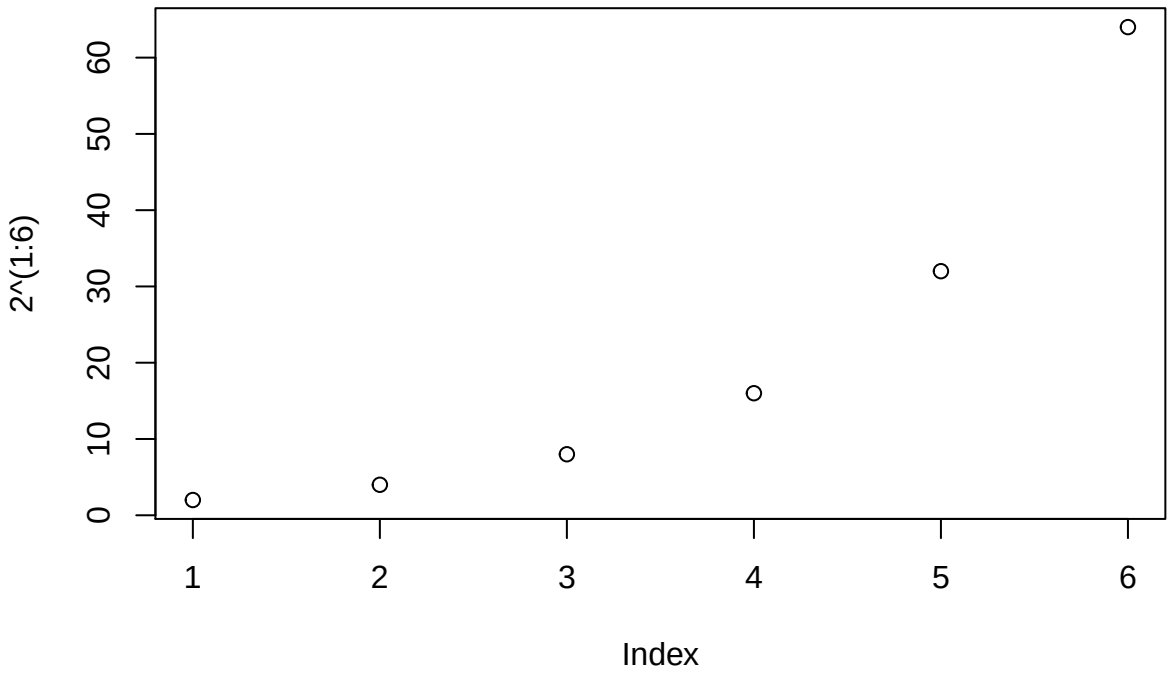


Figure 1: Gráfico básico explicando el uso del plot

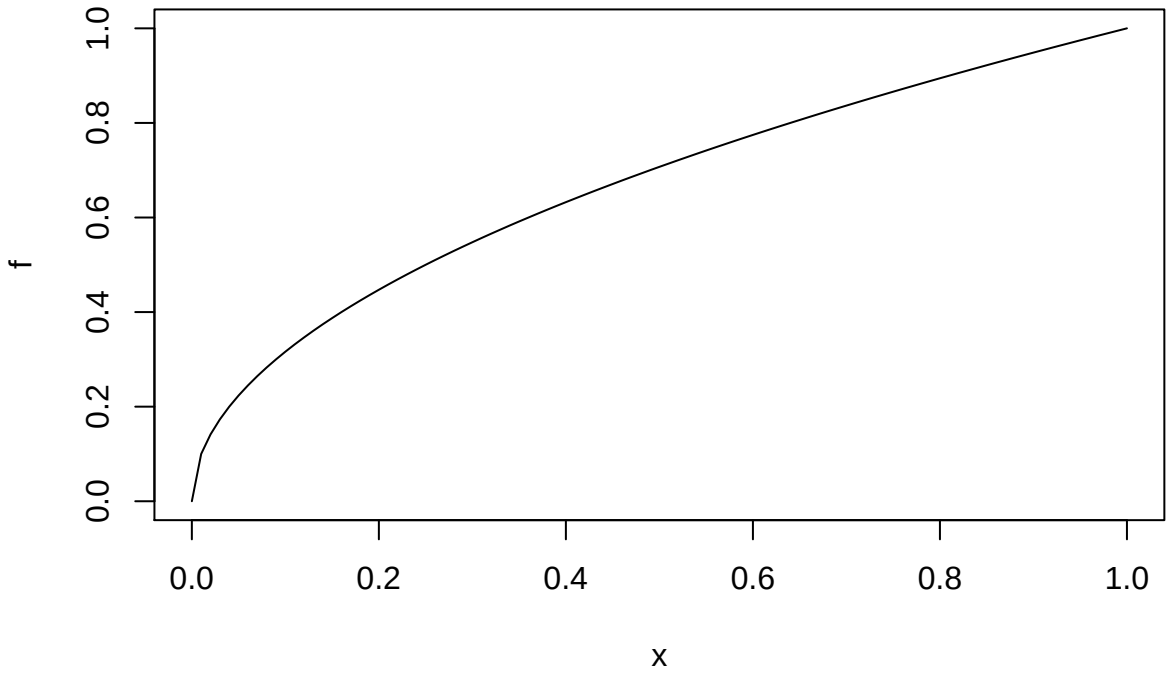
Si no incorporamos vector `y`, `R` nos va a tomar el parámetro `x` como si fuese el vector de datos `y` : 'plot(1:n, x)

```
plot(2^(1:6))
```



Si queremos representar una función $f(x)$:

```
f <- function(x){ sqrt(x) }
plot(f)
```

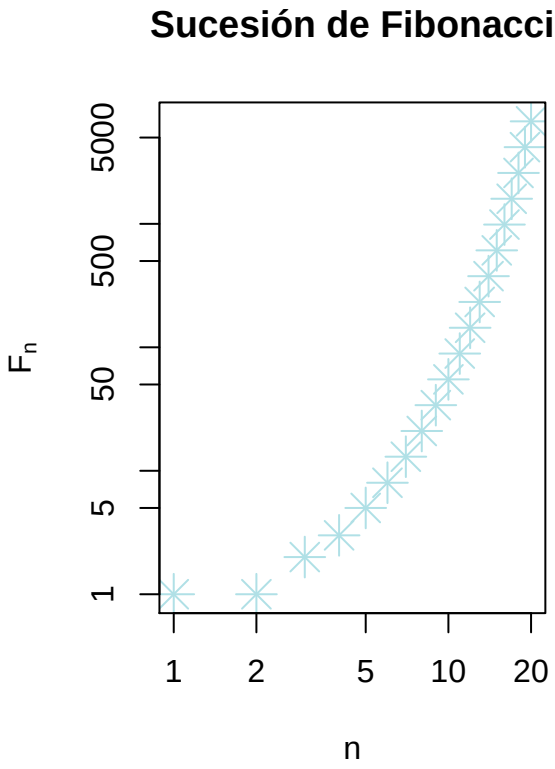


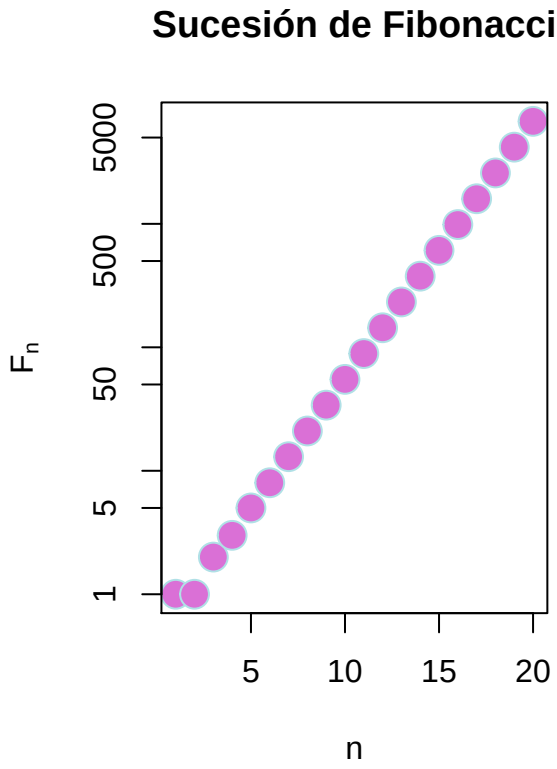
Parámetros

```
n = 1:20
fib = (1/sqrt(5))*((1+sqrt(5))/2)^n - (1/sqrt(5))*((1-sqrt(5))/2)^n
fib
```

```
##  [1]    1    1    2    3    5    8   13   21   34   55   89  144  233  377  610
## [16]  987 1597 2584 4181 6765
```

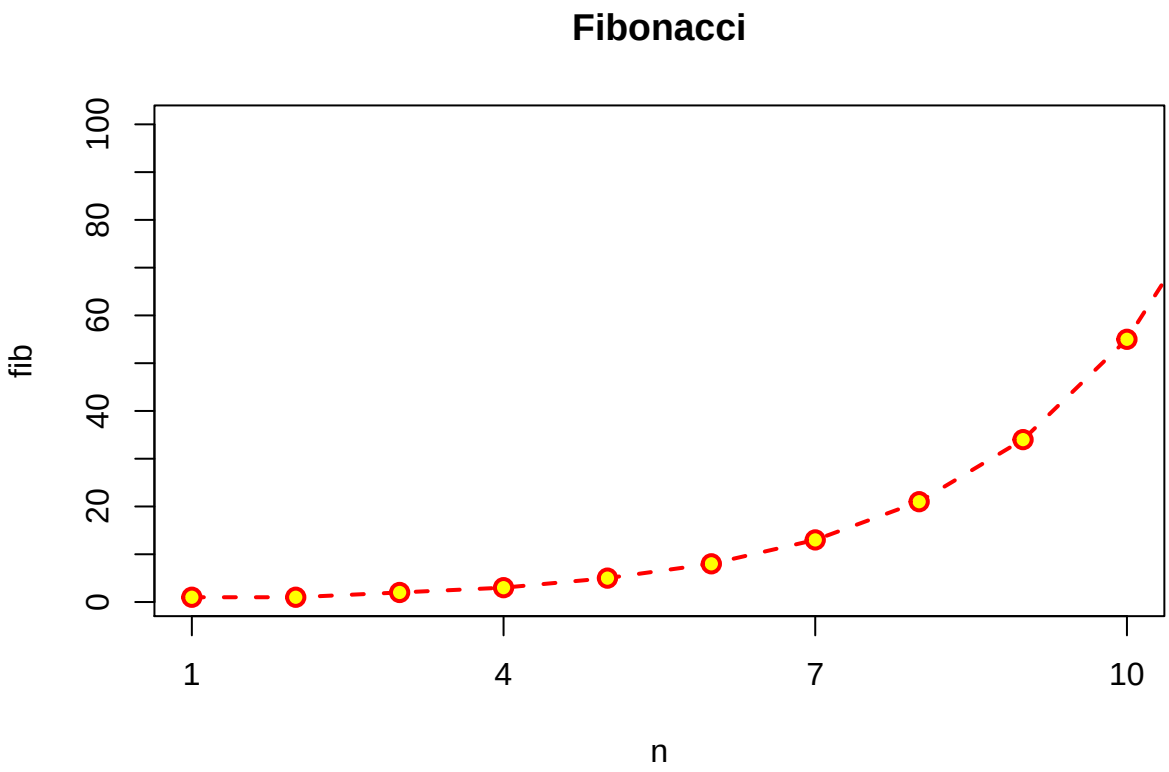
```
par(mfrow = c(1,2))
plot(fib, xlab = "n", ylab = expression(F[n]),
     main = "Sucesión de Fibonacci", pch = 8, cex = 2,
     col = "powderblue", bg = "orchid", log = "xy")

plot(fib, xlab = "n", ylab = expression(F[n]),
     main = "Sucesión de Fibonacci", pch = 21, cex = 2,
     col = "powderblue", bg = "orchid", log = "y")
```





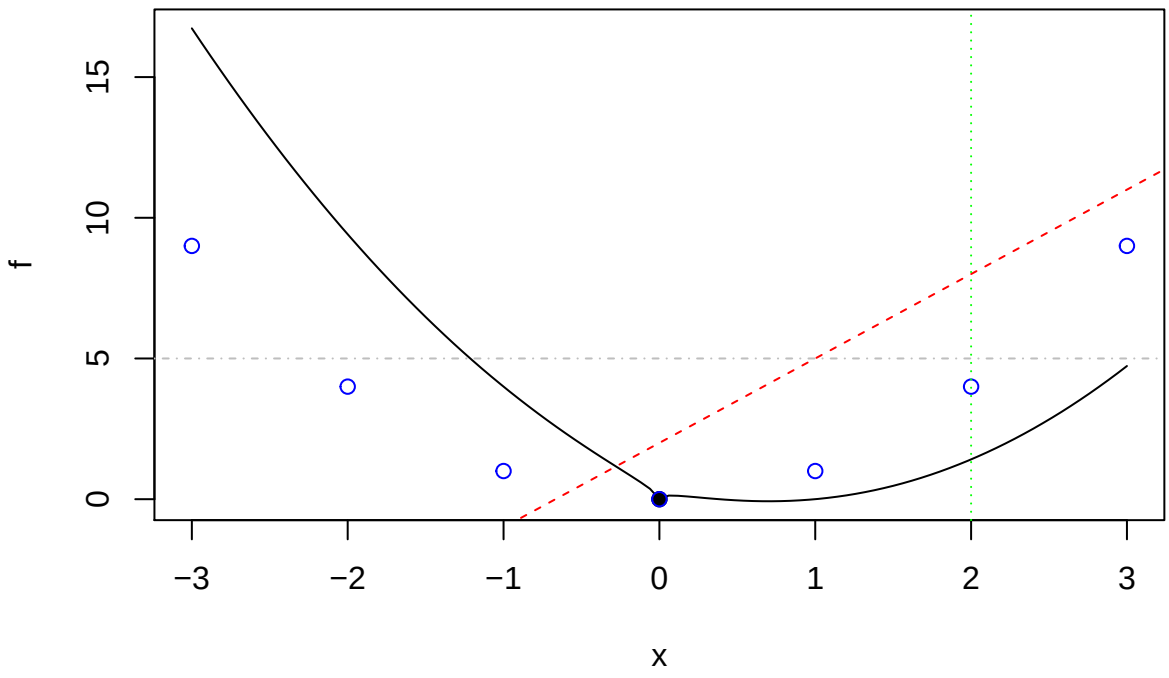

```
par(mfrow = c(1,1))
```

```
plot(n, fib, pch = 21, col = "red", bg = "yellow", cex = 1.2,
     main = "Fibonacci",
     type = "o", lty = "dashed", lwd = 2,
     xlim = c(1,10), ylim = c(1, 100),
     xaxp = c(1,10,3), yaxp = c(0,100, 10))
```

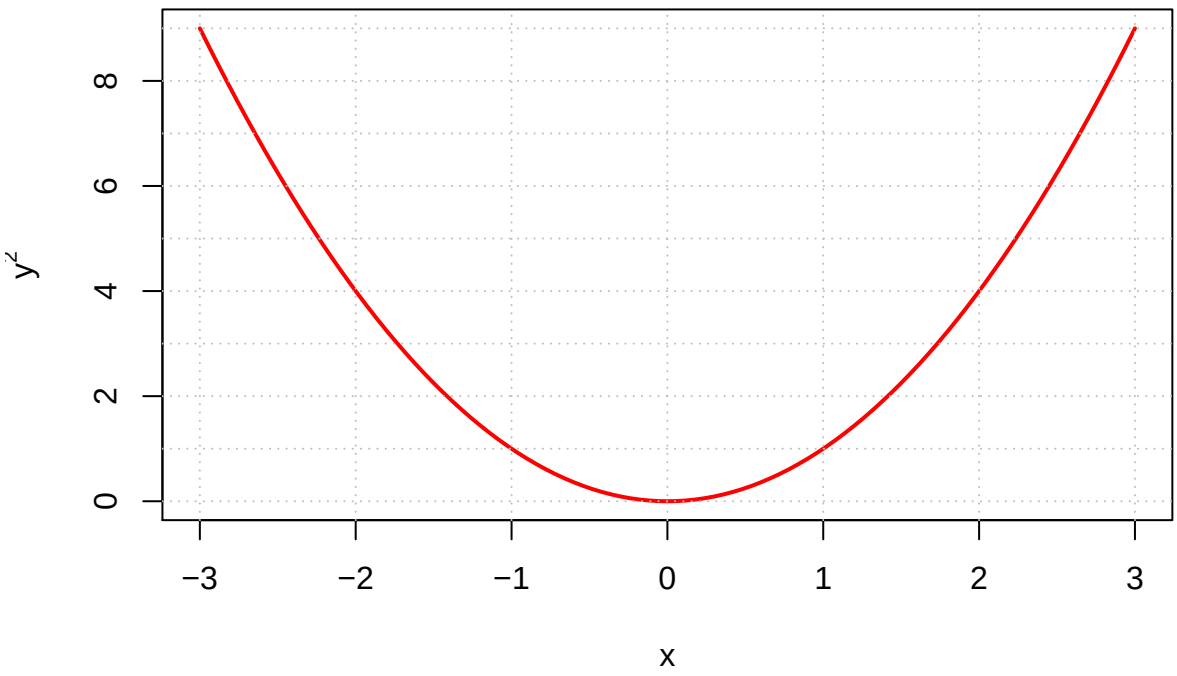


Cómo añadir elementos a un gráfico

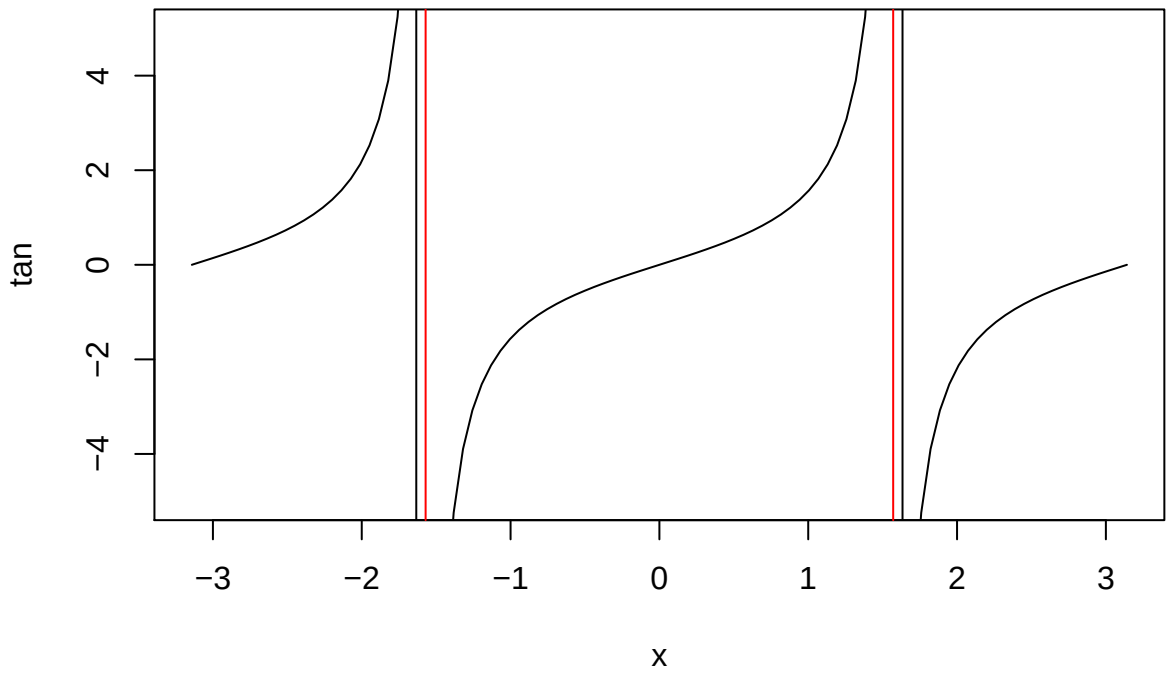
```
f <- function(x){
  x^2 -2*x + sqrt(abs(x))
}
plot(f, xlim = c(-3,3))
points(0,0, pch = 19)
points(-3:3, (-3:3)^2, col = "blue")
abline(2,3, lty = "dashed", col = "red")
abline(v = 2, lty = "dotted", col = "green")
abline(h = 5, lty = "dotdash", col = "gray")
```



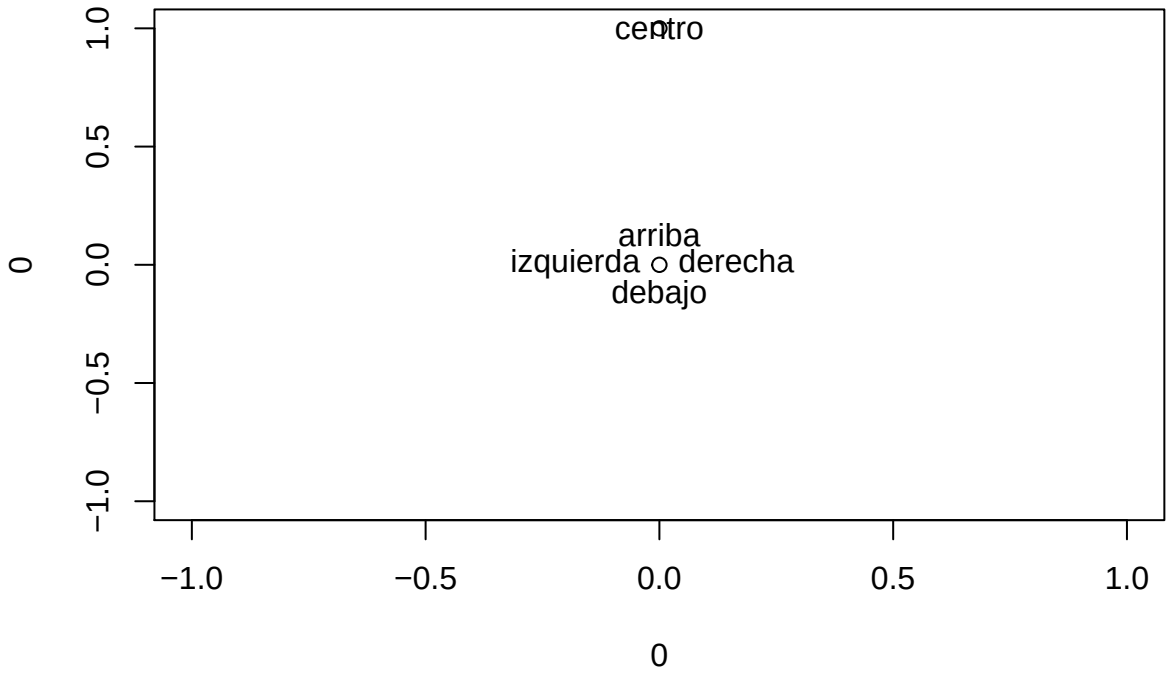

```
f <- function(x){x^2}
plot(f, xlim = c(-3,3), col = "red", lwd = 2, ylab = expression(y^2), xlab = "x")
abline(h=0:9, v = -3:3, lty="dotted", col = "grey")
```



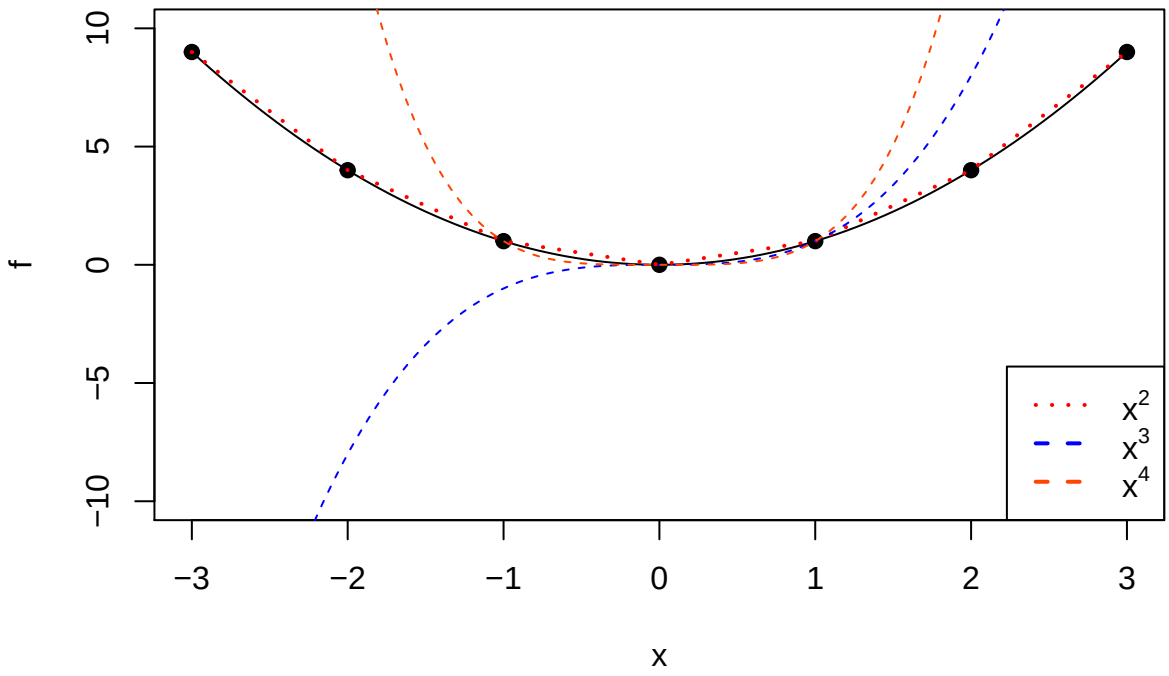

```
plot(tan, xlim = c(-pi, pi), ylim = c(-5,5))
abline(v = c(-pi/2, pi/2), col = "red")
```




```
plot(0,0)
text(0,0, labels = "debajo", pos = 1)
text(0,0, labels = "izquierda", pos = 2)
text(0,0, labels = "arriba", pos = 3)
text(0,0, labels = "derecha", pos = 4)
points(0,1)
text(0,1, labels = "centro")
```




```r
f <- function(x){x^2}
plot(f, xlim = c(-3,3), ylim = c(-10,10))
points(-3:3, f(-3:3), pch = 19)
lines(-3:3, f(-3:3), lwd = 2, lty = "dotted", col = "red")
curve(x^3, lty = "dashed", col = "blue", add = TRUE)
curve(x^4, lty = "dashed", col = "orangered", add=TRUE)
legend("bottomright",
       legend = c(expression(x^2), expression(x^3), expression(x^4)),
       lwd = 2,
       col = c("red", "blue", "orangered"),
       lty = c("dotted", "dashed", "dashed")
       )
```


f
10
5
0
−5
−10
−3
−2
−1
0
1
2
3
x
x2
x3
x4