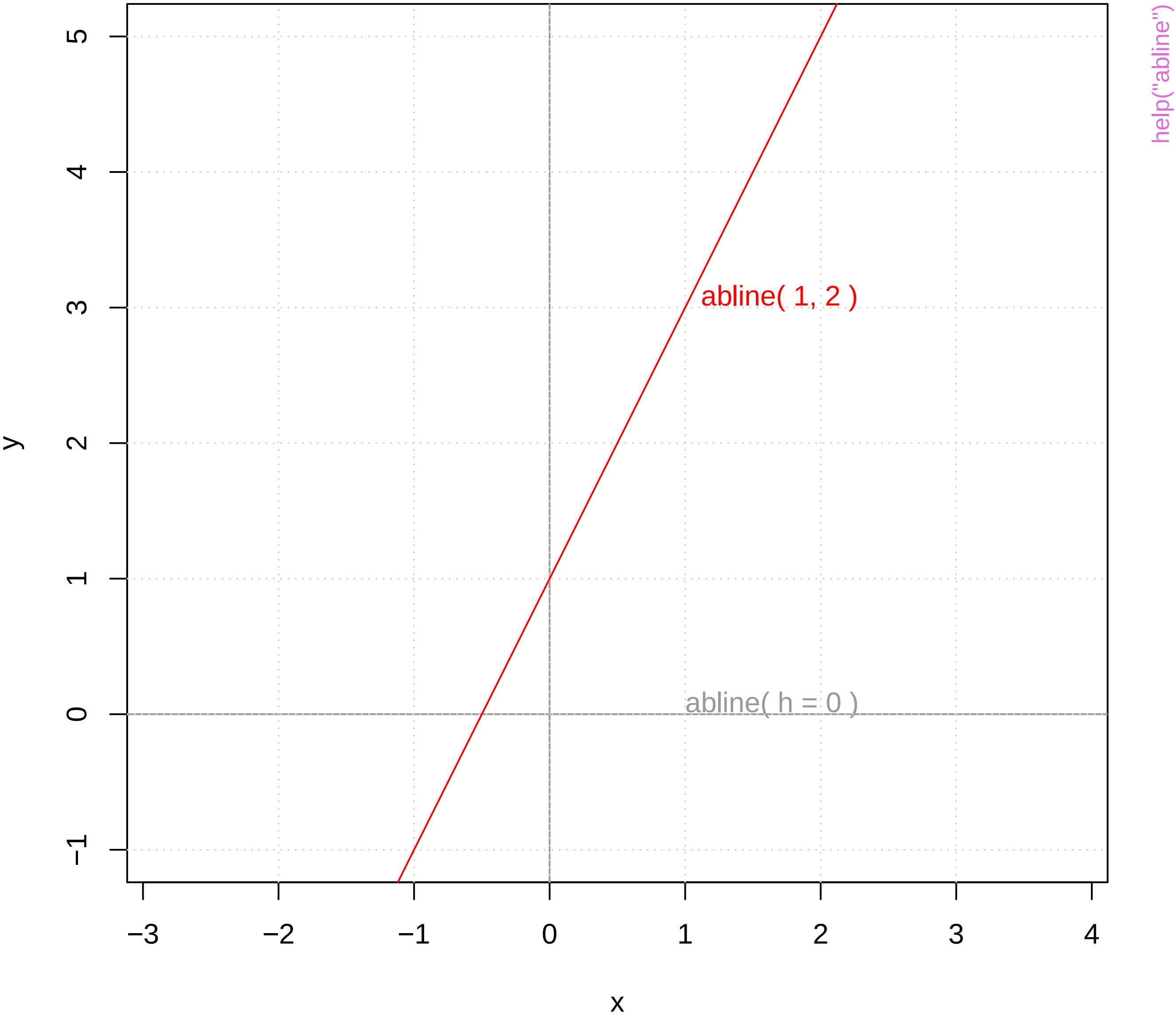
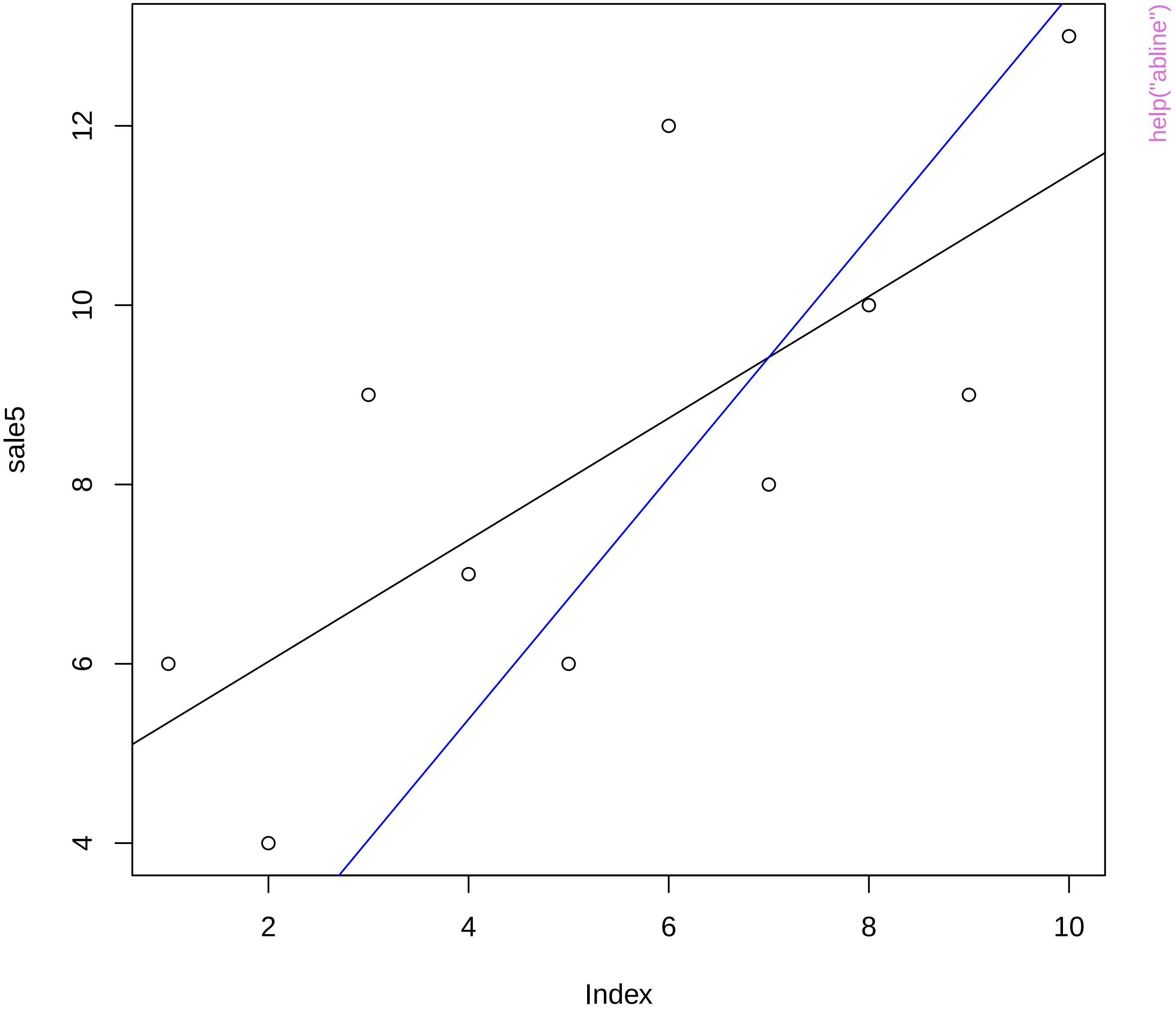
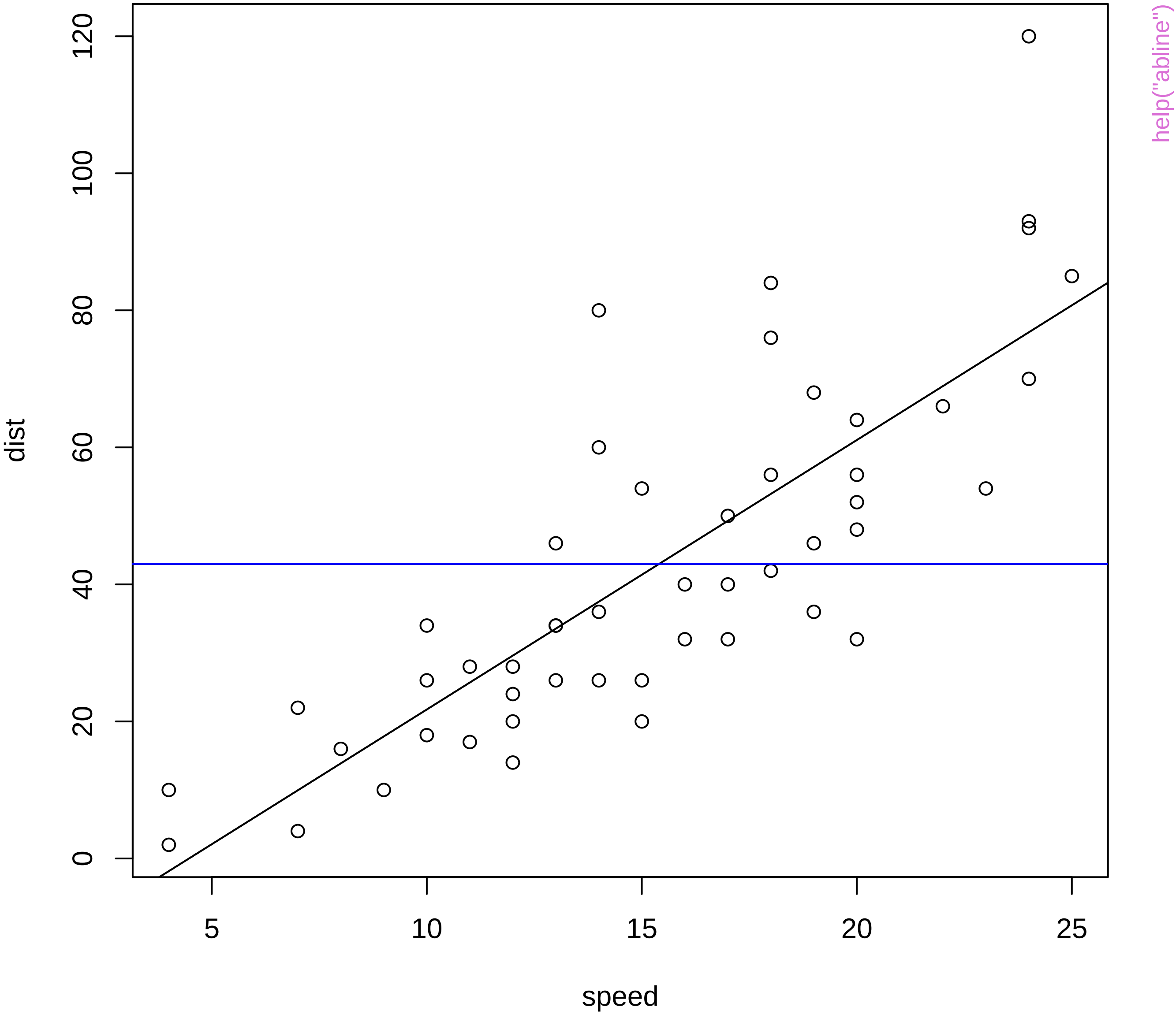
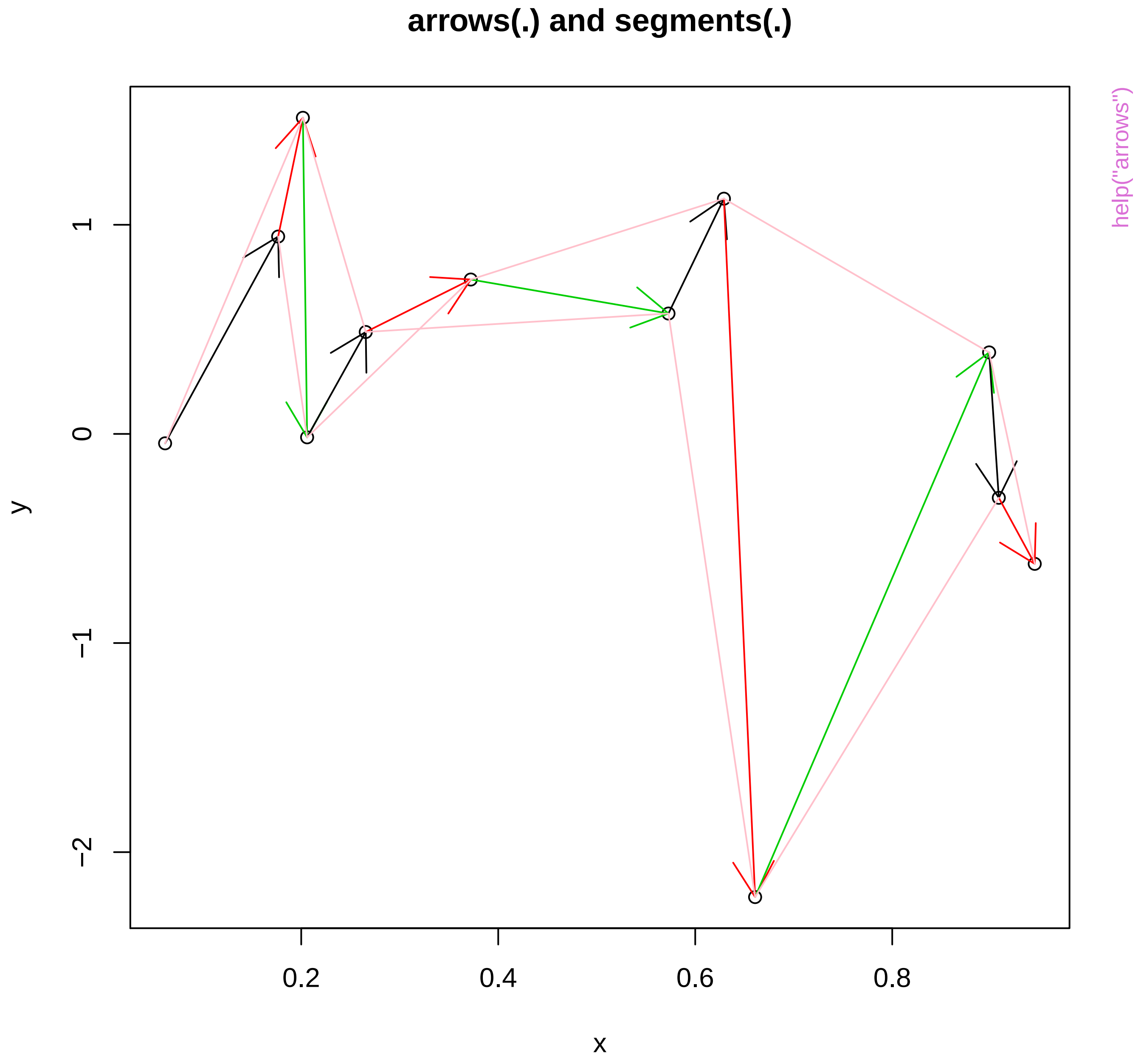

abline(1, 2)
abline(h = 0)
help("abline")
y
x
−3
−2
−1
0
1
2
3
4
5

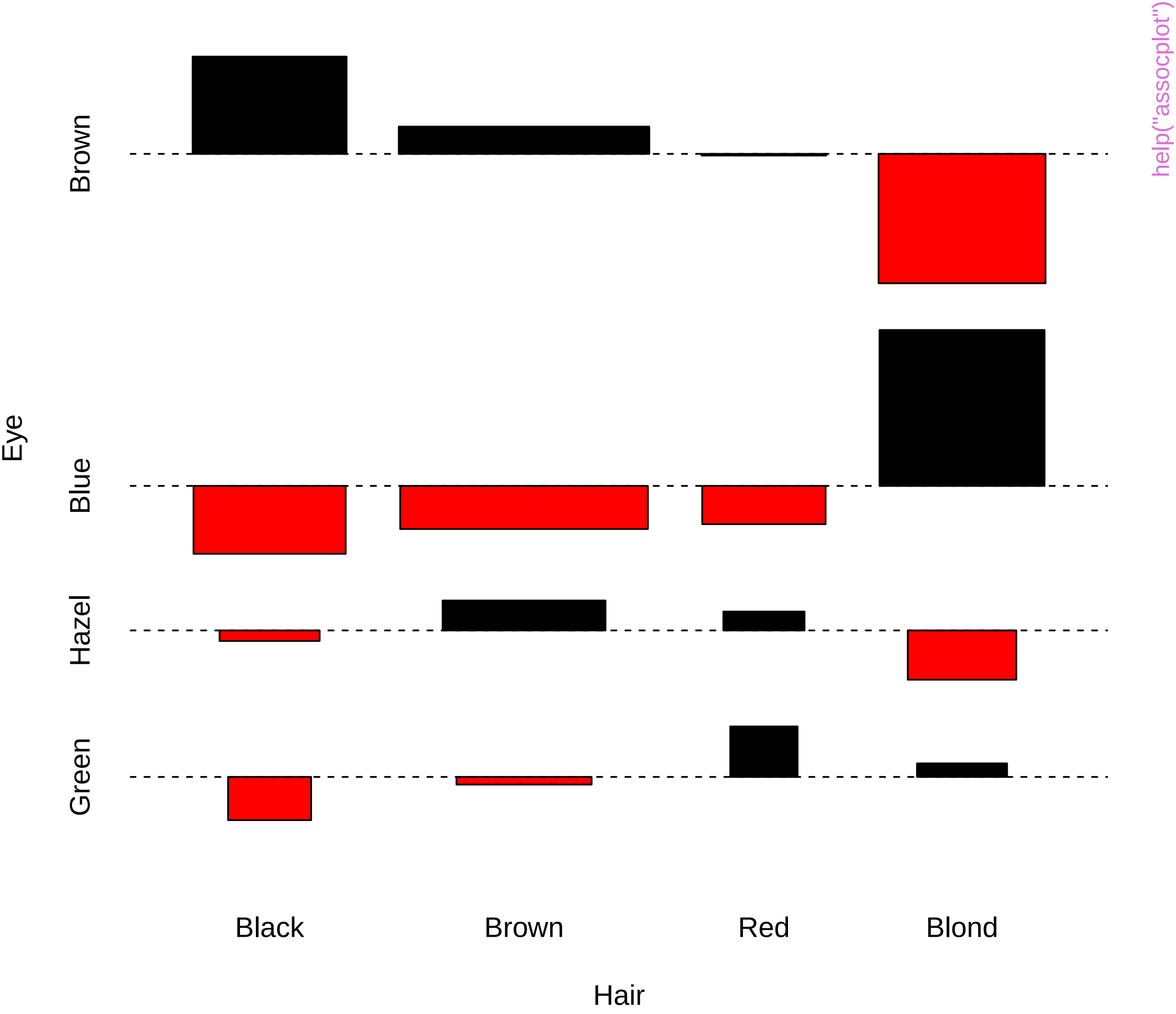

sale5
Index
4
6
8
10
12
2
4
6
8
10
help("abline")

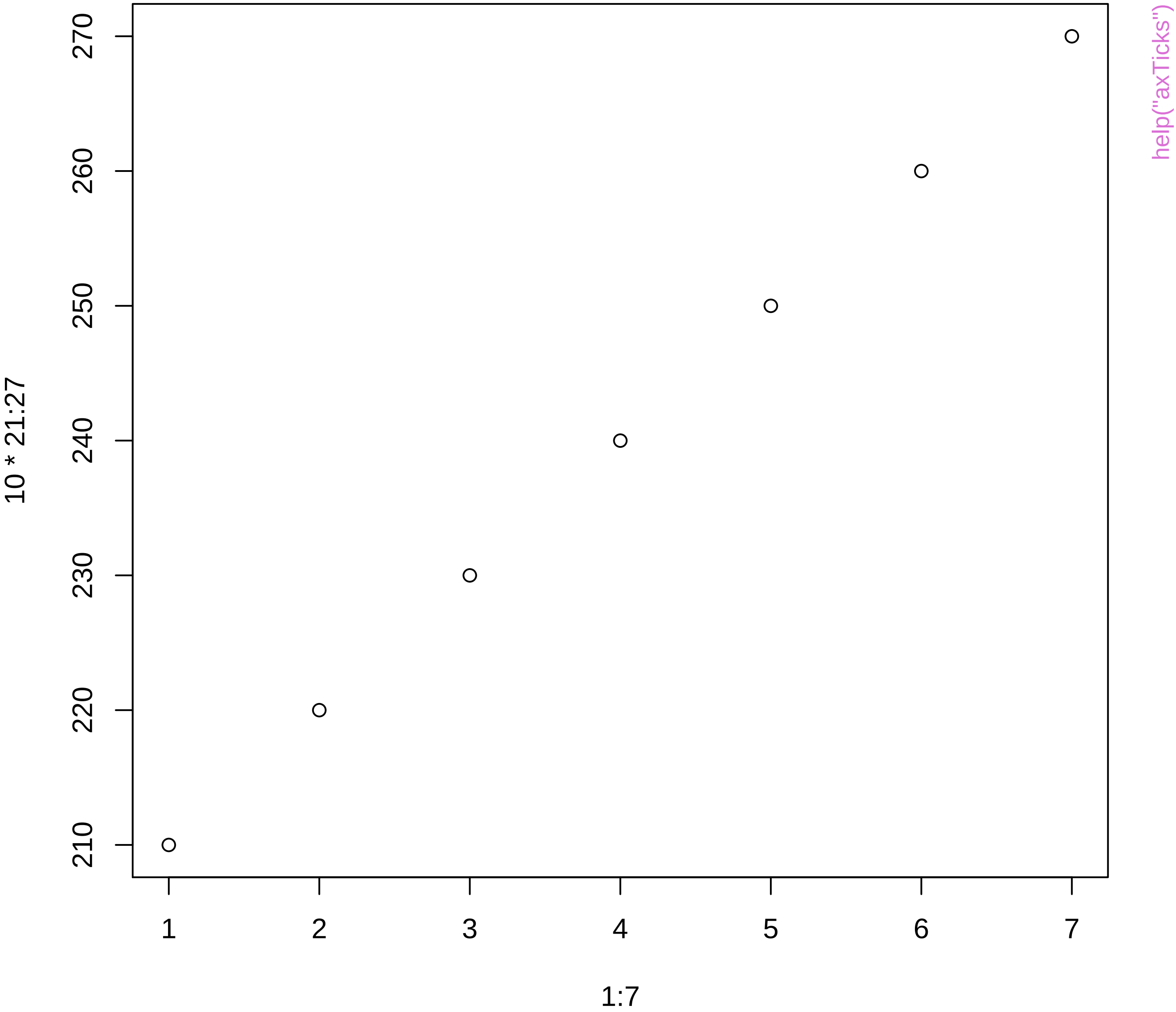


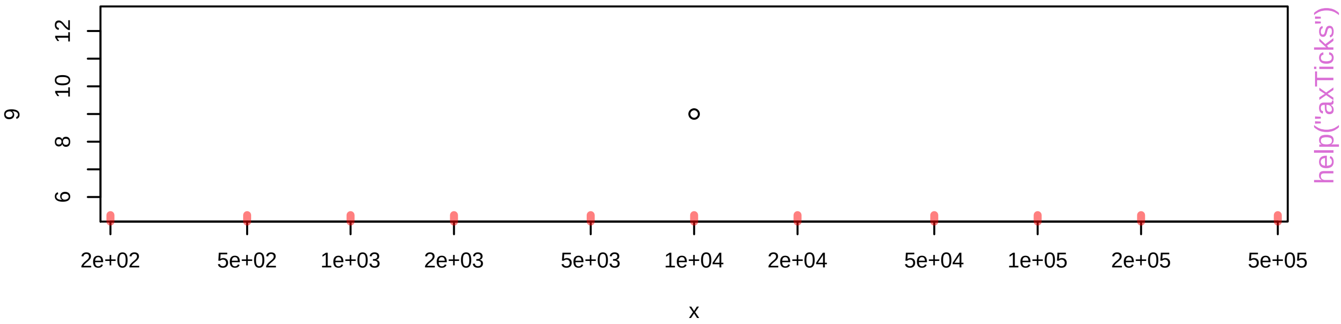
120
100
80
60
40
20
0
dist
5
10
15
20
25
speed
help("abline")


arrows(.) and segments(.)
y
1
0
−1
−2
0.2
0.4
0.6
0.8
x
help("arrows")

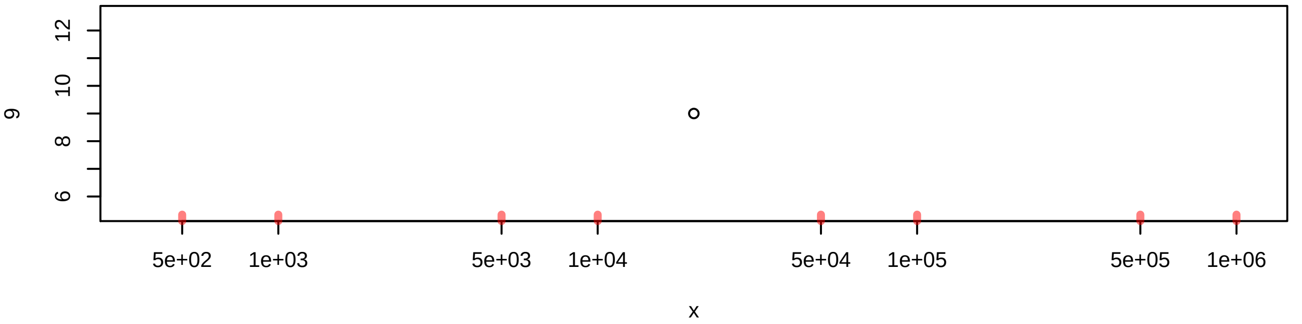
Relation between hair and eye color



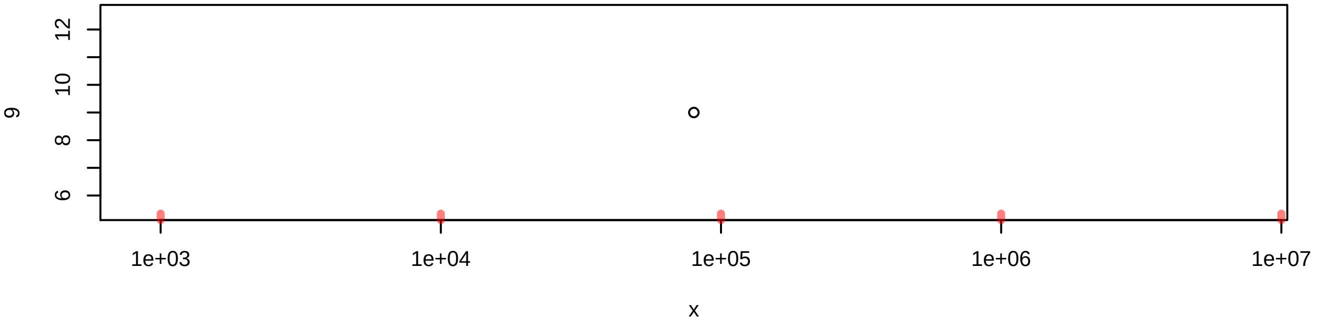

270
260
250
240
230
220
210
10 * 21:27
1
2
3
4
5
6
7
1:7
help("axTicks")



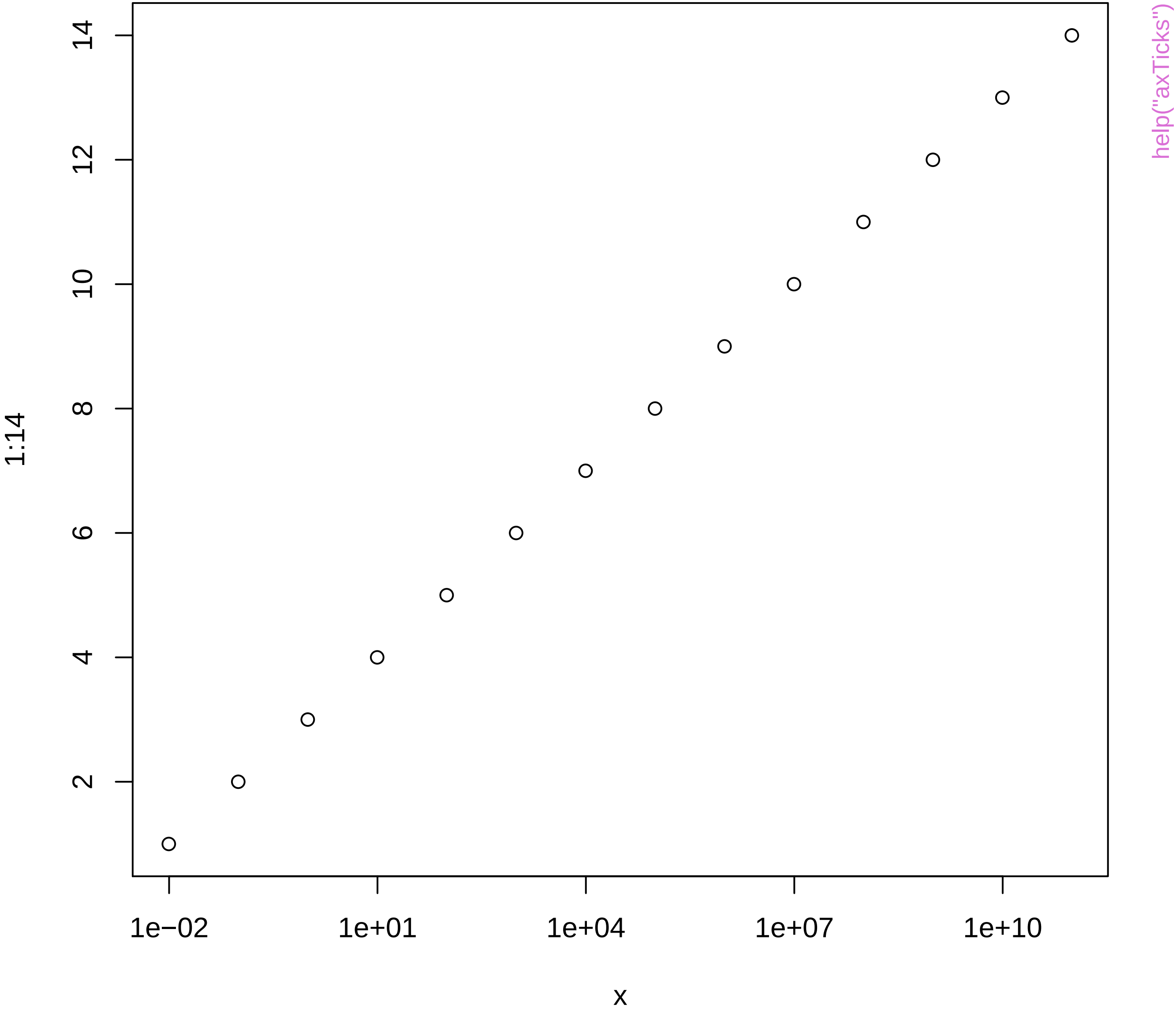
9
6
8
10
12
2e+02
5e+02
1e+03
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05
5e+05
x
help("axTicks")

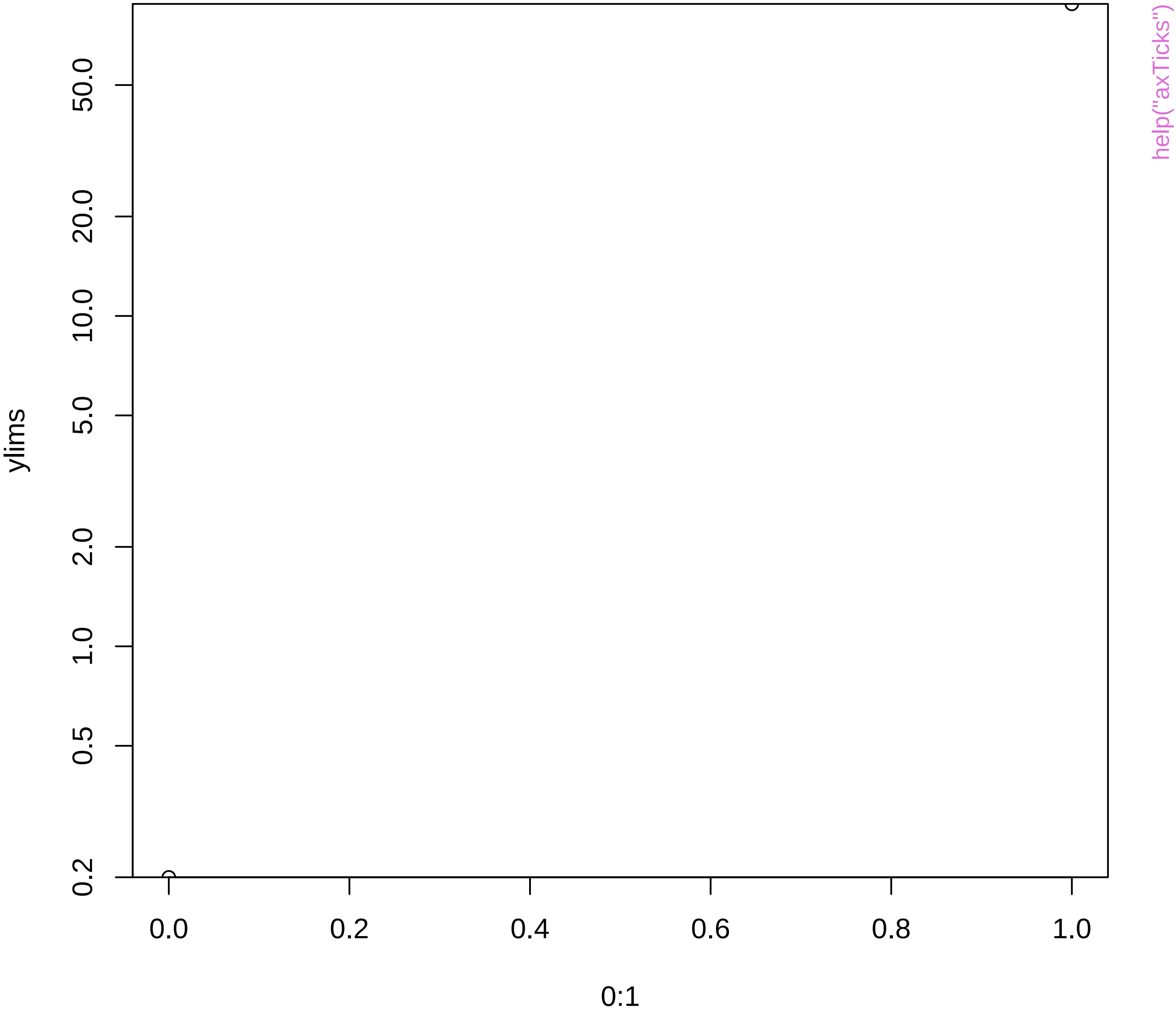


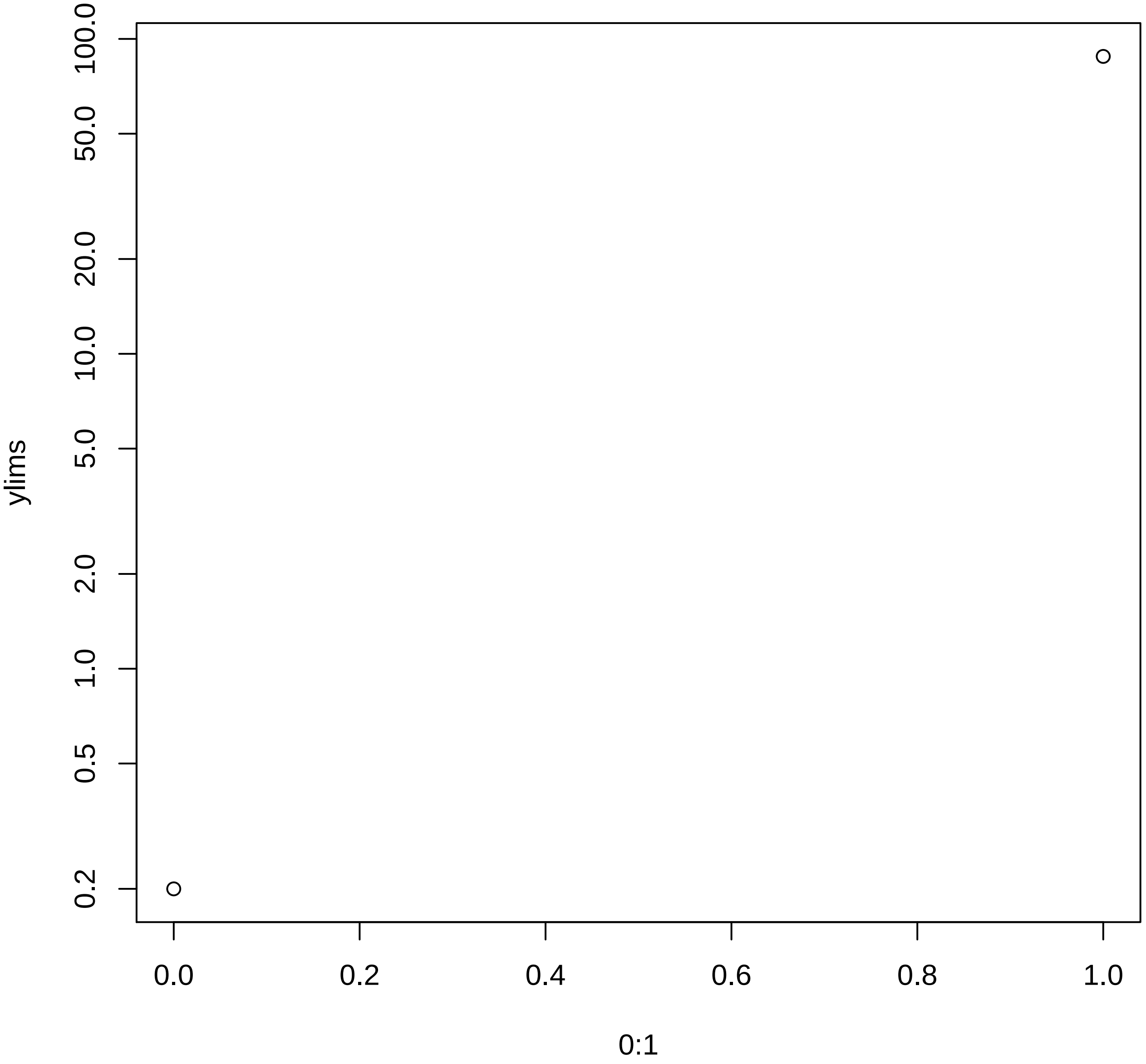
9
6
8
10
12
5e+02
1e+03
5e+03
1e+04
5e+04
1e+05
5e+05
1e+06
x



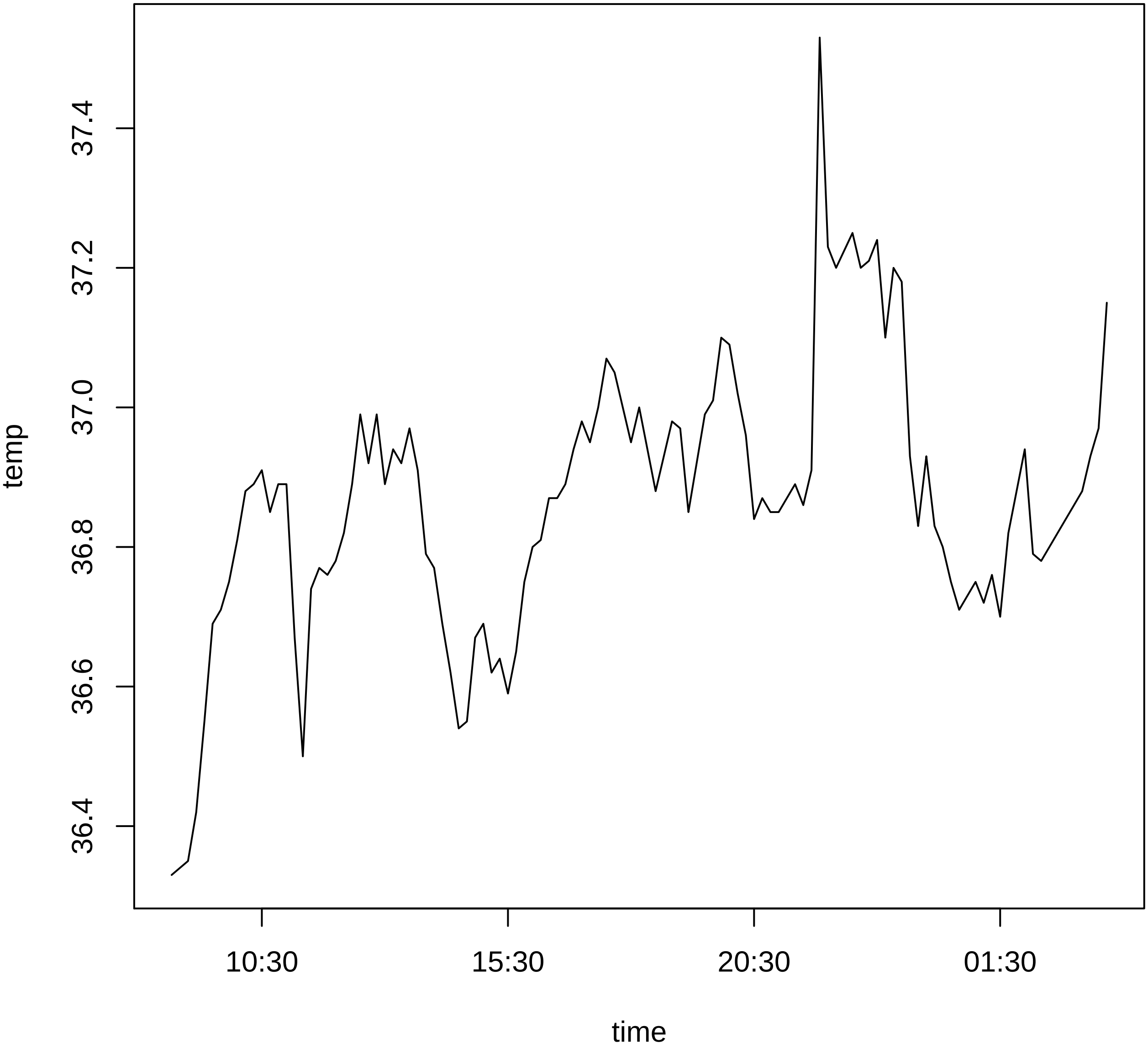
9
6
8
10
12
1e+03
1e+04
1e+05
1e+06
1e+07
x


14
12
10
8
6
4
2
1:14
1e−02
1e+01
1e+04
1e+07
1e+10
x
help("axTicks")

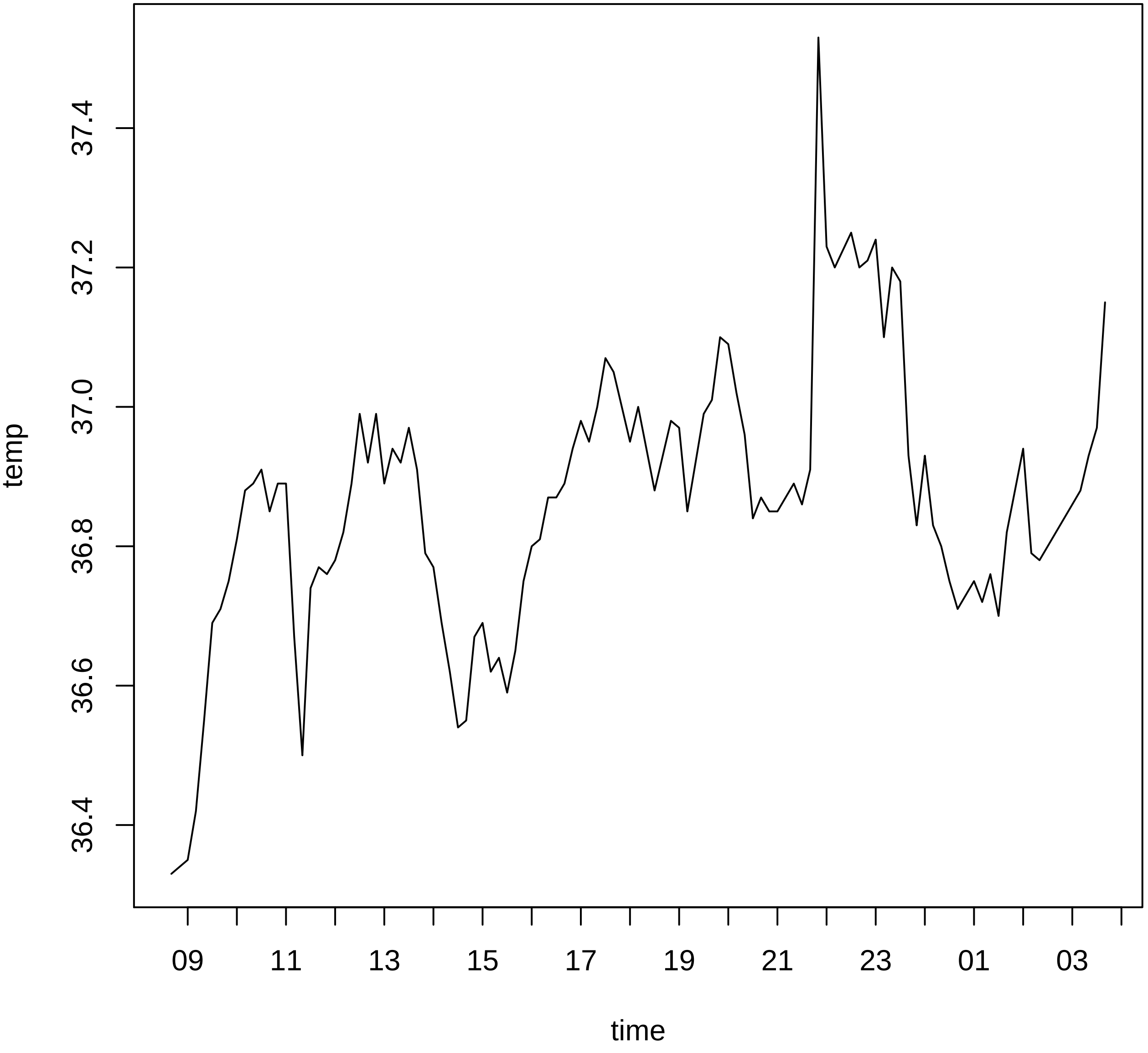

50.0
20.0
10.0
5.0
2.0
1.0
0.5
0.2
ylims
0.0
0.2
0.4
0.6
0.8
1.0
0:1
help("axTicks")



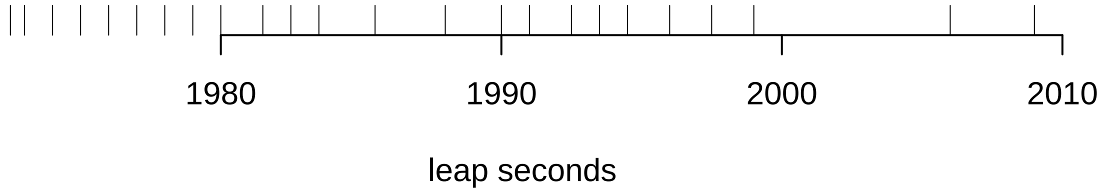
help("axTicks")



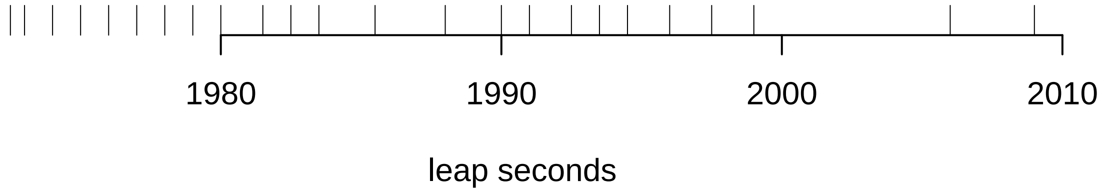
help("axis.POSIXct")

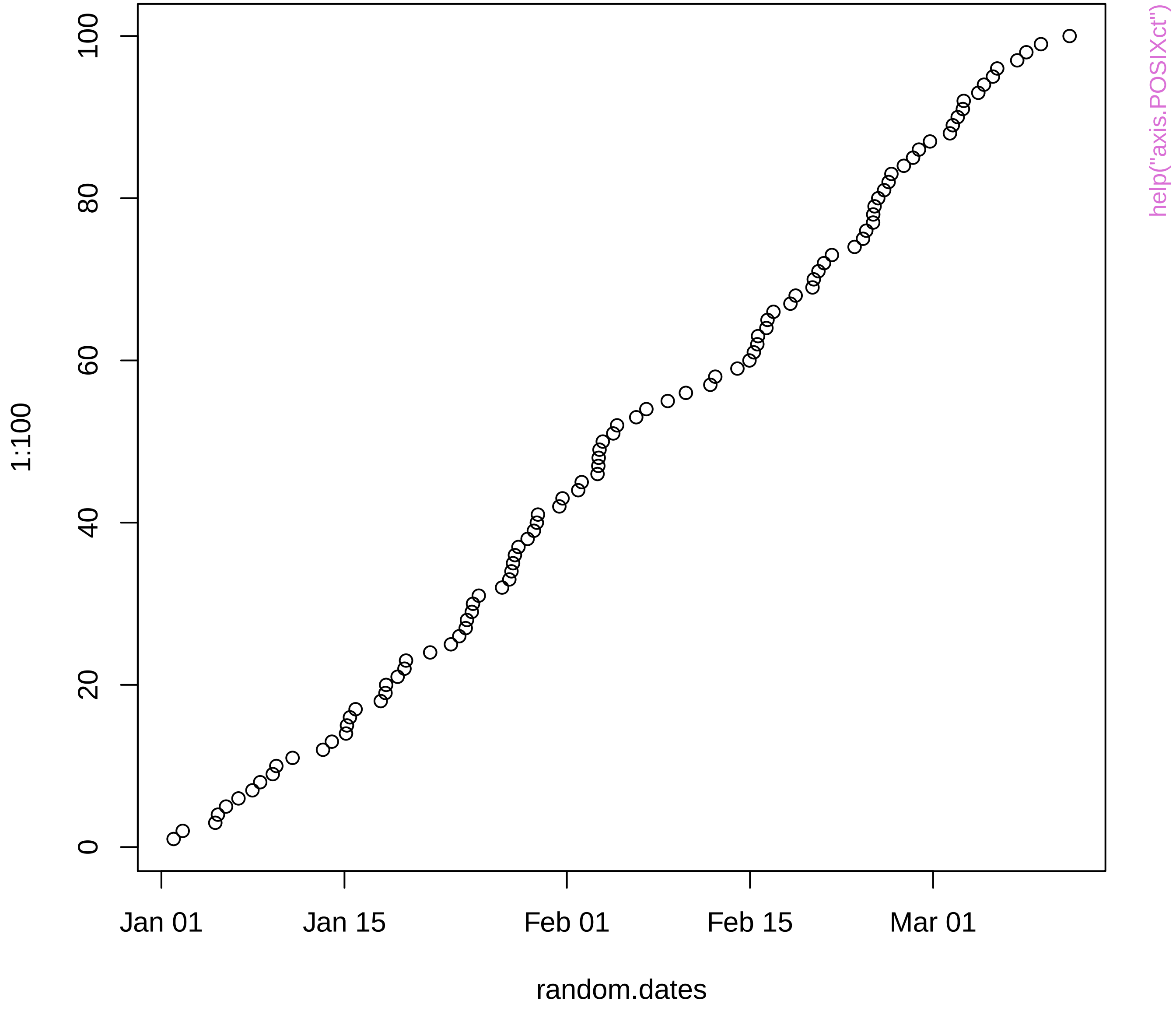


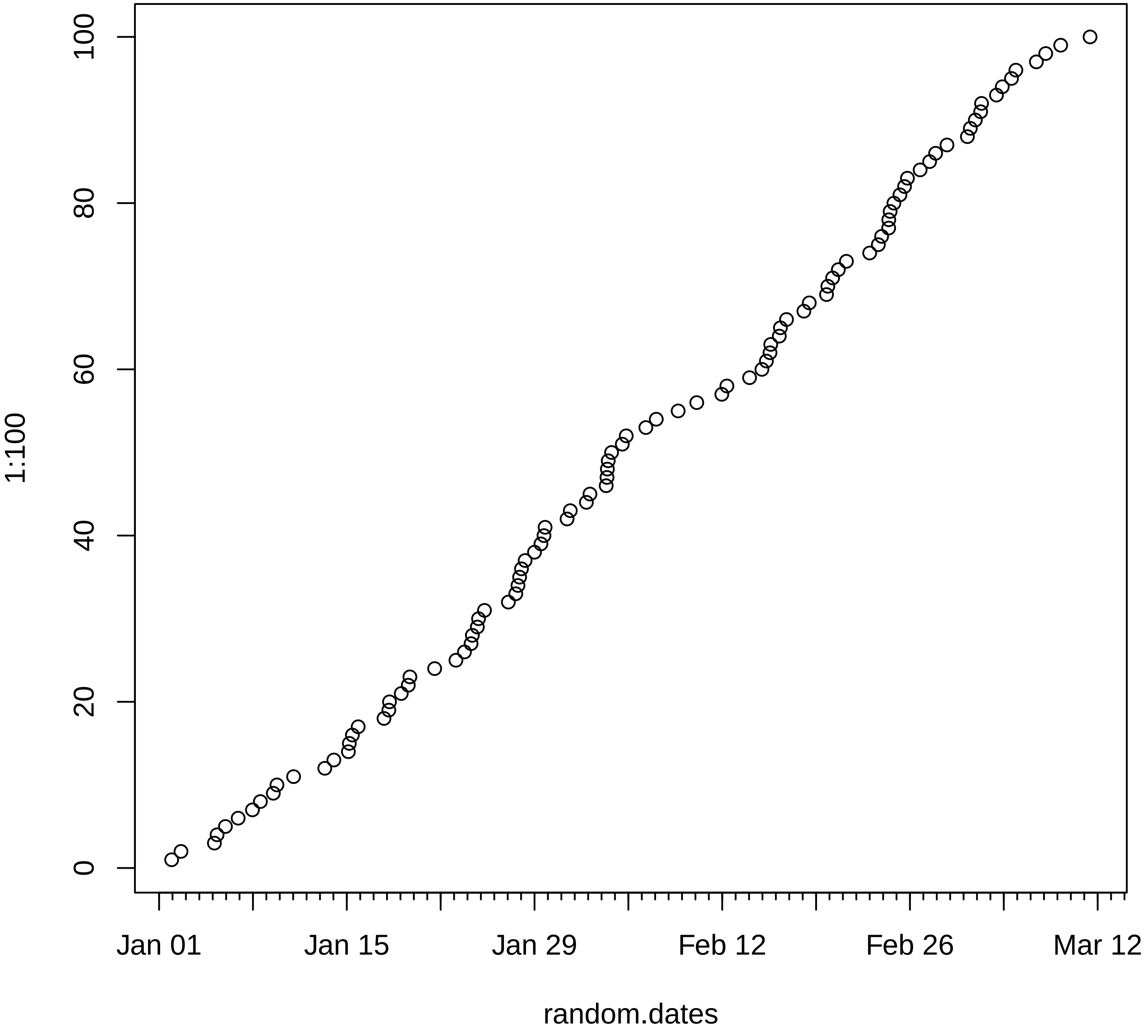
help("axis.POSIXct")


1980
1990
2000
2010
leap seconds

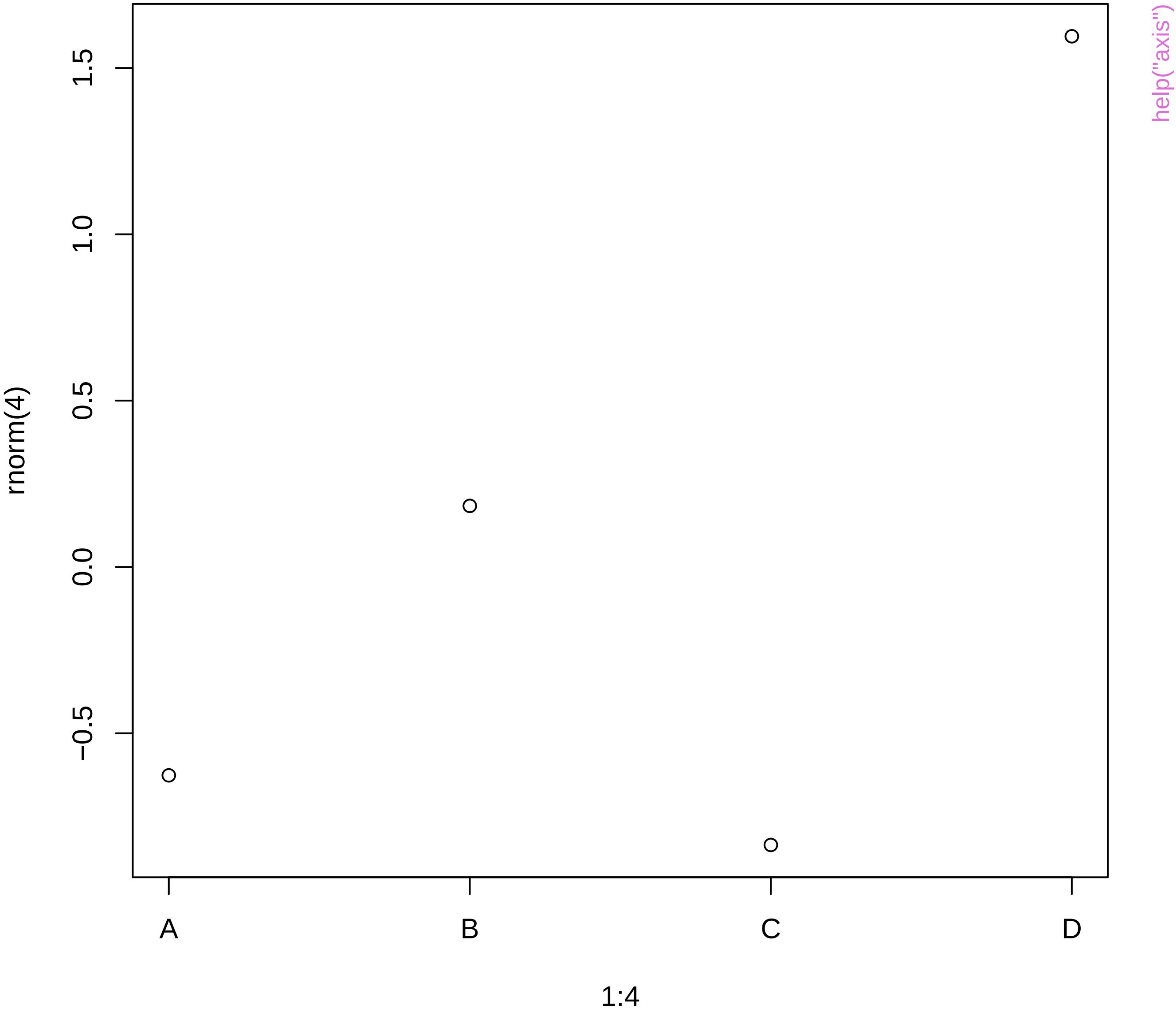
help("axis.POSIXct")

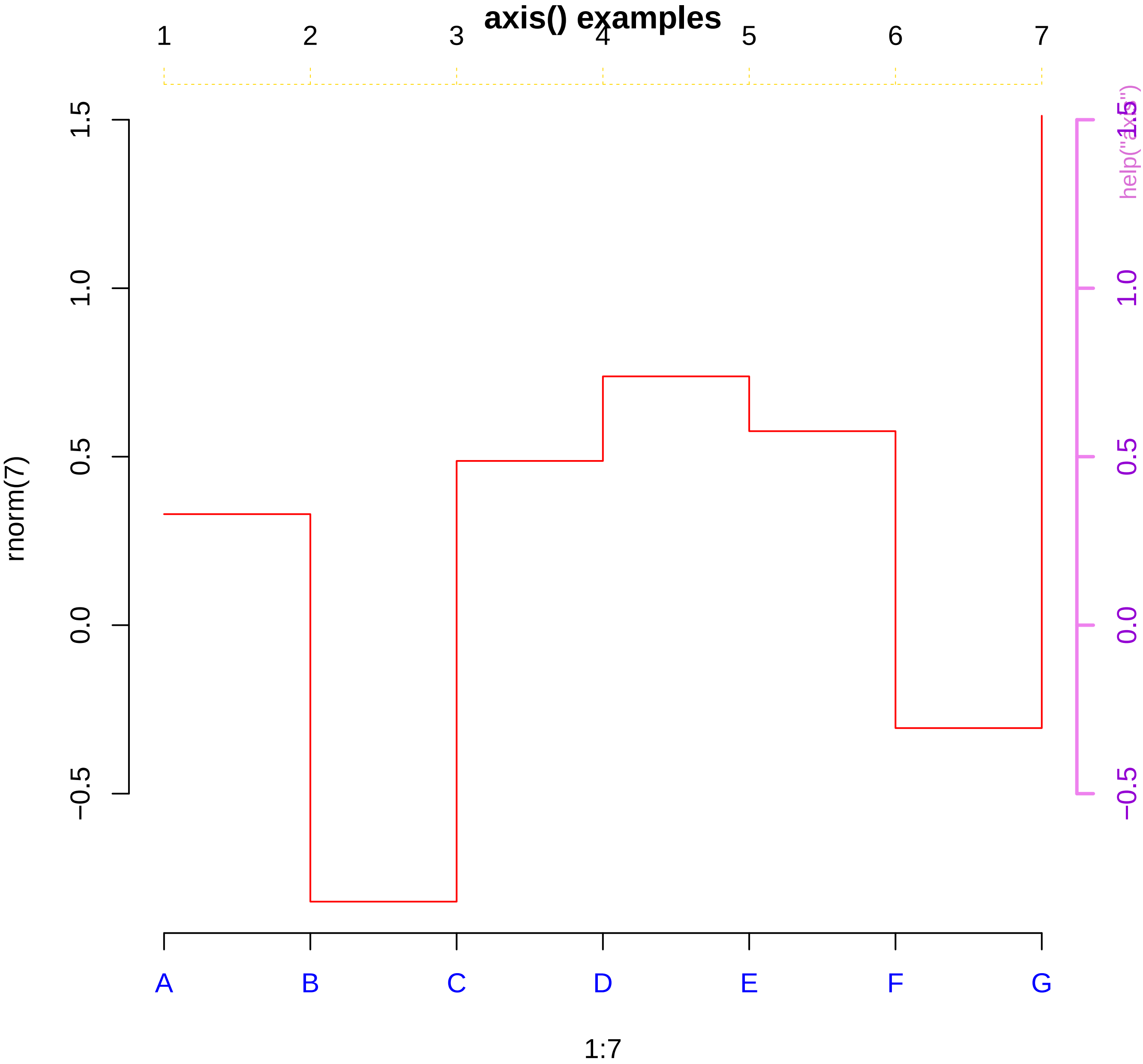

1980
1990
2000
2010
leap seconds

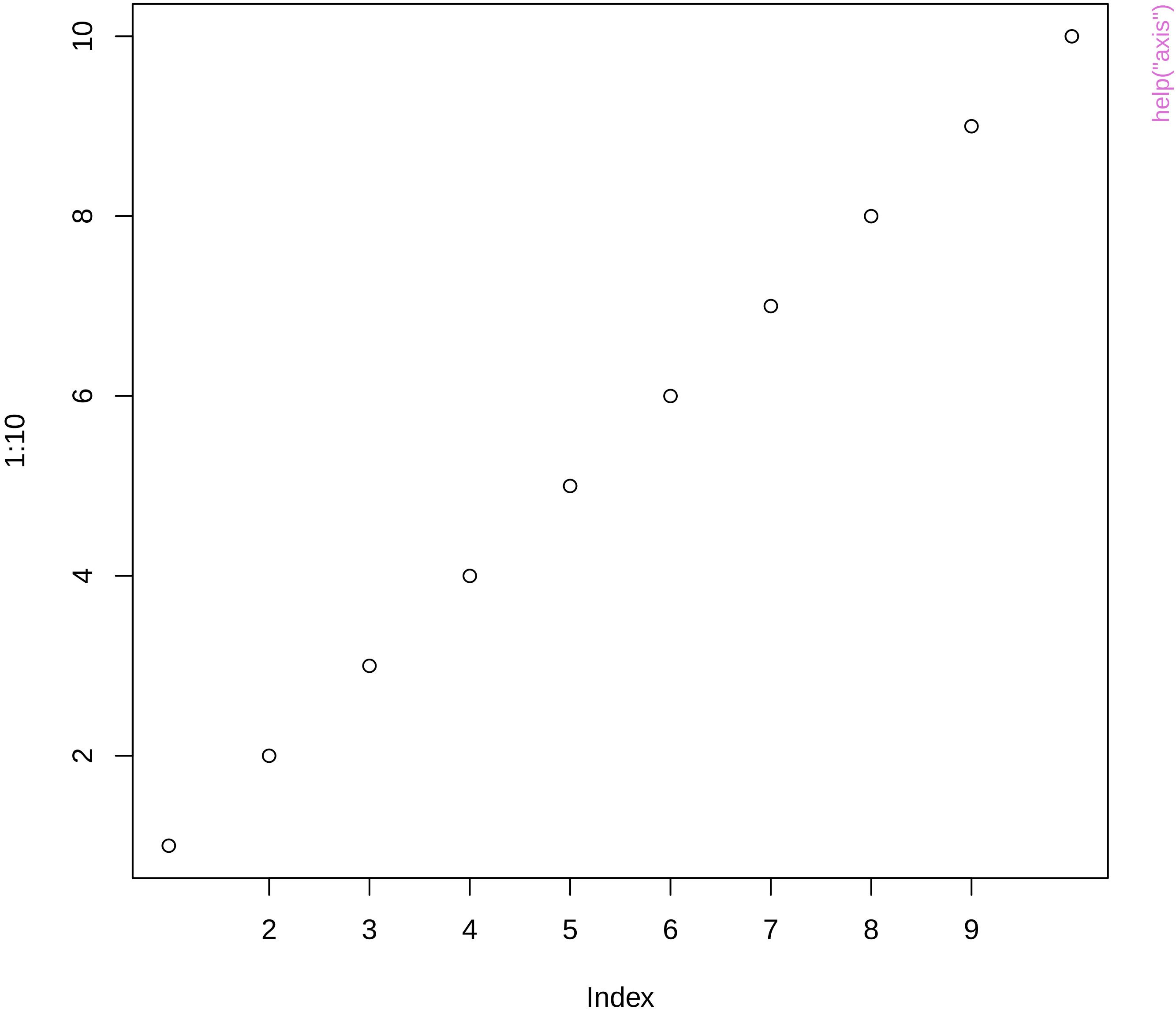

100
80
60
40
20
0
1:100
Jan 01
Jan 15
Feb 01
Feb 15
Mar 01
random.dates
help("axis.POSIXct")

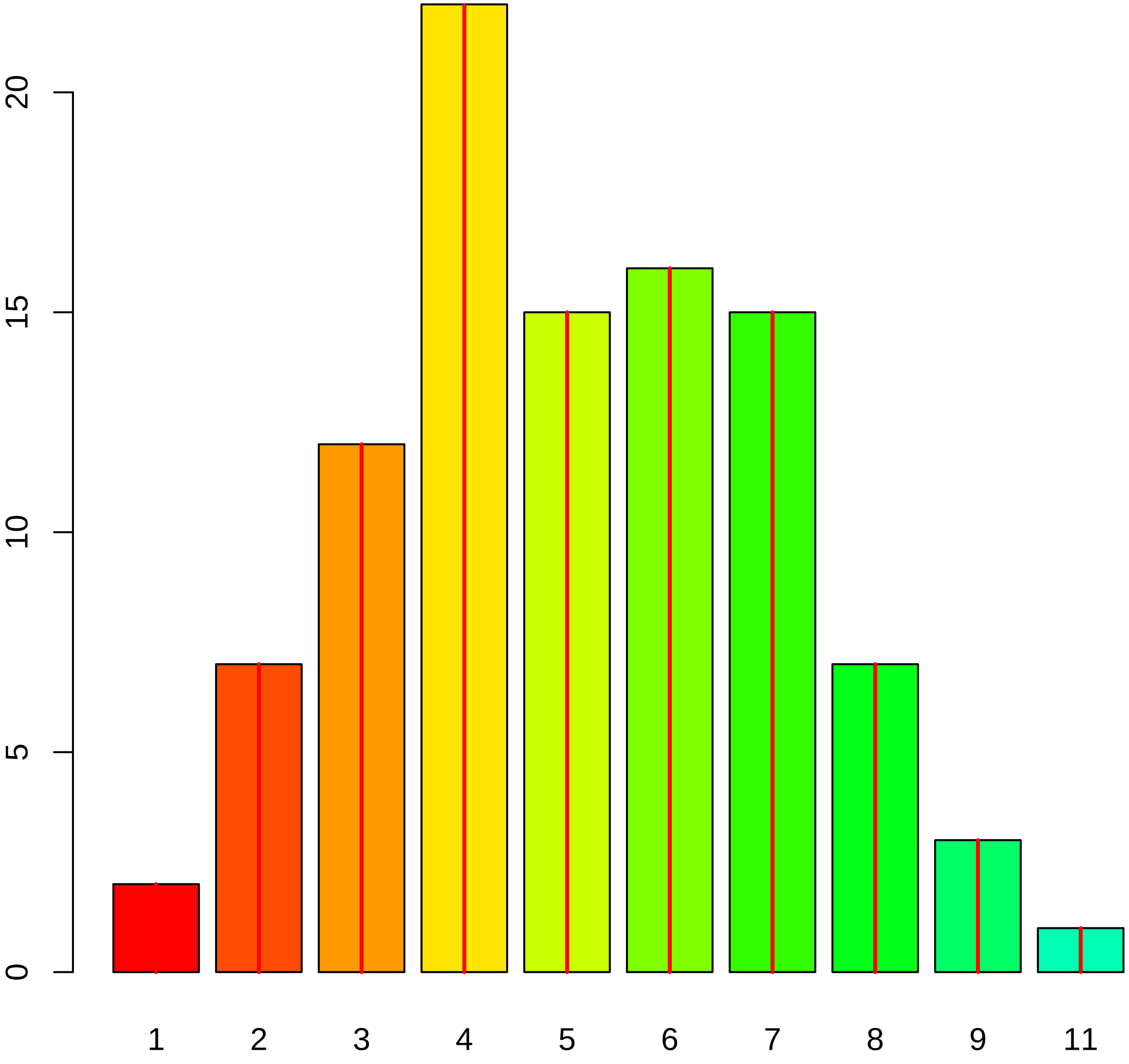


help("axis.POSIXct")

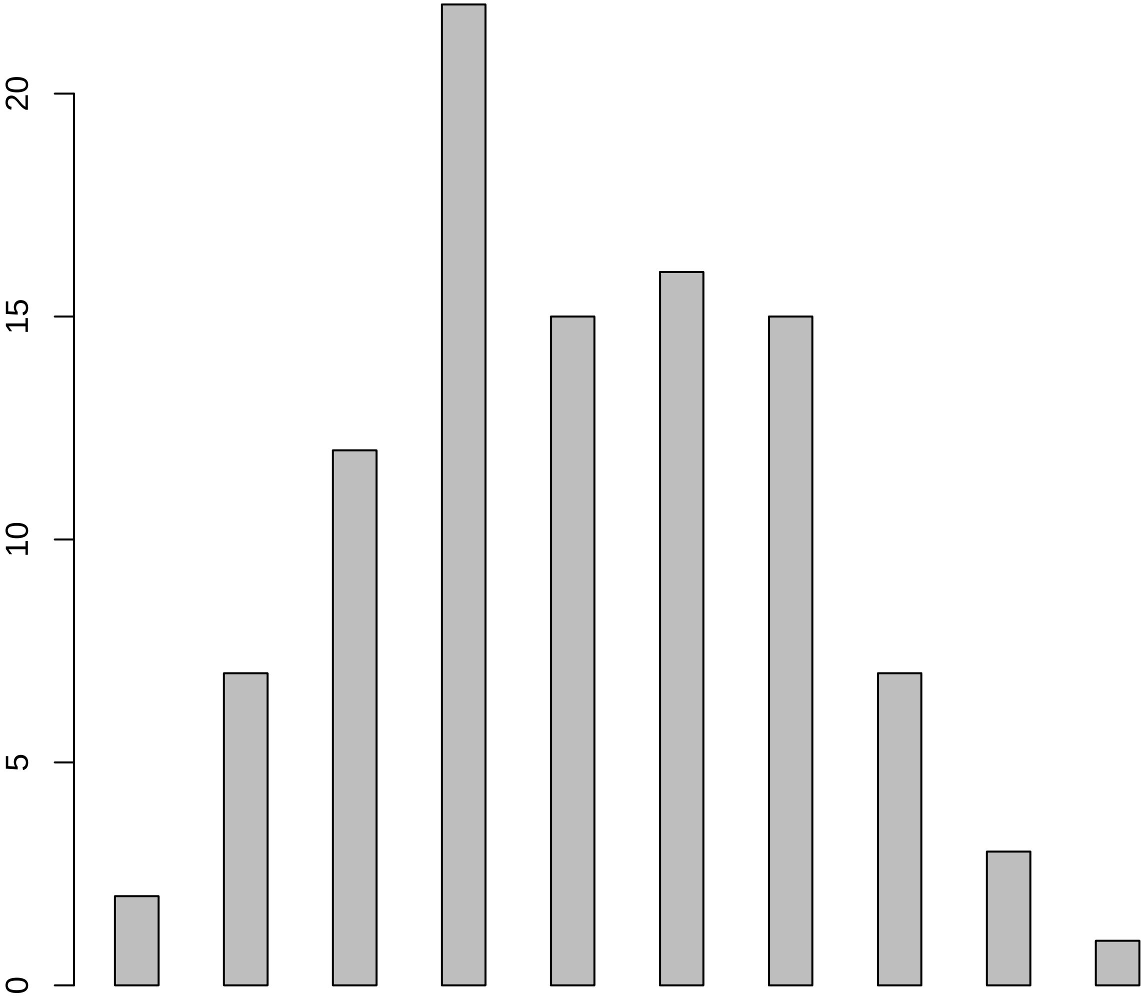

rnorm(4)
1.5
1.0
0.5
0.0
−0.5
A
B
C
D
1:4
help("axis")


axis() examples
1
2
3
4
5
6
7
1.5
1.0
0.5
0.0
−0.5
rnorm(7)
A
B
C
D
E
F
G
1:7
help("axis")
1.5
1.0
0.5
0.0
−0.5


10
8
6
4
2
1:10
2
3
4
5
6
7
8
9
Index
help("axis")

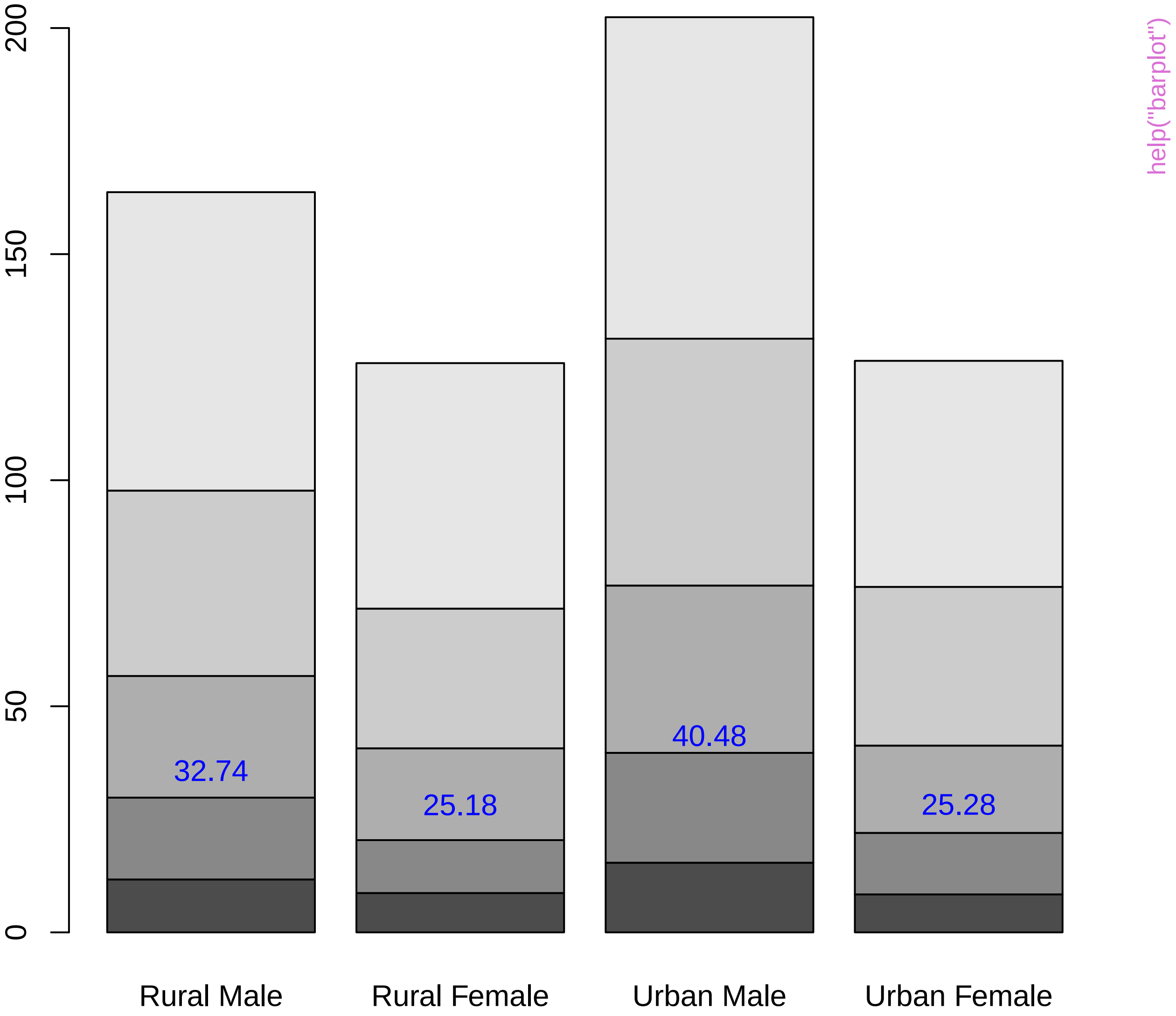


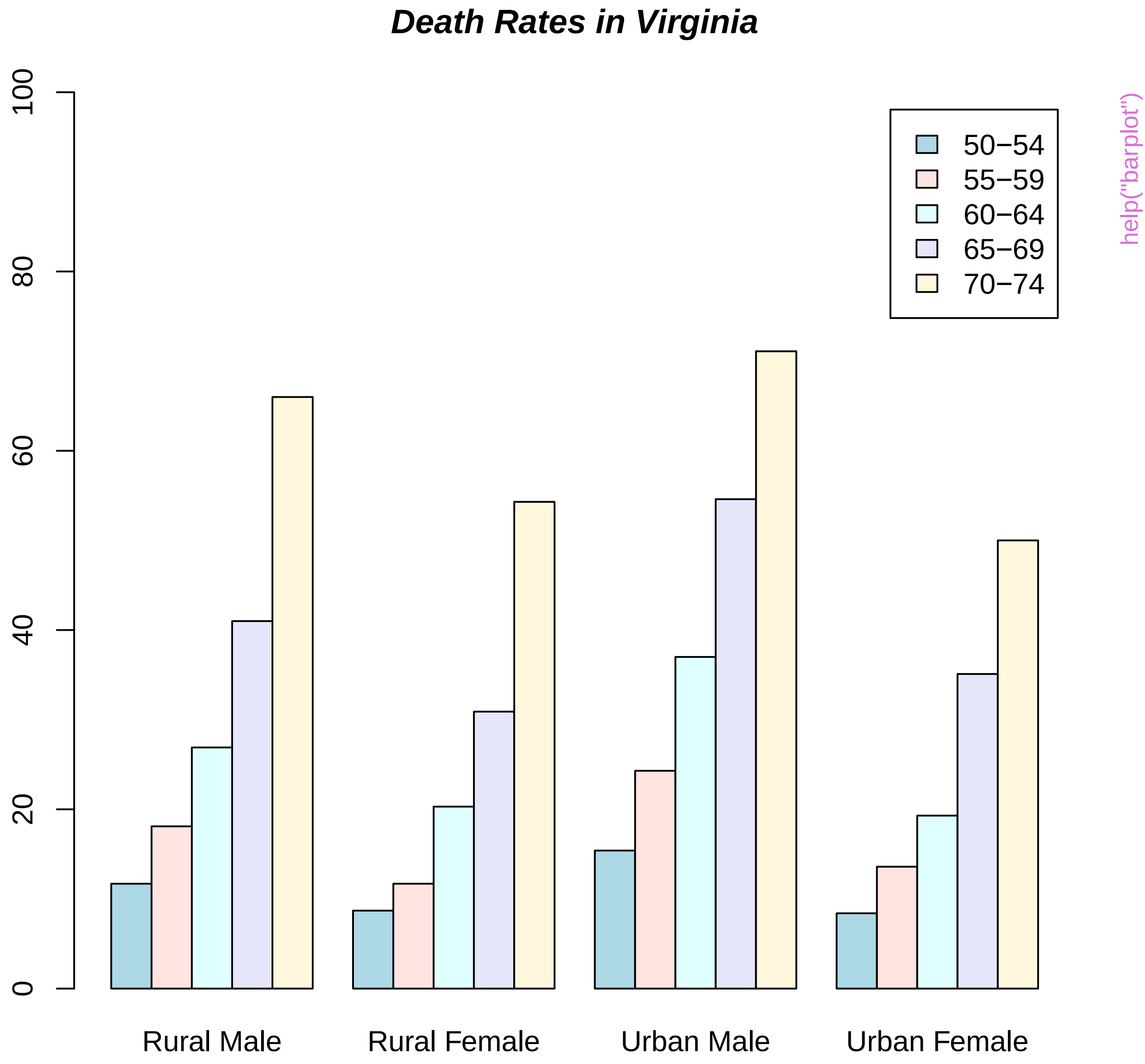
help("barplot")

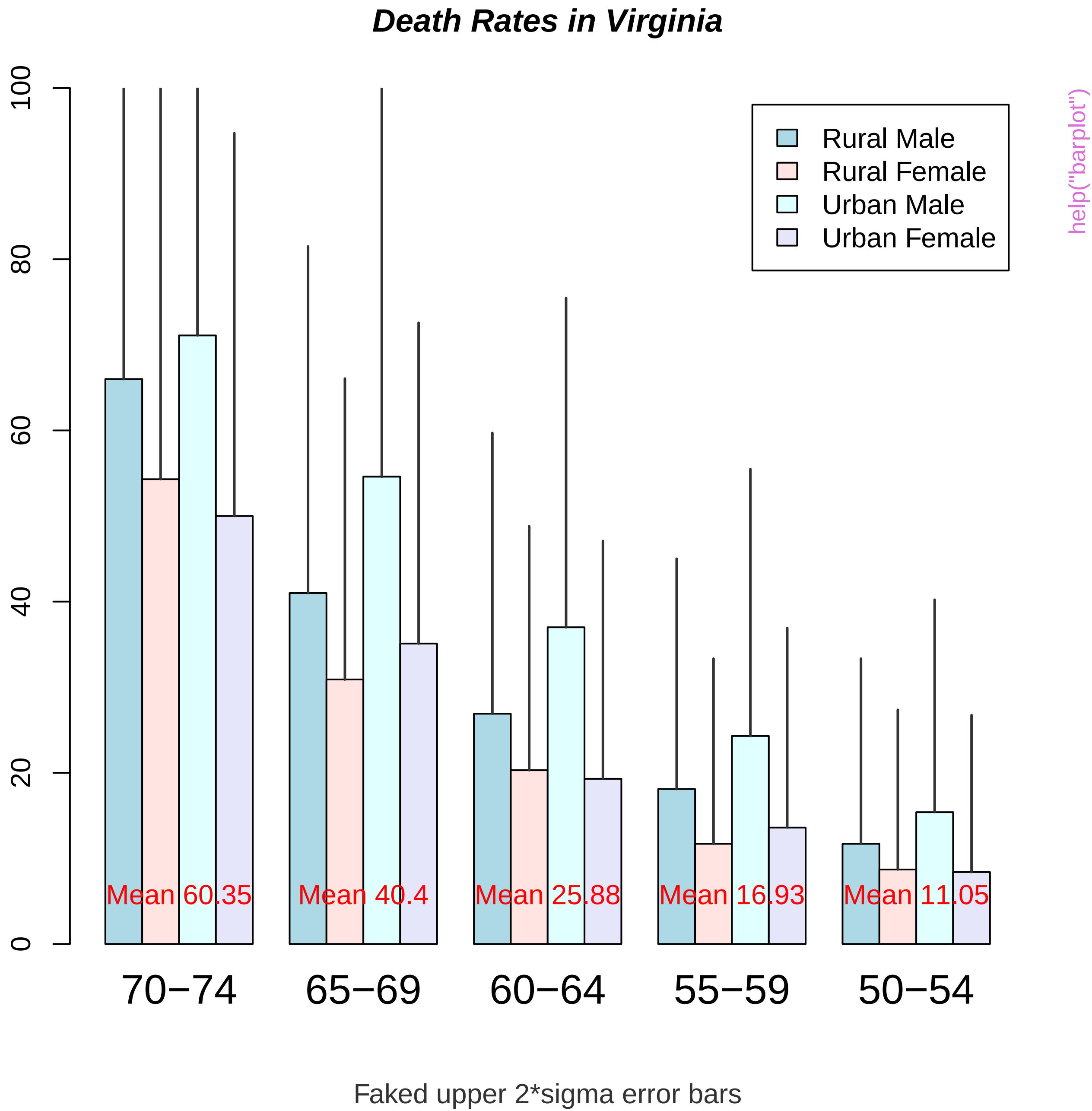


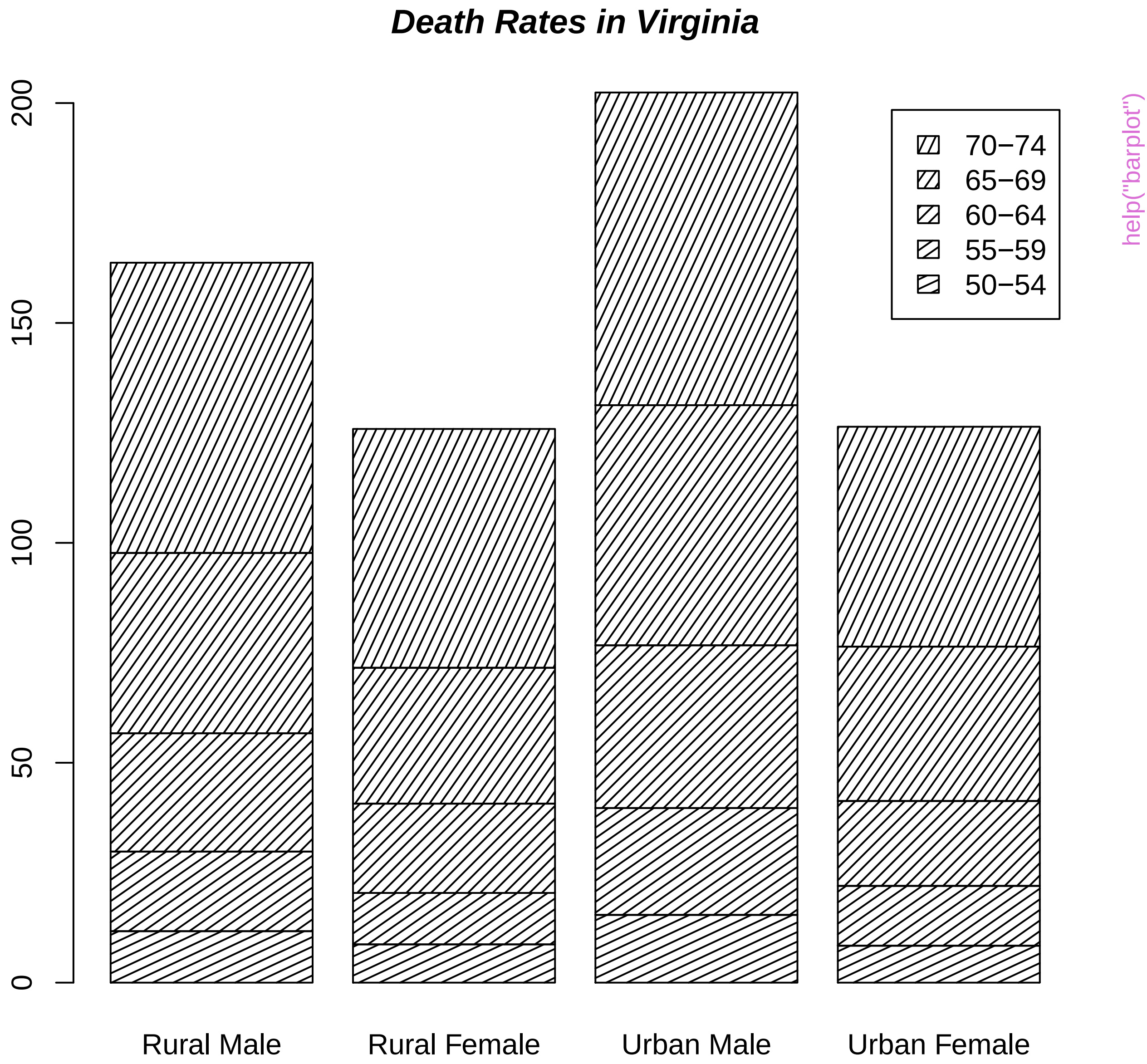
barplot(..., space= 1.5, axisnames = FALSE)

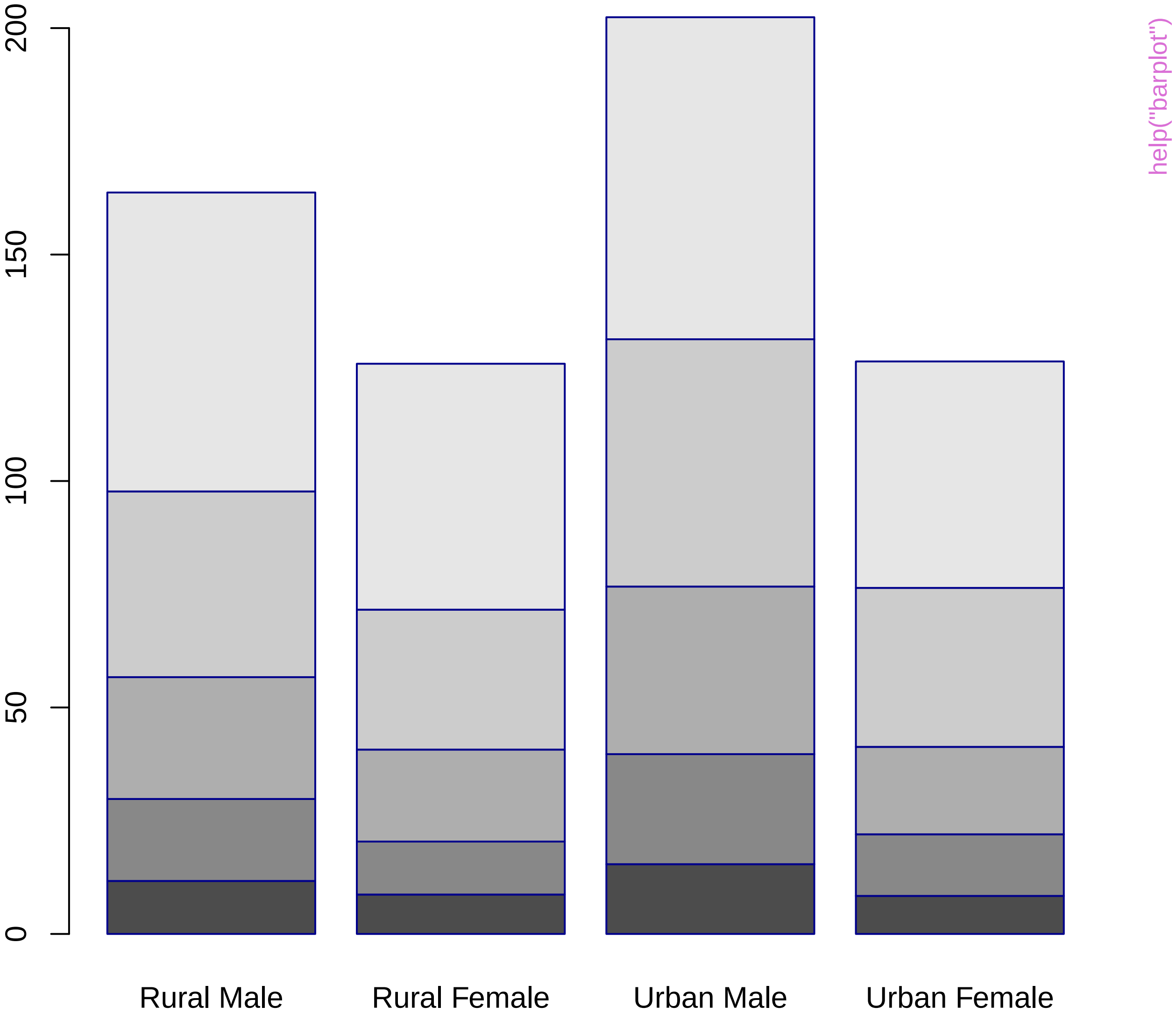
help("barplot")

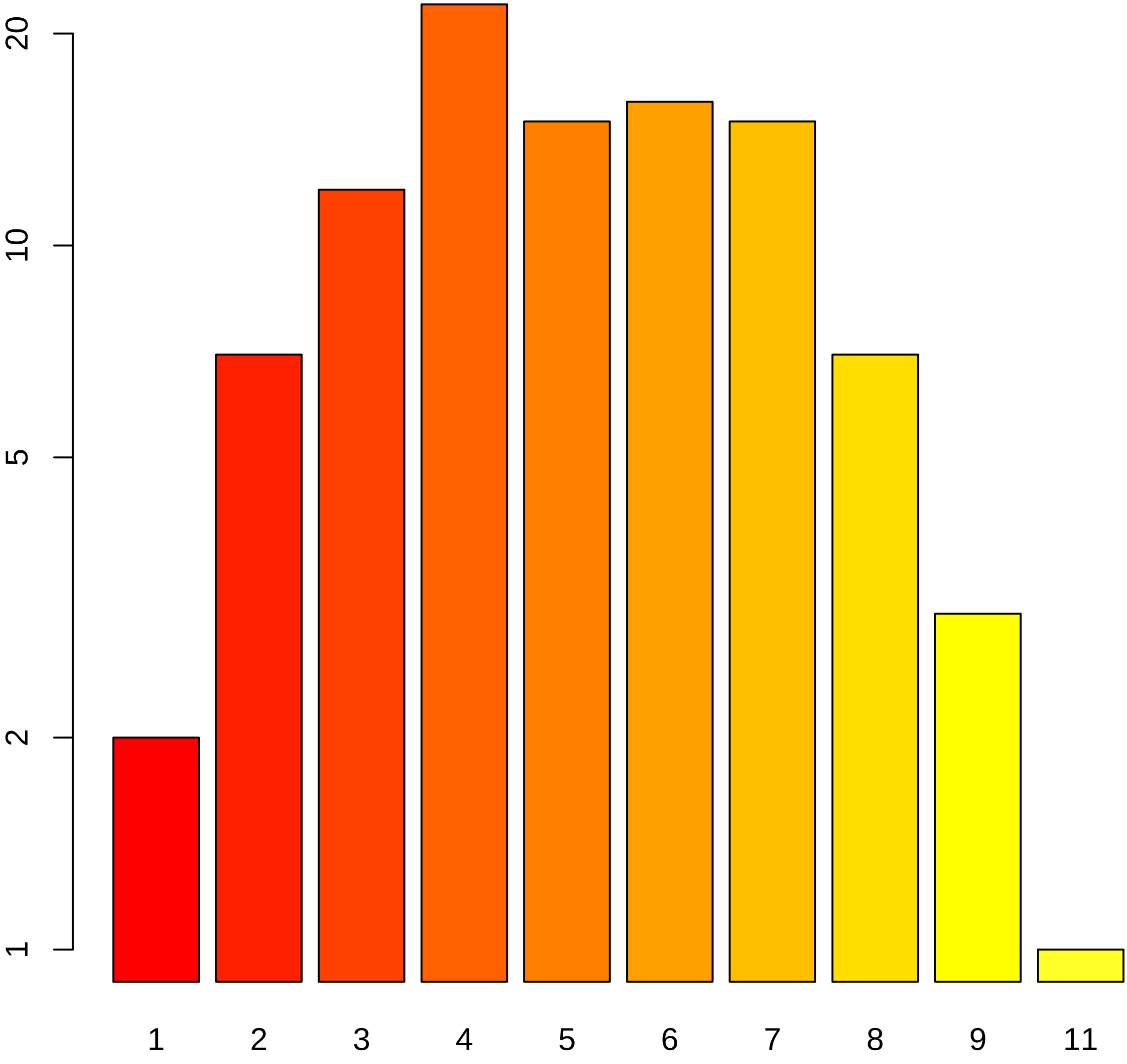

200
150
100
50
0
32.74
25.18
40.48
25.28
Rural Male
Rural Female
Urban Male
Urban Female
help("barplot")


Death Rates in Virginia
100
80
60
40
20
0
50−54
55−59
60−64
65−69
70−74
help("barplot")
Rural Male
Rural Female
Urban Male
Urban Female

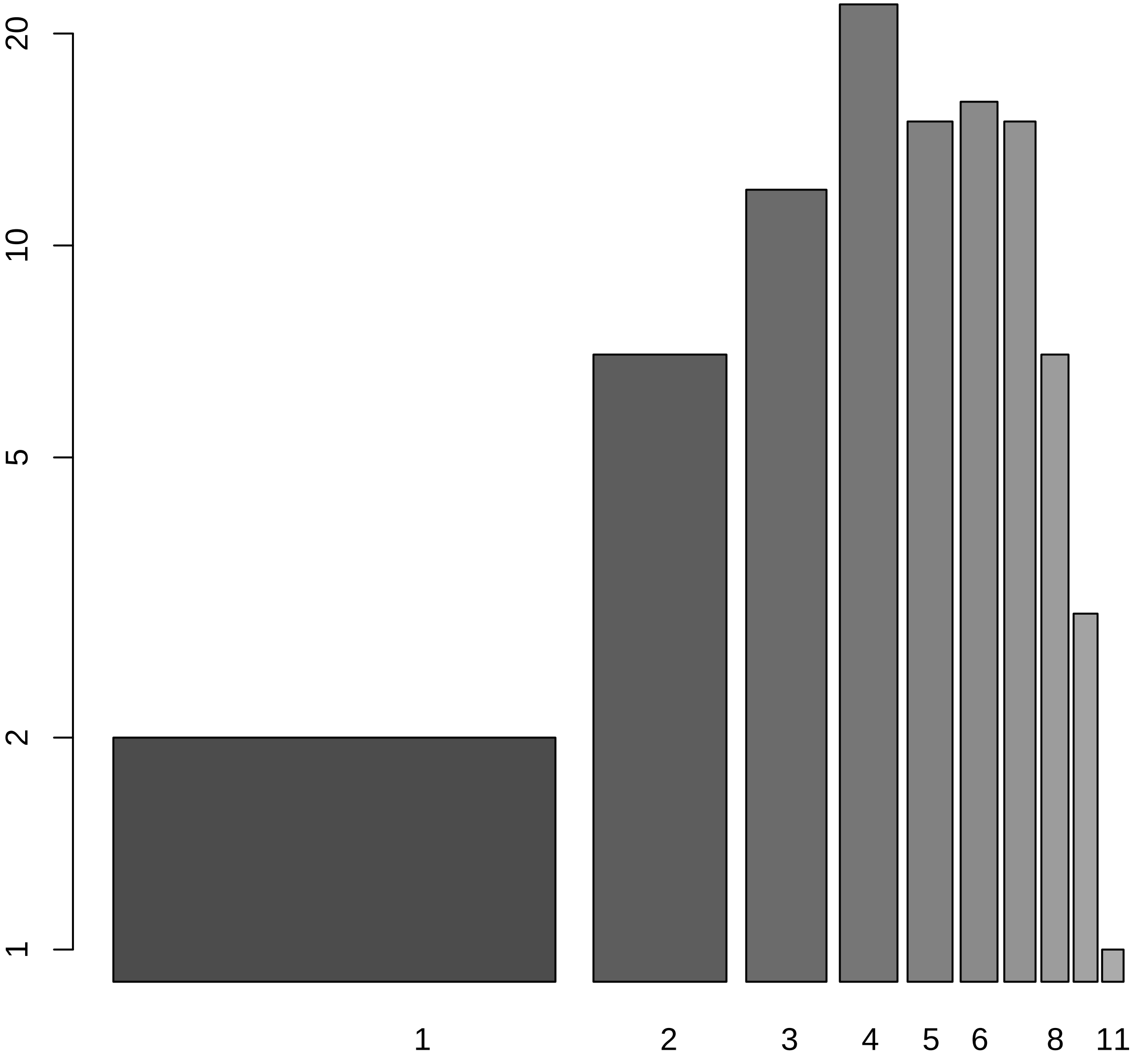

Death Rates in Virginia
100
80
60
40
20
0
Rural Male
Rural Female
Urban Male
Urban Female
help("barplot")
Mean 60.35
Mean 40.4
Mean 25.88
Mean 16.93
Mean 11.05
70−74
65−69
60−64
55−59
50−54
Faked upper 2*sigma error bars


Death Rates in Virginia
200
150
100
50
0
70−74
65−69
60−64
55−59
50−54
Rural Male
Rural Female
Urban Male
Urban Female
help("barplot")

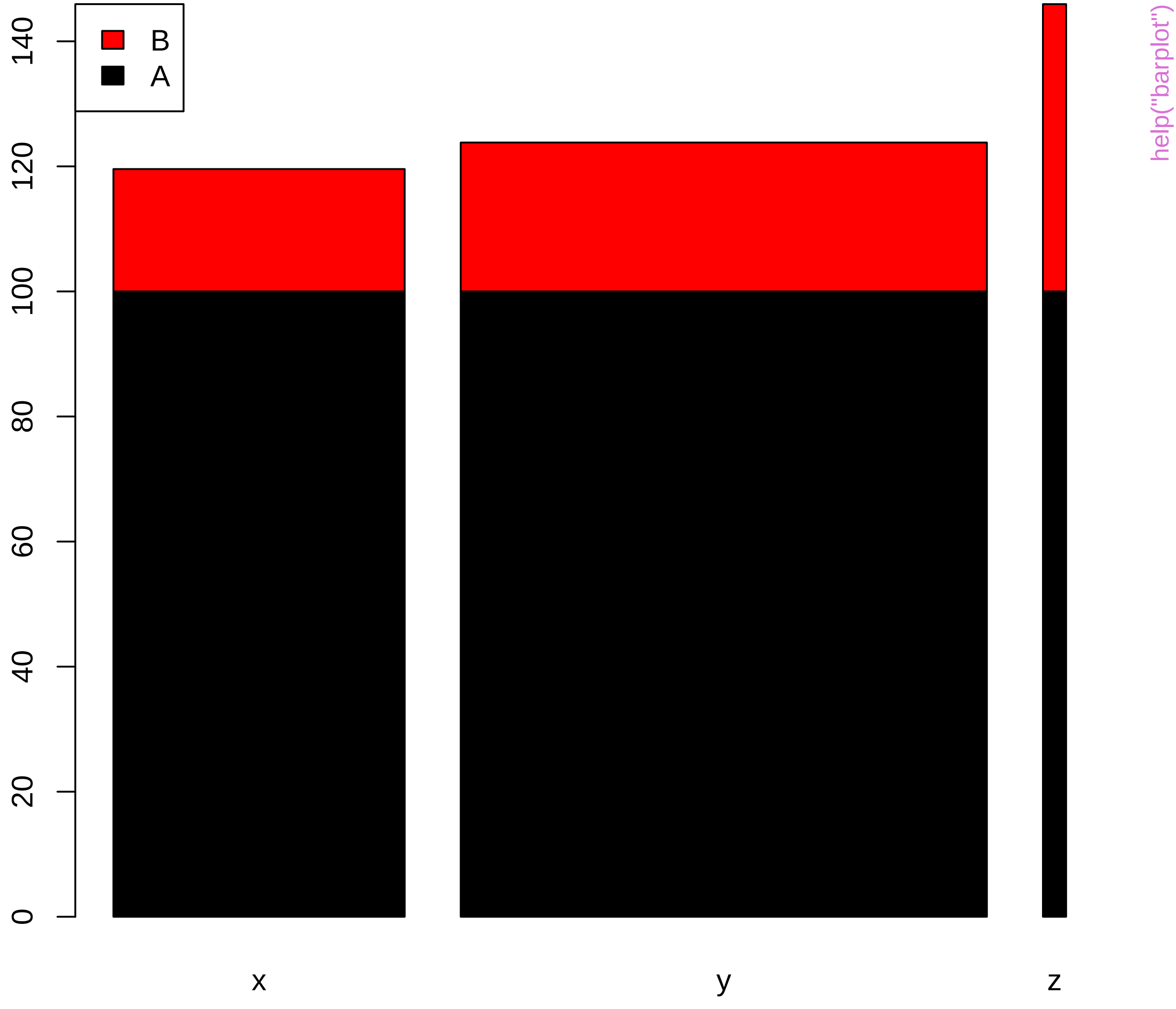

0
50
100
150
200
Rural Male
Rural Female
Urban Male
Urban Female
help("barplot")

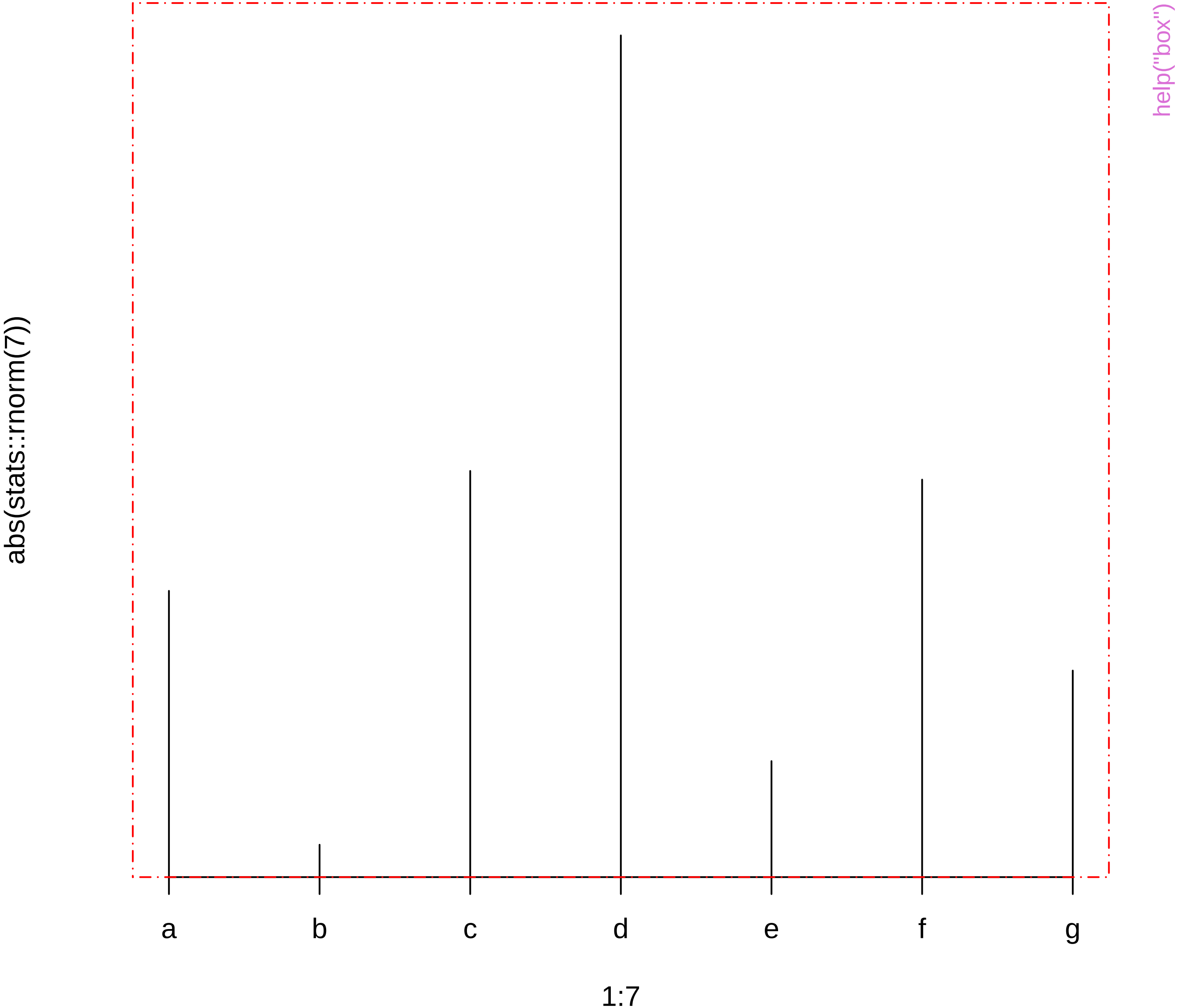


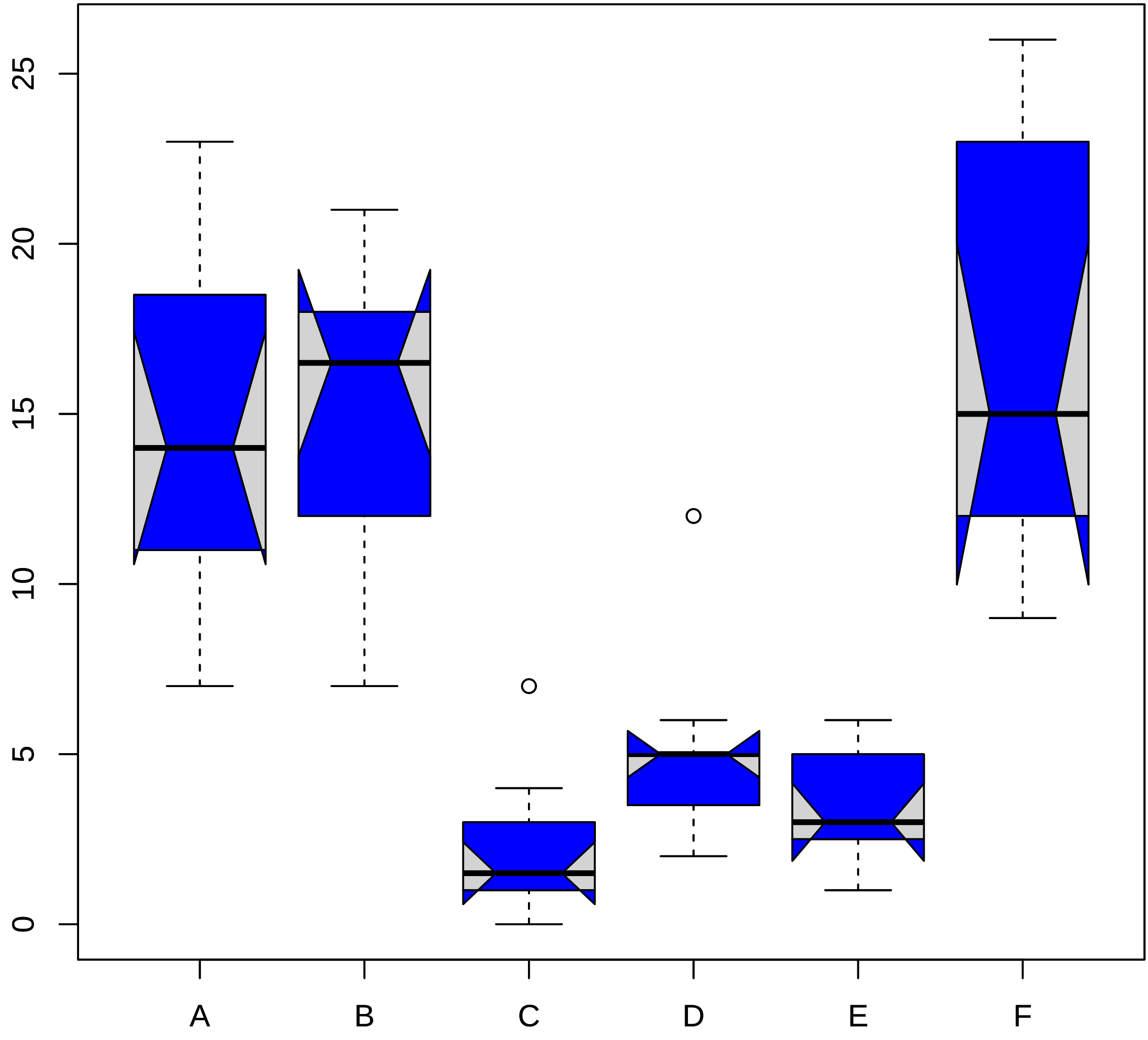
help("barplot")



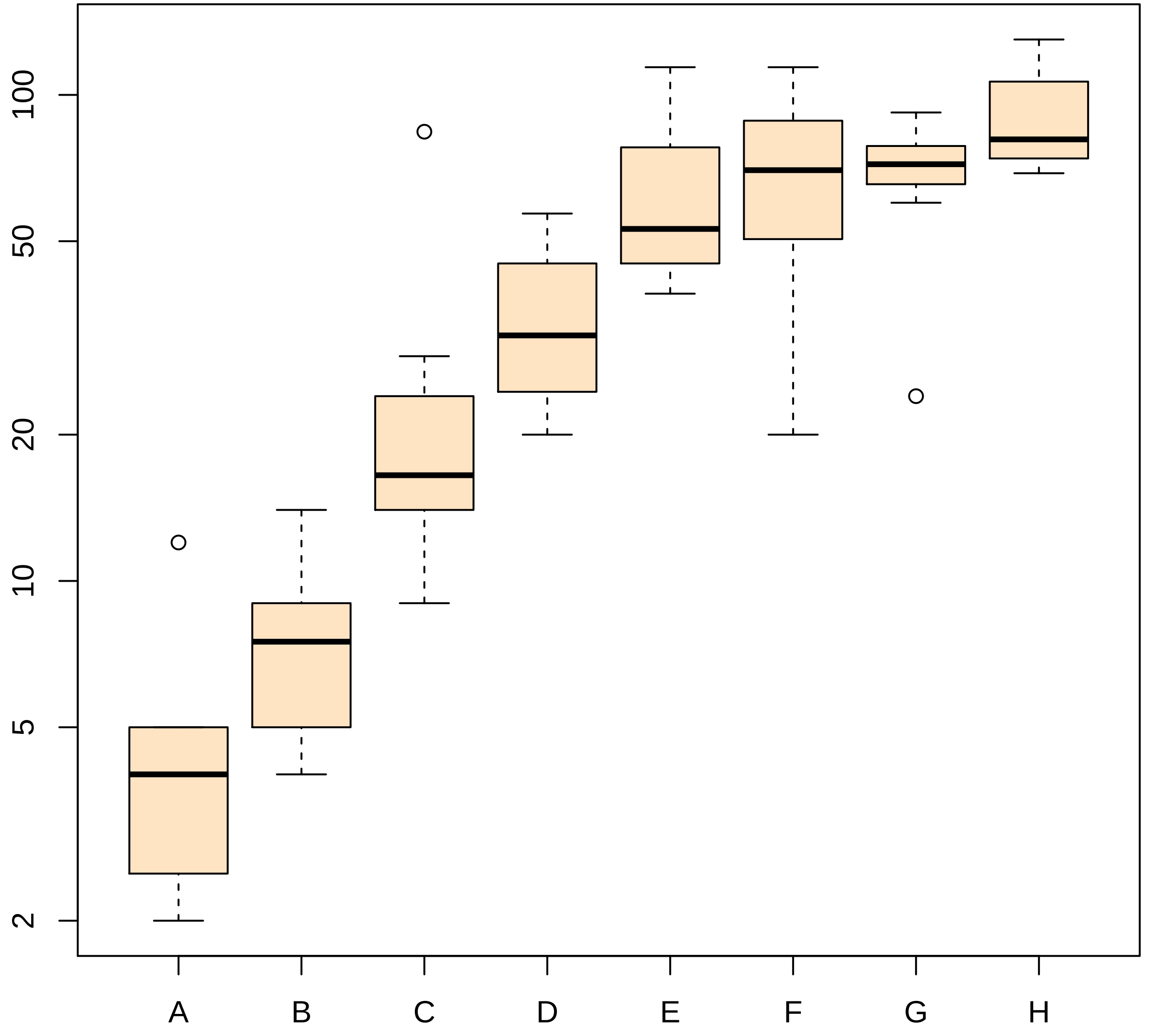
help("barplot")


B
A
0
20
40
60
80
100
120
140
x
y
z
help("barplot")

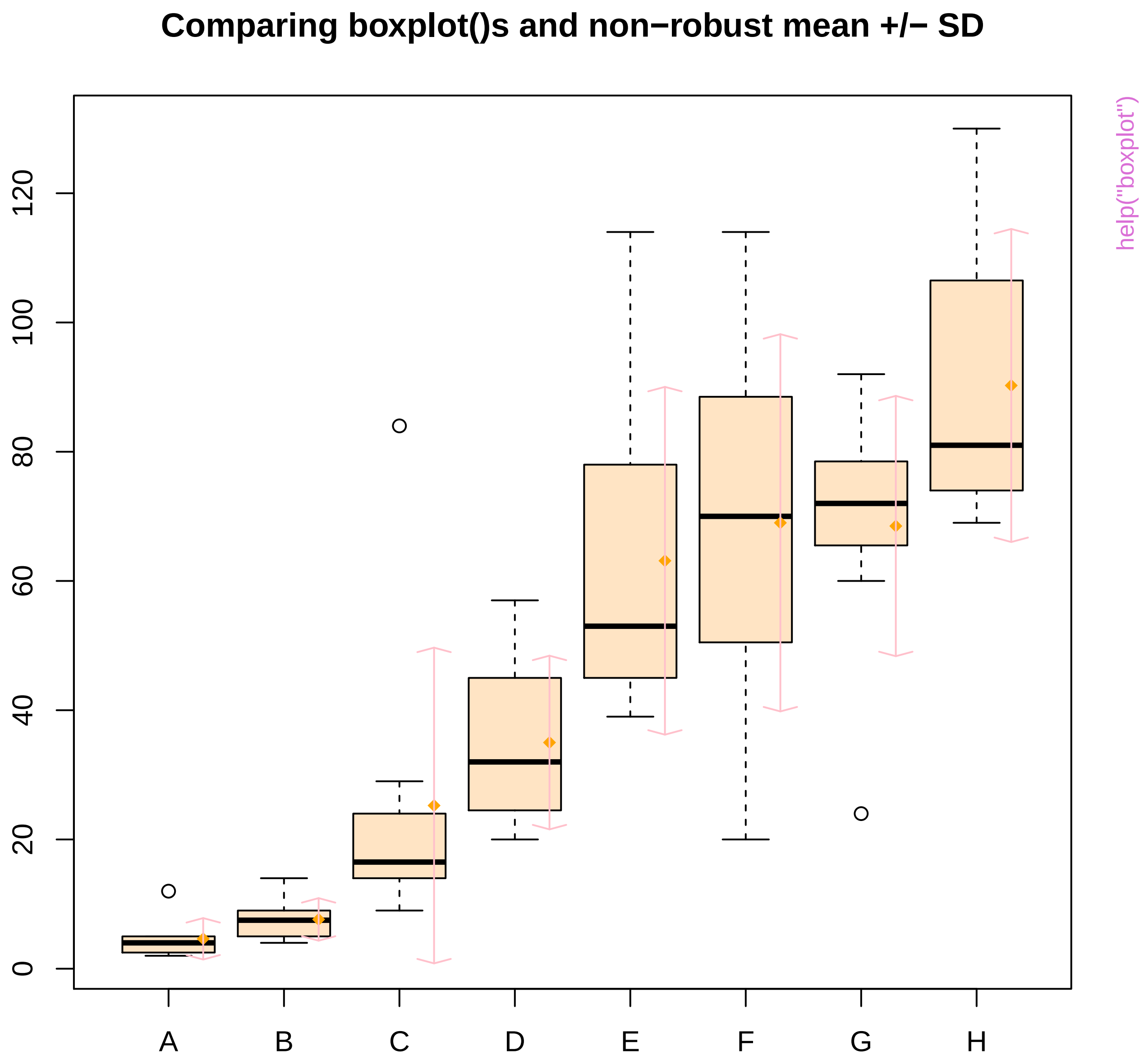

abs(stats::rnorm(7))
a
b
c
d
e
f
g
1:7
help("box")

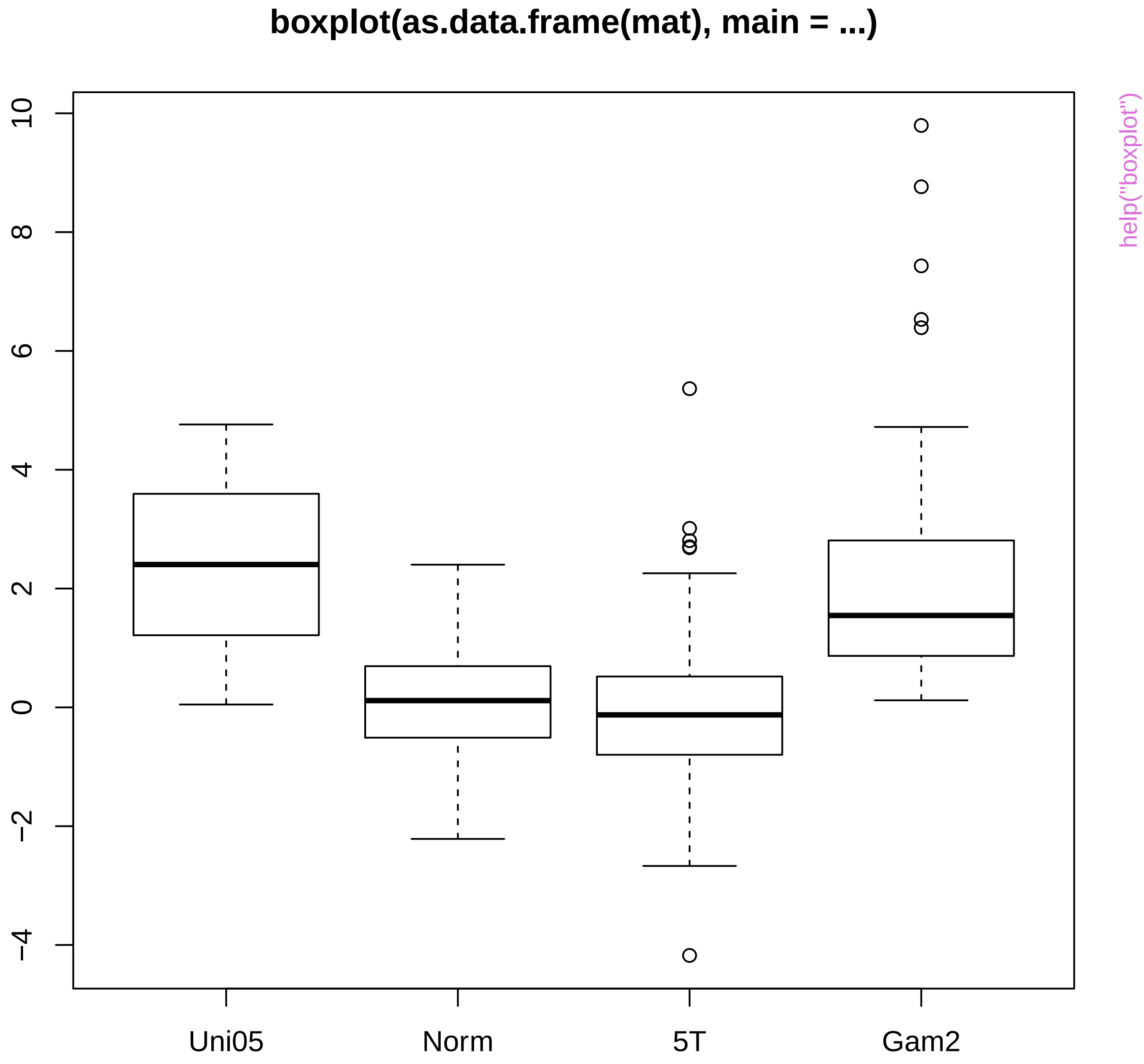


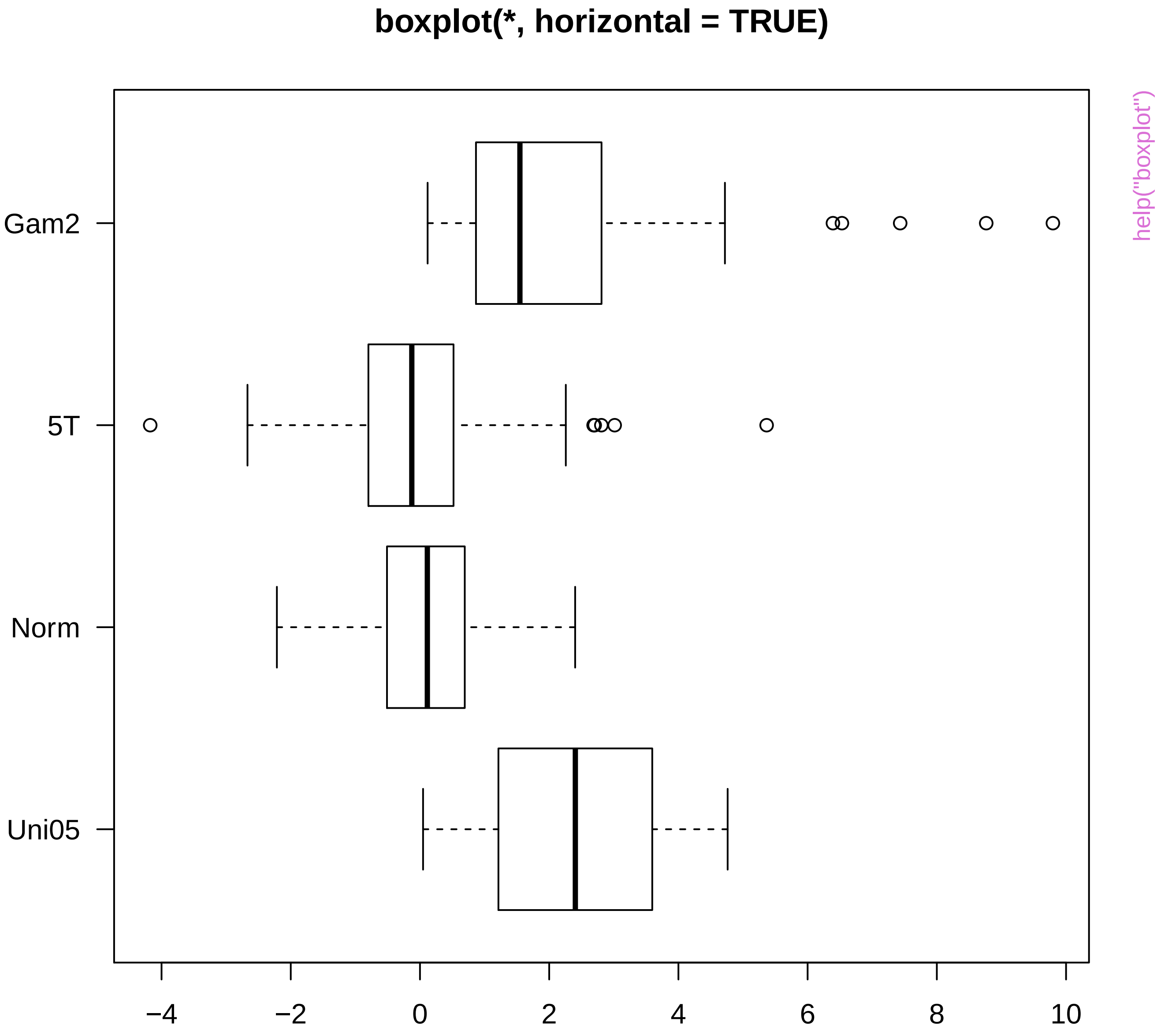
help("boxplot")

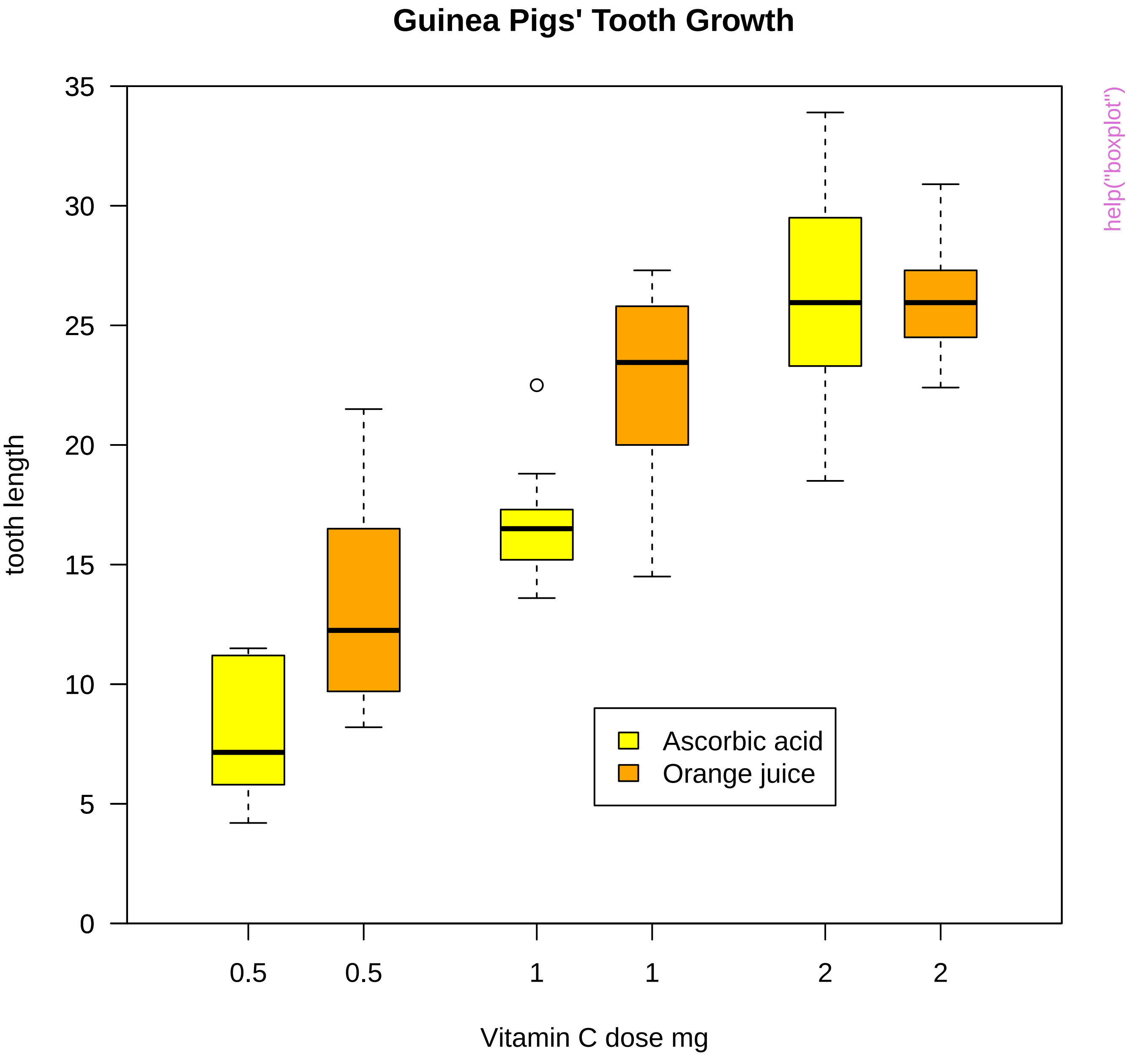


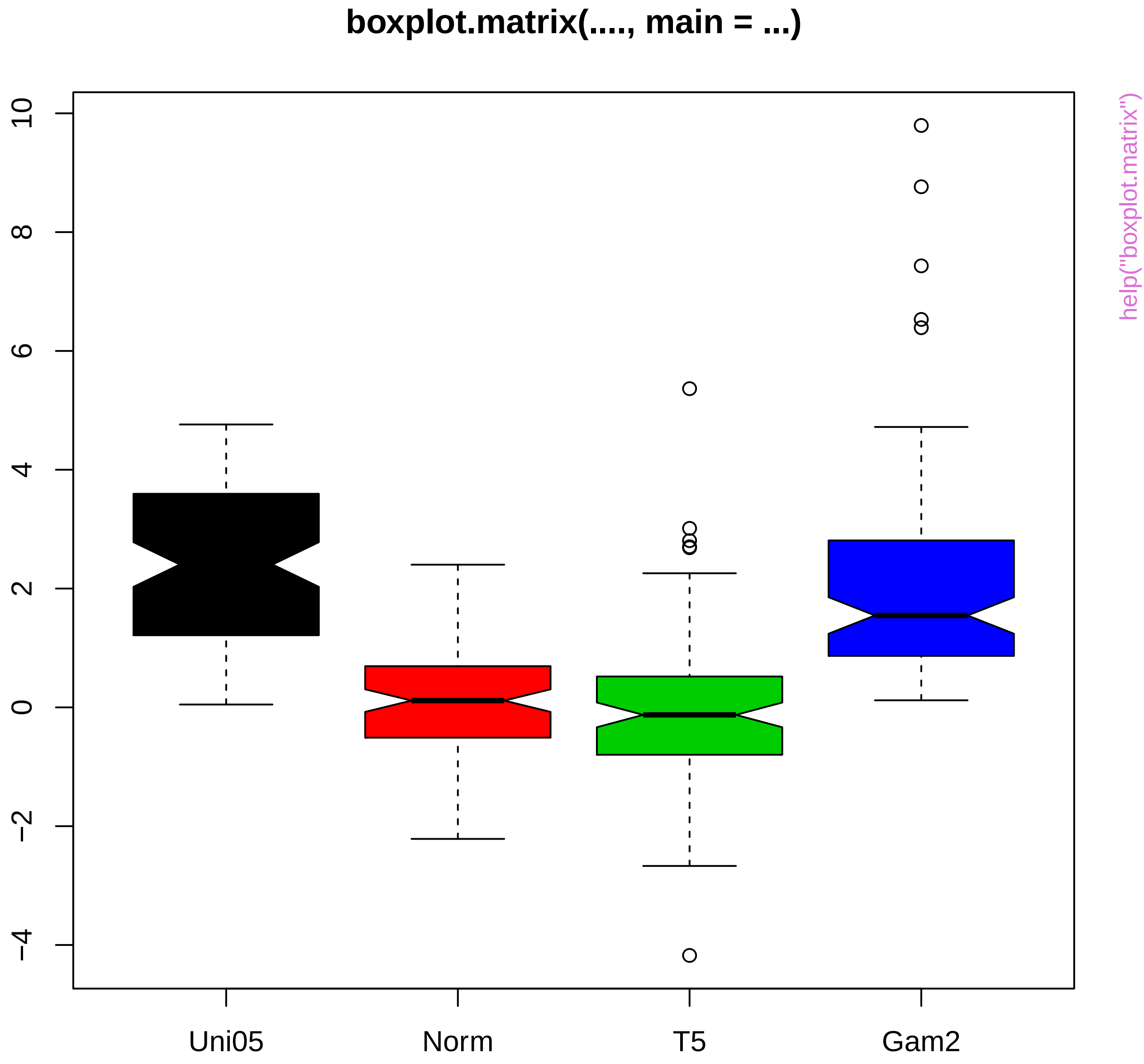
help("boxplot")

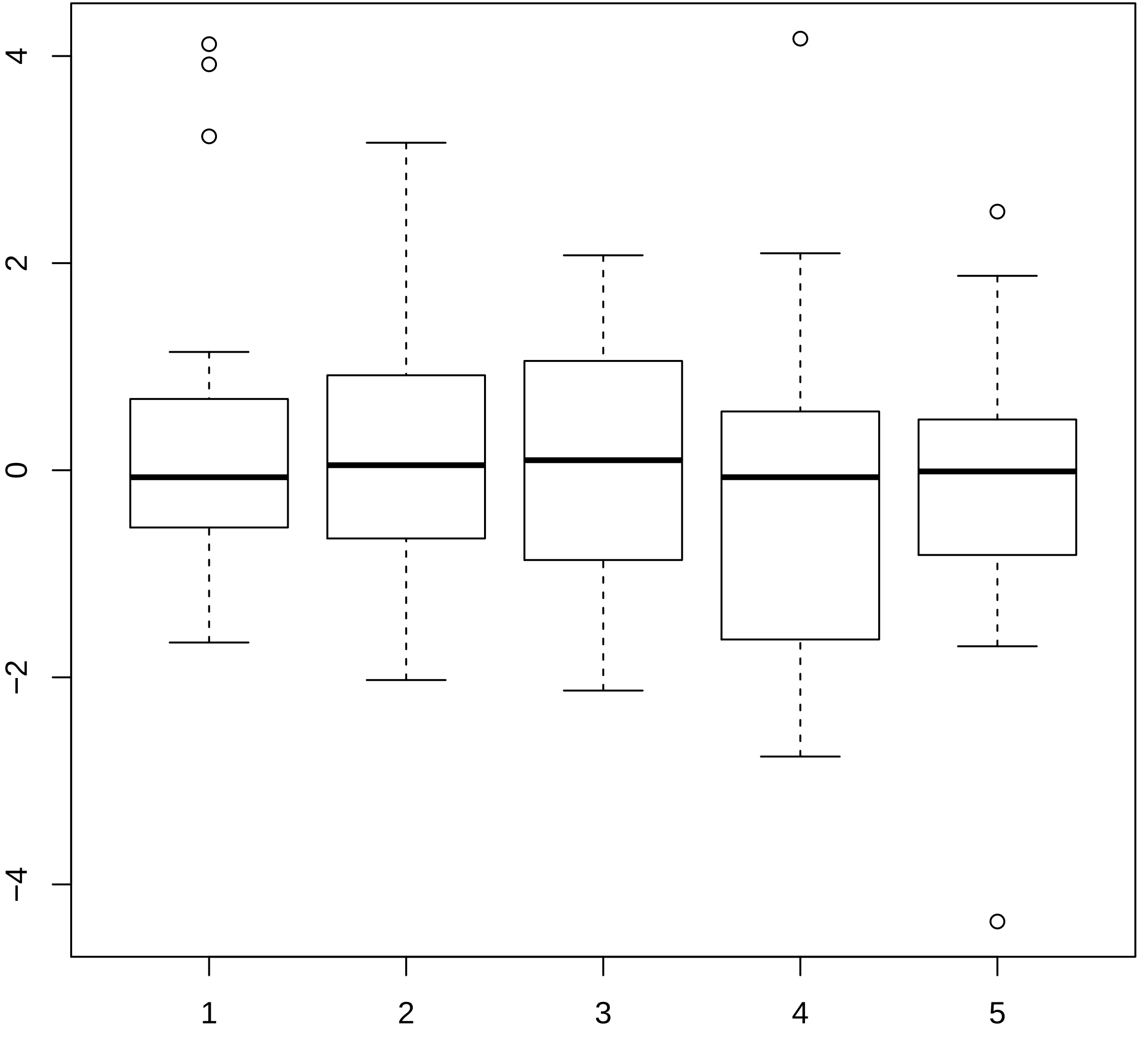

Comparing boxplot()s and non−robust mean +/− SD
0
20
40
60
80
100
120
A
B
C
D
E
F
G
H
help("boxplot")

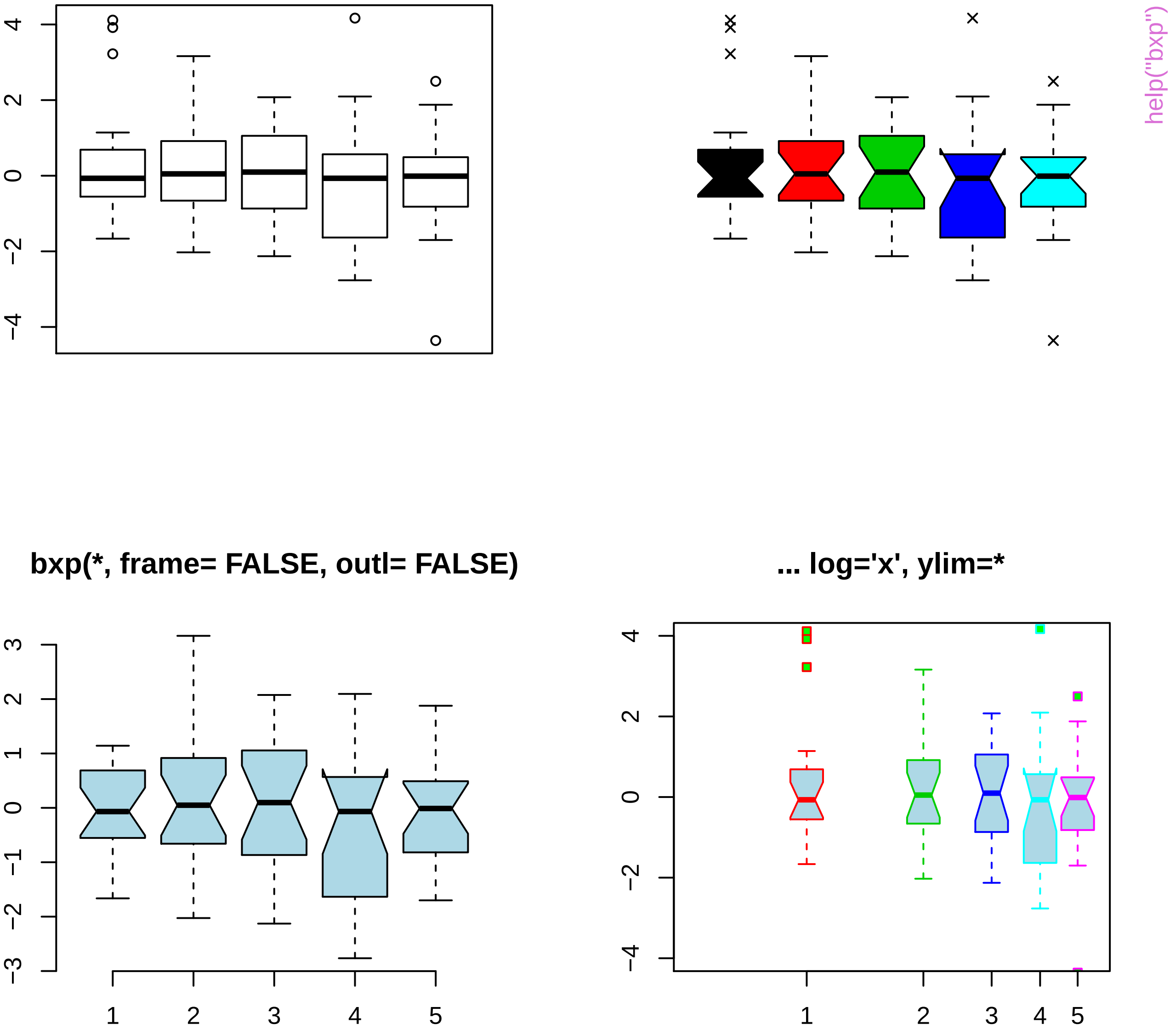

boxplot(as.data.frame(mat), main = ...)
help("boxplot")
10
8
6
4
2
0
−2
−4
Uni05
Norm
5T
Gam2

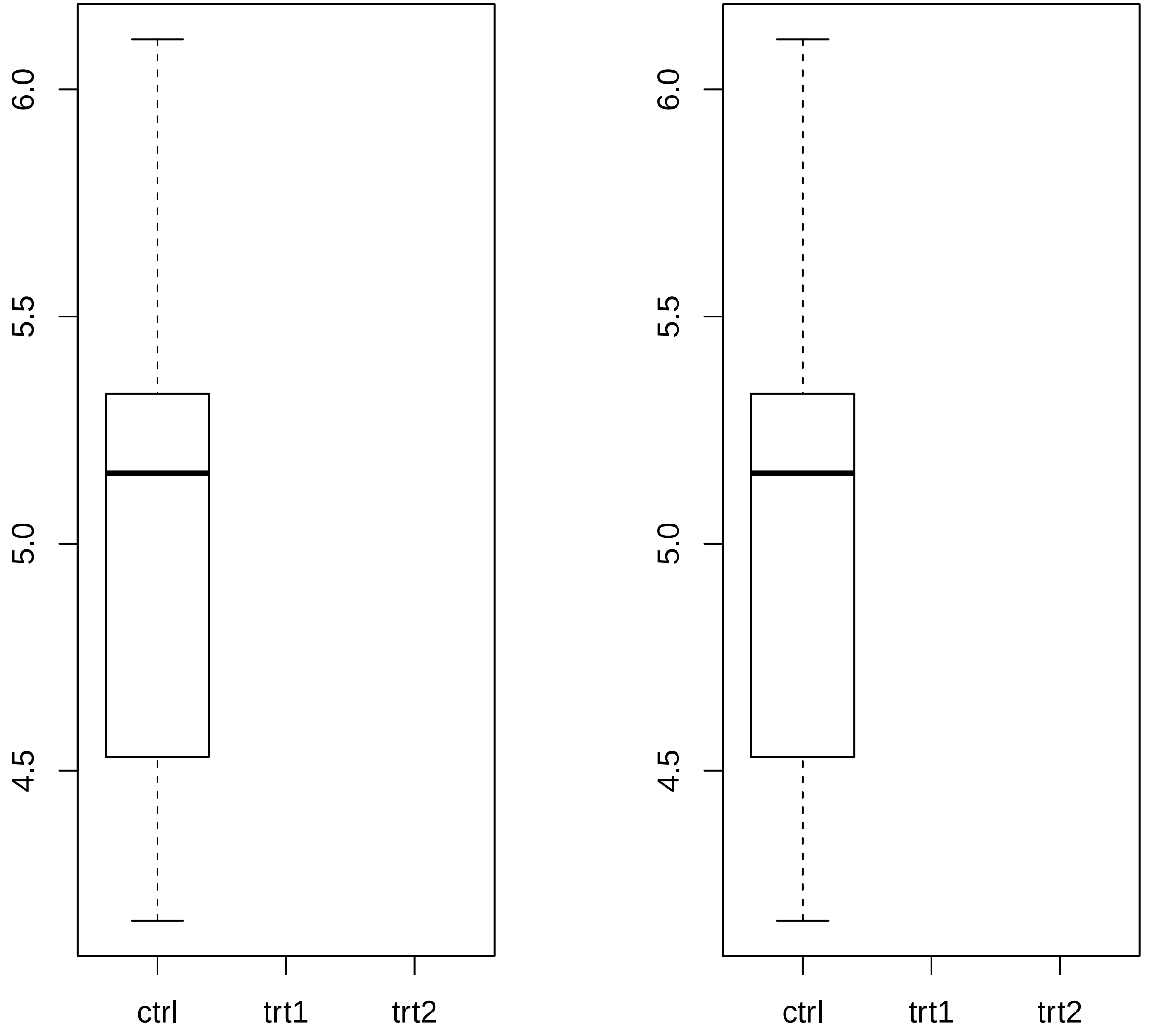

boxplot(*, horizontal = TRUE)
Gam2
5T
Norm
Uni05
−4
−2
0
2
4
6
8
10
help("boxplot")


Guinea Pigs' Tooth Growth
help("boxplot")
tooth length
35
30
25
20
15
10
5
0
Ascorbic acid
Orange juice
0.5
0.5
1
1
2
2
Vitamin C dose mg

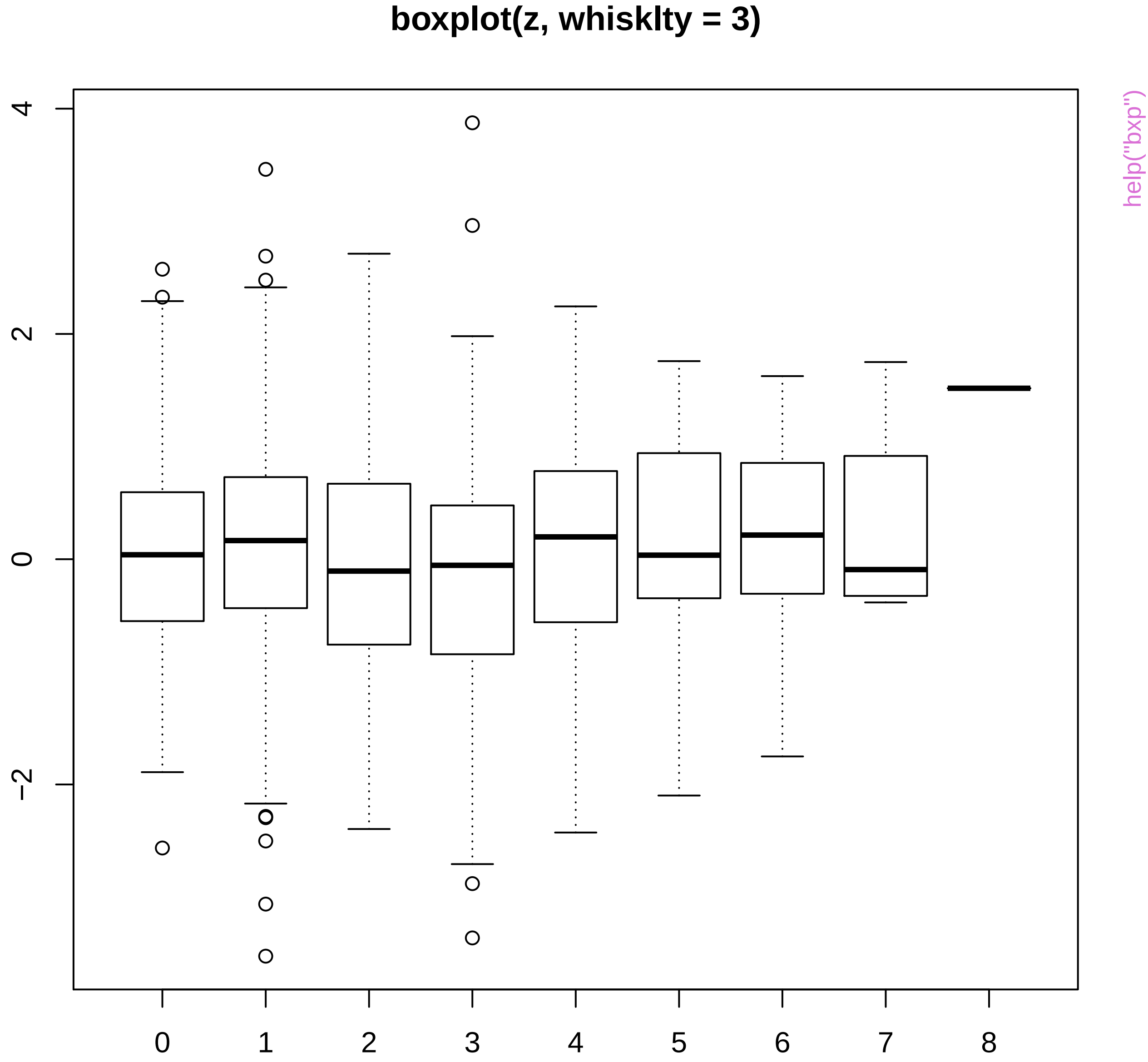

boxplot.matrix(...., main = ...)
10
8
6
4
2
0
−2
−4
Uni05
Norm
T5
Gam2
help("boxplot.matrix")

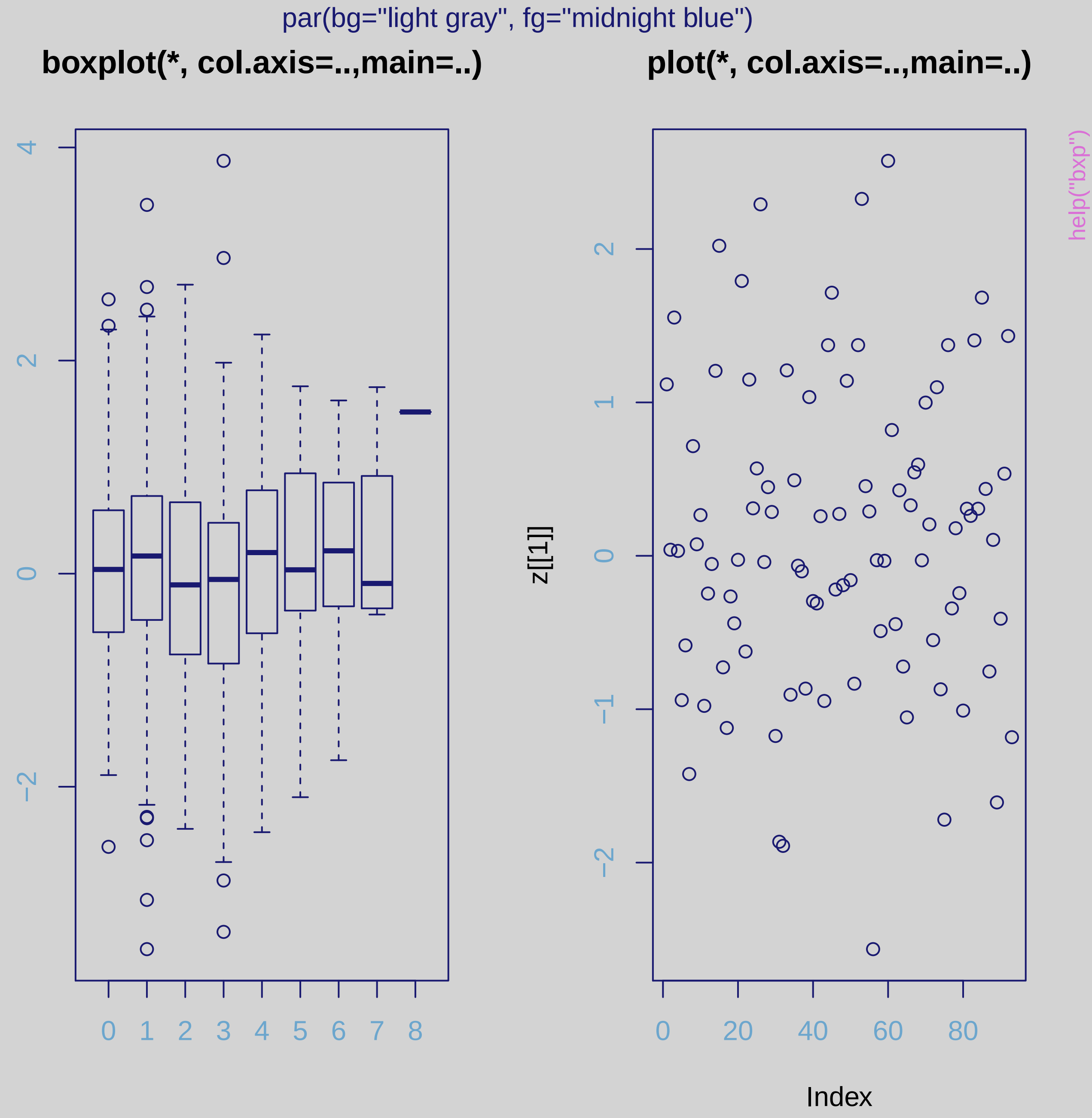

4
2
0
−2
−4
1
2
3
4
5

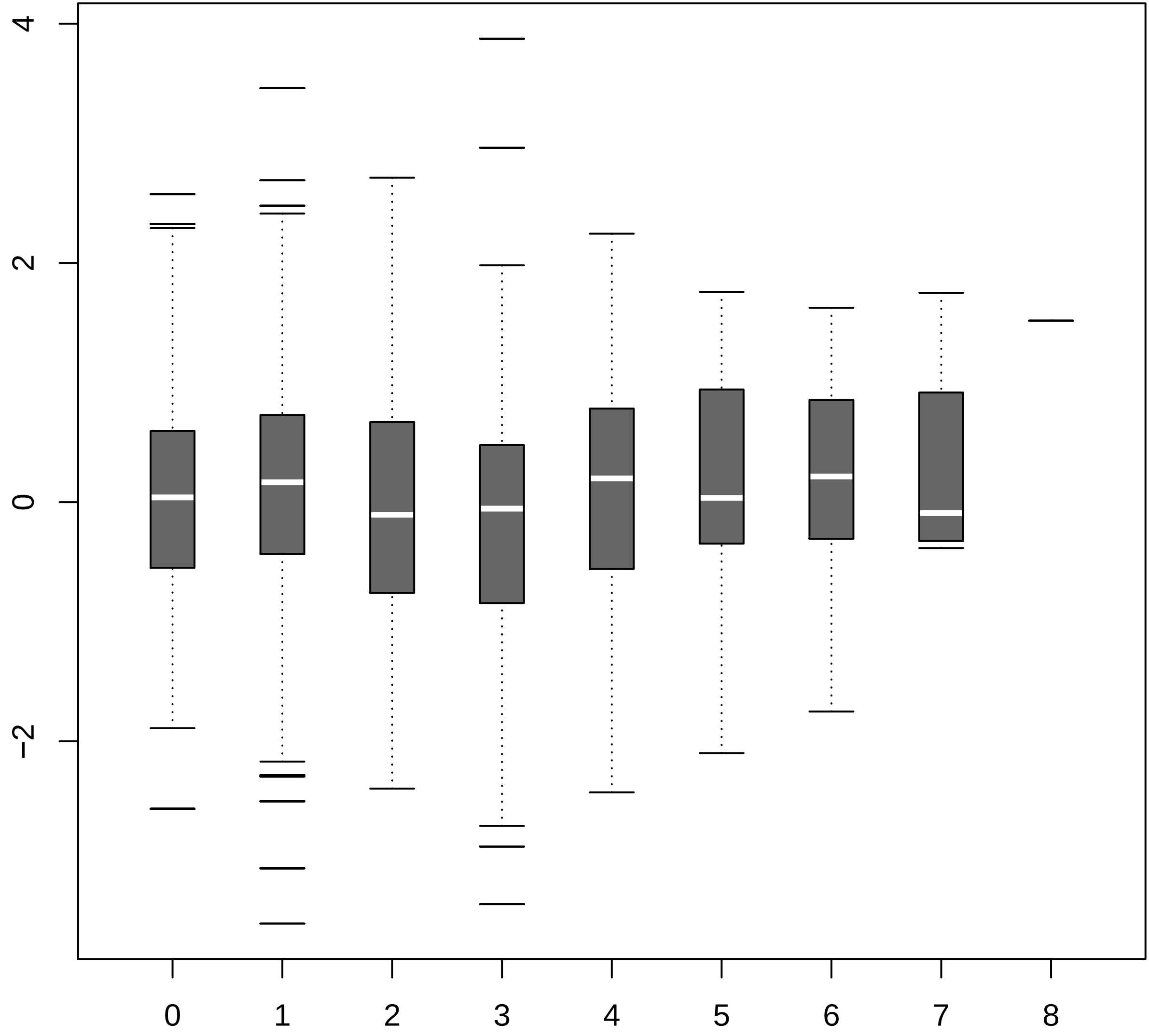

4
2
0
−2
−4
help("bxp")
bxp(*, frame= FALSE, outl= FALSE)
3
2
1
0
−1
−2
−3
1
2
3
4
5
... log='x', ylim=*
4
2
0
−2
−4
1
2
3
4
5



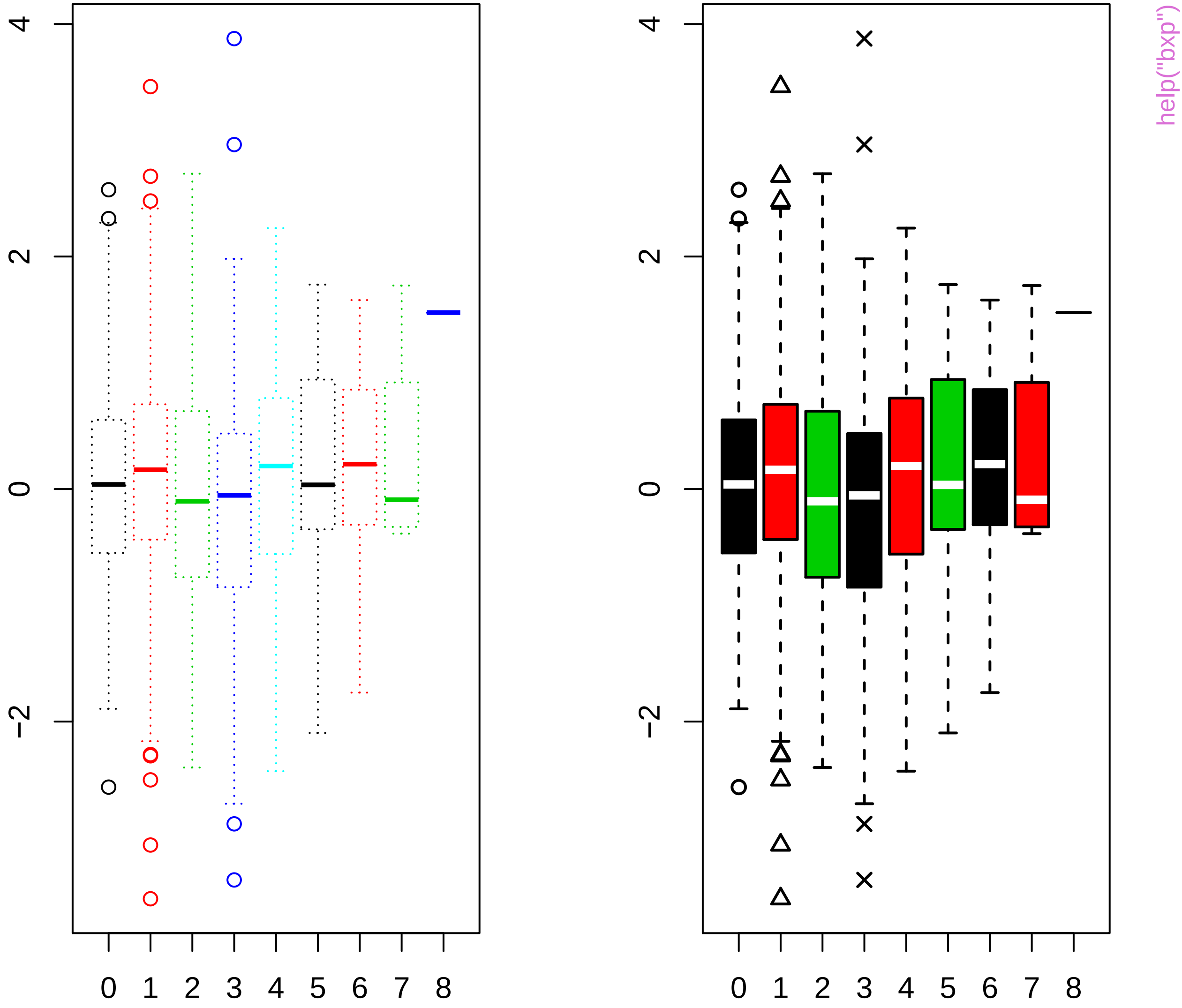
help("bxp")

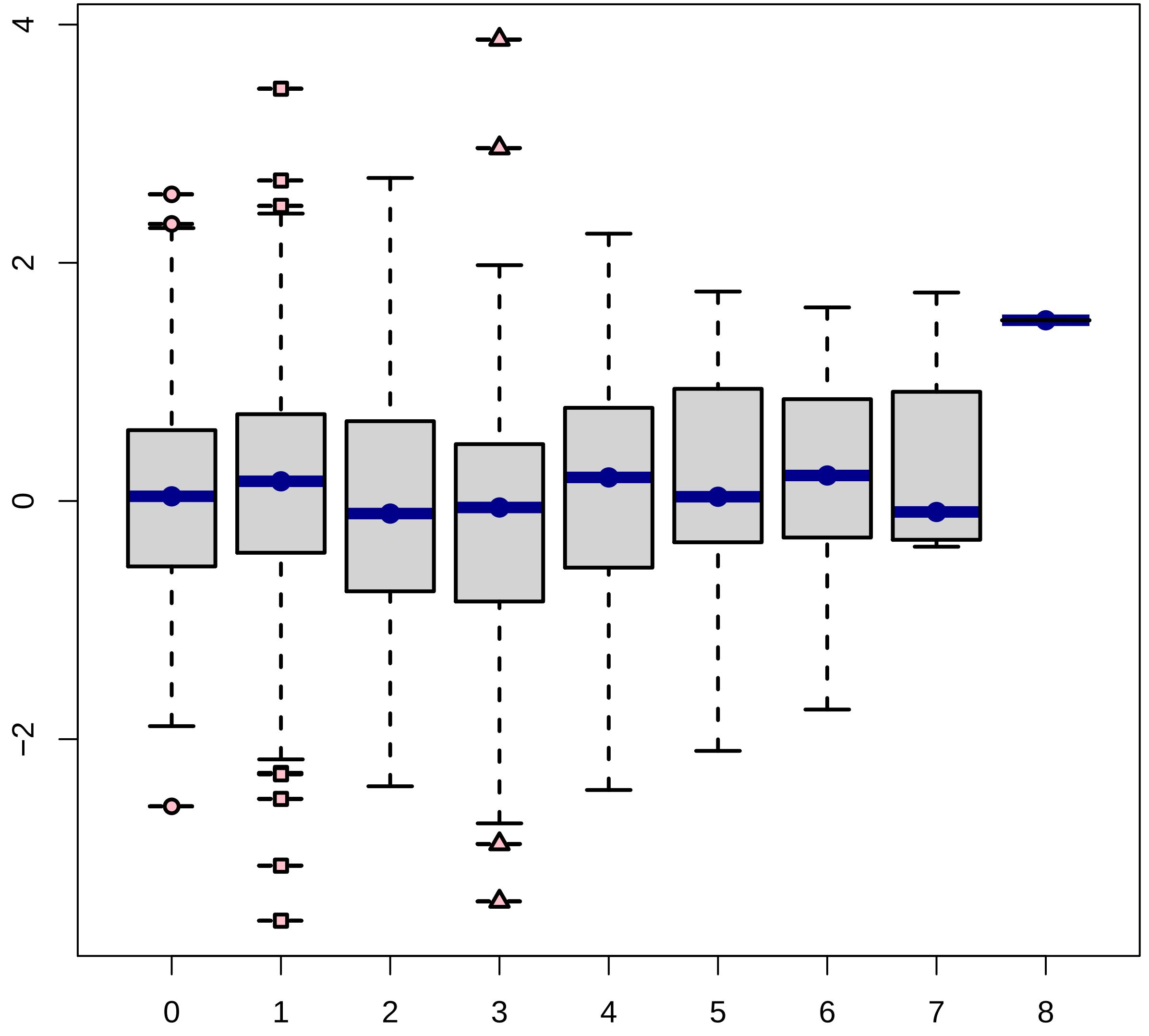

boxplot(z, whisklty = 3)
help("bxp")
4
2
0
−2
0
1
2
3
4
5
6
7
8


par(bg="light gray", fg="midnight blue")
boxplot(*, col.axis=..,main=..)
plot(*, col.axis=..,main=..)
help("bxp")
4
2
0
−2
0
1
2
3
4
5
6
7
8
z[[1]]
2
1
0
−1
−2
0
20
40
60
80
Index

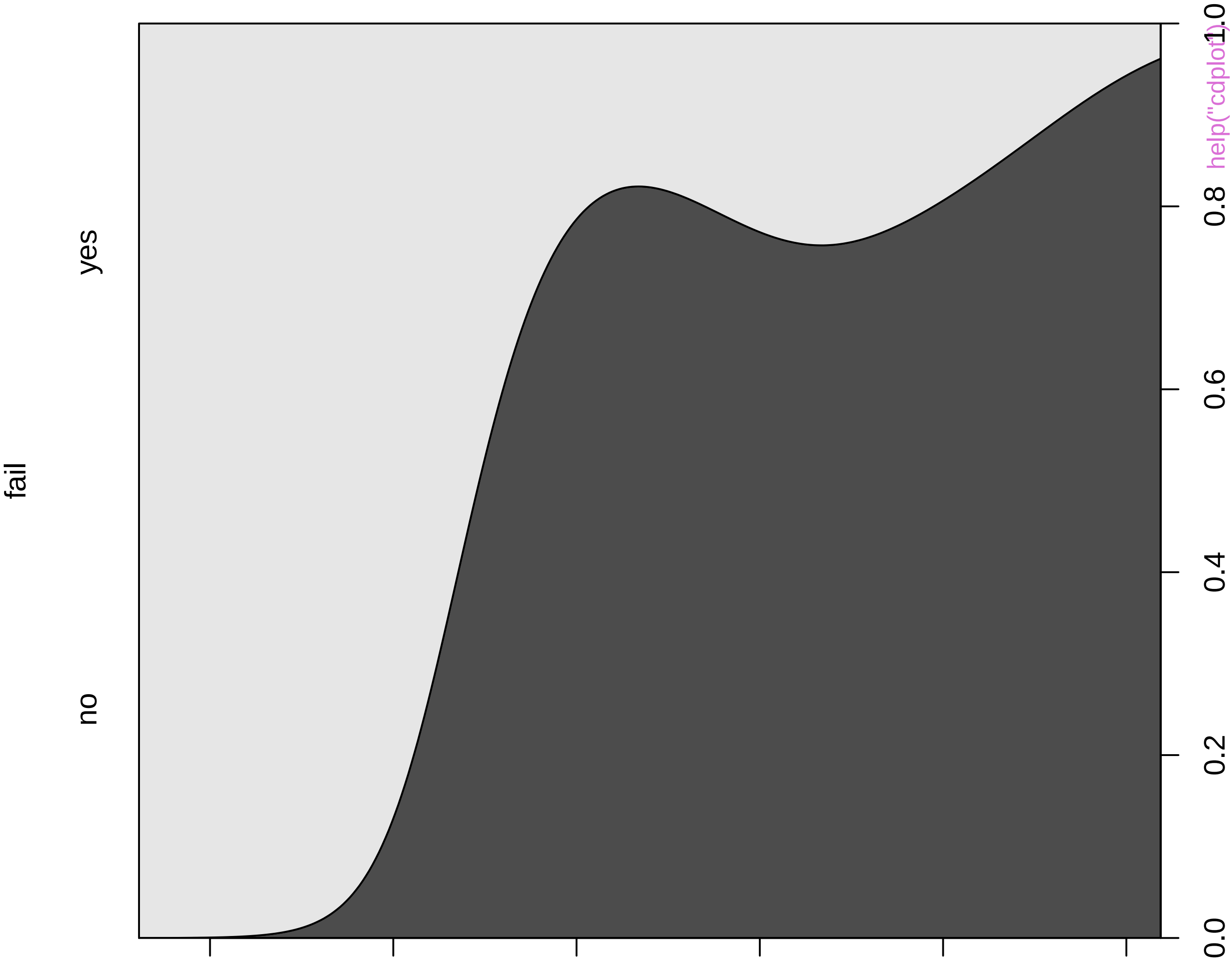


help("bxp")

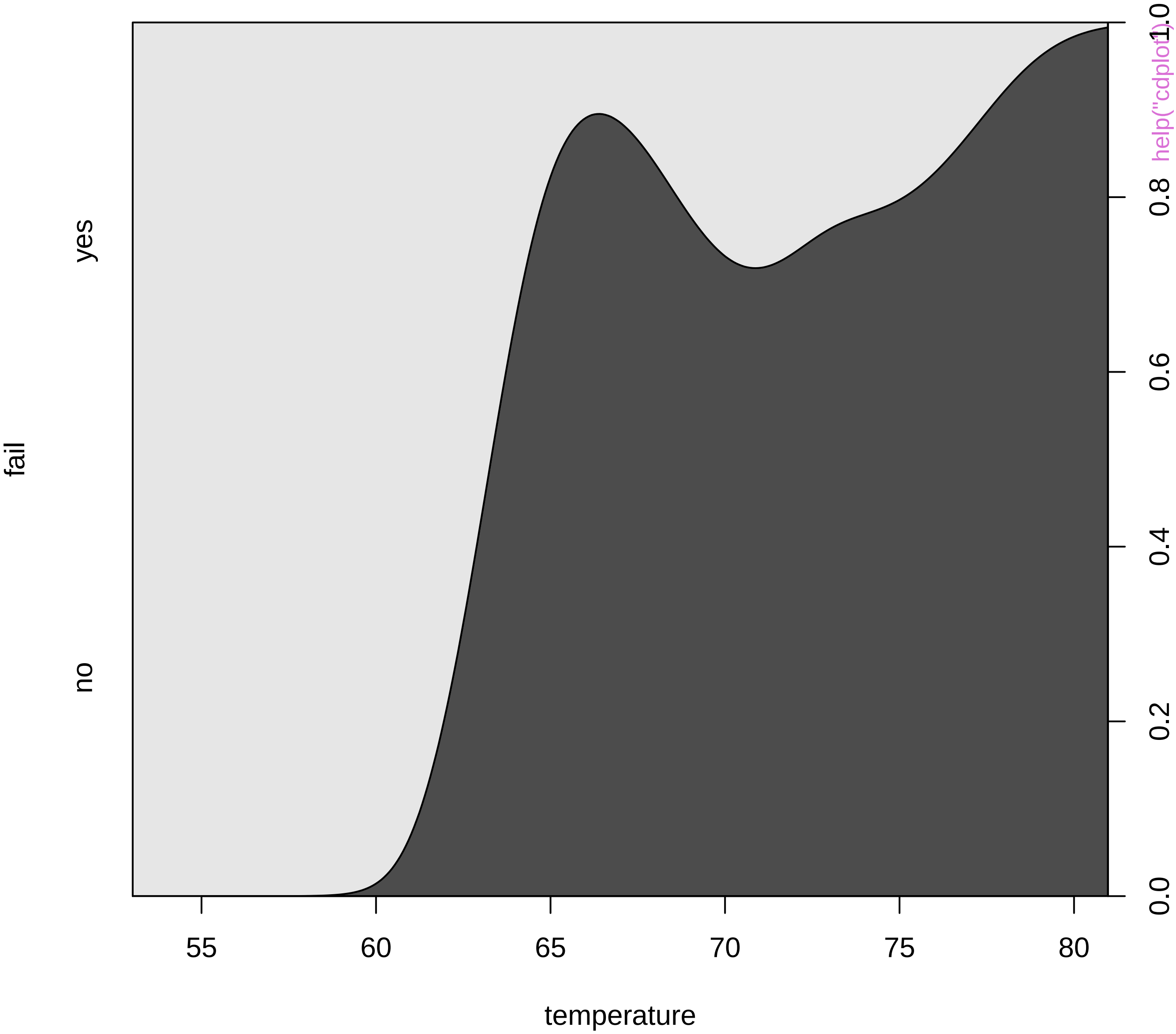

4
2
0
−2
0
1
2
3
4
5
6
7
8
4
2
0
−2
0
1
2
3
4
5
6
7
8
help("bxp")


4
2
0
−2
0
1
2
3
4
5
6
7
8

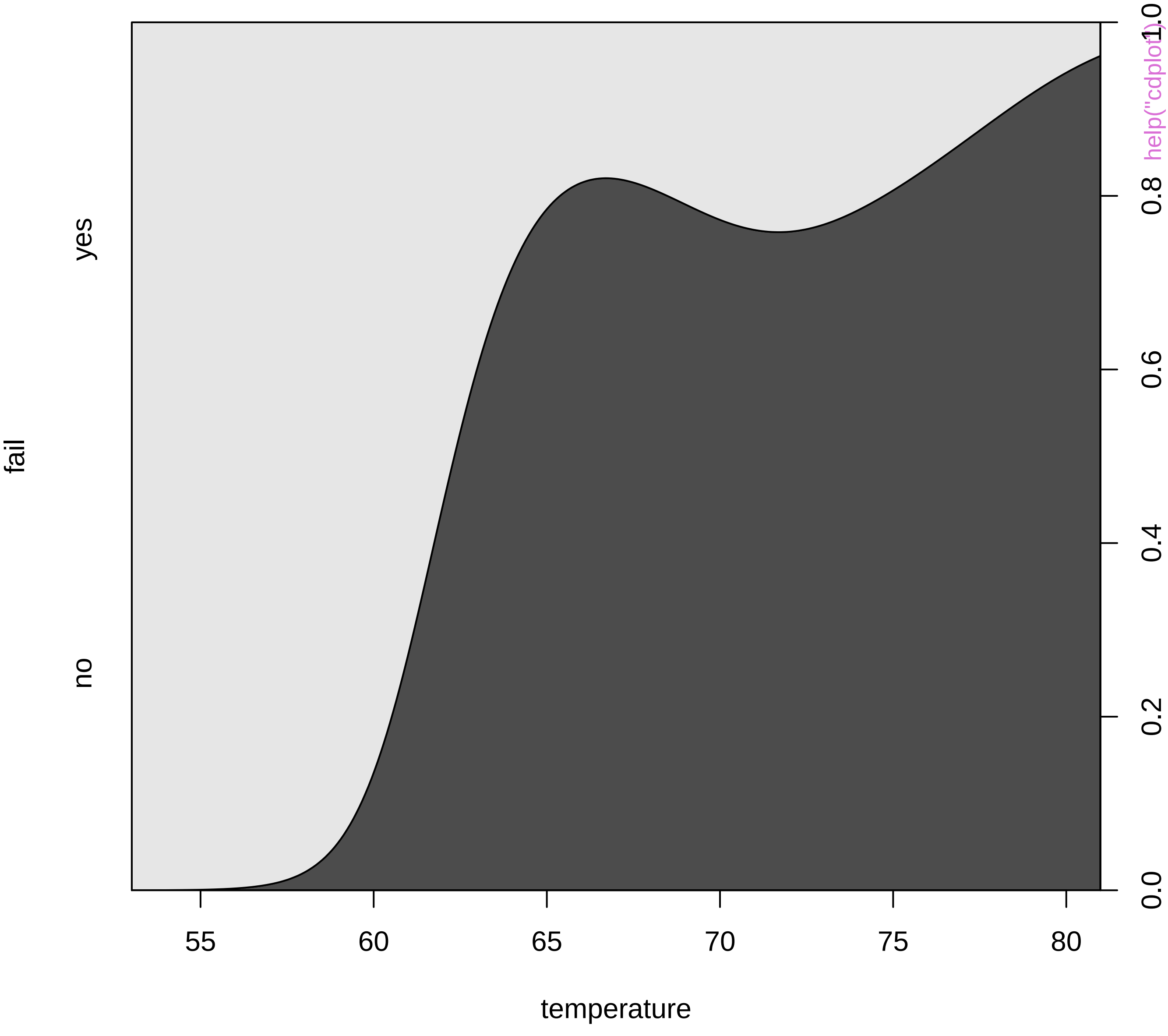
help("bxp")

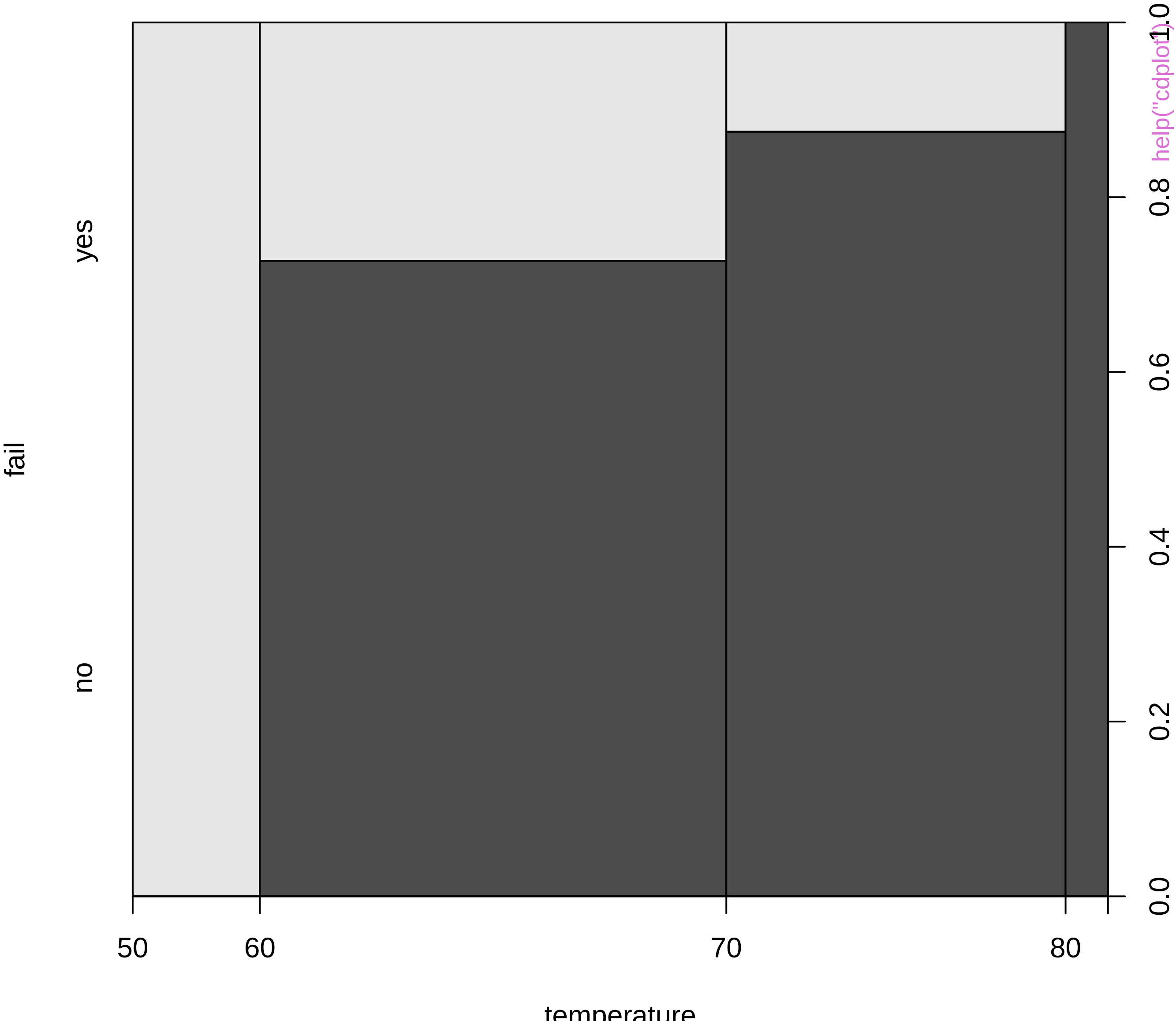


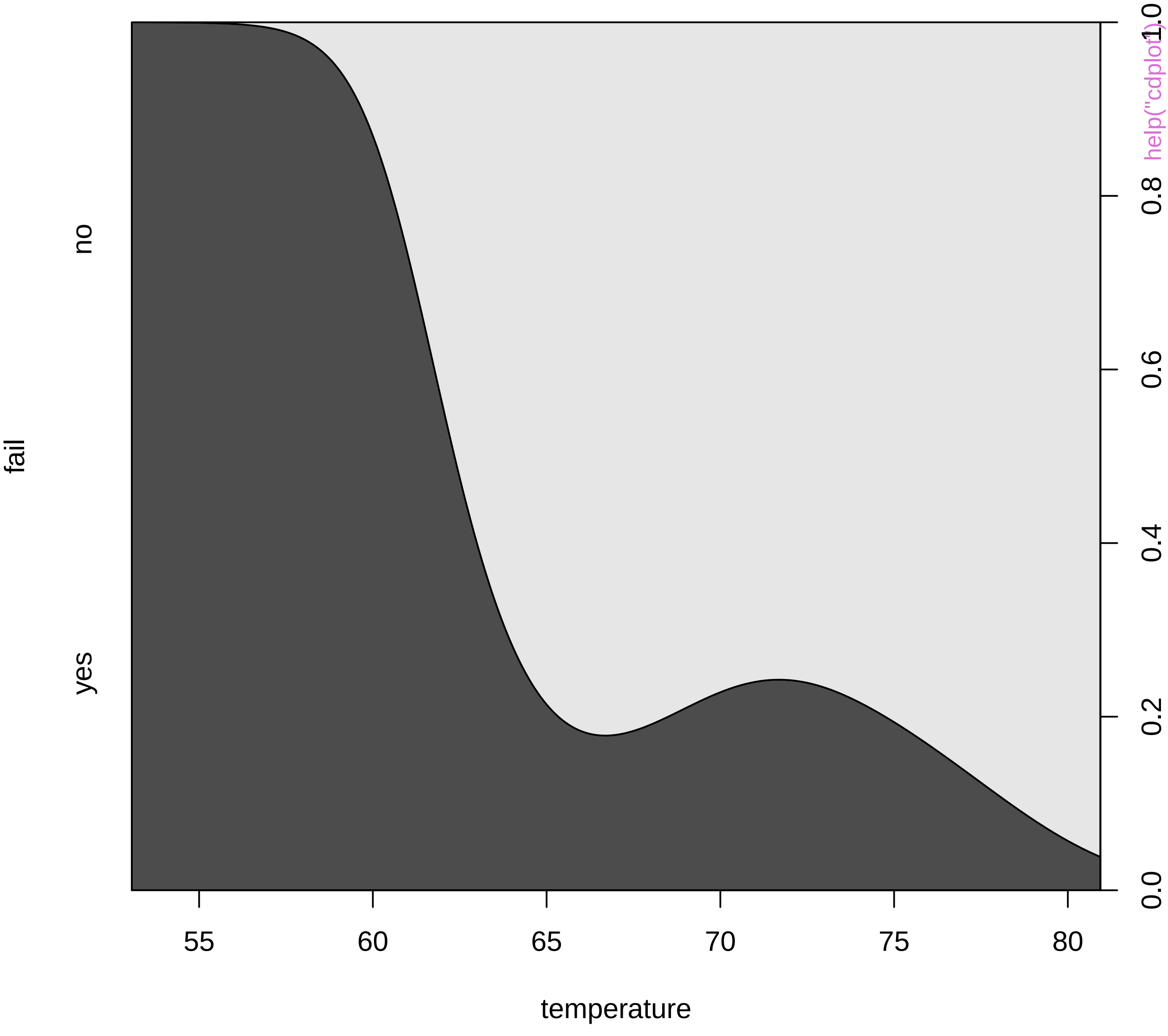
fail
yes
no
temperature
55
60
65
70
75
80
0.0
0.2
0.4
0.6
0.8
1.0
help("cdplot")



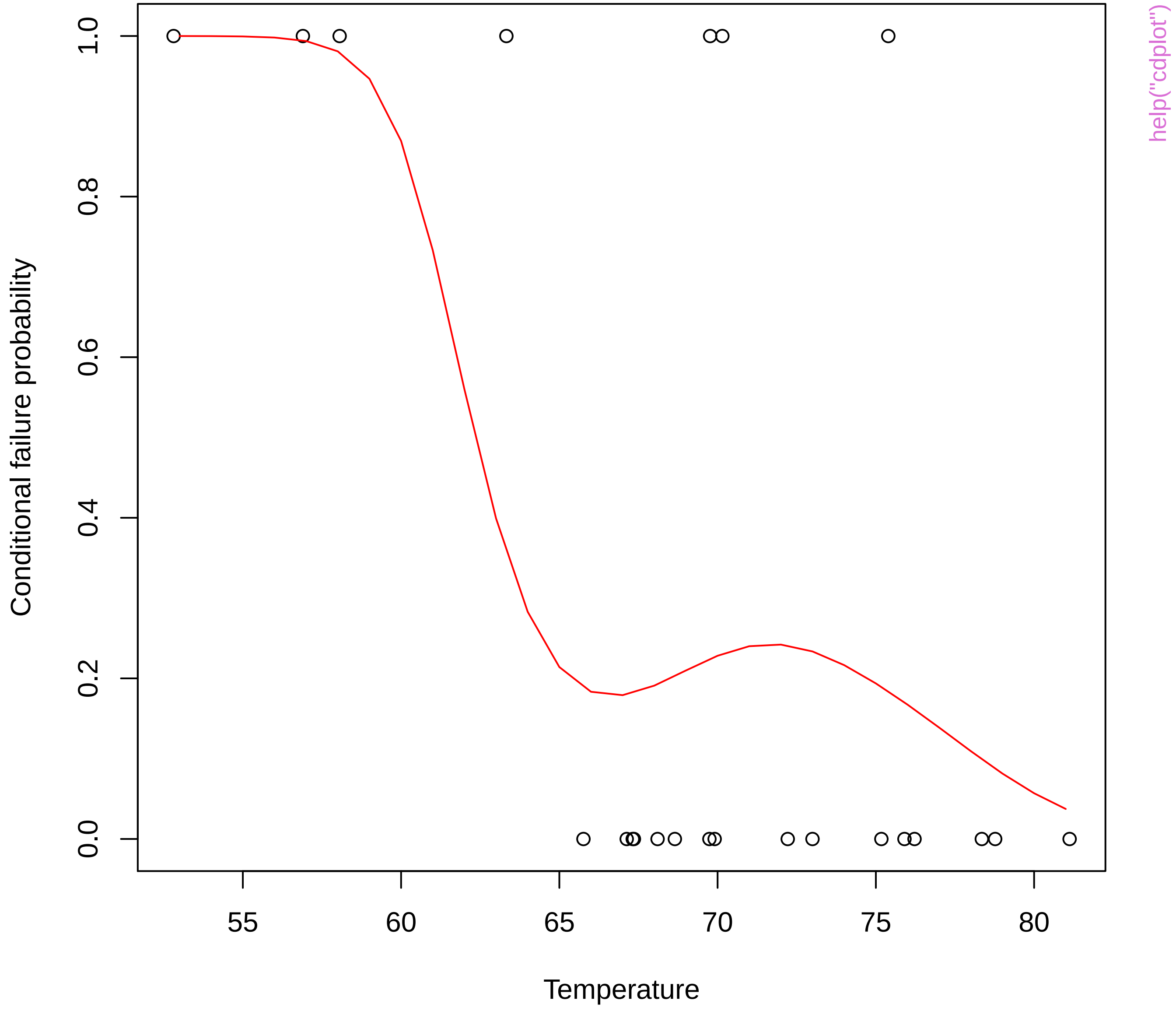
yes
no
fail
1.0
0.8
0.6
0.4
0.2
0.0
55
60
65
70
75
80
temperature
help("cdplot")

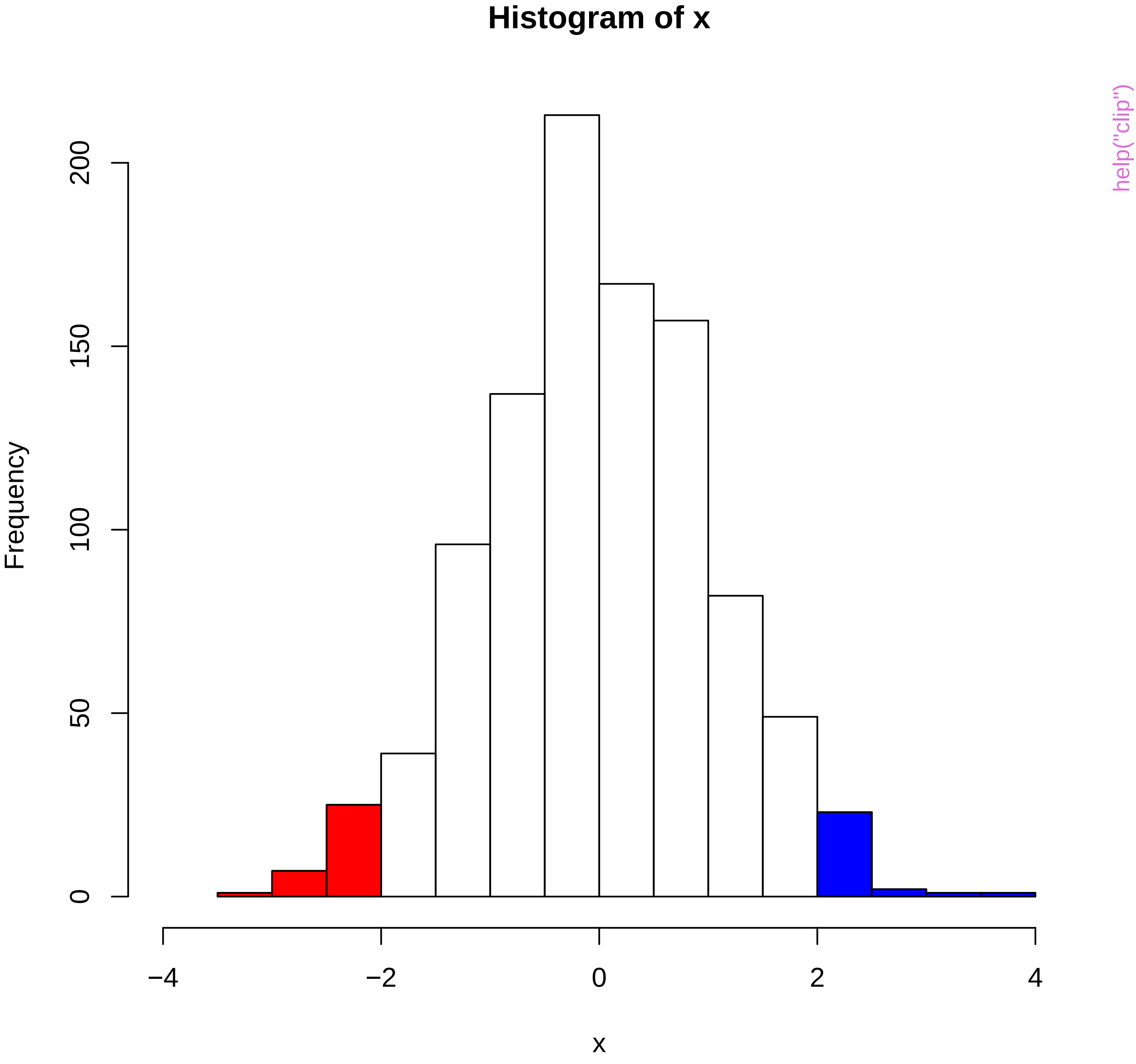

fail
yes
no
temperature
55
60
65
70
75
80
0.0
0.2
0.4
0.6
0.8
1.0
help("cdplot")

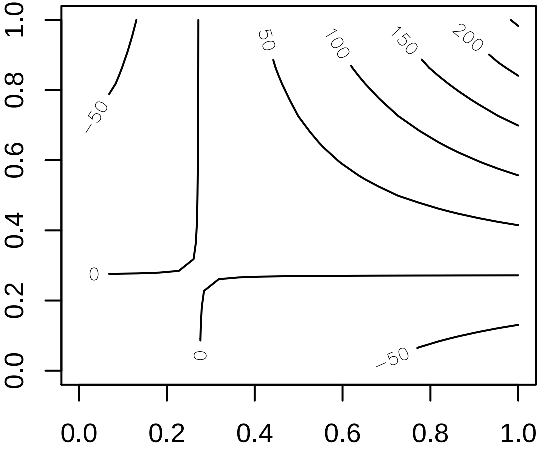

fail
yes
no
50
60
70
80
temperature
0.0
0.2
0.4
0.6
0.8
1.0
help("cdplot")



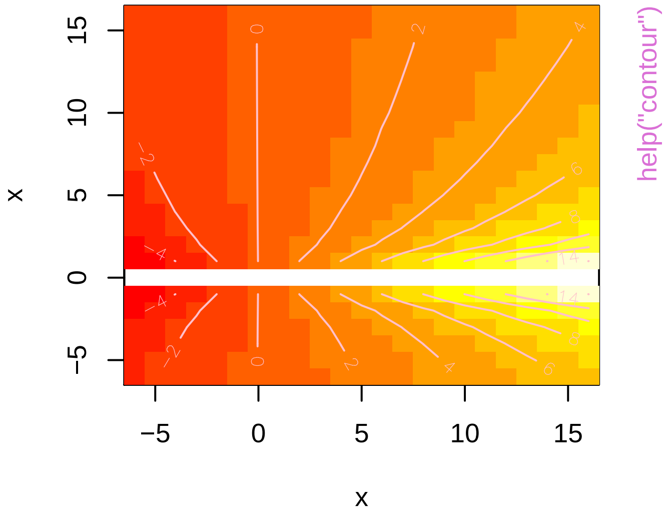
fail
no
yes
55
60
65
70
75
80
temperature
0.0
0.2
0.4
0.6
0.8
1.0
help("cdplot")


Conditional failure probability
0.0
0.2
0.4
0.6
0.8
1.0
55
60
65
70
75
80
Temperature
help("cdplot")

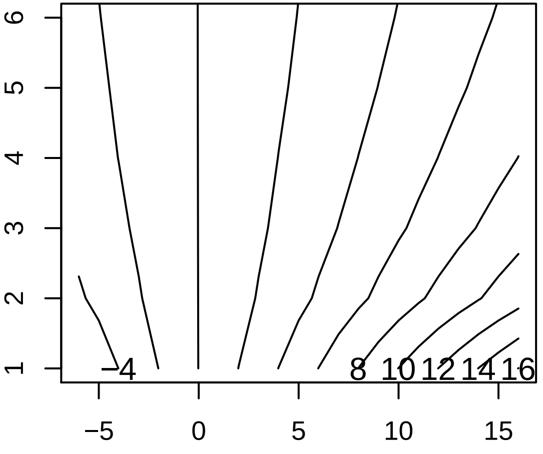

Histogram of x
Frequency
0
50
100
150
200
−4
−2
0
2
4
x
help("clip")



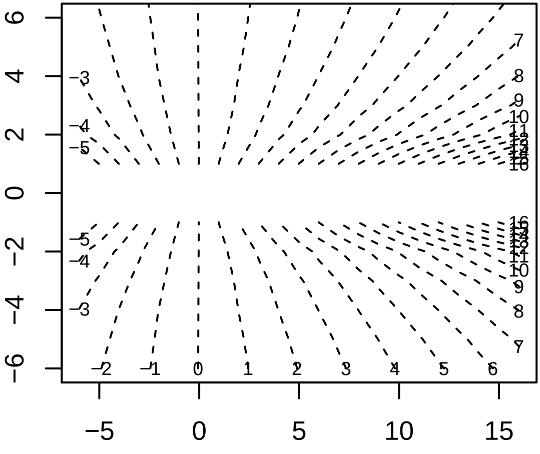
−50
0
50
100
150
200
0
−50
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0



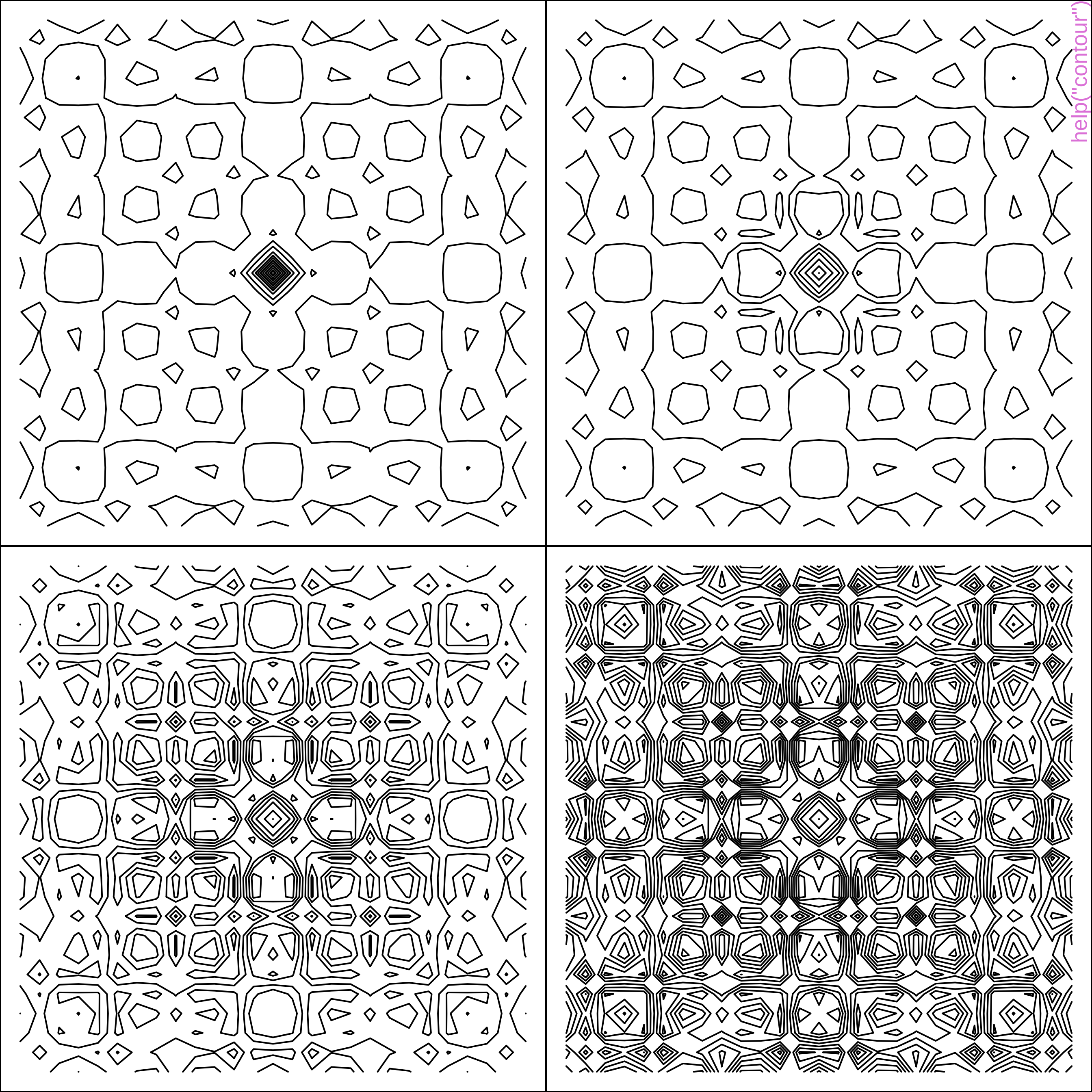
help("contour")
x
x
−5
0
5
10
15
−5
0
5
10
15
−4
−2
0
2
4
6
8
14



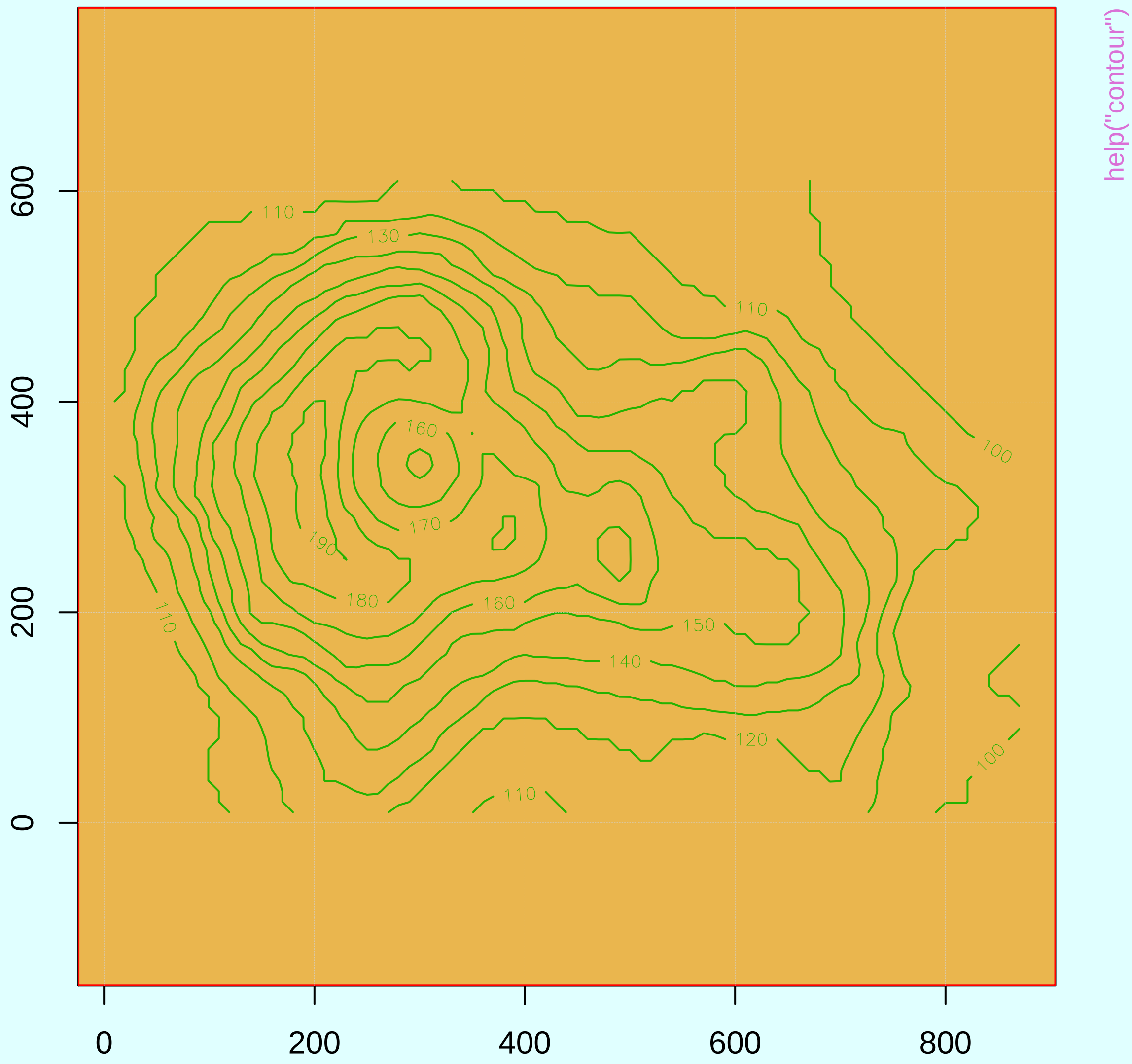
−4
8
10
12
14
16
1
2
3
4
5
6
−5
0
5
10
15

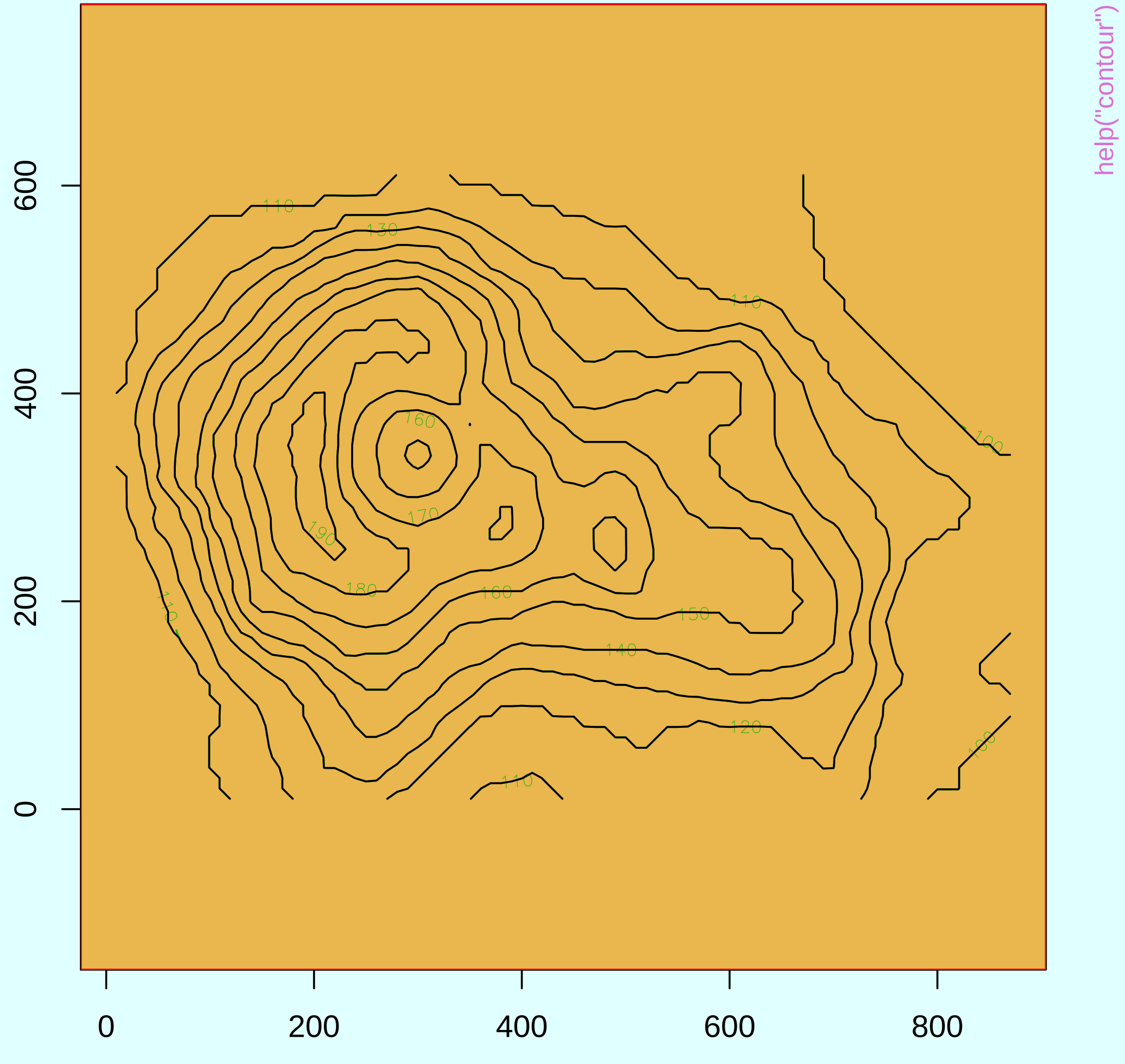


−3
−4
−5
7
8
9
10
11
16
−5
−4
−3
16
11
10
9
8
7
−2
−1
0
1
2
3
4
5
6
−6
−4
−2
0
2
4
6
−5
0
5
10
15

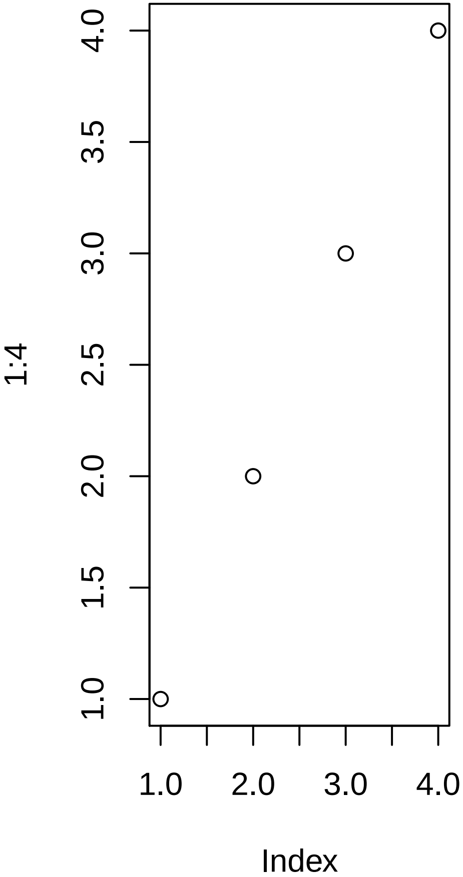

help("contour")

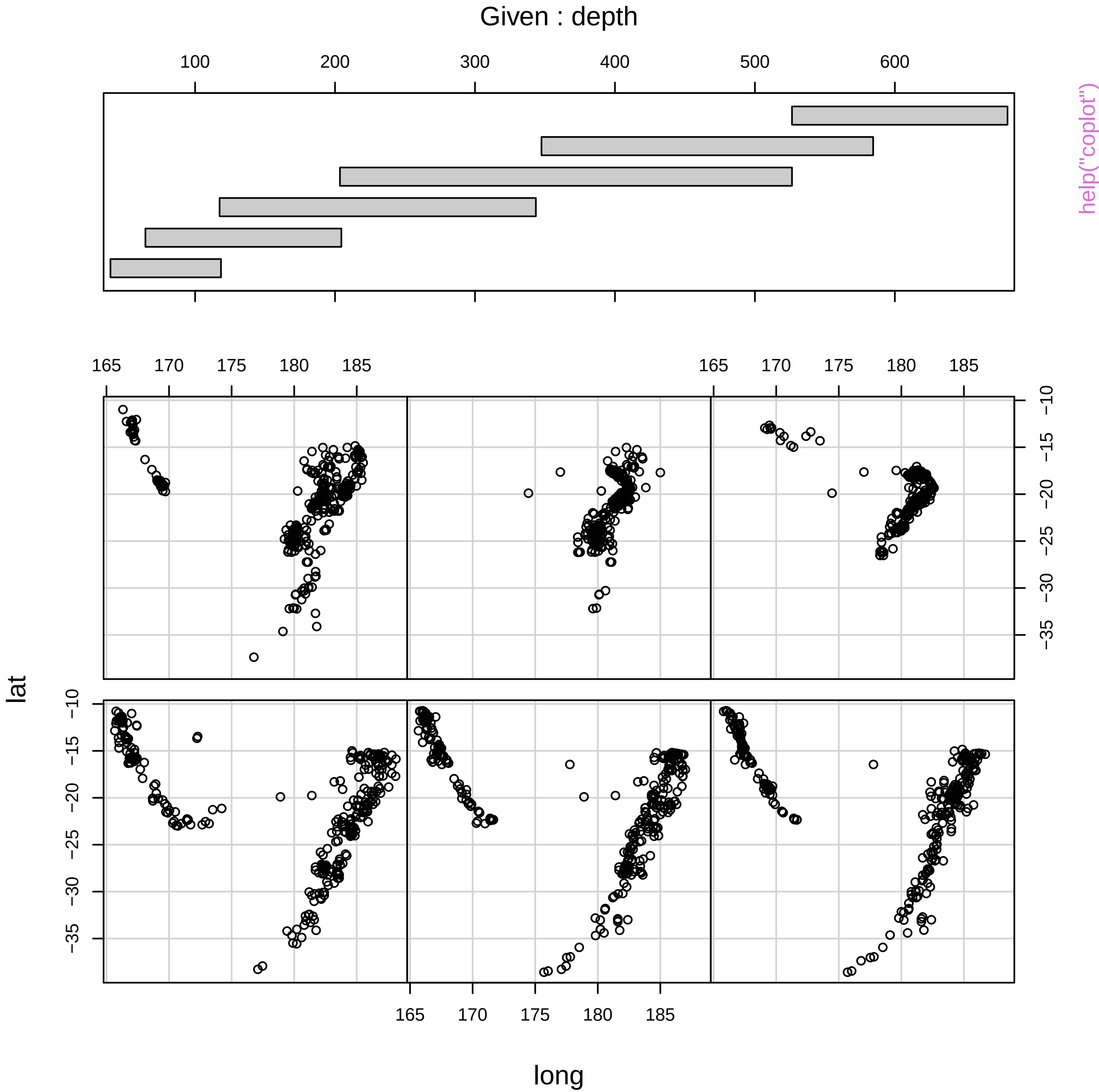
A Topographic Map of Maunga Whau

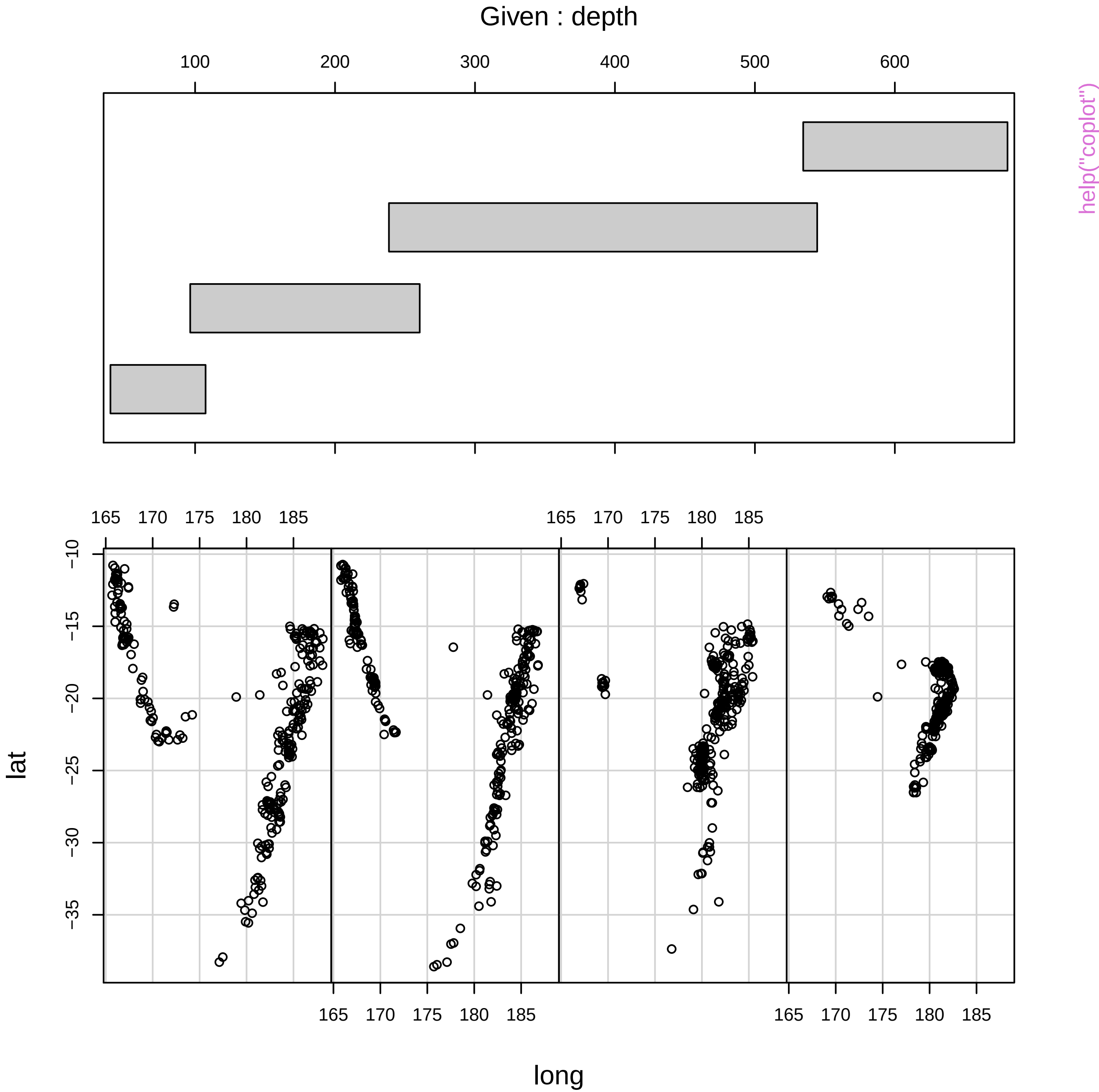

help("contour")
600
400
200
0
0
200
400
600
800
110
130
110
100
160
170
190
180
160
150
140
120
110
100
110

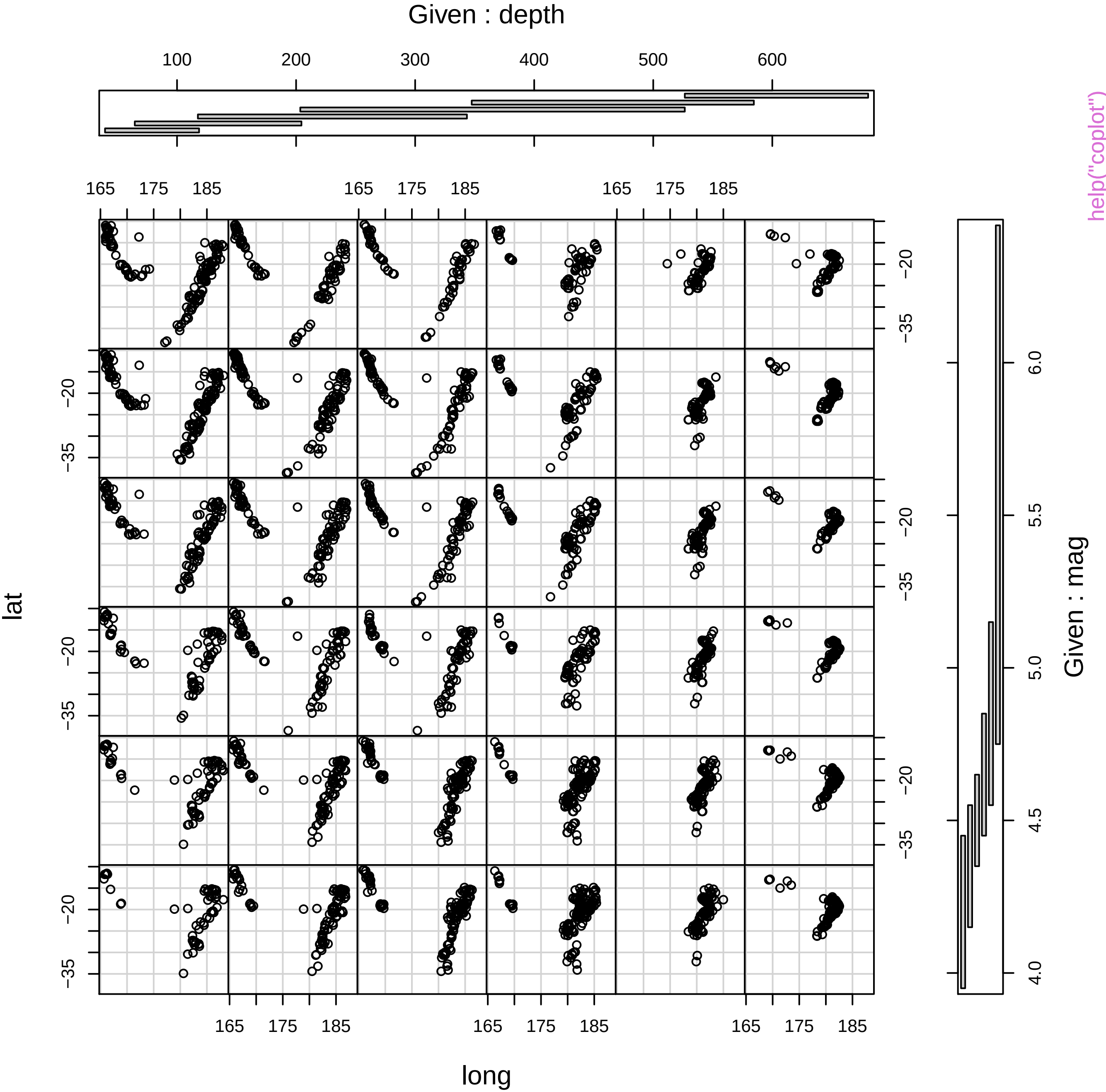


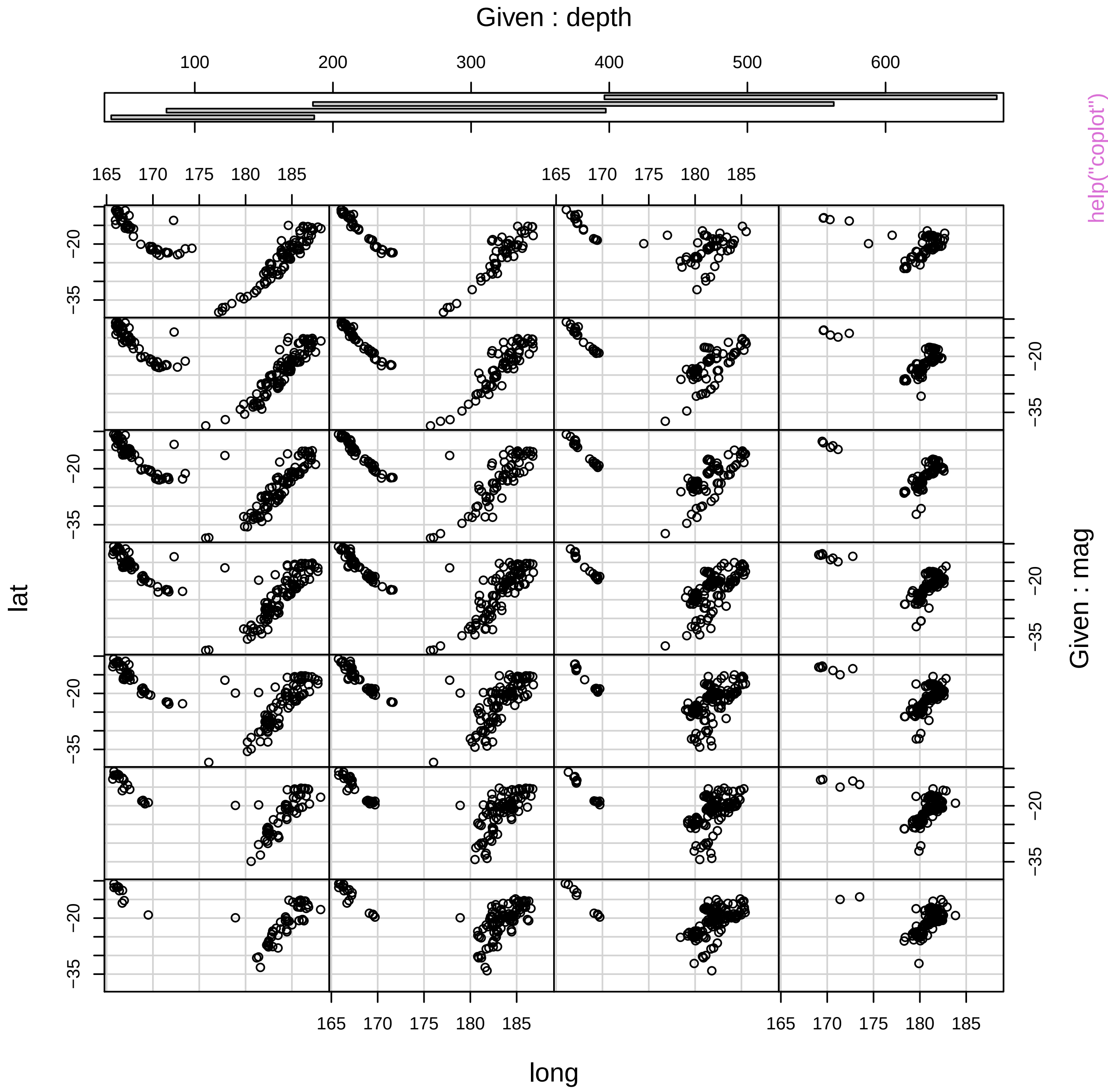
0
200
400
600
0
200
400
600
800
110
130
110
100
160
170
190
180
160
150
140
110
120
100
110
help("contour")

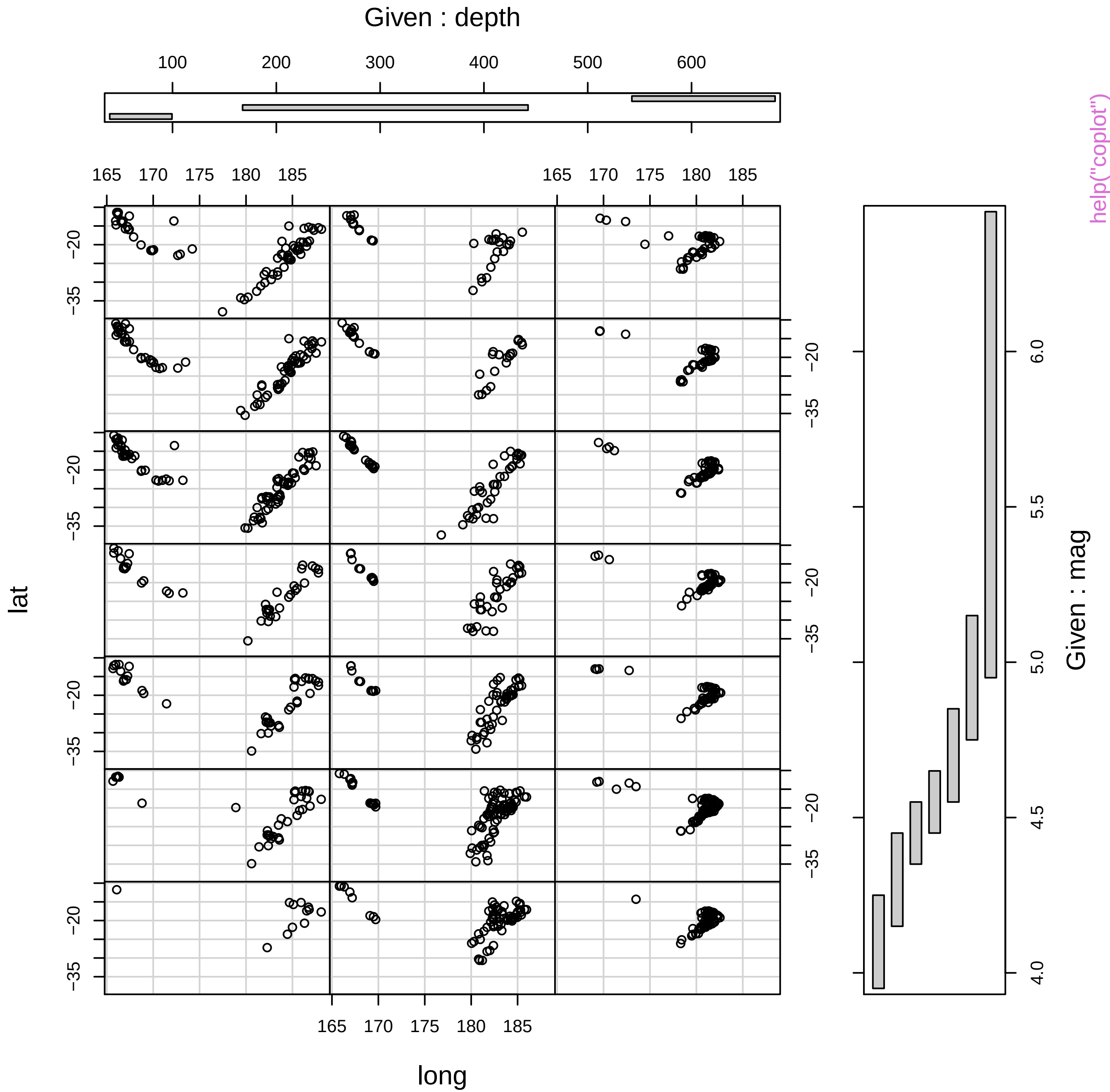

1:4
1.0
1.5
2.0
2.5
3.0
3.5
4.0
1.0
2.0
3.0
4.0
Index


Given : depth
100
200
300
400
500
600
165
170
175
180
185
−10
−15
−20
−25
−30
−35
lat
long
help("coplot")

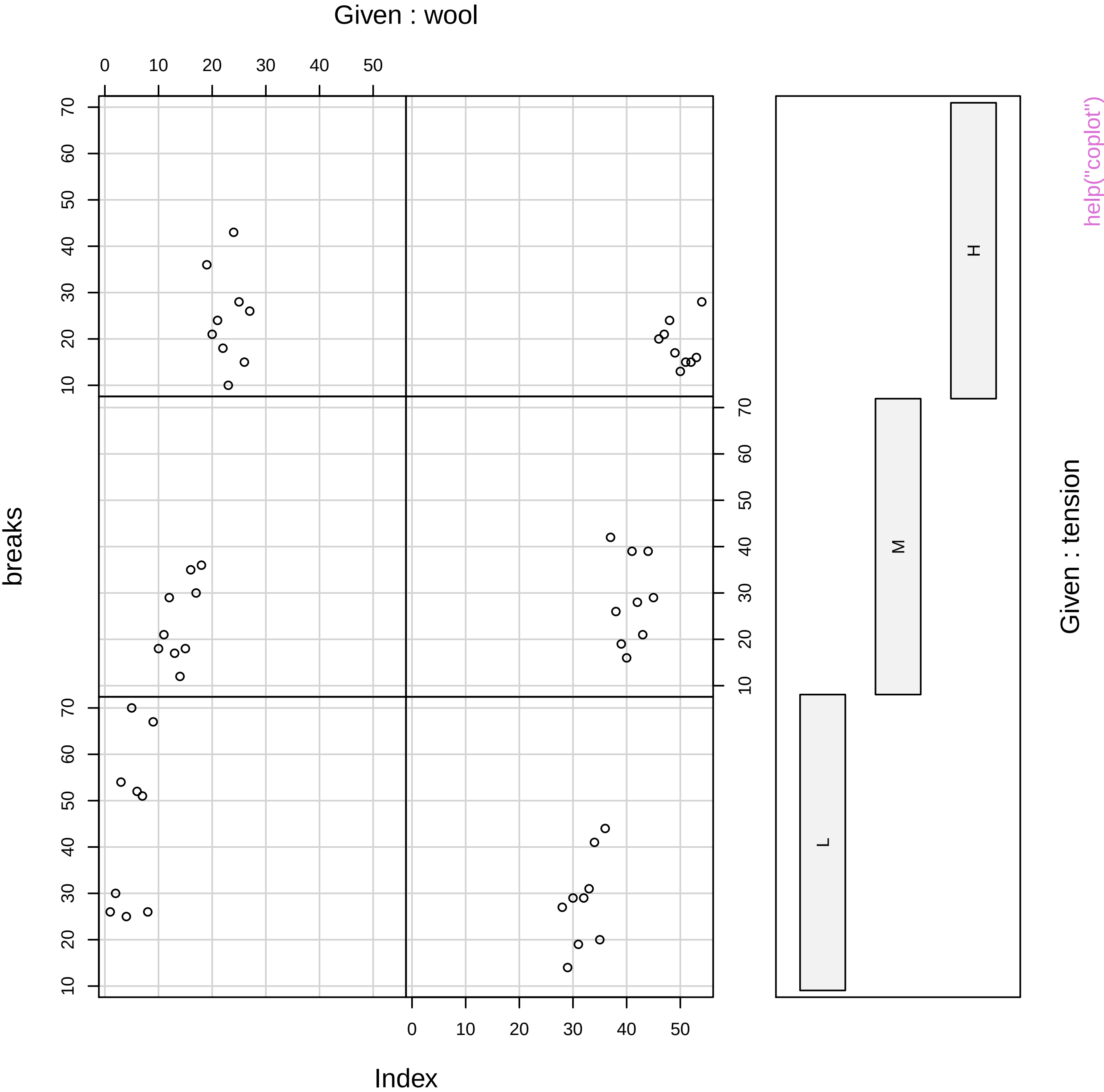

Given : depth
100
200
300
400
500
600
lat
−10
−15
−20
−25
−30
−35
165
170
175
180
185
long
help("coplot")

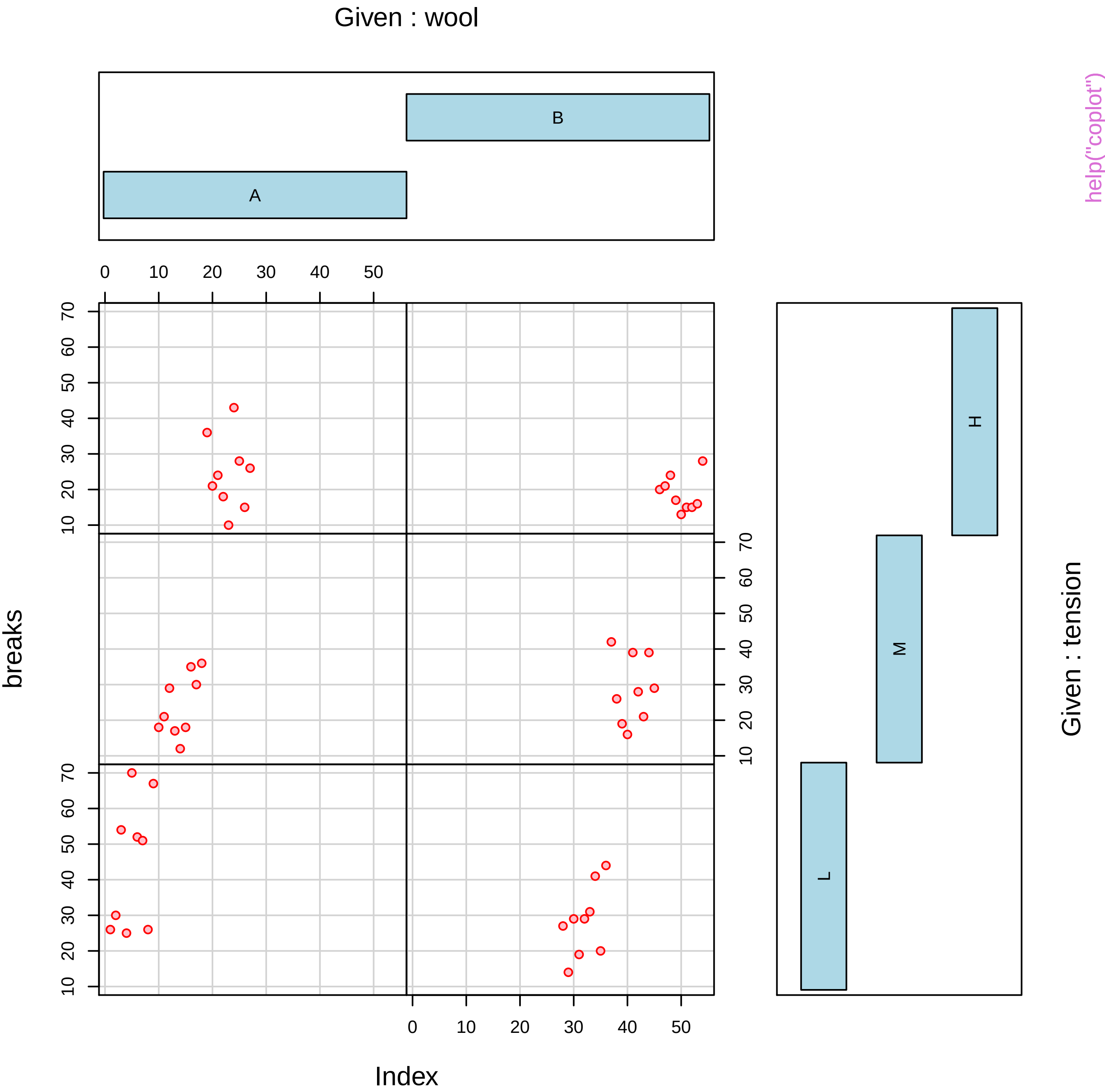

Given : depth
100
200
300
400
500
600
165
175
185
−20
−35
lat
long
Given : mag
4.0
4.5
5.0
5.5
6.0
help("coplot")

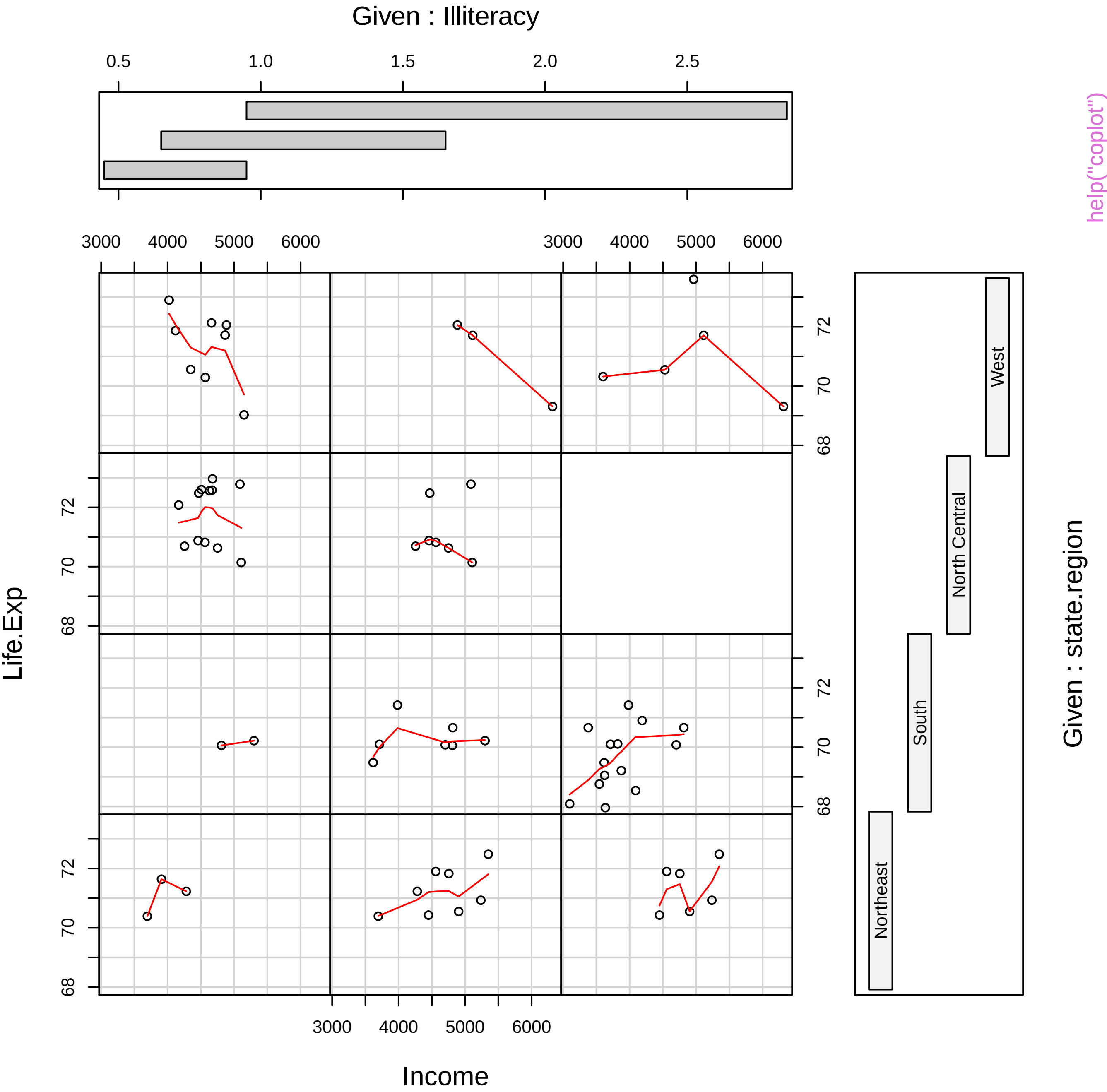

Given : depth
100
200
300
400
500
600
help("coplot")
165
170
175
180
185
-20
-35
lat
Given : mag
long

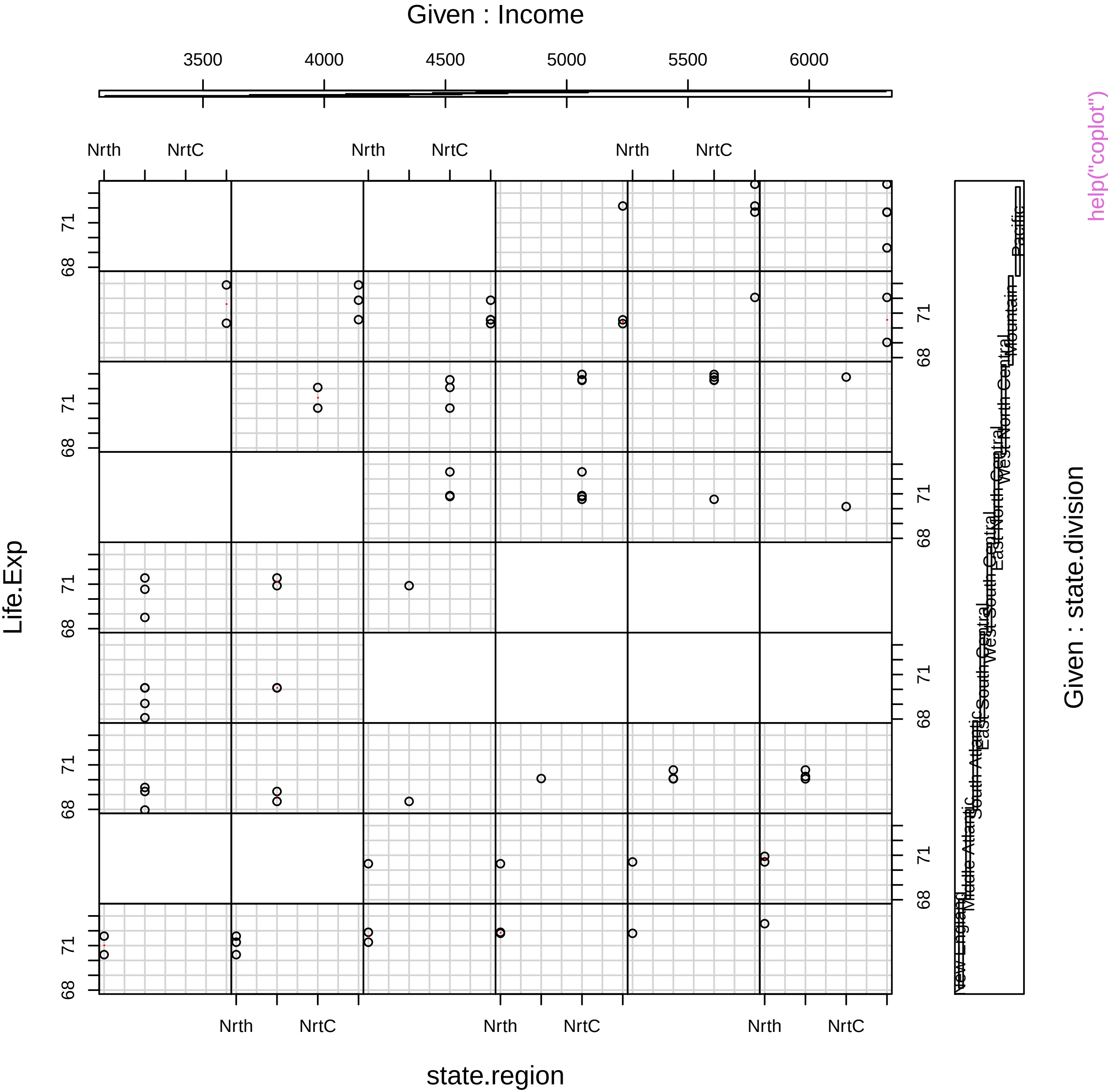


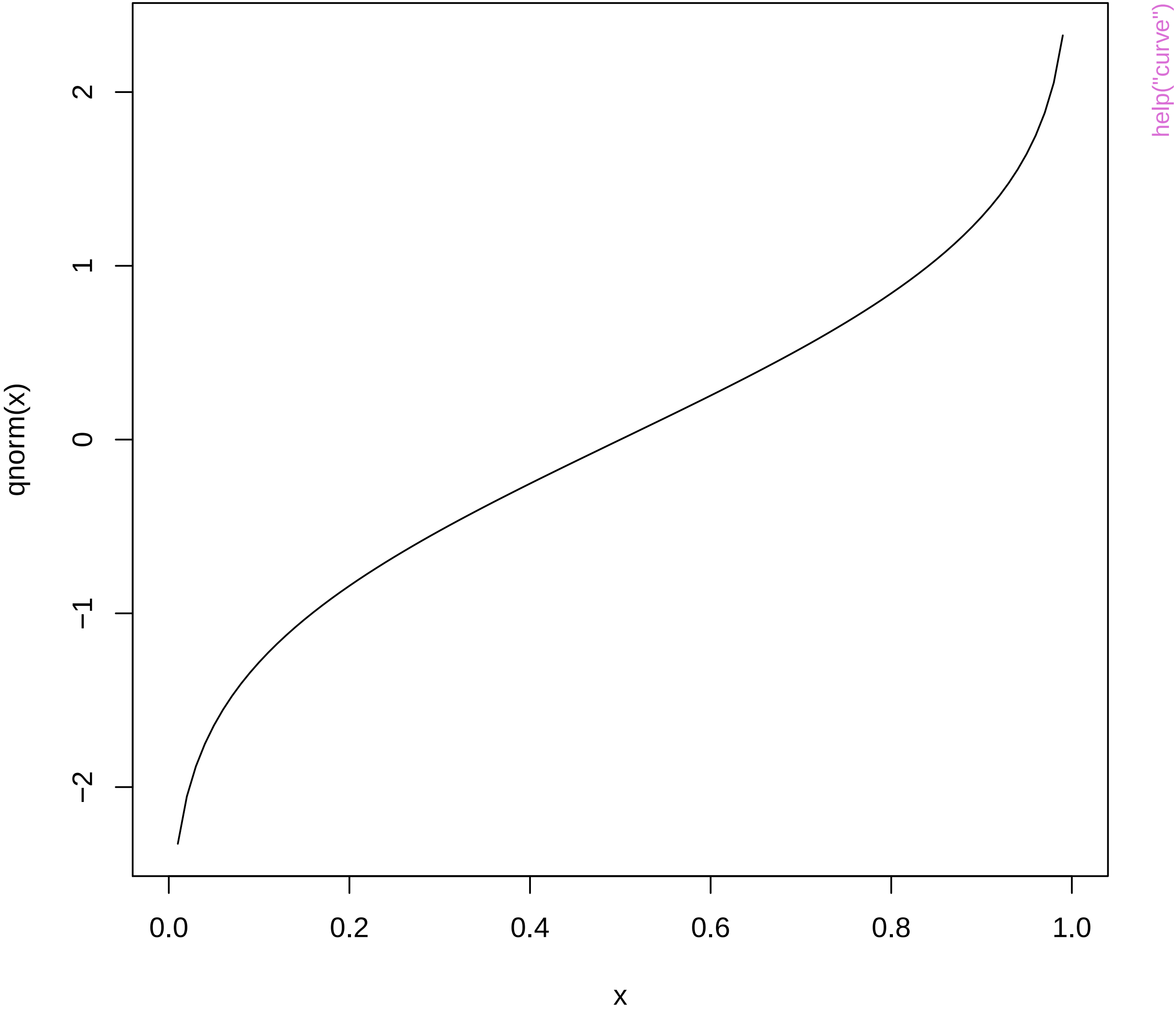
Given : depth
100
200
300
400
500
600
165
170
175
180
185
lat
−20
−35
long
Given : mag
4.0
4.5
5.0
5.5
6.0
help("coplot")

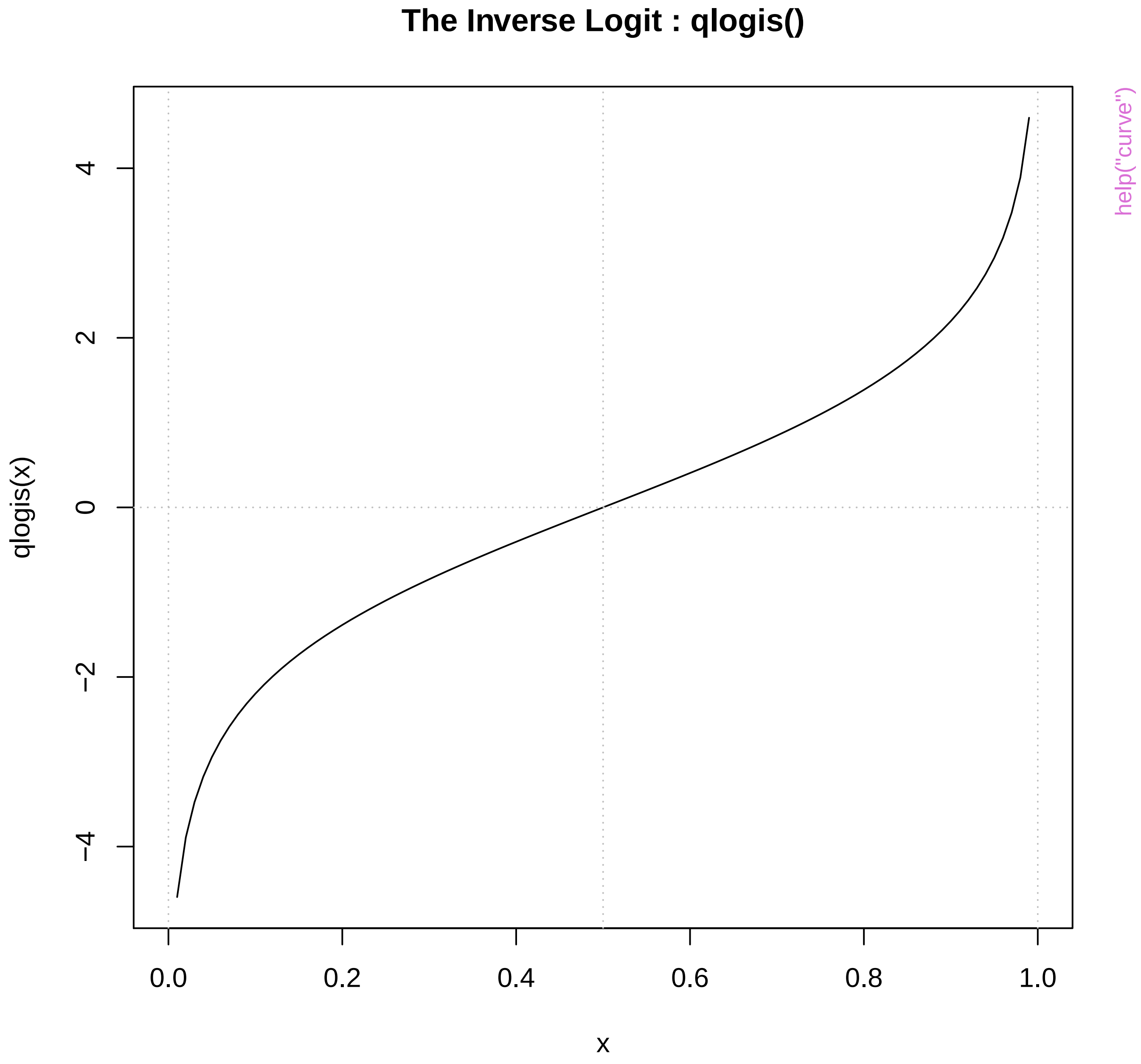

Given : wool
0
10
20
30
40
50
70
60
50
40
30
20
10
breaks
Index
Given : tension
L
M
H
help("coplot")

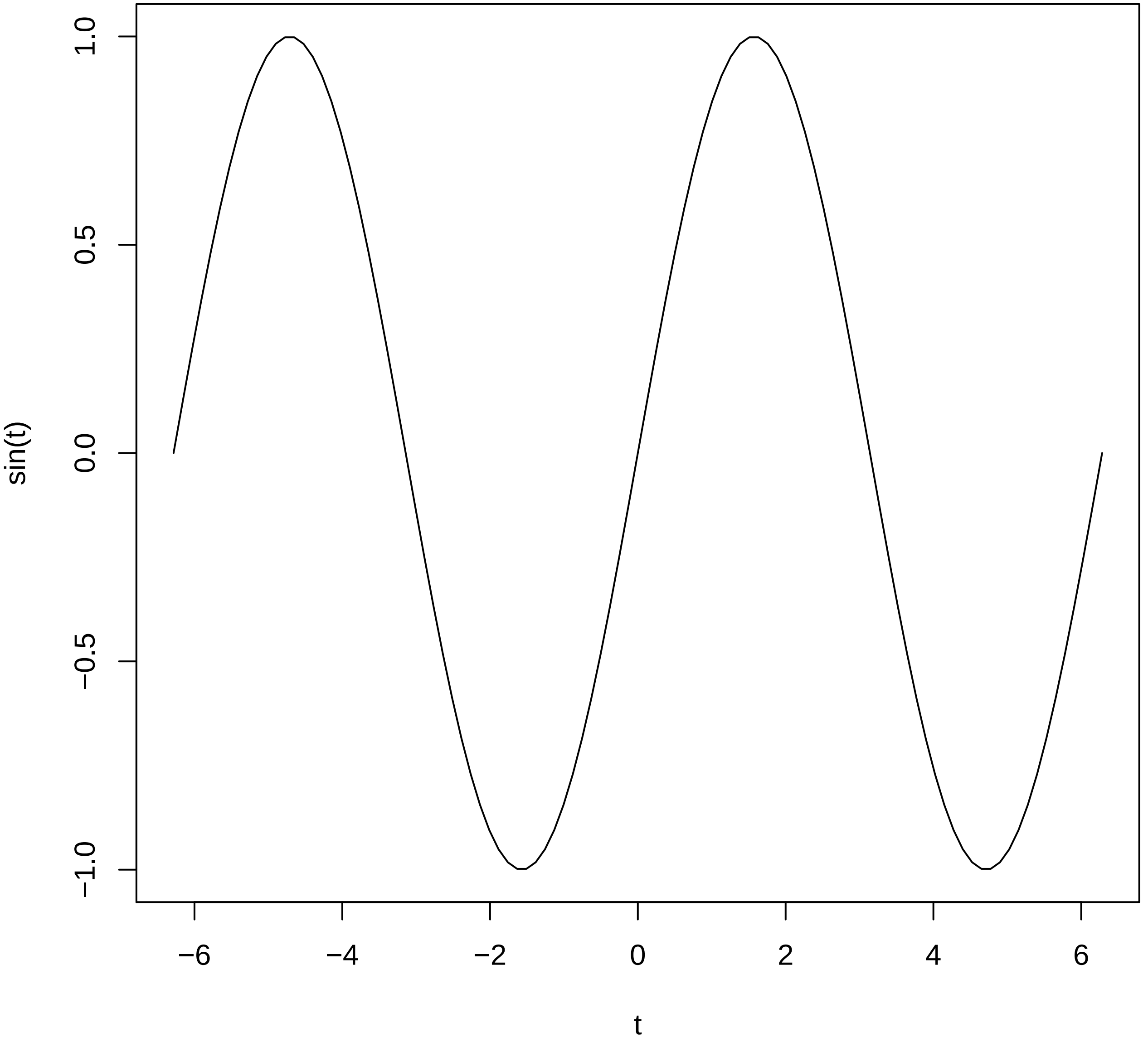

Given : wool
B
A
0
10
20
30
40
50
10
20
30
40
50
60
70
H
M
L
breaks
Given : tension
Index
help("coplot")

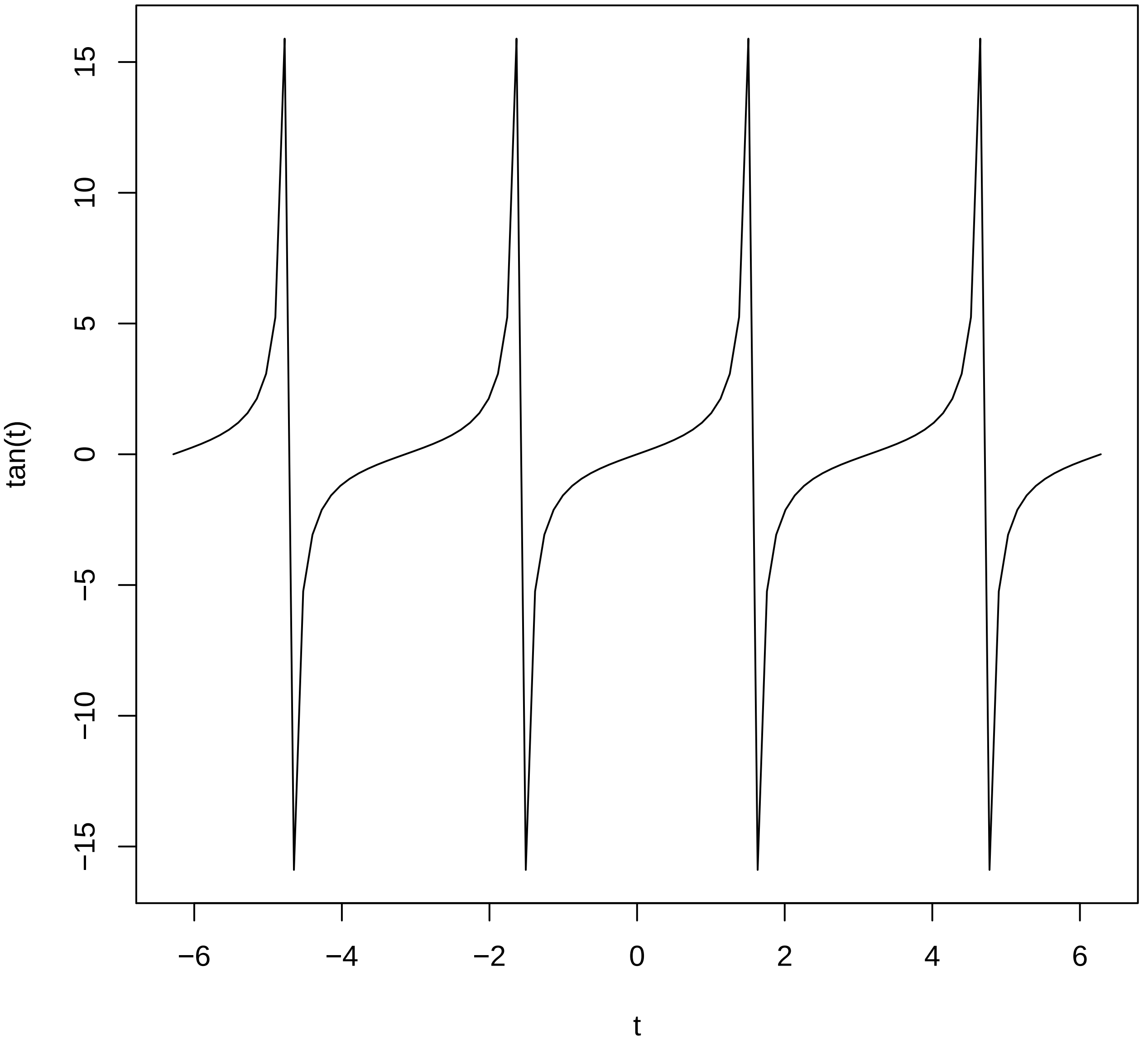

Given : Illiteracy
0.5
1.0
1.5
2.0
2.5
3000
4000
5000
6000
68
70
72
Life.Exp
Income
Given : state.region
Northeast
South
North Central
West
help("coplot")


Given : Income
3500
4000
4500
5000
5500
6000
Nrth
NrtC
71
68
Life.Exp
state.region
Given : state.division
New England
Middle Atlantic
South Atlantic
East South Central
West South Central
East North Central
West North Central
Mountain
Pacific
help("coplot")


2
1
0
−1
−2
qnorm(x)
0.0
0.2
0.4
0.6
0.8
1.0
x
help("curve")

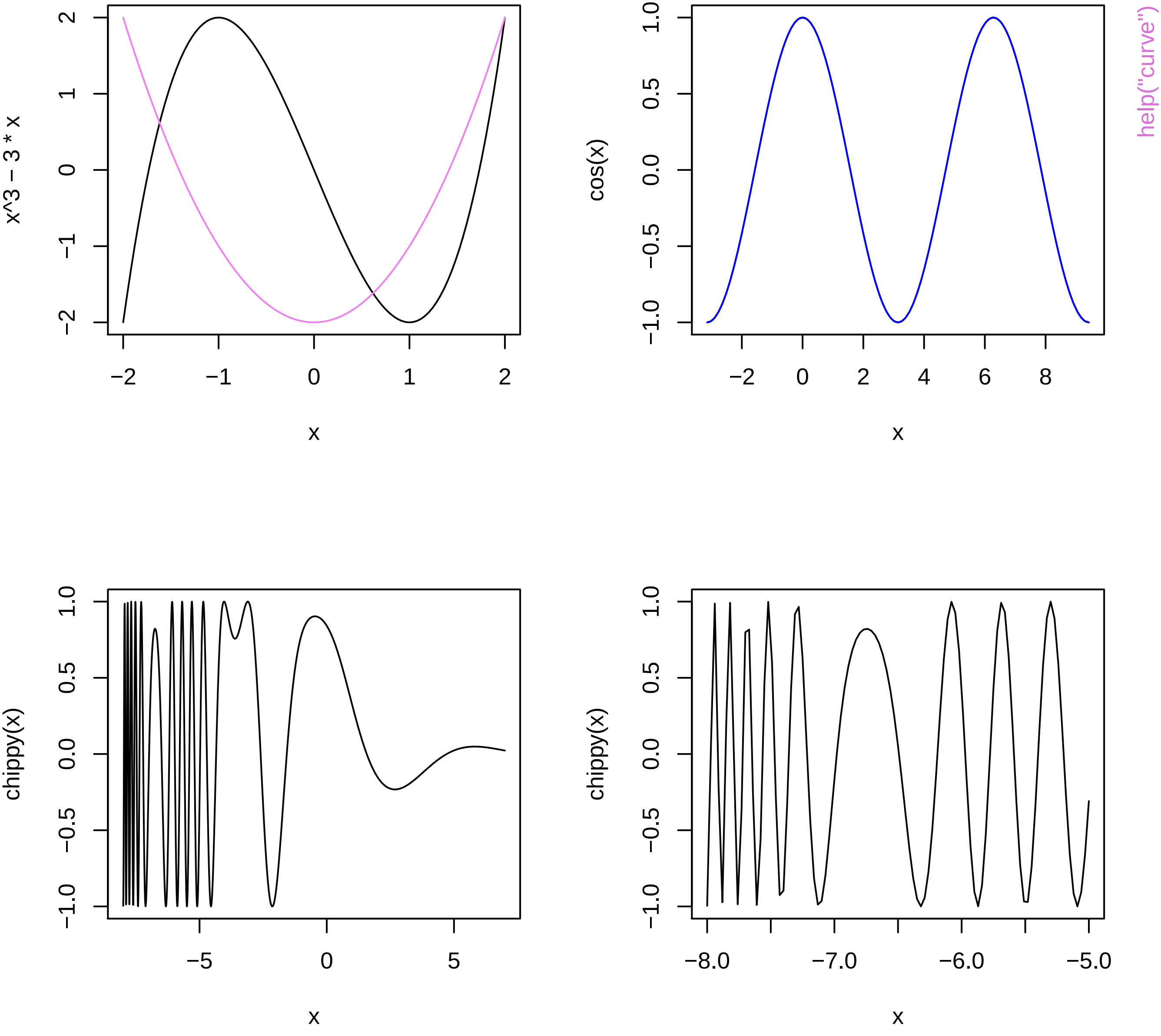

The Inverse Logit : qlogis()
help("curve")
qlogis(x)
4
2
0
−2
−4
0.0
0.2
0.4
0.6
0.8
1.0
x

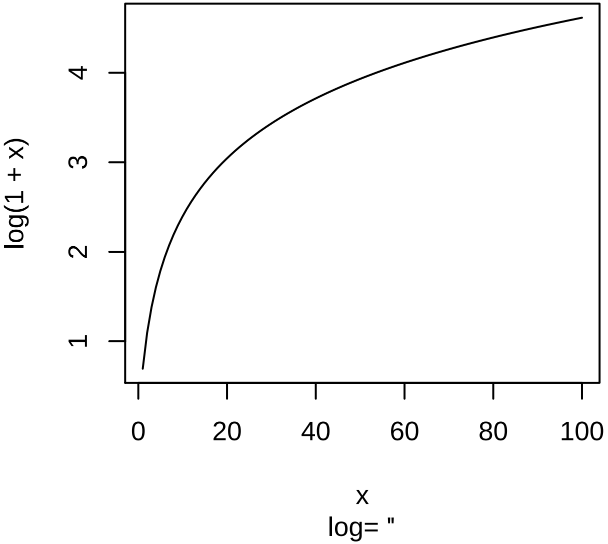

1.0
0.5
0.0
−0.5
−1.0
sin(t)
−6
−4
−2
0
2
4
6
t

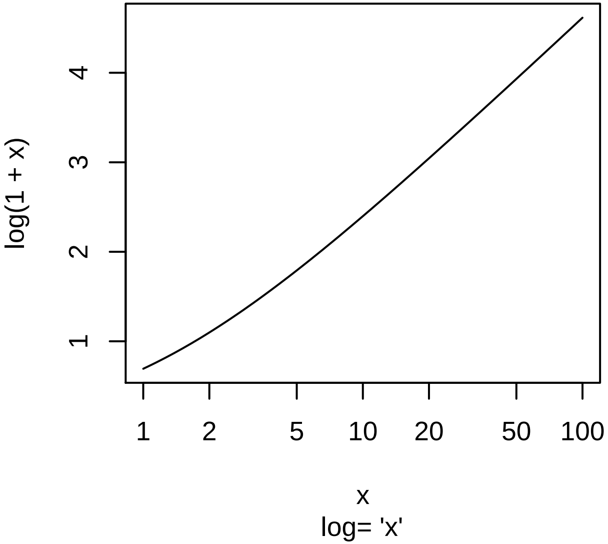


curve(tan) --> same x−scale as previous plot

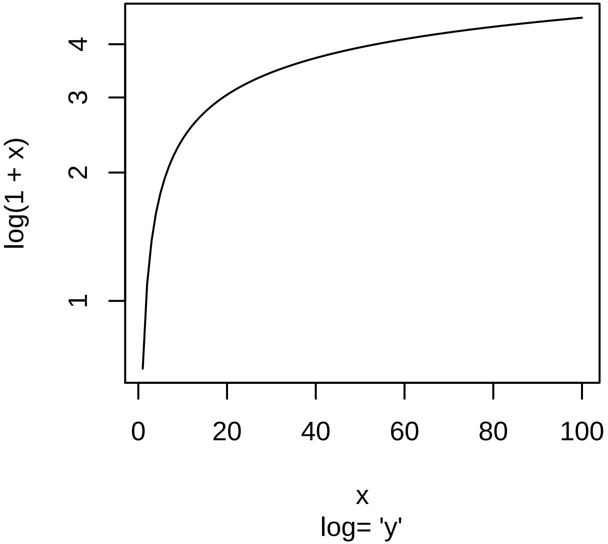
help("curve")

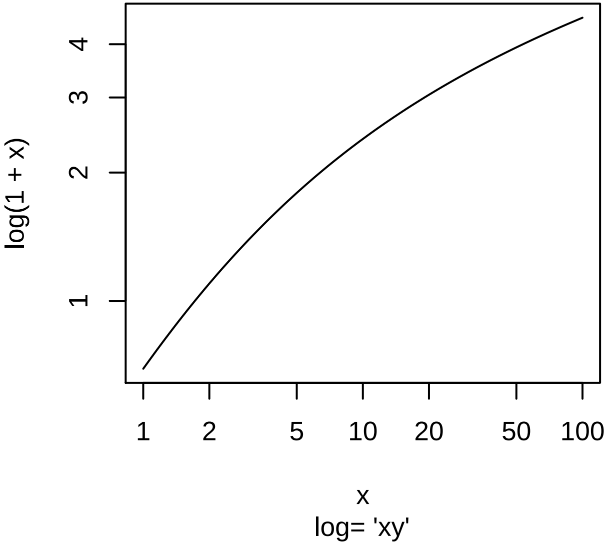

x^3 − 3 * x
−2
−1
0
1
2
x
cos(x)
−1.0
−0.5
0.0
0.5
1.0
−2
0
2
4
6
8
x
help("curve")
chippy(x)
−1.0
−0.5
0.0
0.5
1.0
−5
0
5
x
chippy(x)
−1.0
−0.5
0.0
0.5
1.0
−8.0
−7.0
−6.0
−5.0
x

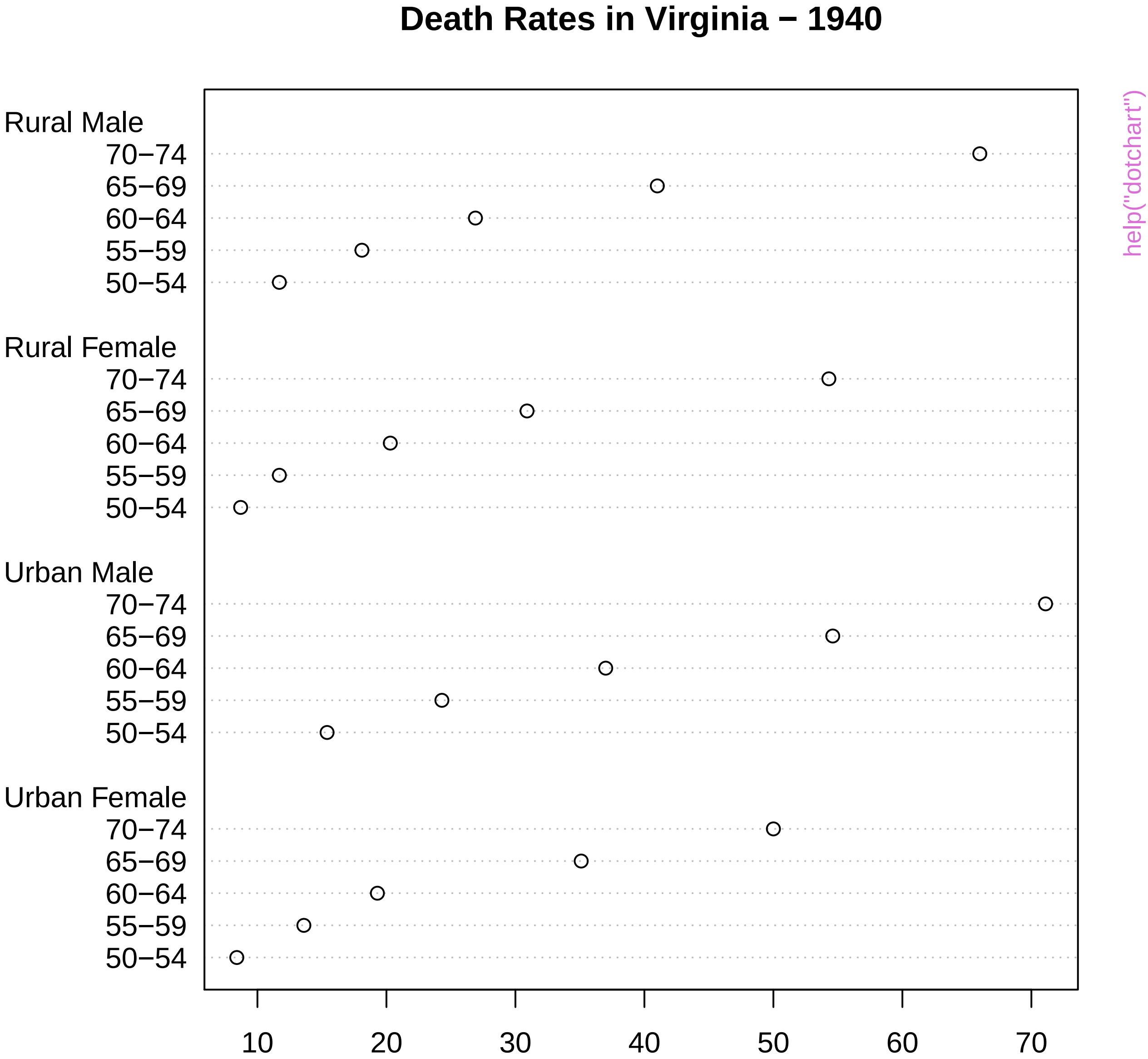

log(1 + x)
1
2
3
4
0
20
40
60
80
100
x
log= ''


log(1 + x)
1
2
3
4
1
2
5
10
20
50
100
x
log= 'x'

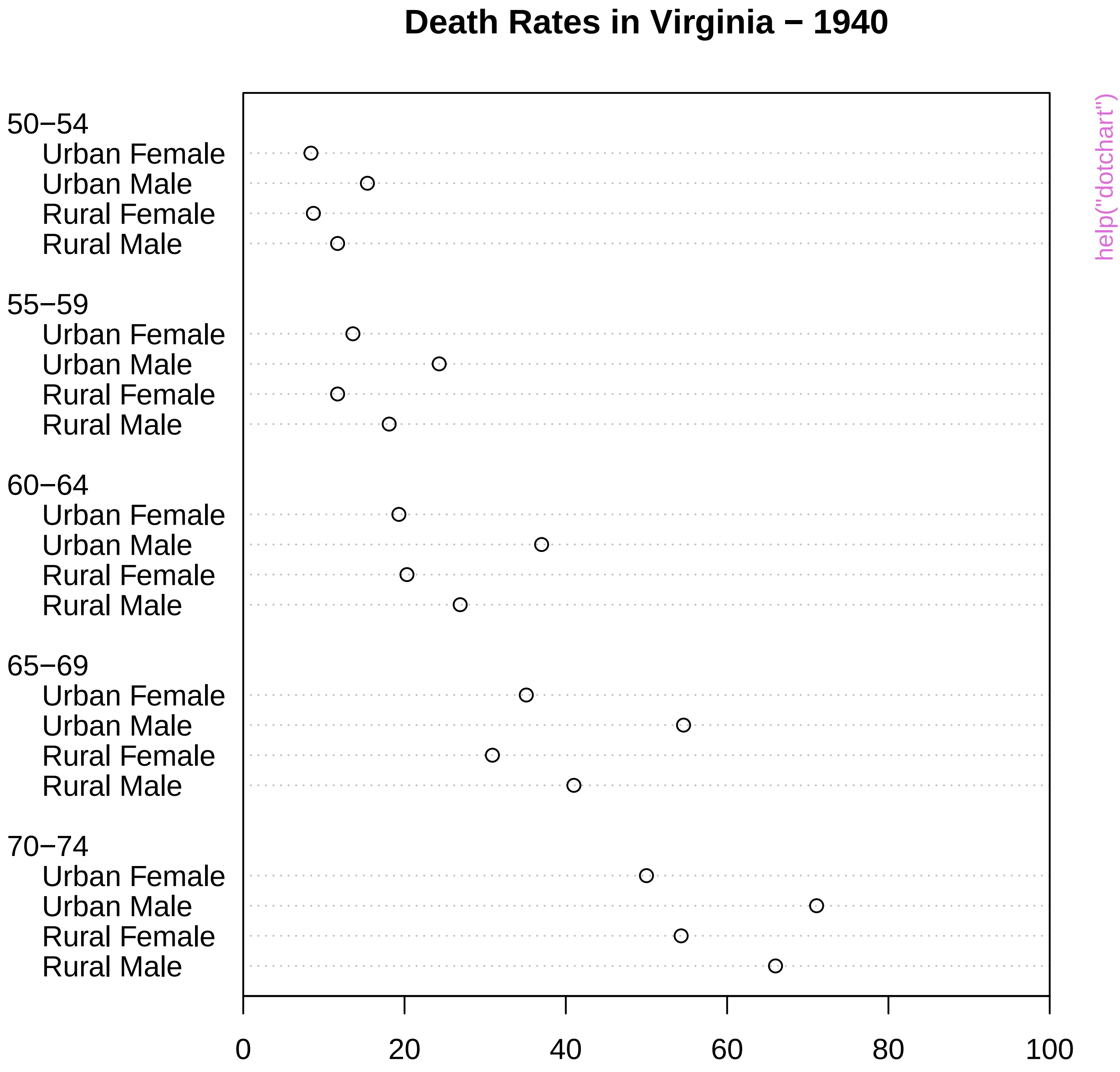
help("curve")

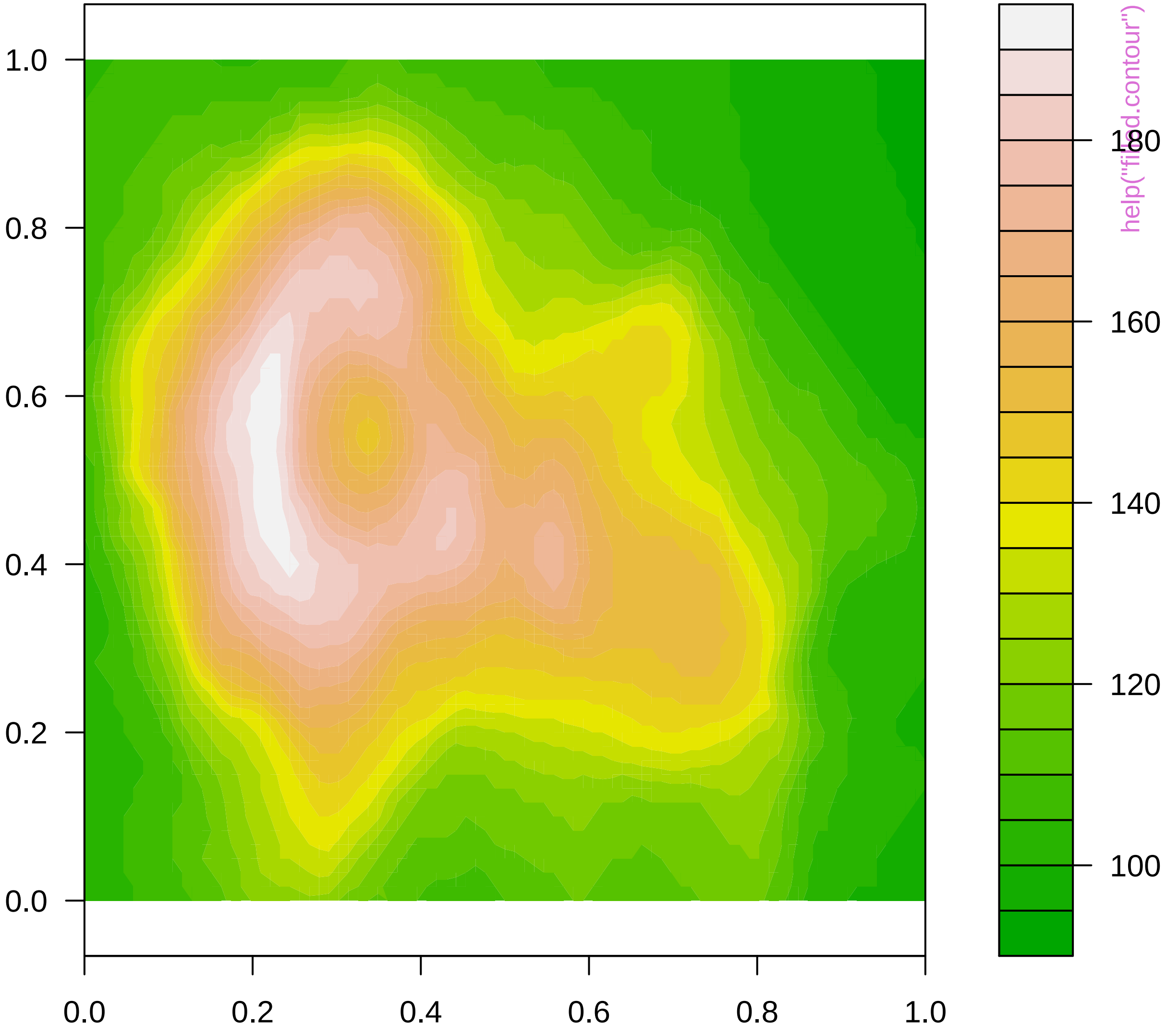

log(1 + x)
1
2
3
4
0
20
40
60
80
100
x
log= 'y'

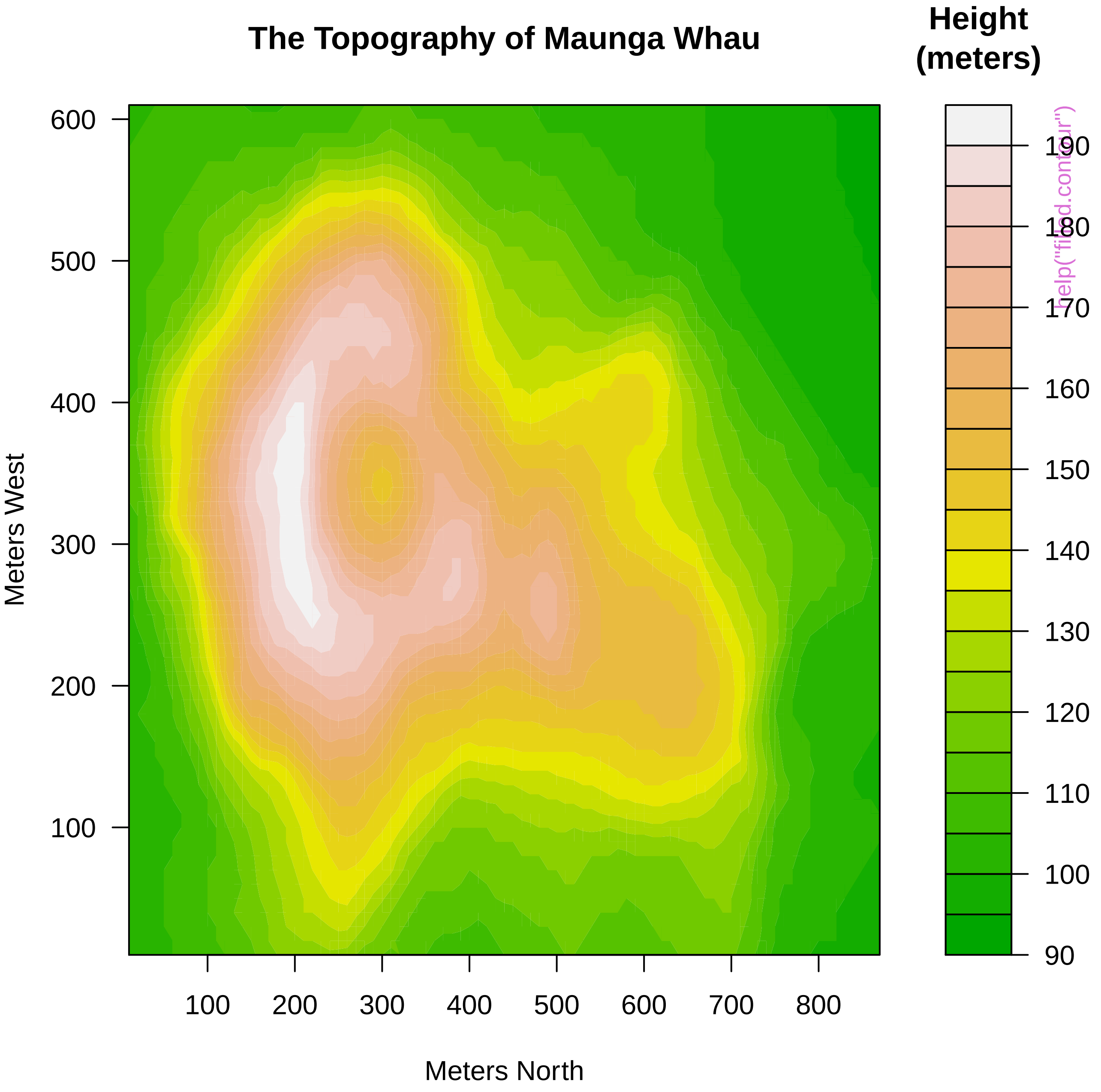

log(1 + x)
1
2
3
4
1
2
5
10
20
50
100
x
log= 'xy'



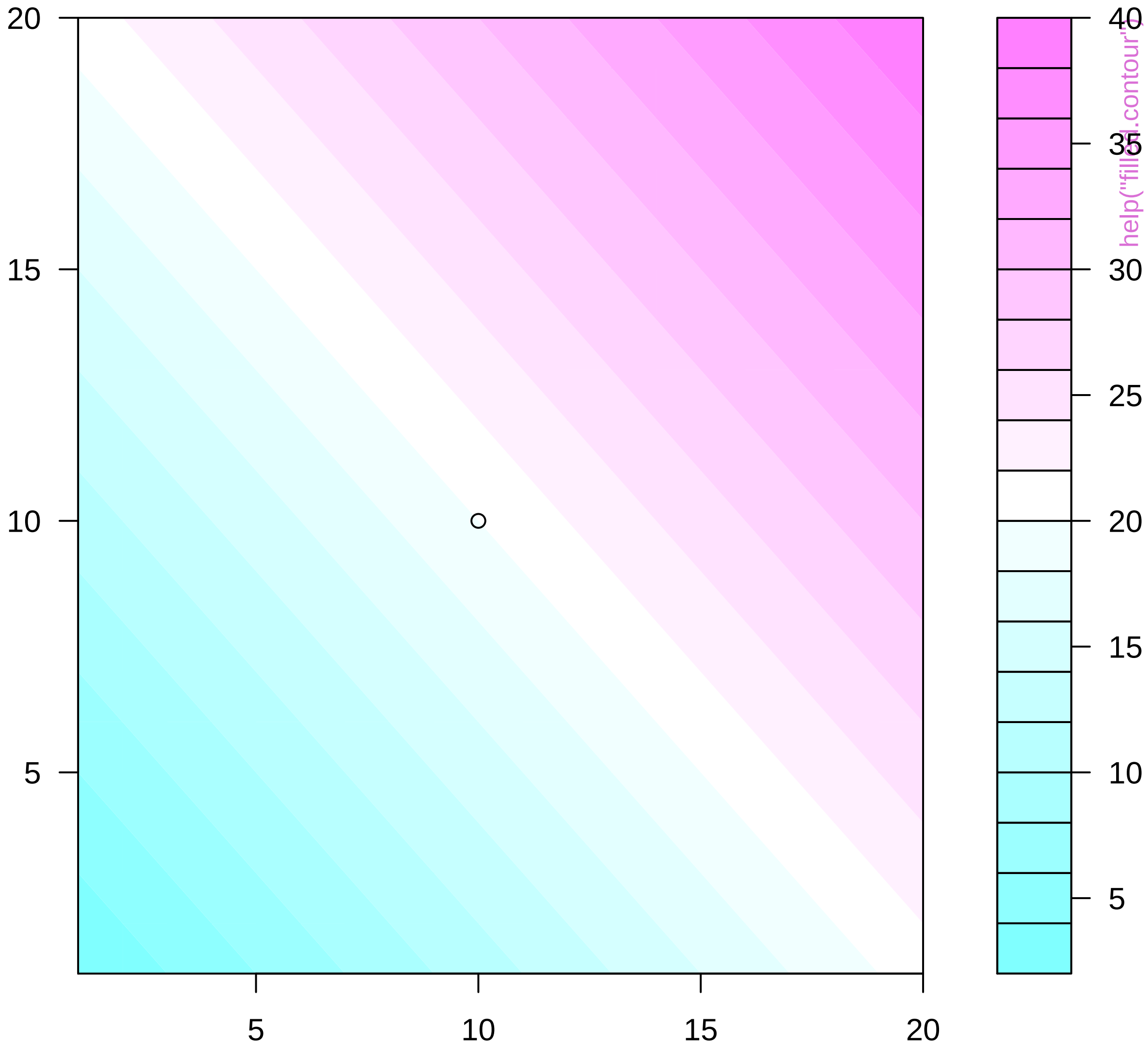
Death Rates in Virginia − 1940
Rural Male
70−74
65−69
60−64
55−59
50−54
Rural Female
70−74
65−69
60−64
55−59
50−54
Urban Male
70−74
65−69
60−64
55−59
50−54
Urban Female
70−74
65−69
60−64
55−59
50−54
10
20
30
40
50
60
70
help("dotchart")

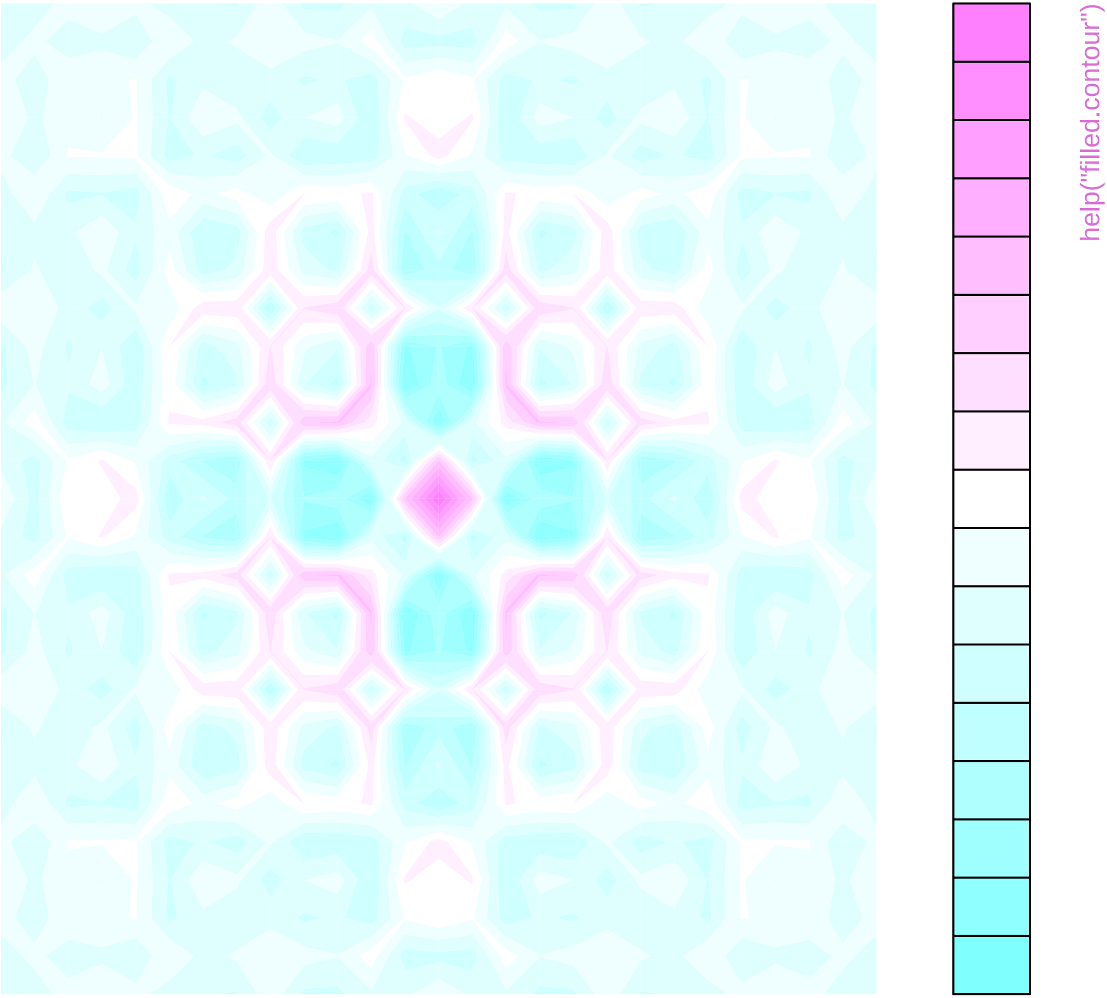

Death Rates in Virginia − 1940
50−54
Urban Female
Urban Male
Rural Female
Rural Male
55−59
Urban Female
Urban Male
Rural Female
Rural Male
60−64
Urban Female
Urban Male
Rural Female
Rural Male
65−69
Urban Female
Urban Male
Rural Female
Rural Male
70−74
Urban Female
Urban Male
Rural Female
Rural Male
0
20
40
60
80
100
help("dotchart")

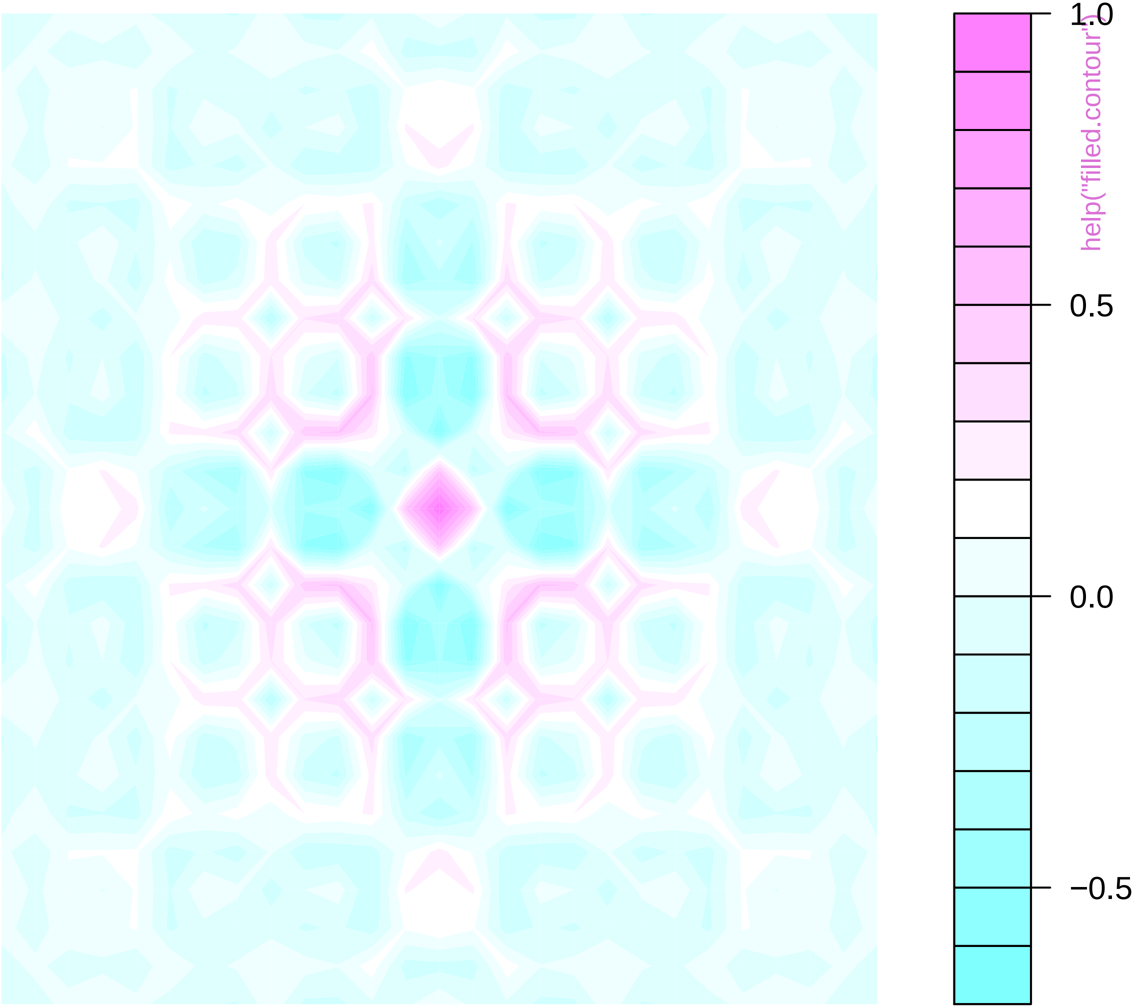

1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
180
160
140
120
100
help("filled.contour")

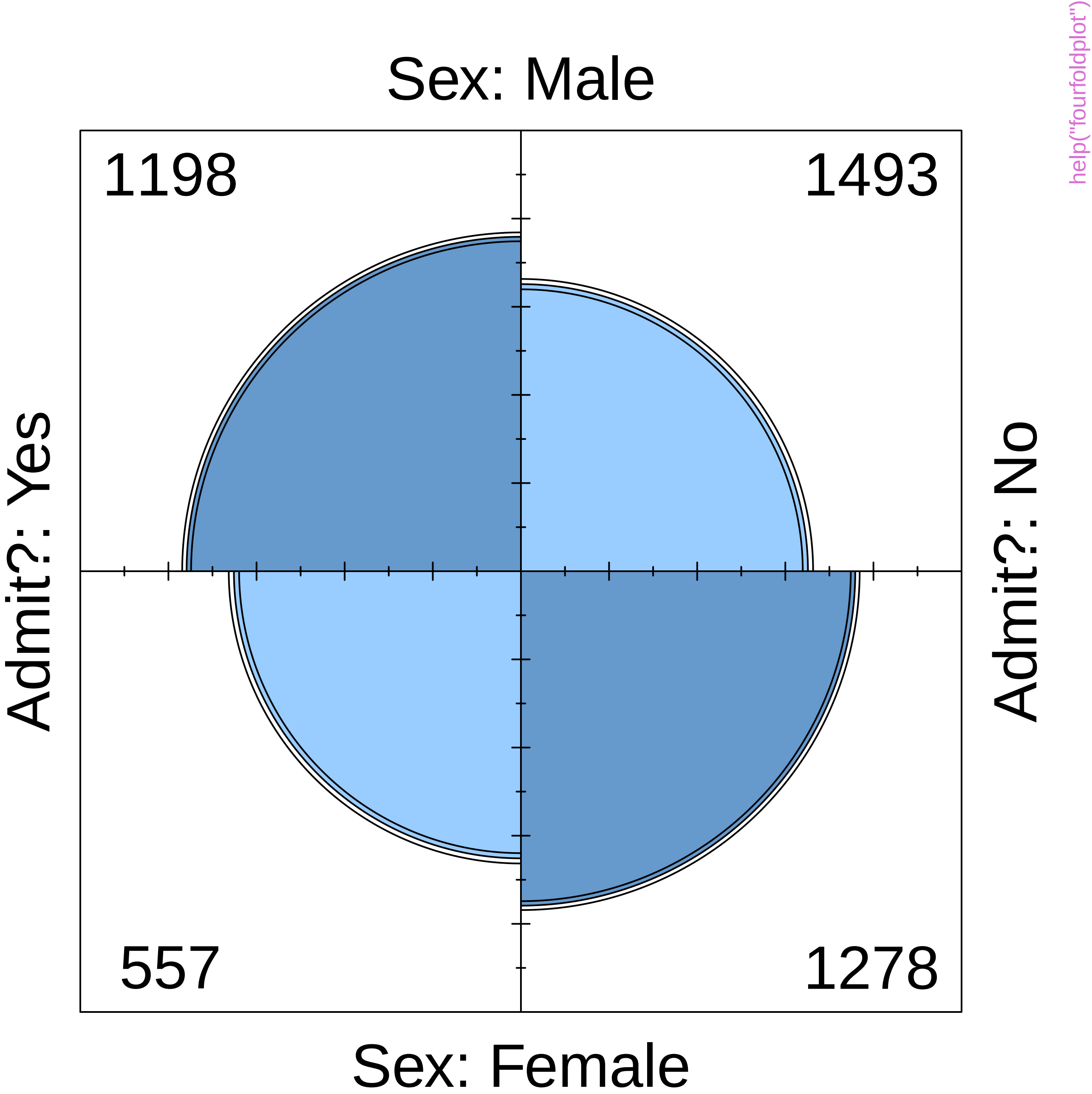


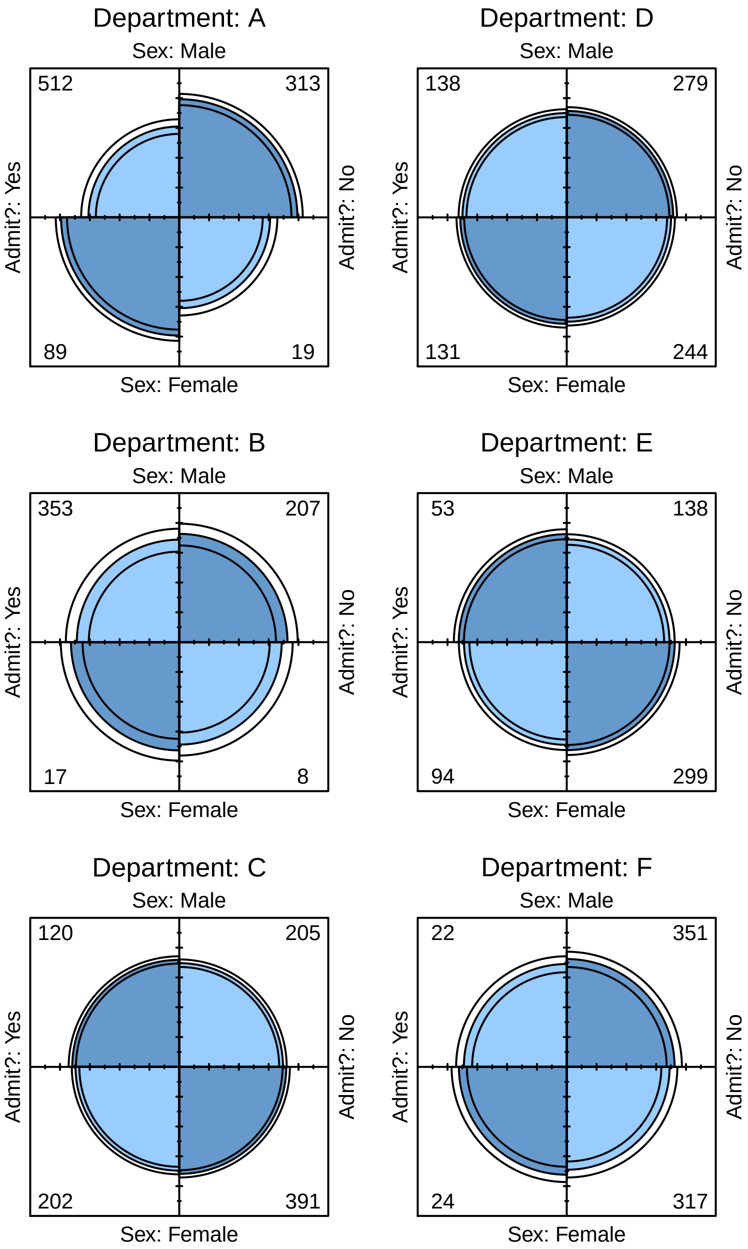
filled.contour(.) from R version 2.15.1 (2012−06−22)


20
15
10
5
5
10
15
20
40
35
30
25
20
15
10
5
help("filled.contour")

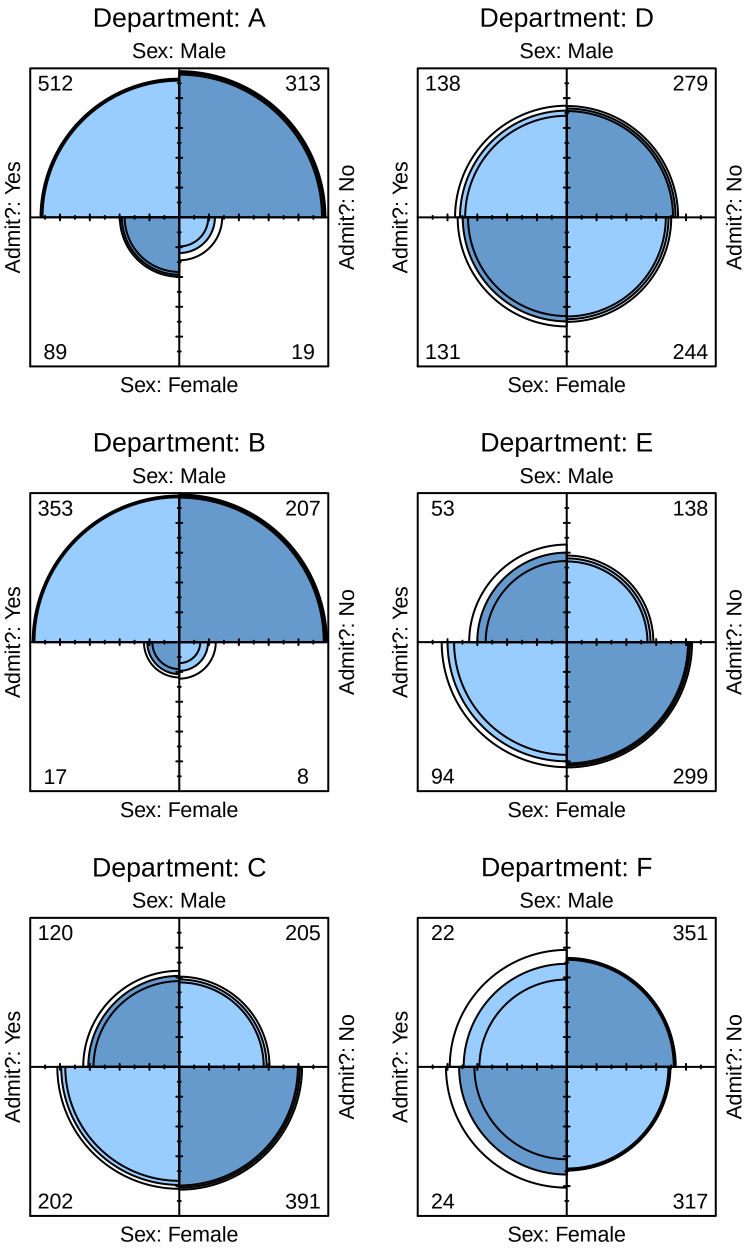

help("filled.contour")


1.0
0.5
0.0
−0.5
help("filled.contour")

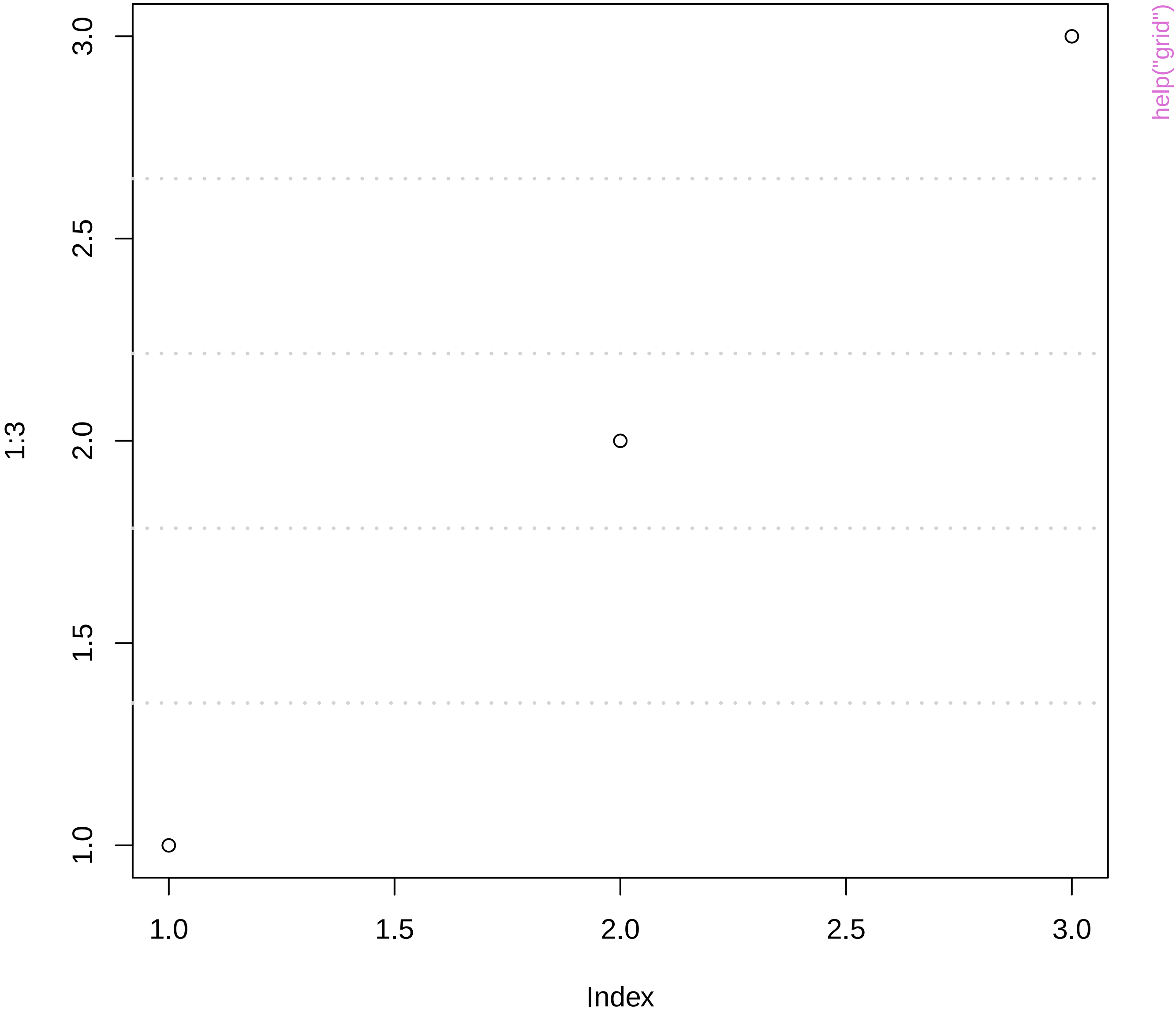

Sex: Male
1198
1493
Admit?: Yes
Admit?: No
557
1278
Sex: Female
help("fourfoldplot")

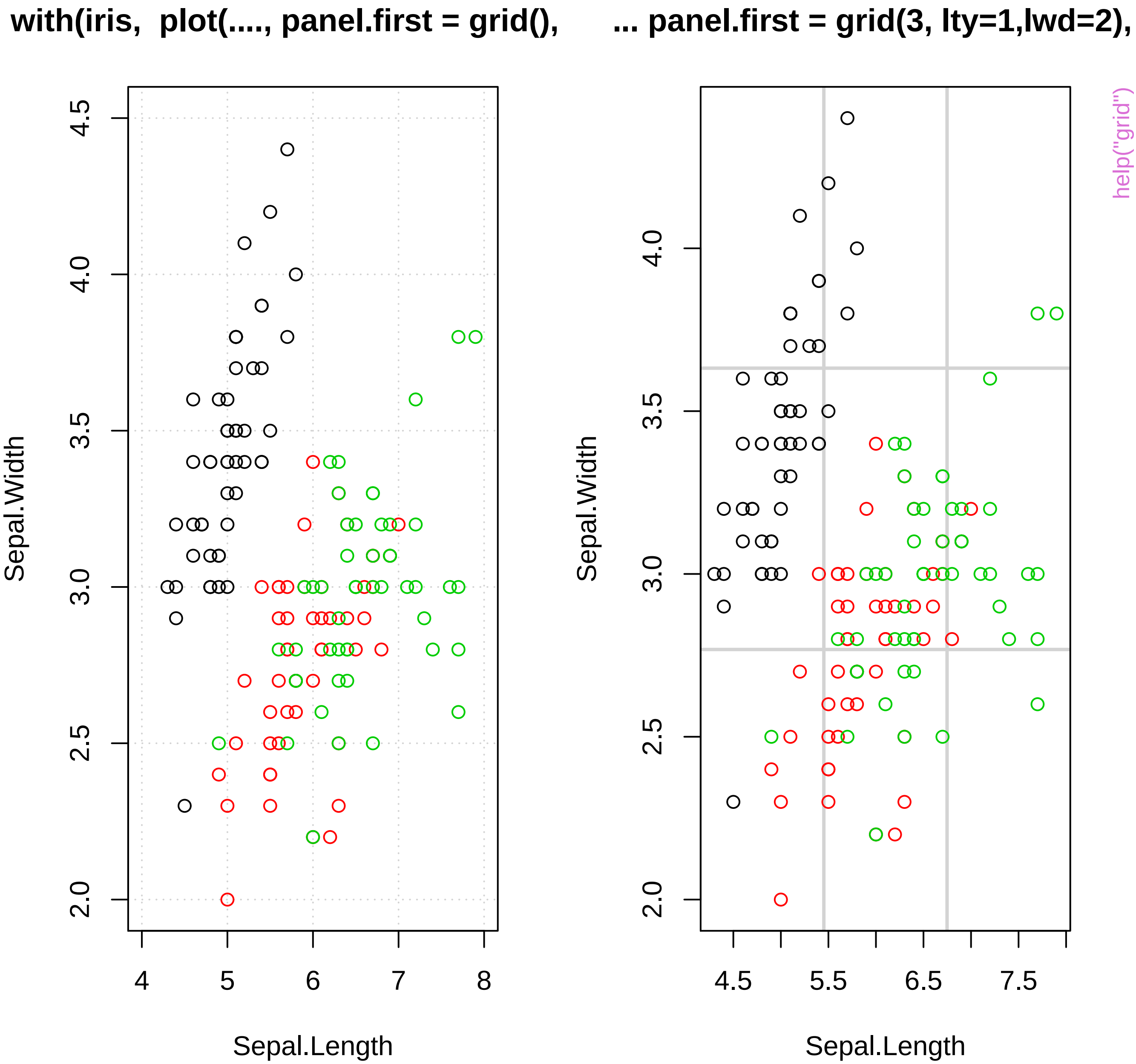


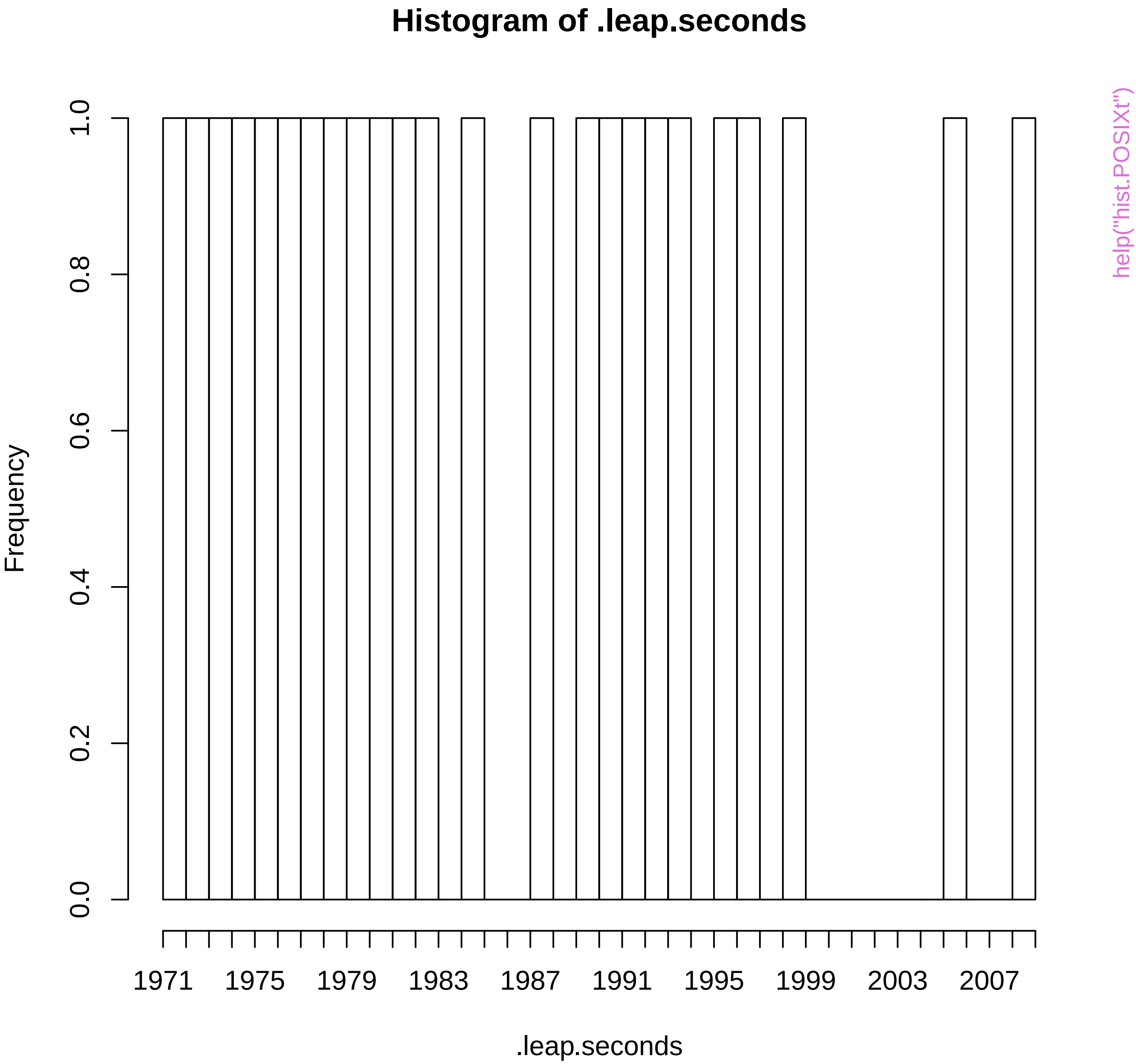
help("fourfoldplot")

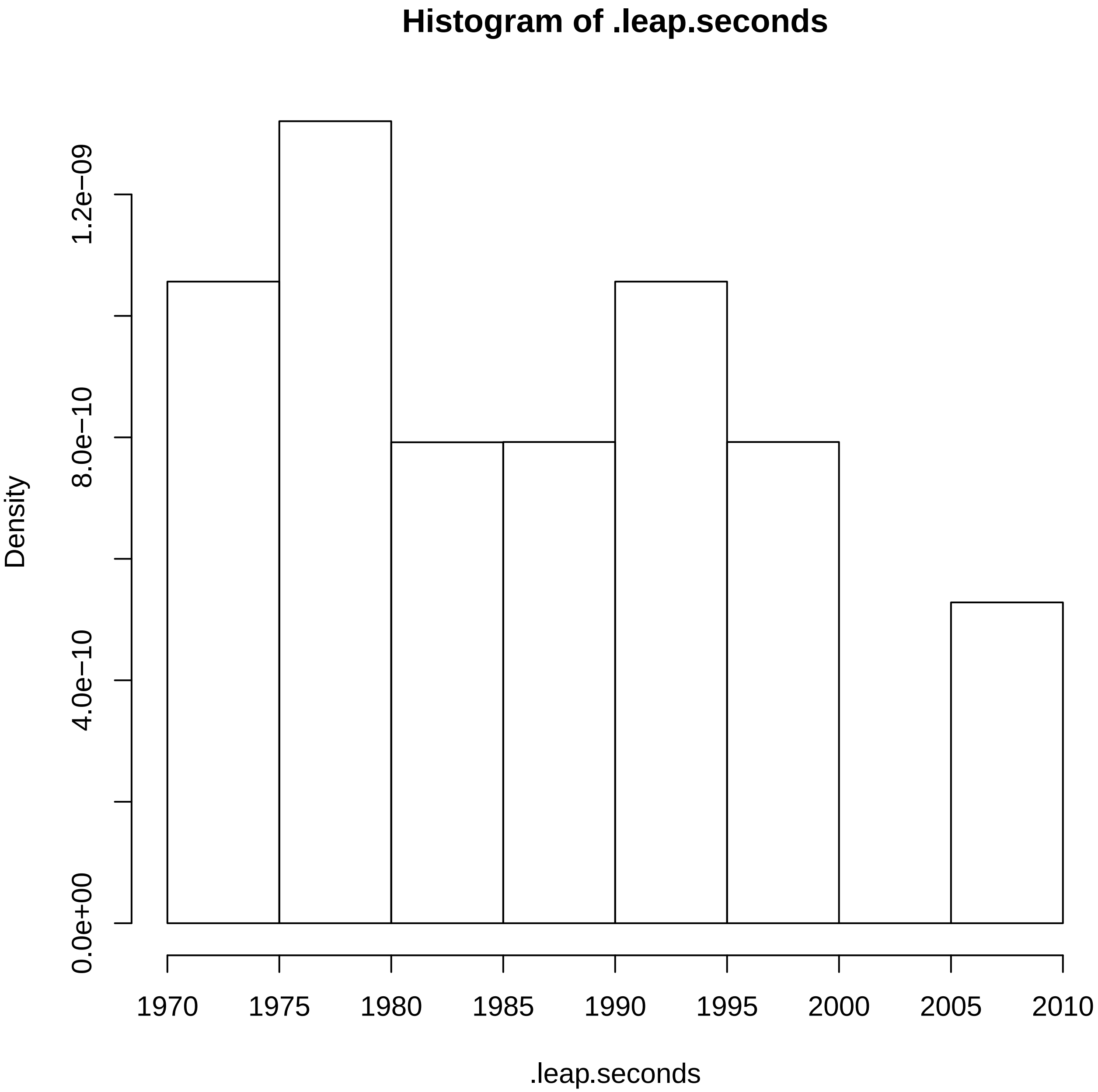


help("fourfoldplot")

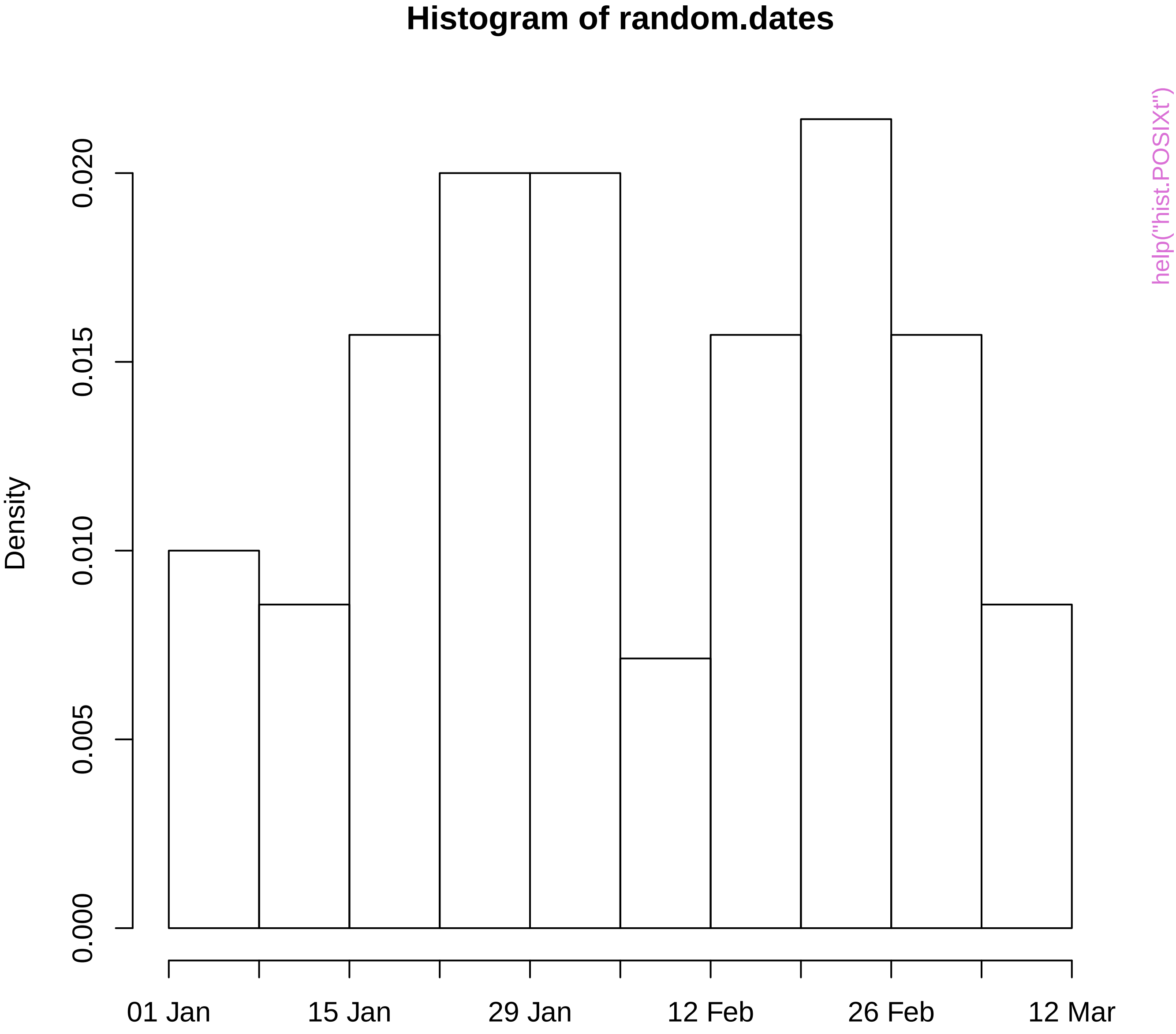

3.0
2.5
2.0
1.5
1.0
1:3
1.0
1.5
2.0
2.5
3.0
Index
help("grid")

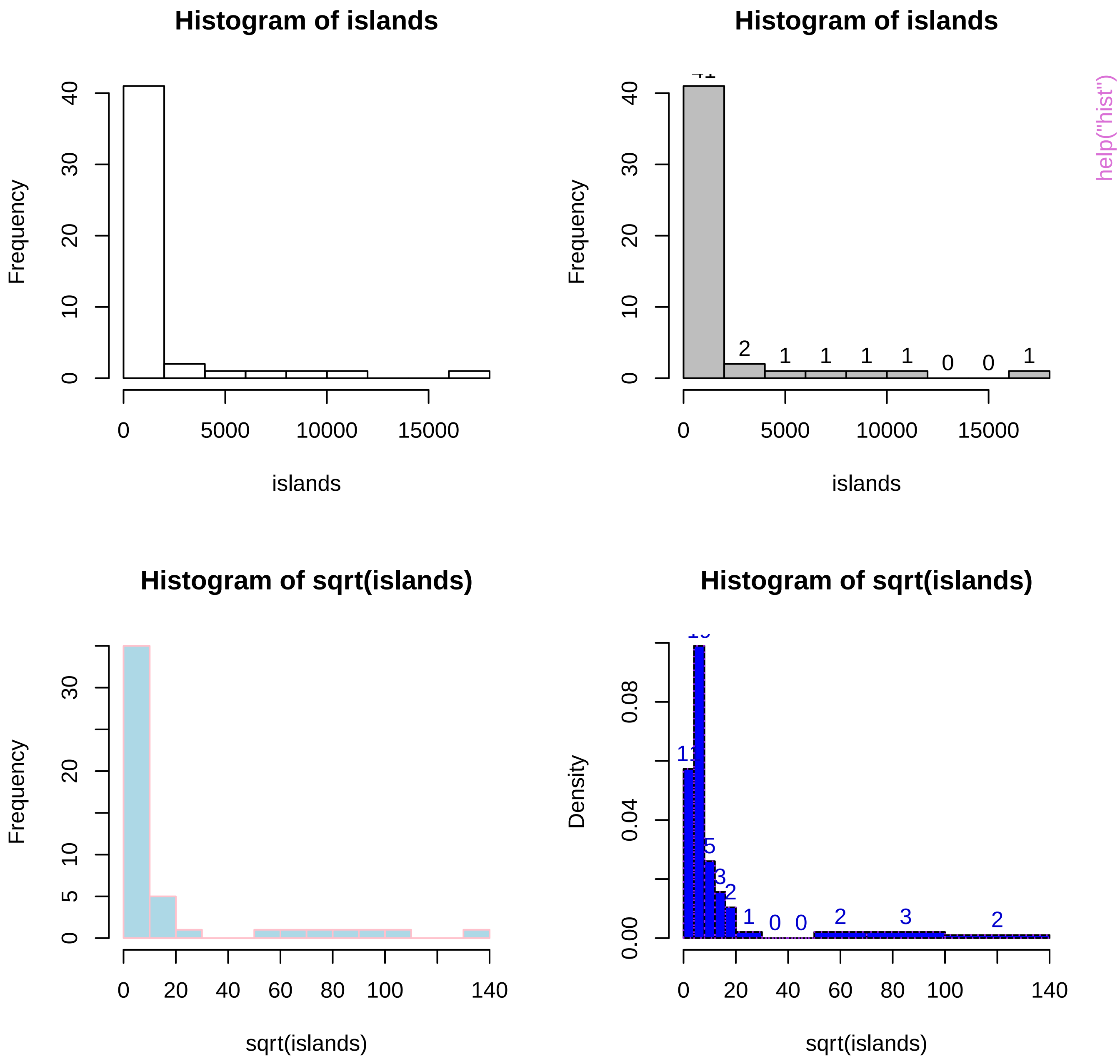

with(iris, plot(...., panel.first = grid(),
... panel.first = grid(3, lty=1,lwd=2),
help("grid")
Sepal.Width
4.5
4.0
3.5
3.0
2.5
2.0
4
5
6
7
8
Sepal.Length
Sepal.Width
4.0
3.5
3.0
2.5
2.0
4.5
5.5
6.5
7.5
Sepal.Length

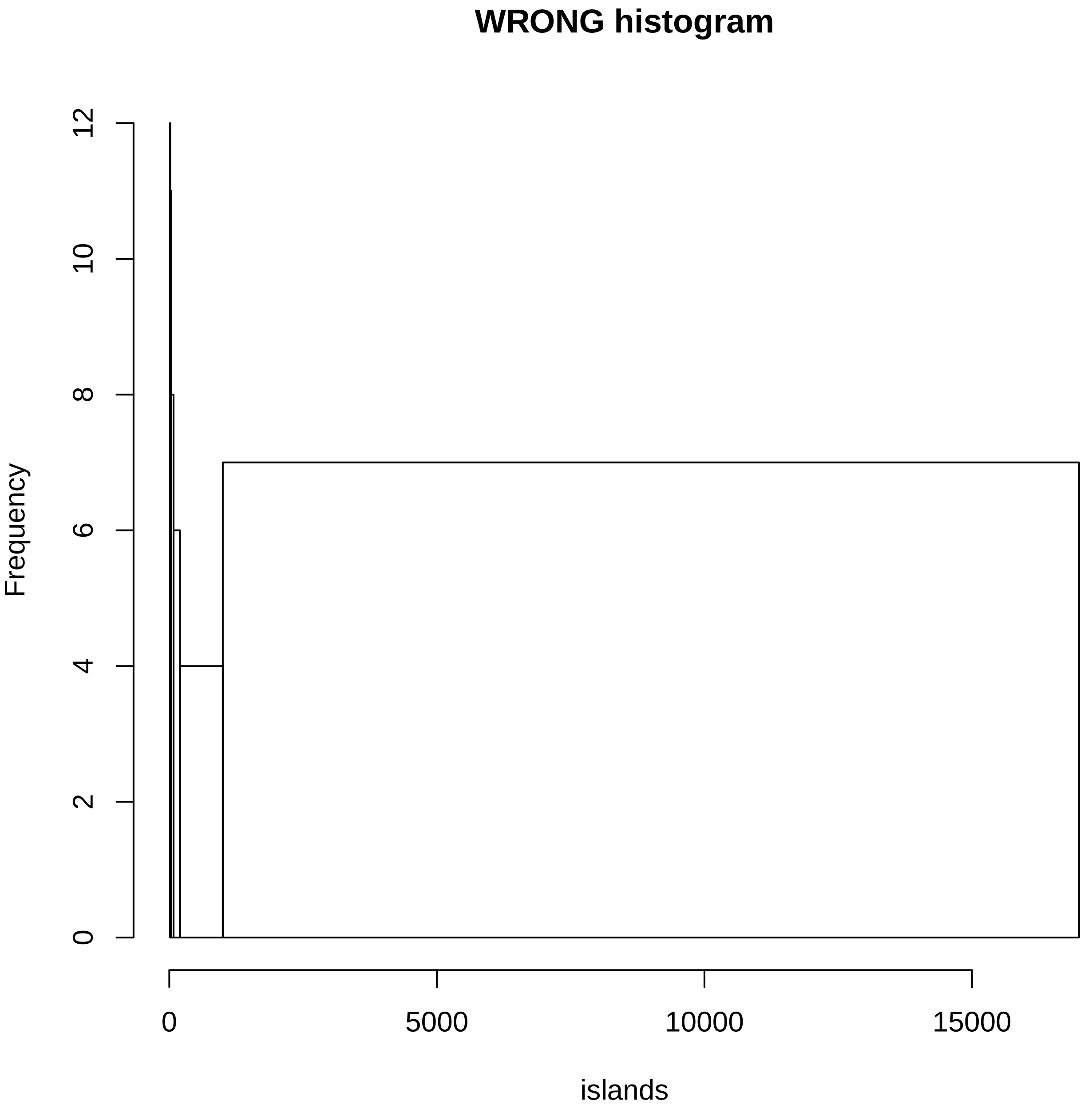

Histogram of .leap.seconds
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
1971
1975
1979
1983
1987
1991
1995
1999
2003
2007
.leap.seconds
help("hist.POSIXt")



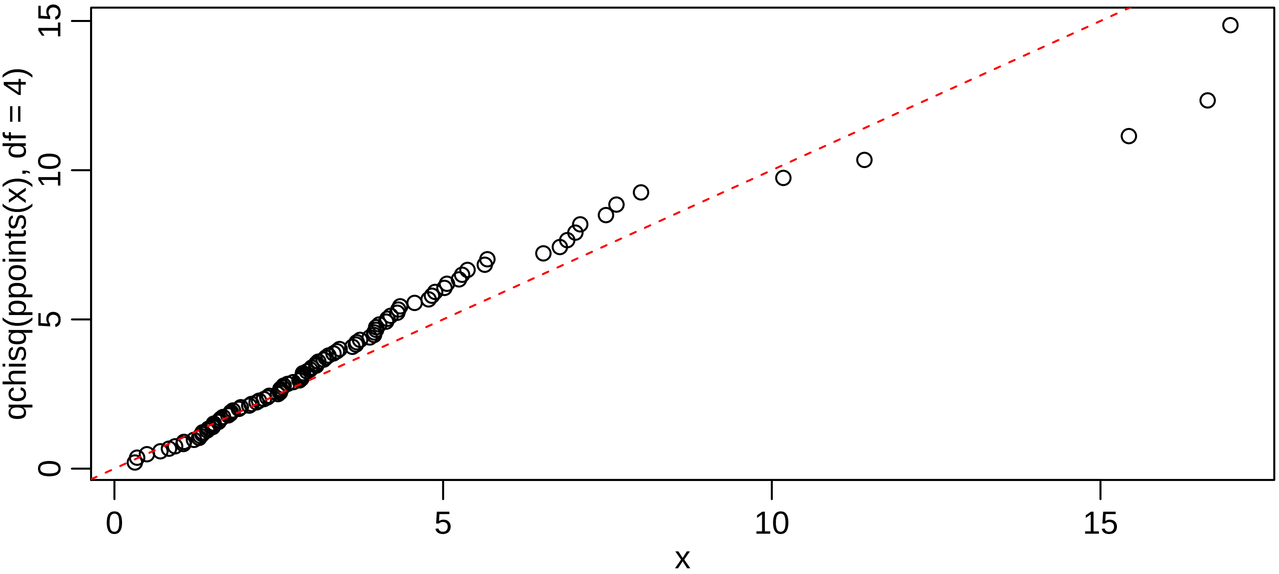
help("hist.POSIXt")


Histogram of random.dates
Density
0.000
0.005
0.010
0.015
0.020
01 Jan
15 Jan
29 Jan
12 Feb
26 Feb
12 Mar
random.dates
help("hist.POSIXt")

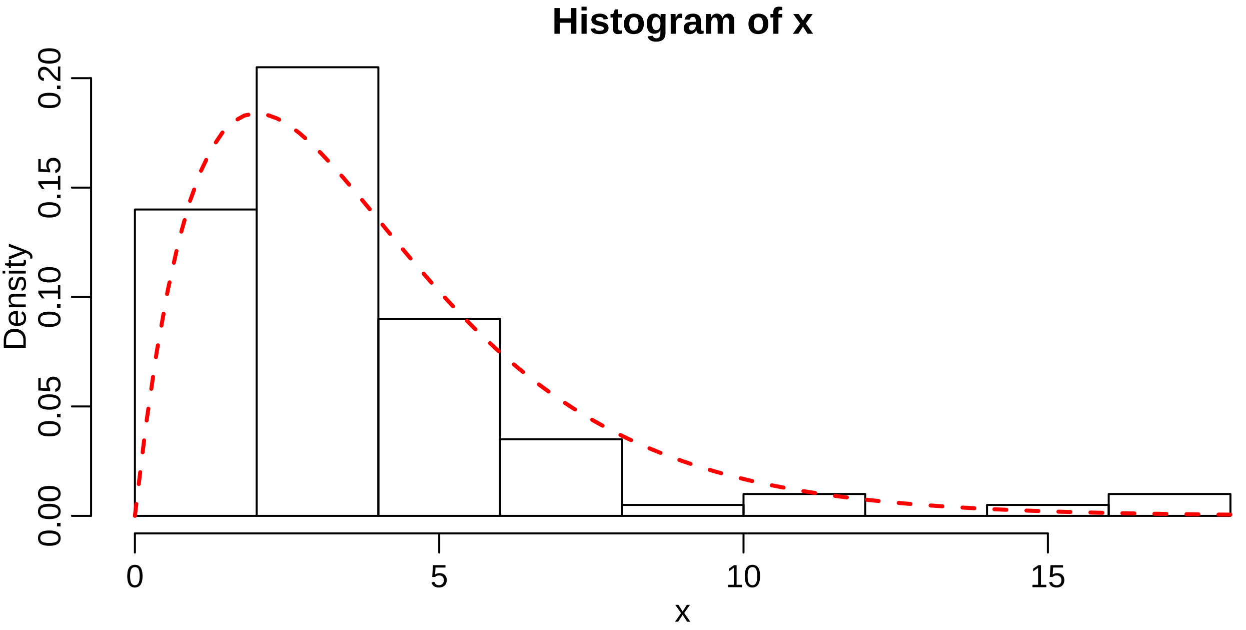

Histogram of islands
Frequency
0
10
20
30
40
0
5000
10000
15000
islands
Histogram of islands
Frequency
2
1
1
1
1
0
0
1
0
10
20
30
40
0
5000
10000
15000
islands
help("hist")
Histogram of sqrt(islands)
Frequency
0
5
10
20
30
0
20
40
60
80
100
140
sqrt(islands)
Histogram of sqrt(islands)
Density
11
5
3
2
1
0
0
2
3
2
0.00
0.04
0.08
0
20
40
60
80
100
140
sqrt(islands)

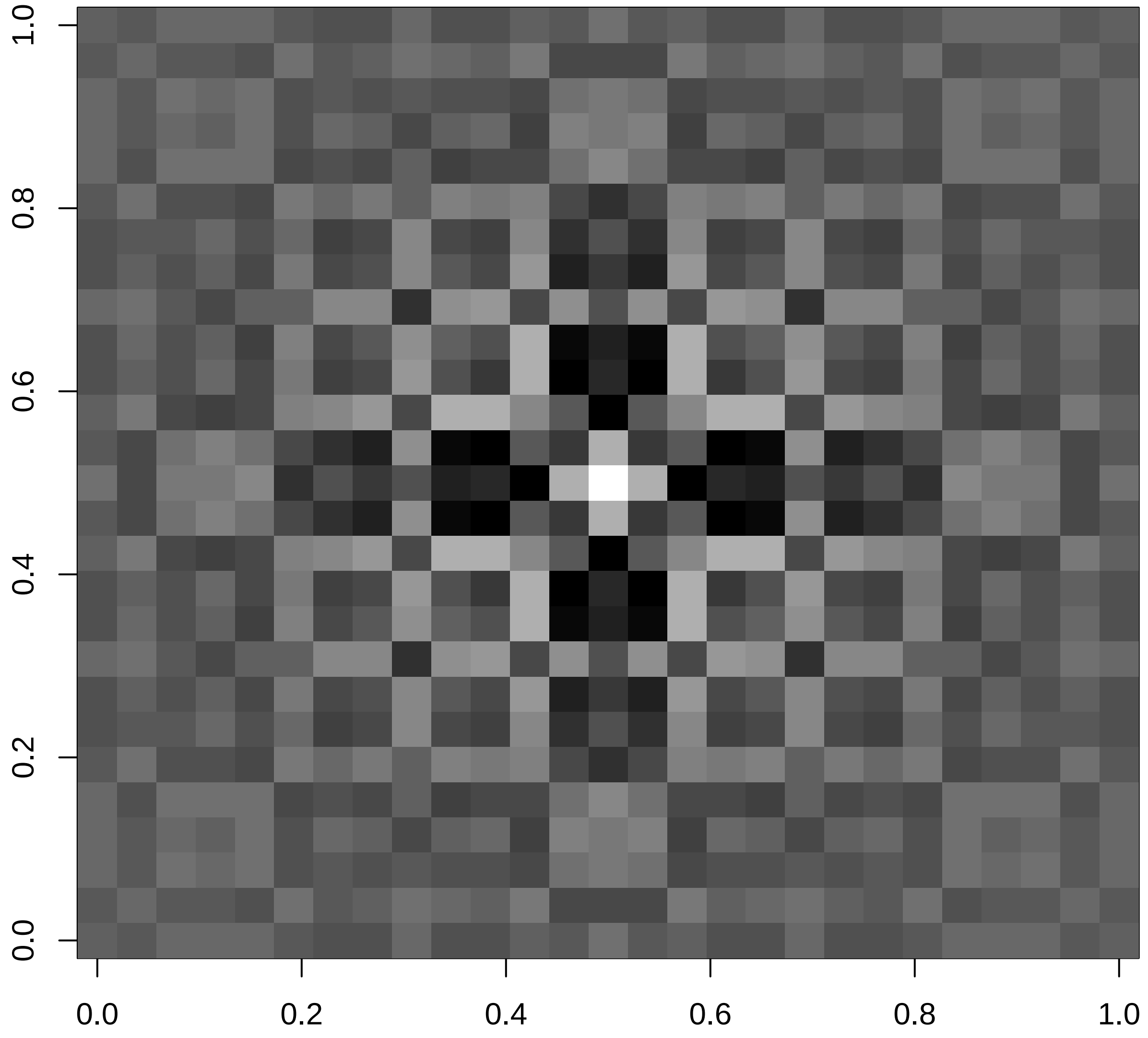

WRONG histogram
Frequency
0
2
4
6
8
10
12
0
5000
10000
15000
islands

help("hist")


qchisq(ppoints(x), df = 4)
0
5
10
15
x
0
5
10
15

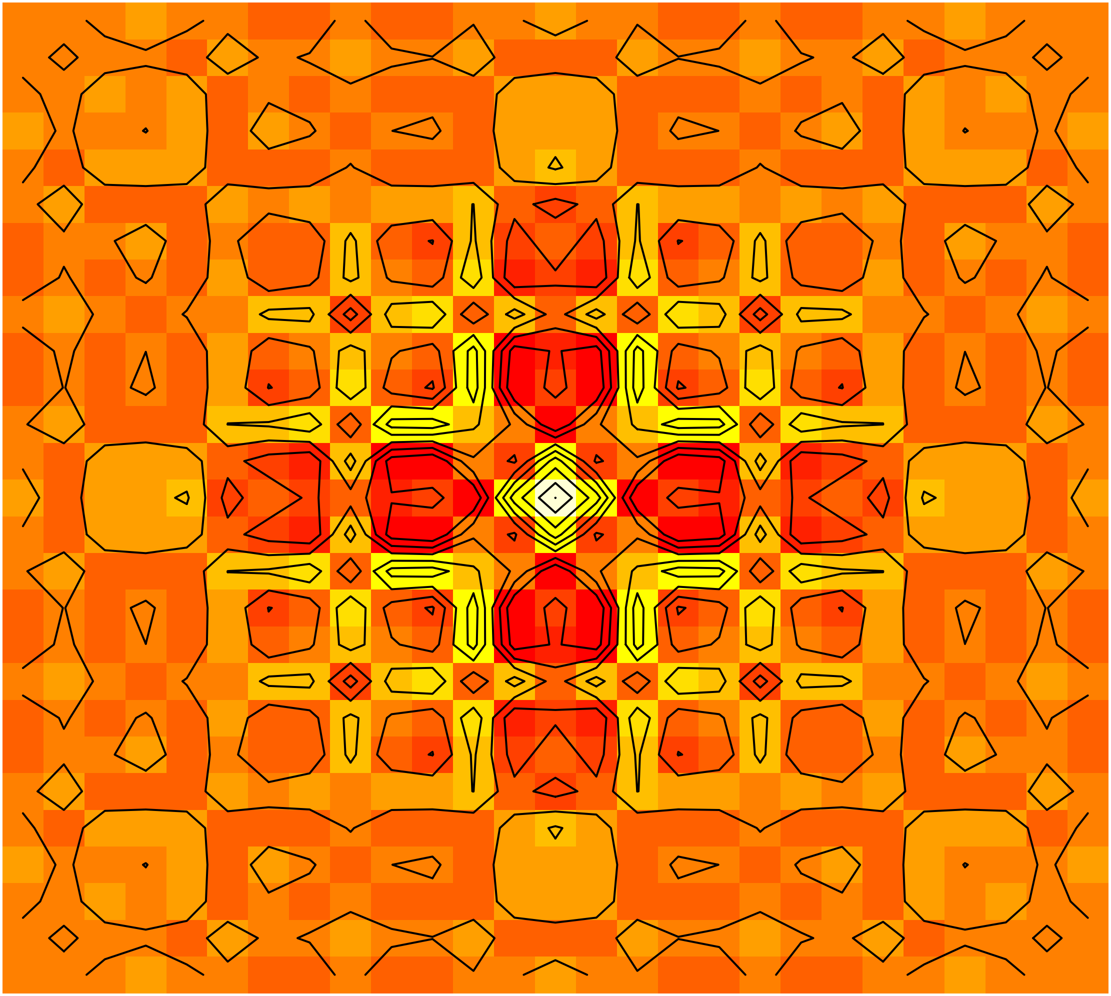
help("hist")


Histogram of x
Density
0.00
0.05
0.10
0.15
0.20
x
0
5
10
15

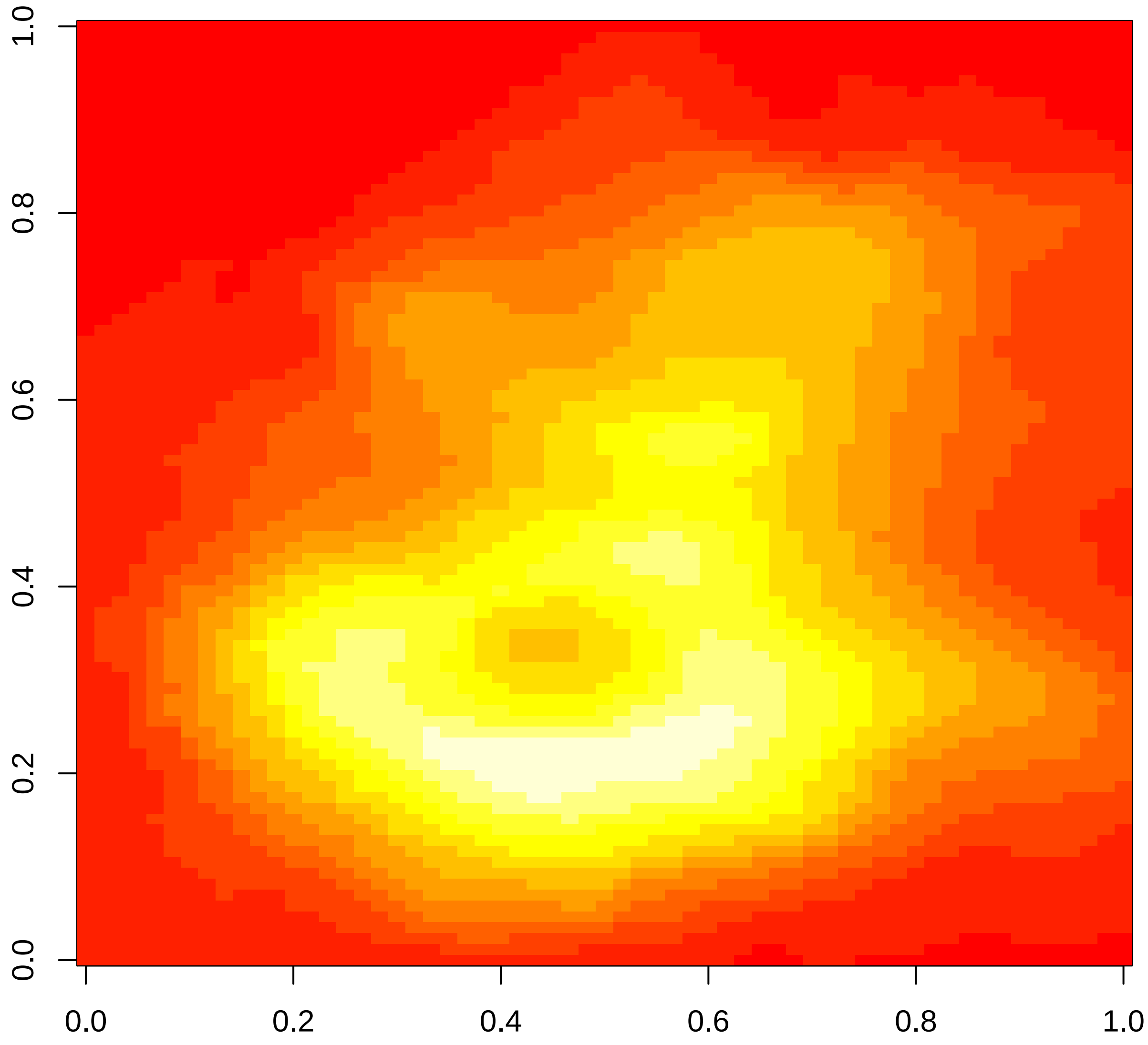


help("image")

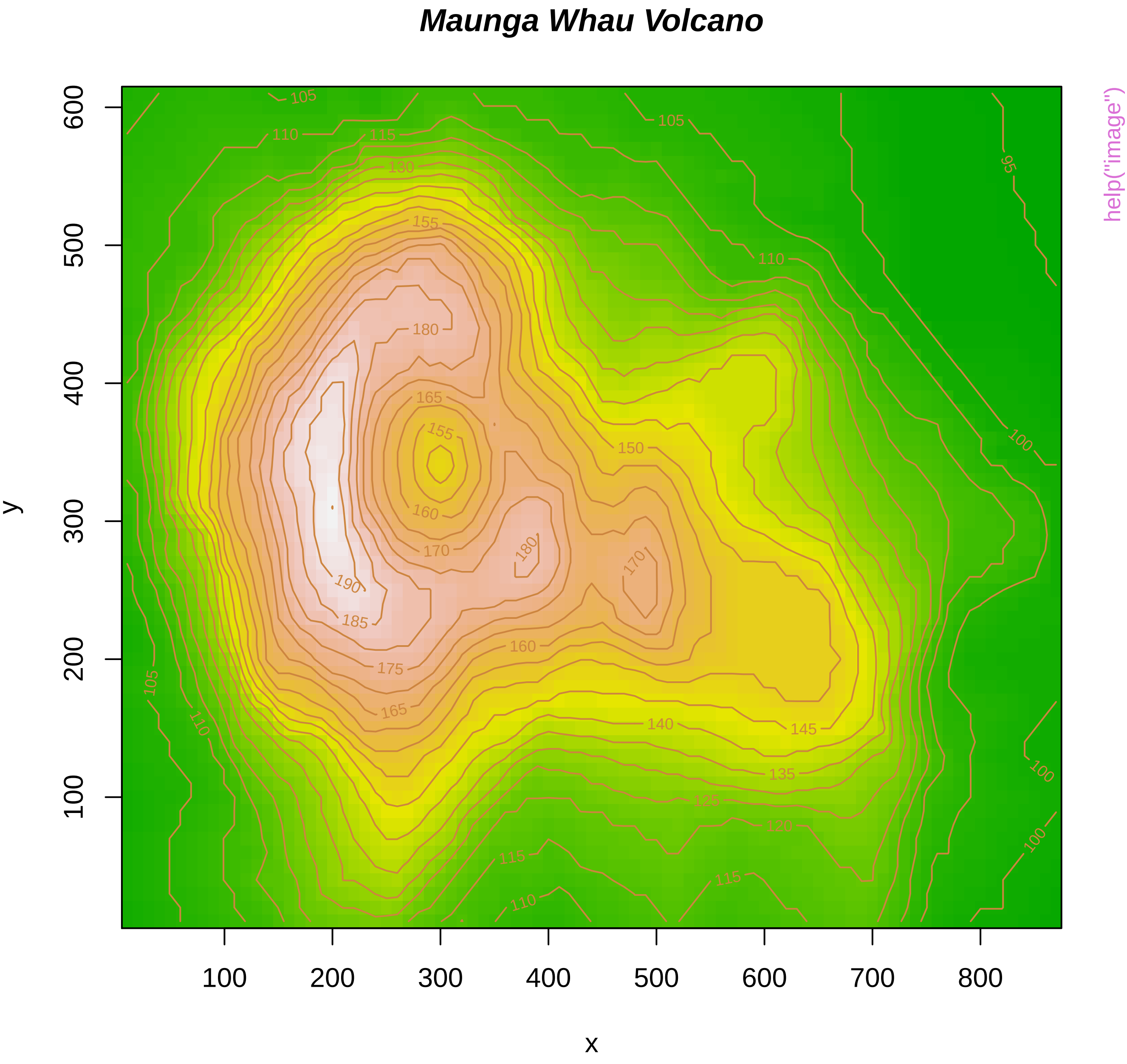
Math can be beautiful ...

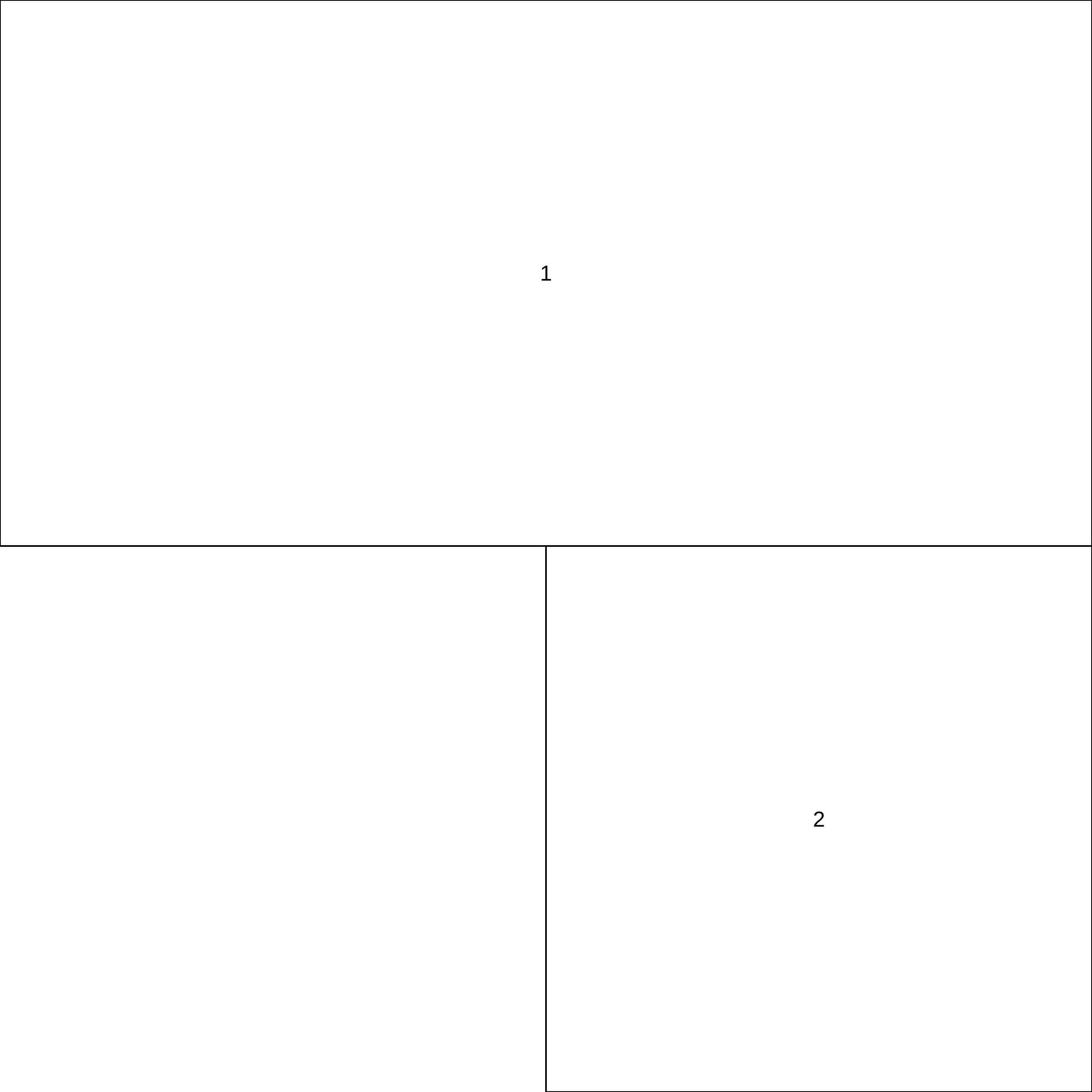


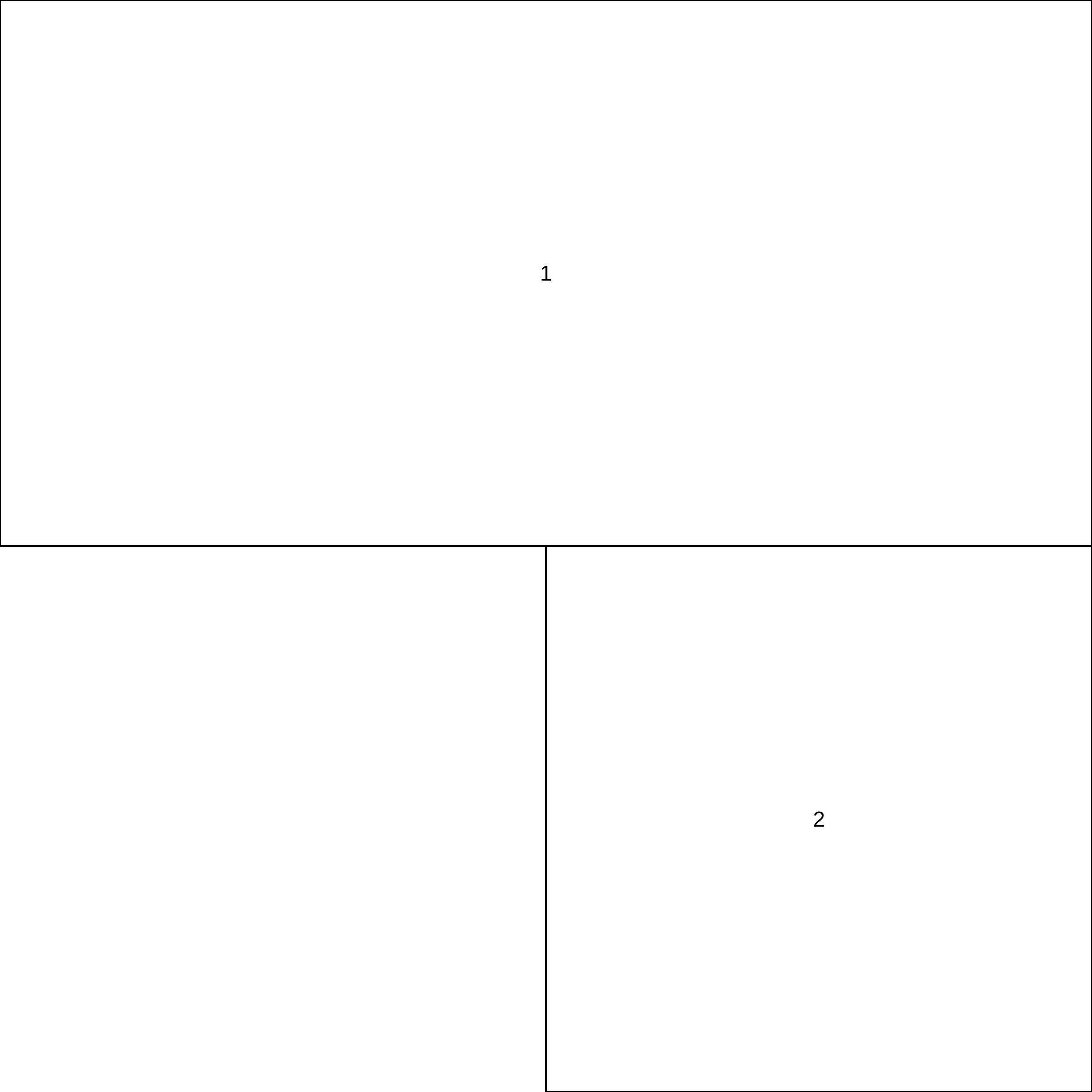
$\cos(r^2)e^{-r/6}$

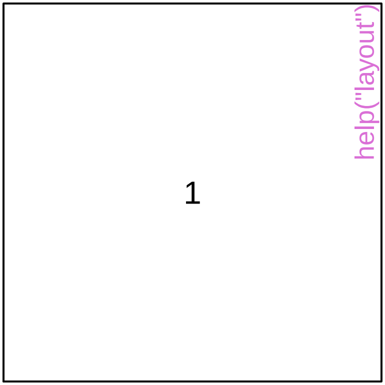


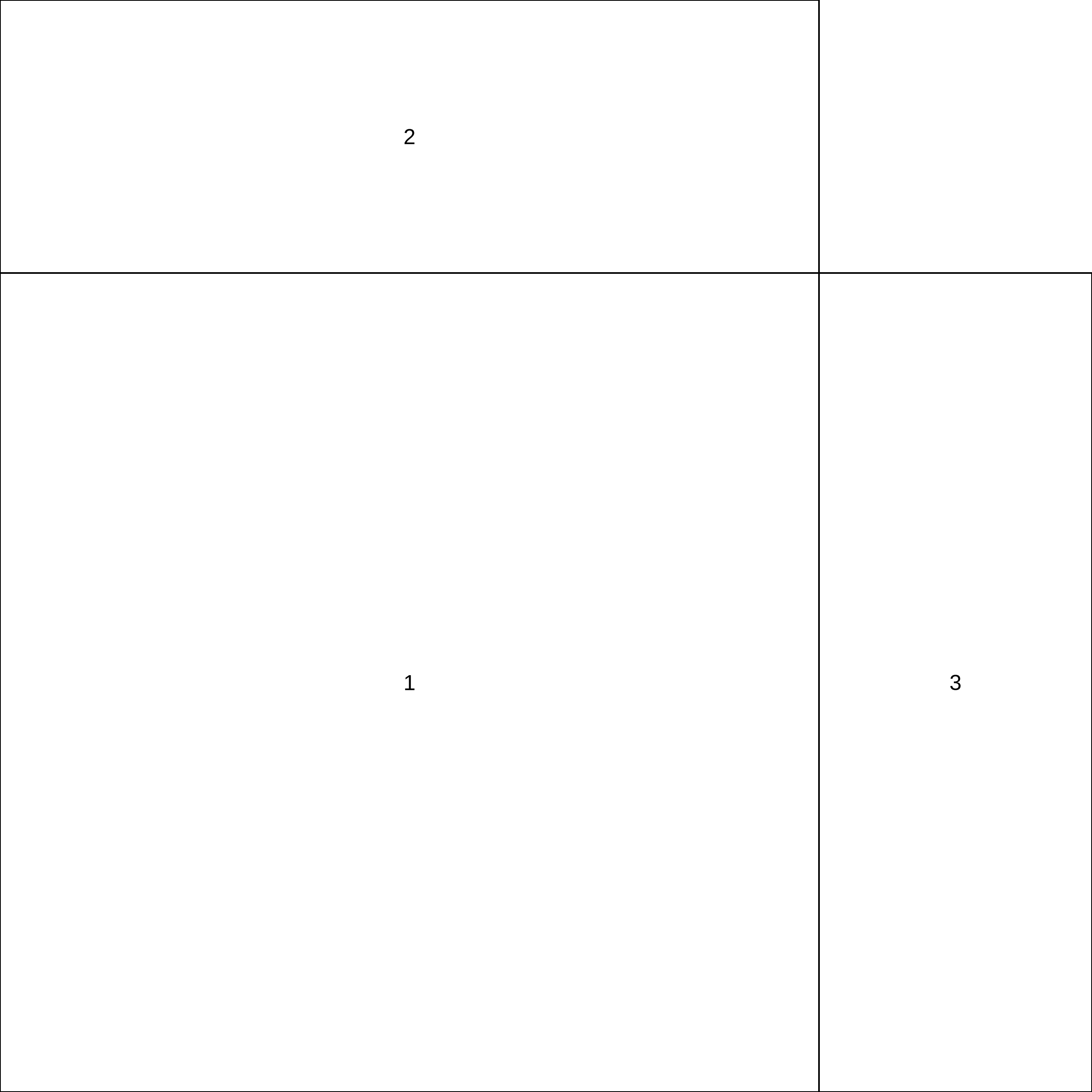
help("image")

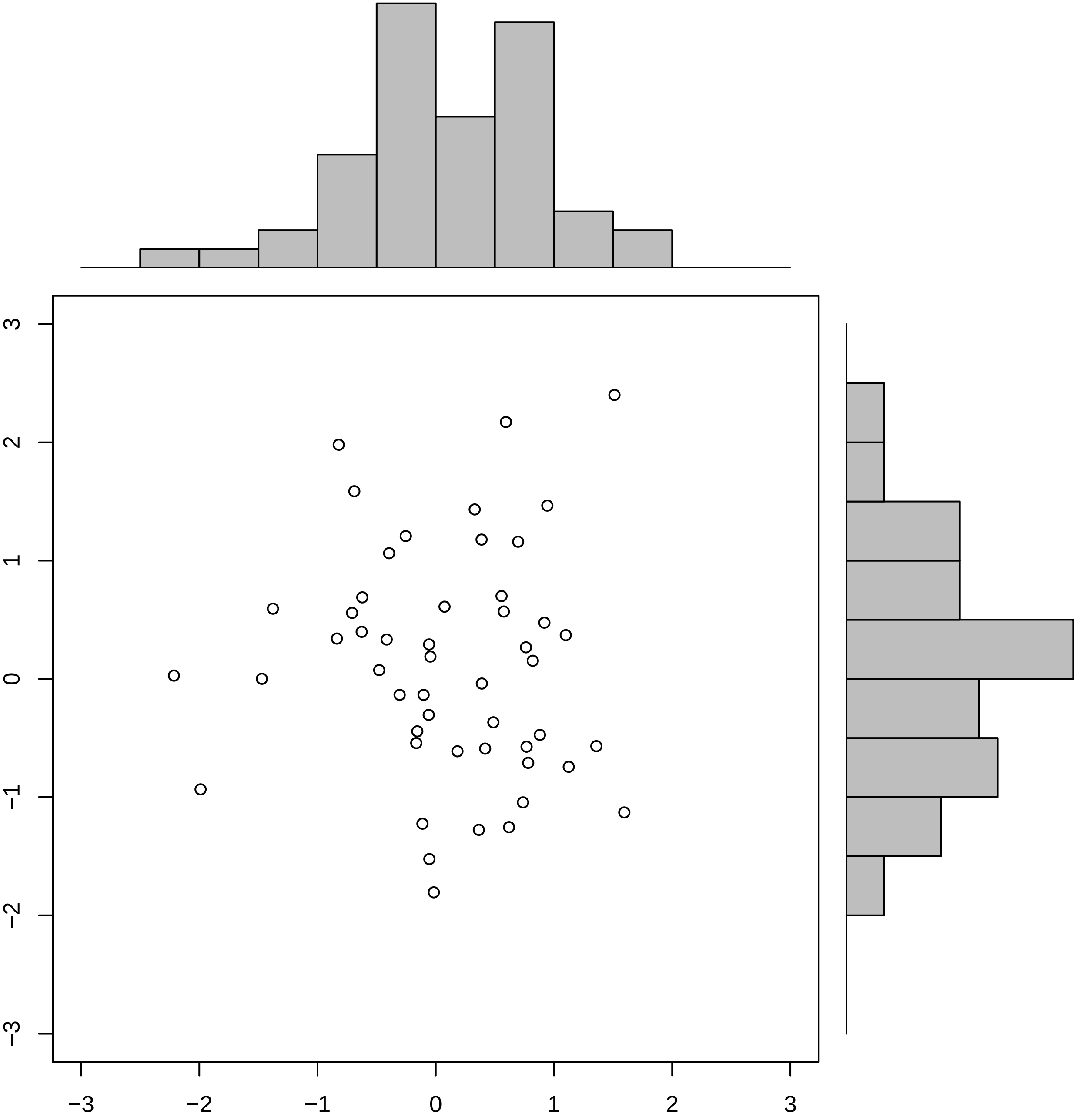

Maunga Whau Volcano
x
y
100
200
300
400
500
600
700
800
100
200
300
400
500
600
help("image")
95
100
105
110
115
120
125
130
135
140
145
150
155
160
165
170
175
180
185
190

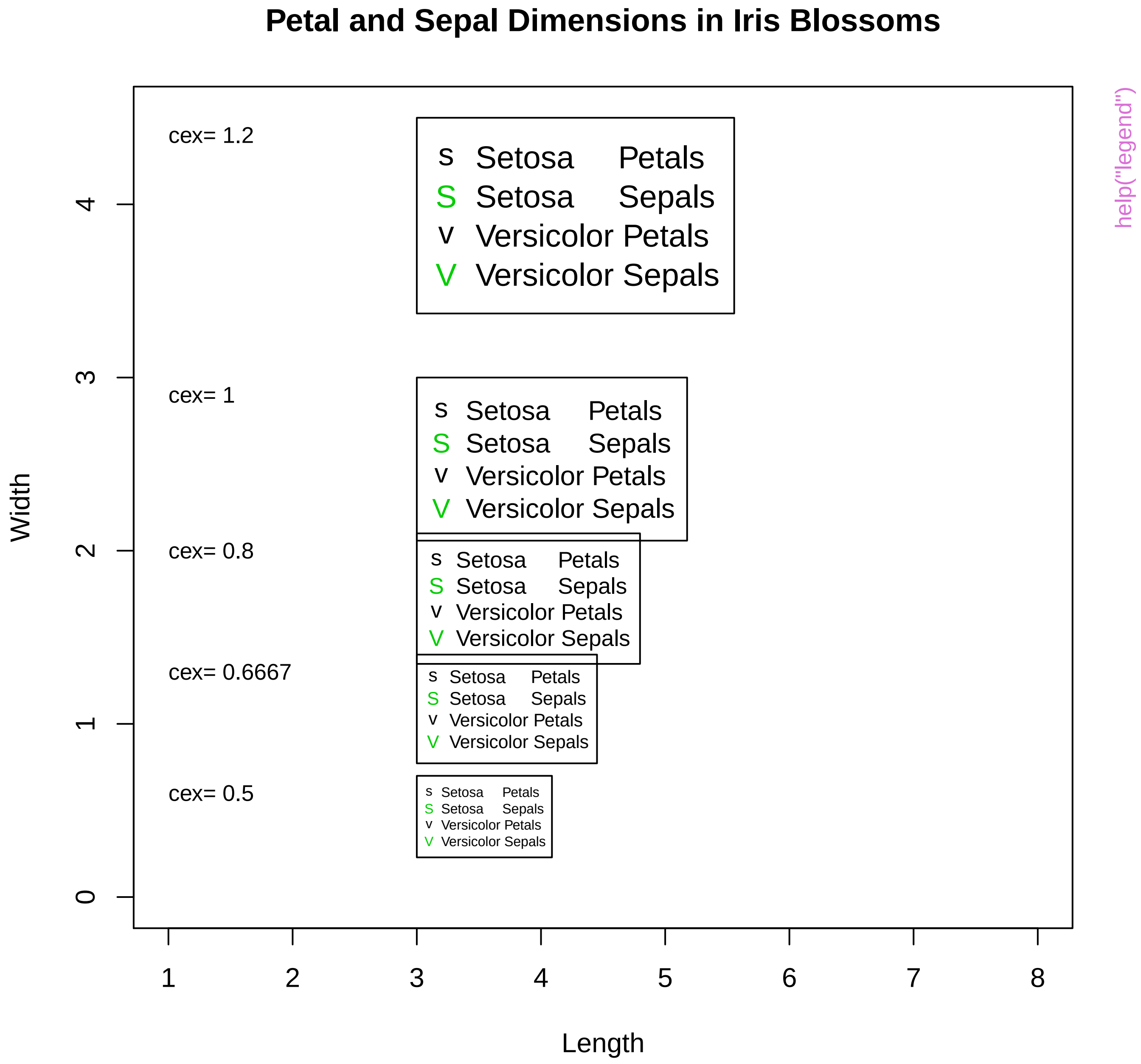

1
2


1
2

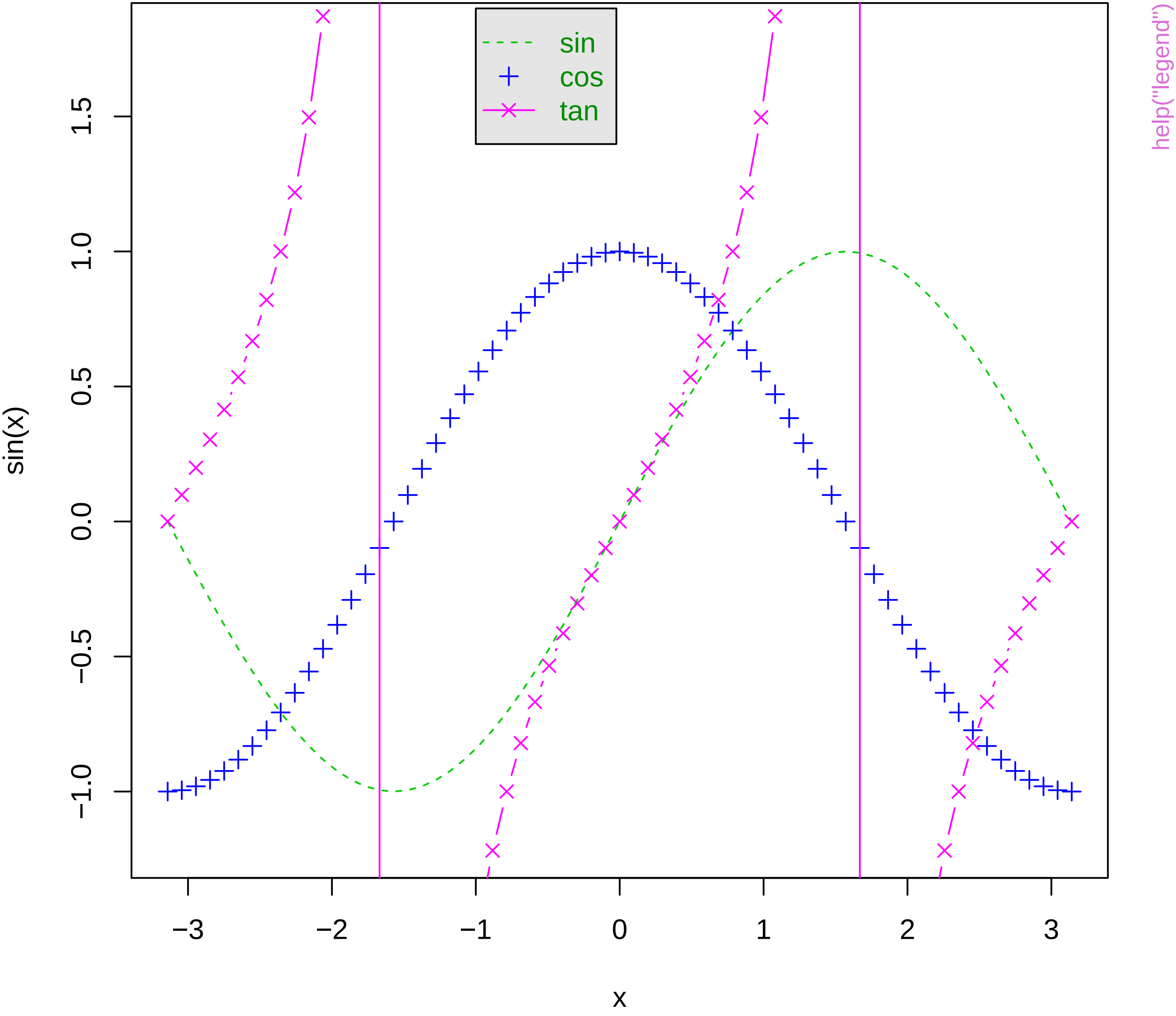

1
help("layout")

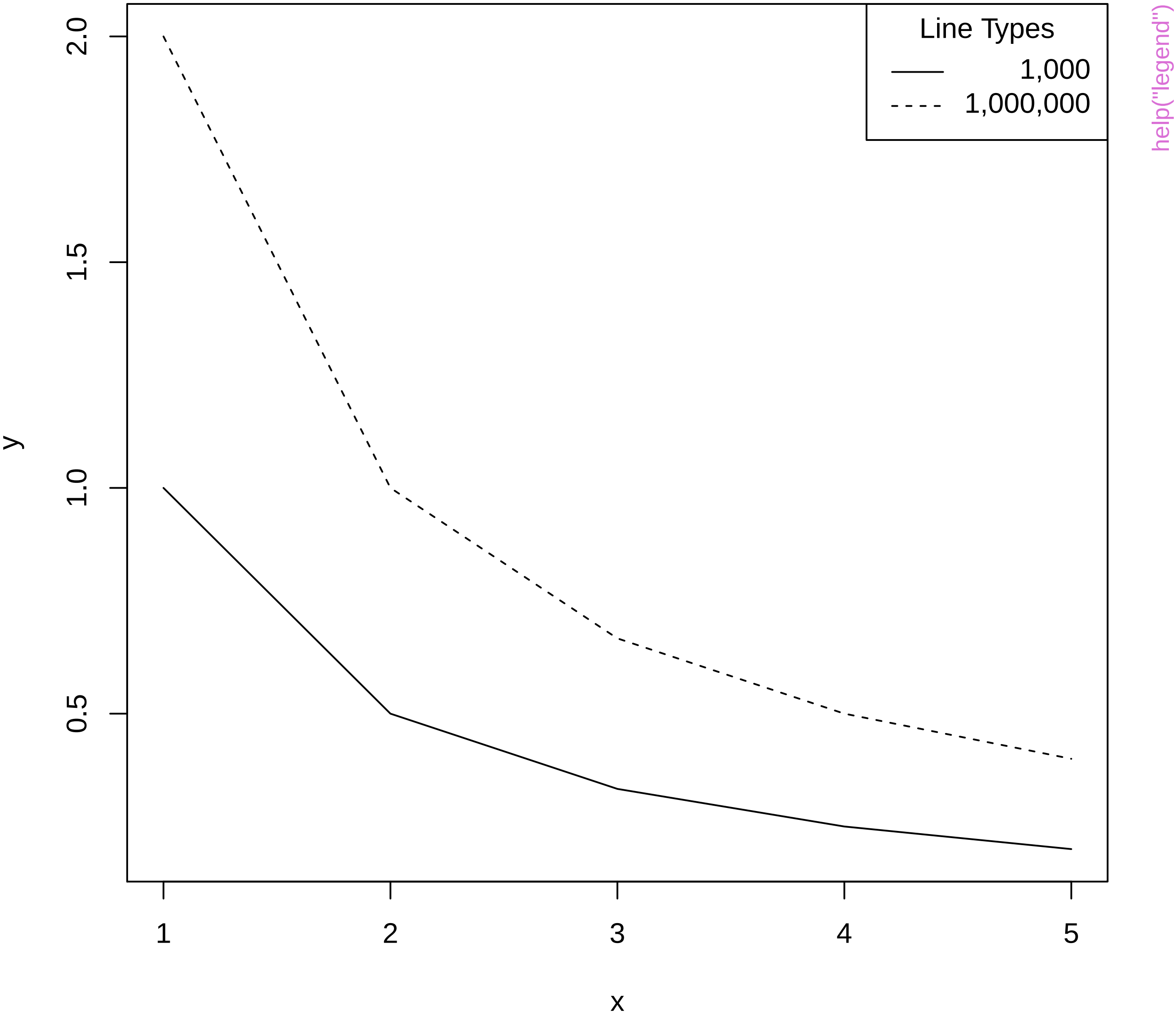



3
2
1
0
−1
−2
−3
−3
−2
−1
0
1
2
3

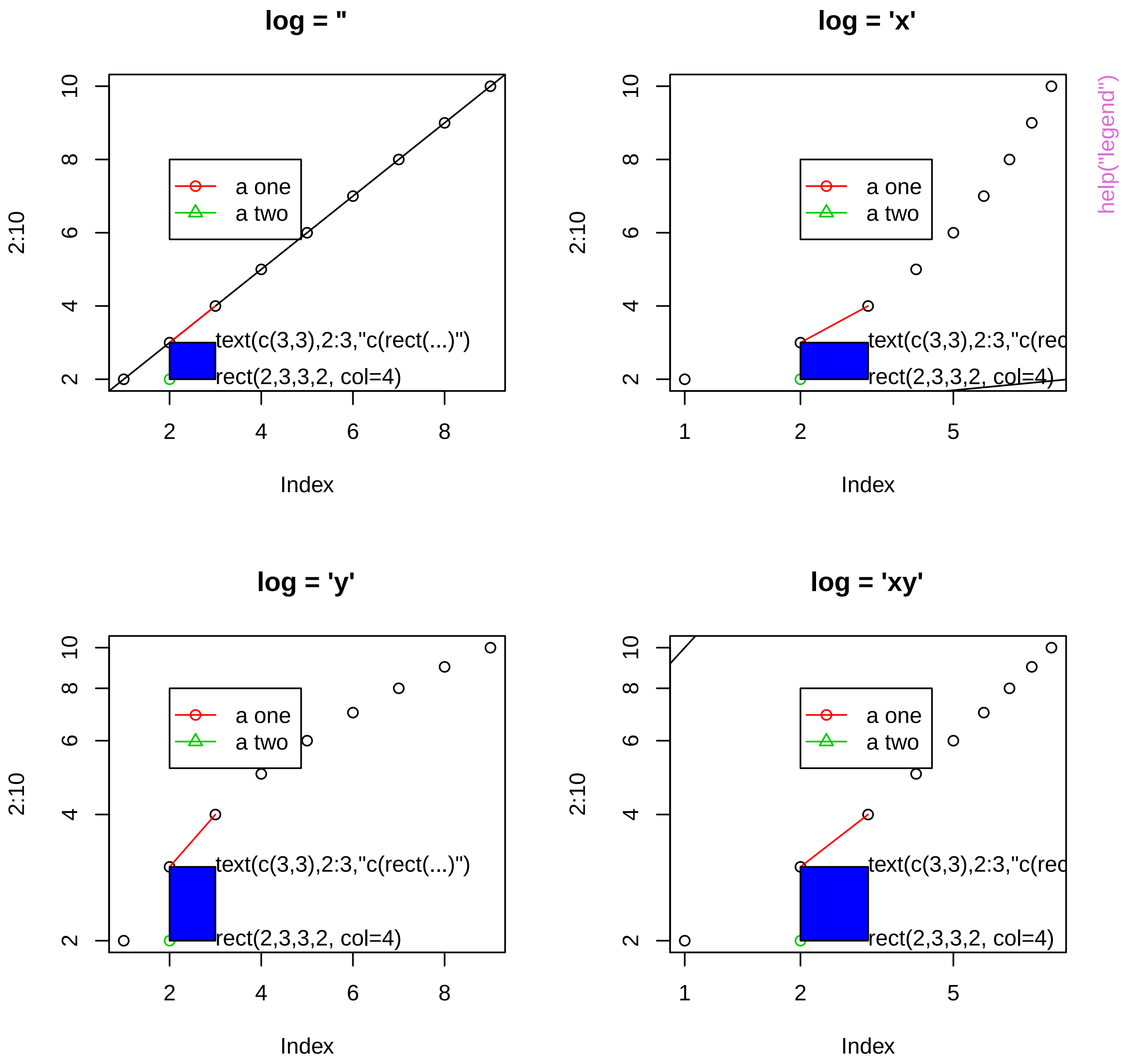

Petal and Sepal Dimensions in Iris Blossoms
cex= 1.2
s Setosa Petals
S Setosa Sepals
v Versicolor Petals
V Versicolor Sepals
cex= 1
cex= 0.8
cex= 0.6667
cex= 0.5
Width
Length
0
1
2
3
4
1
2
3
4
5
6
7
8
help("legend")

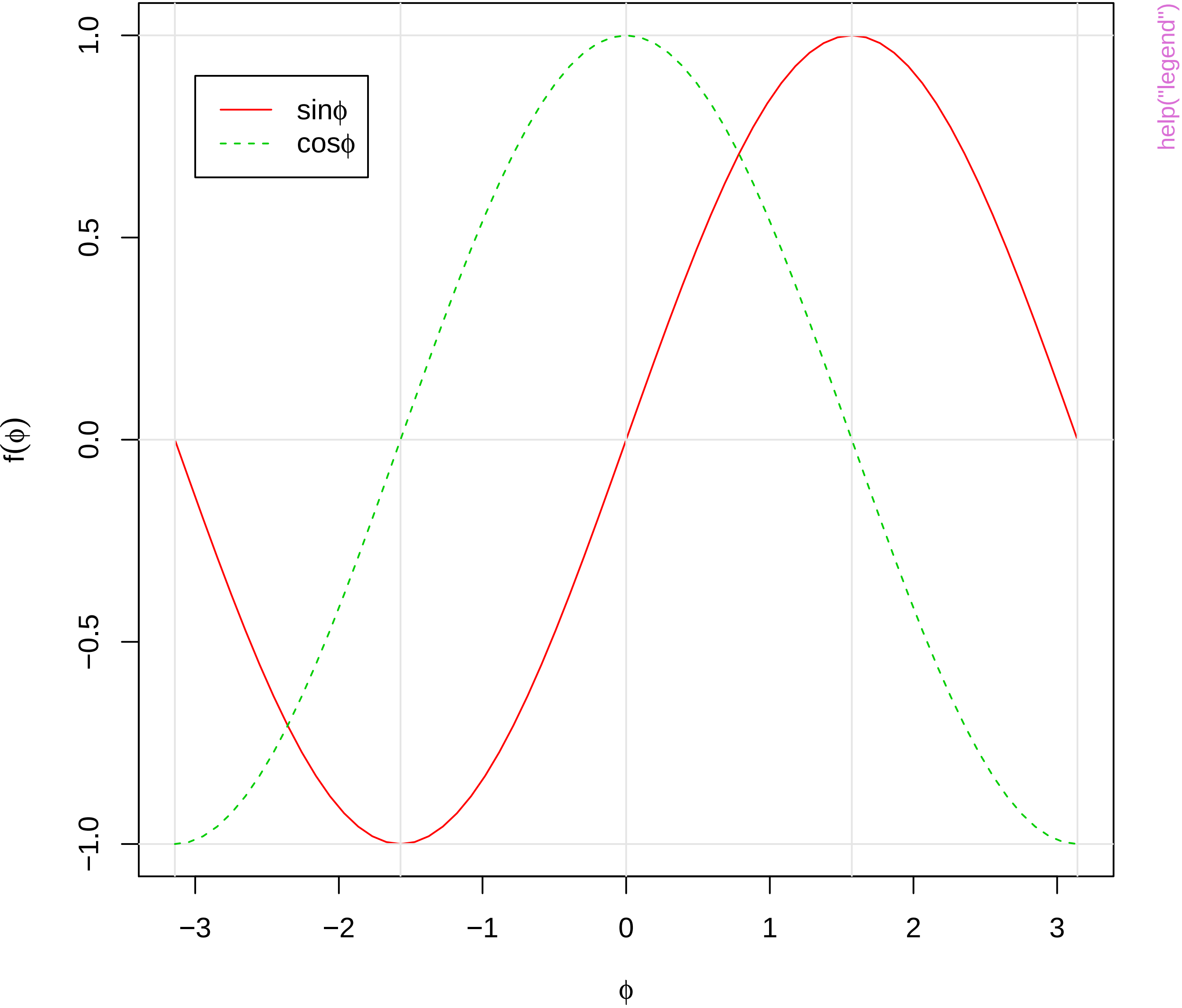
legend(..., lty = c(2, −1, 1), pch = c(−1,3,4), merge = TRUE)

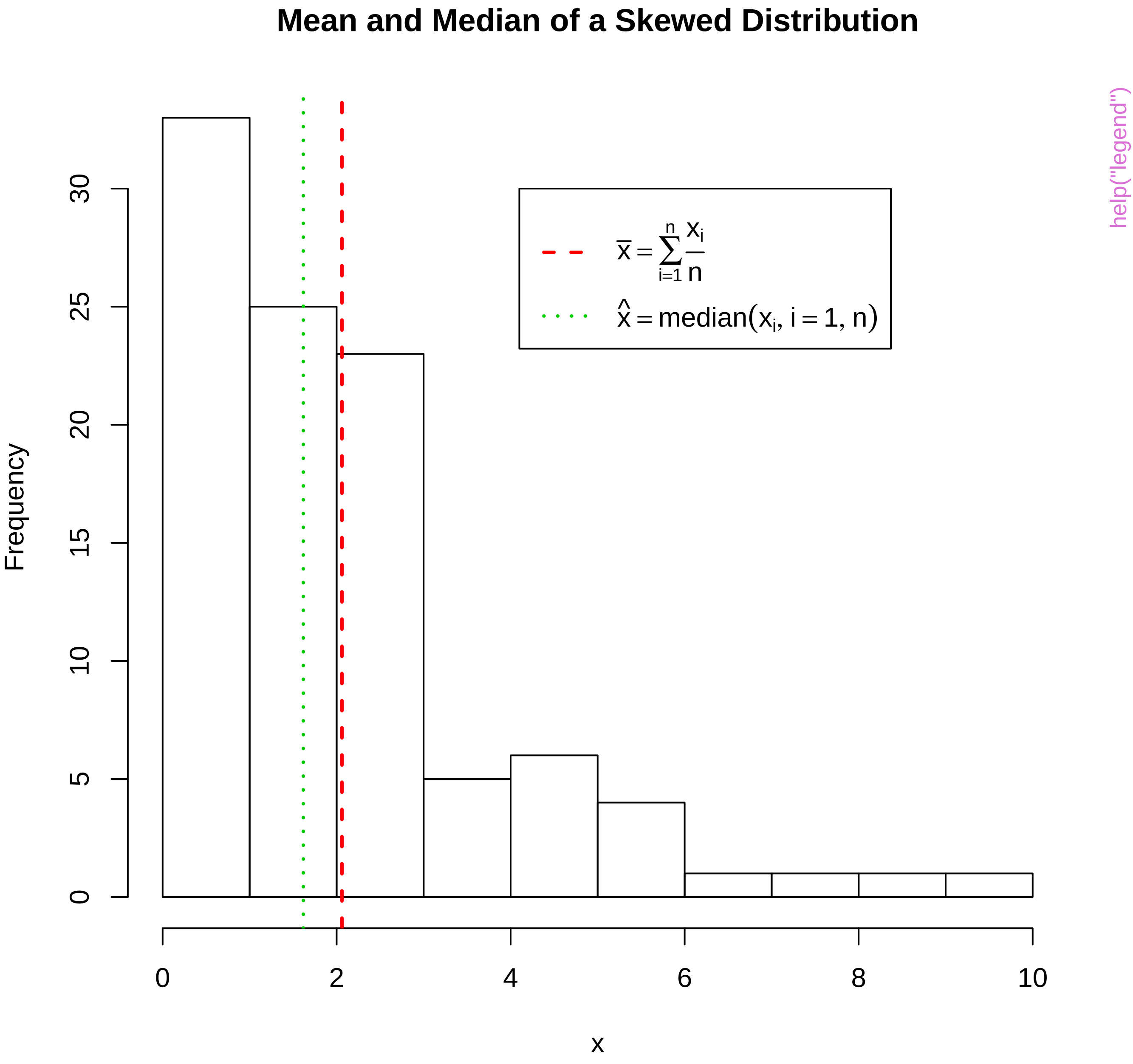


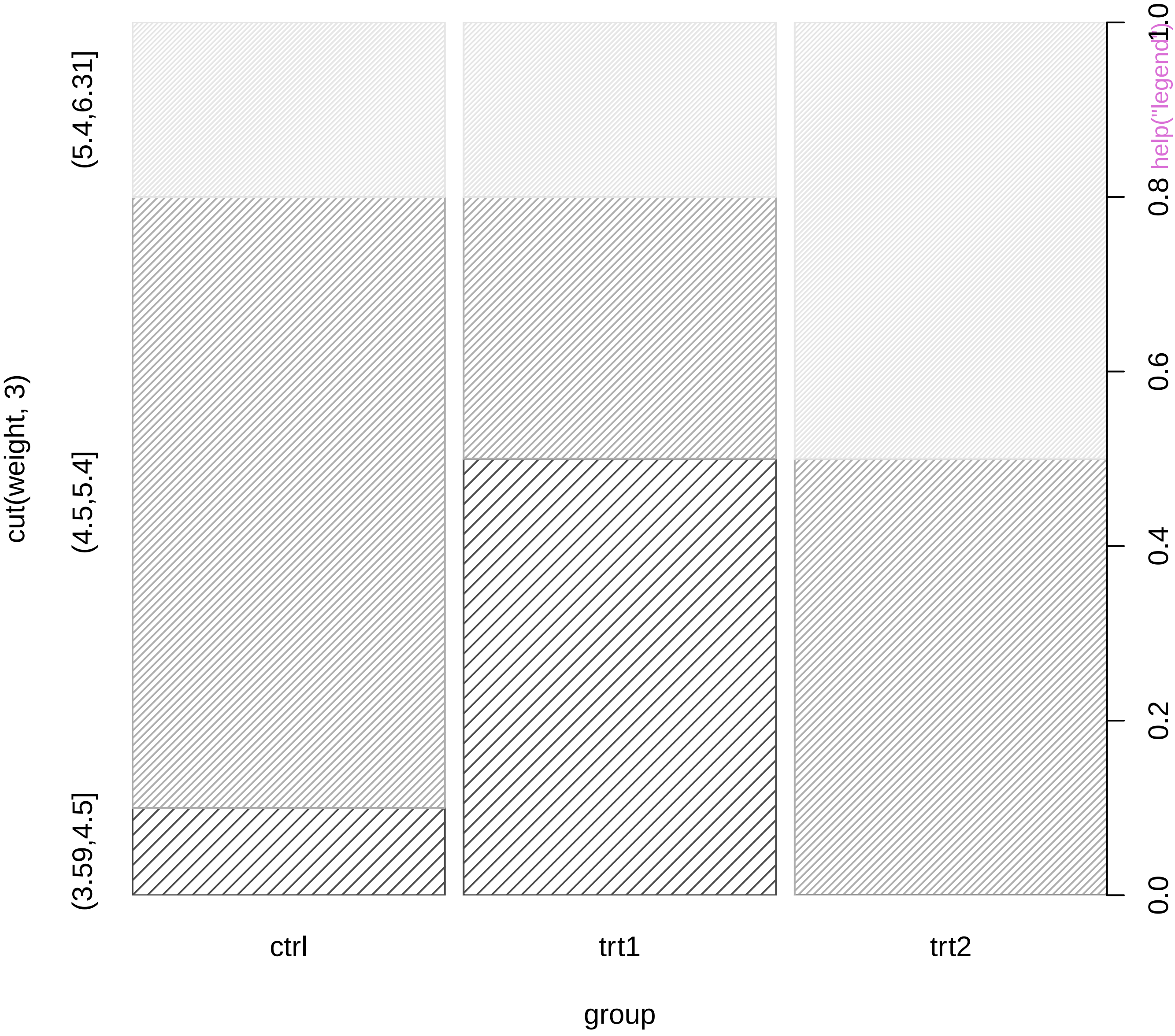


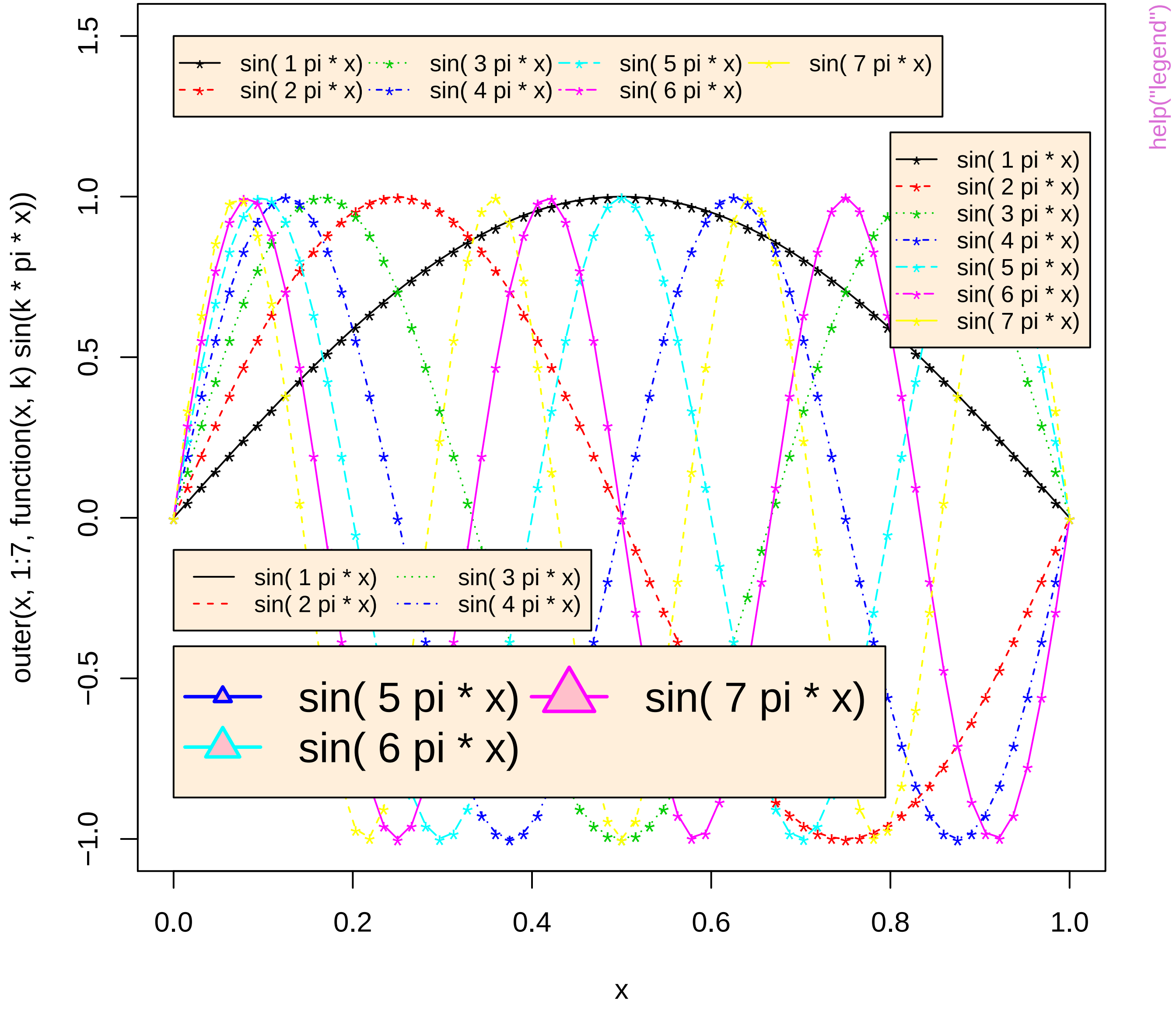
Line Types
1,000
1,000,000
help("legend")
y
2.0
1.5
1.0
0.5
x
1
2
3
4
5


log = ''
log = 'x'
log = 'y'
log = 'xy'
help("legend")
2:10
Index
2
4
6
8
10
1
5
a one
a two
text(c(3,3),2:3,"c(rect(...)")
rect(2,3,3,2, col=4)

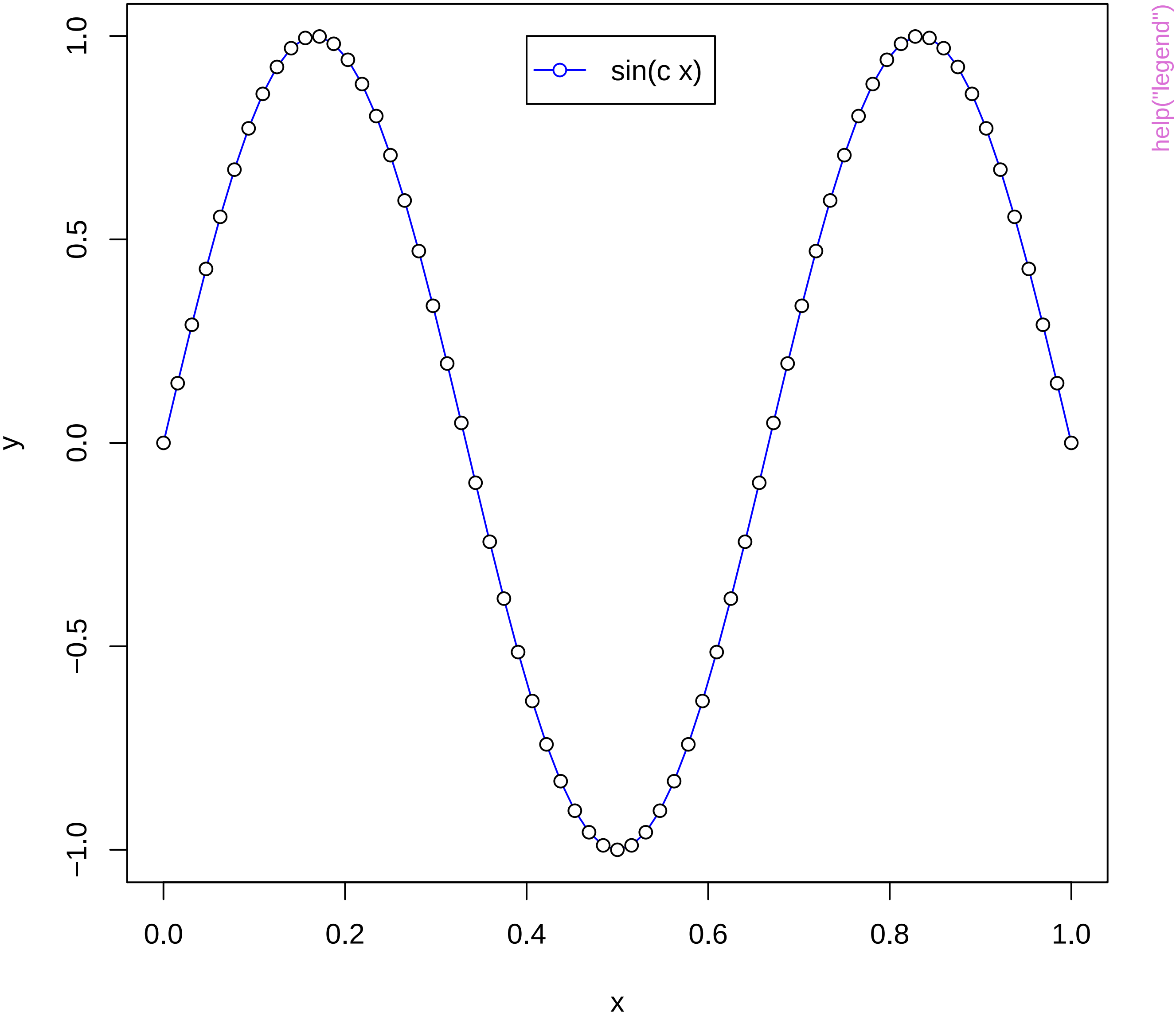

sinϕ
cosϕ
1.0
0.5
0.0
−0.5
−1.0
f(ϕ)
−3
−2
−1
0
1
2
3
ϕ
help("legend")

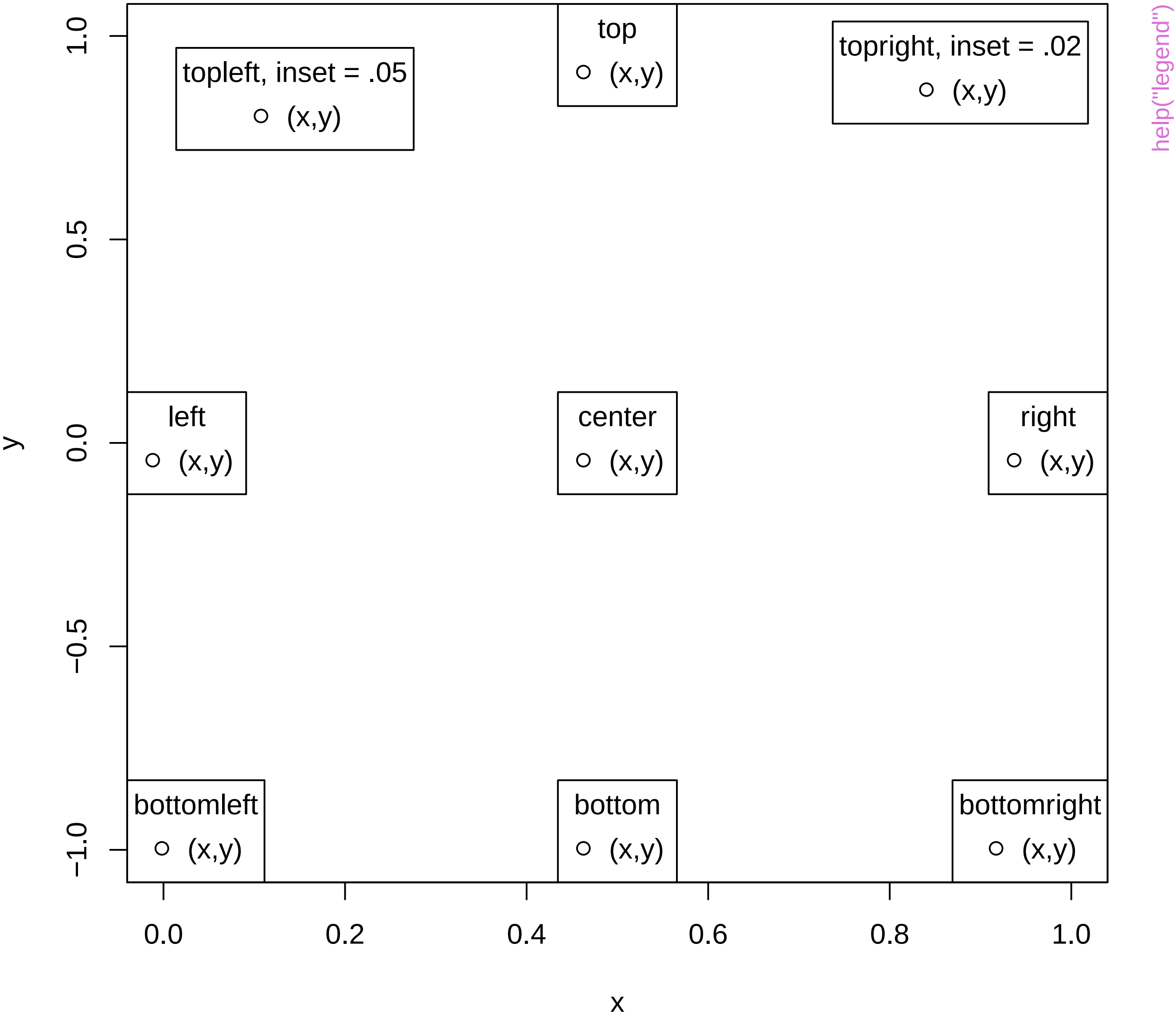

Mean and Median of a Skewed Distribution
Frequency
0
5
10
15
20
25
30
0
2
4
6
8
10
x
$\bar{x} = \sum_{i=1}^{n} \frac{x_i}{n}$
$\hat{x} = \text{median}(x_i, i = 1, n)$
help("legend")

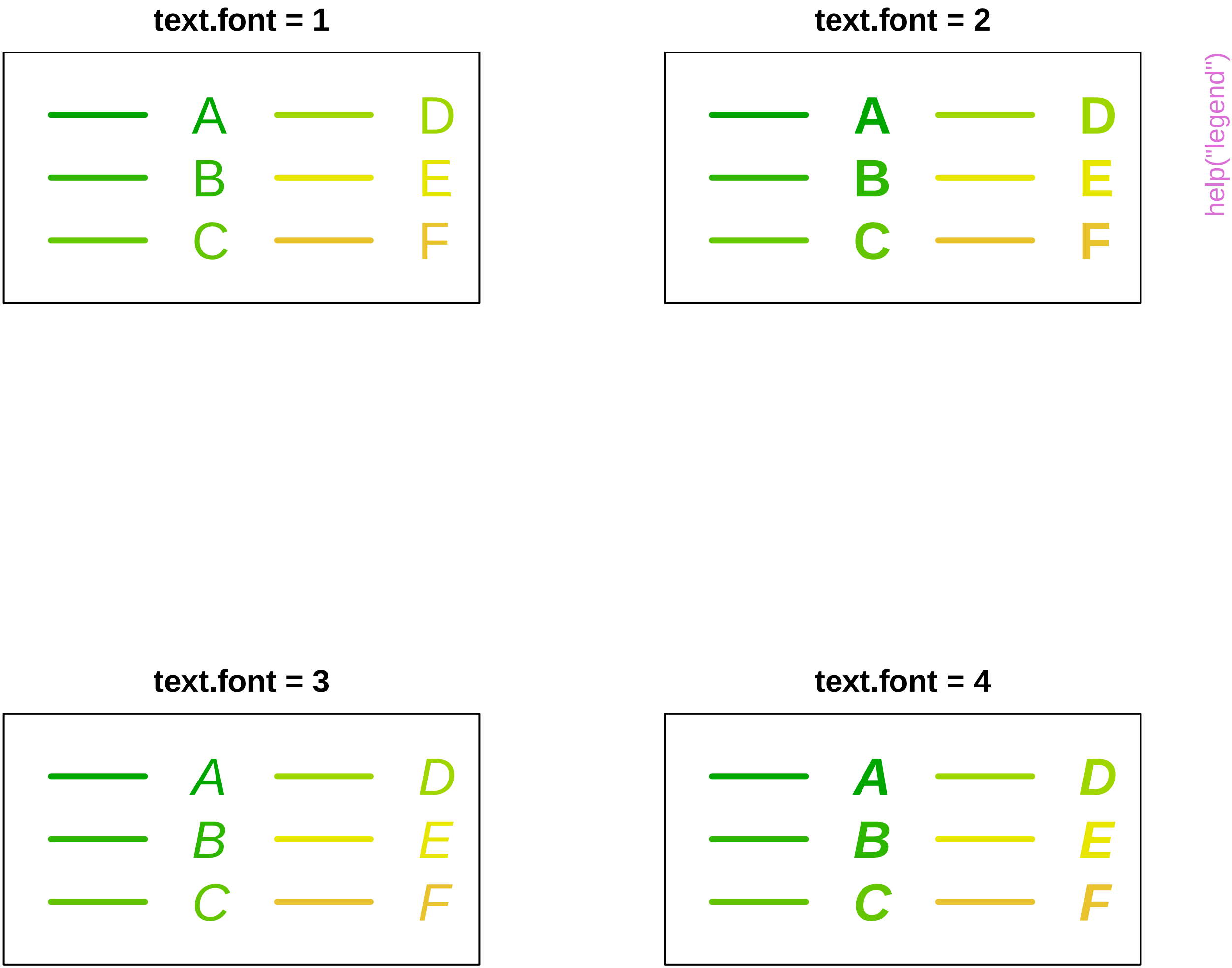

(5.4,6.31]
(4.5,5.4]
(3.59,4.5]
cut(weight, 3)
ctrl
trt1
trt2
group
0.0
0.2
0.4
0.6
0.8
1.0
help("legend")

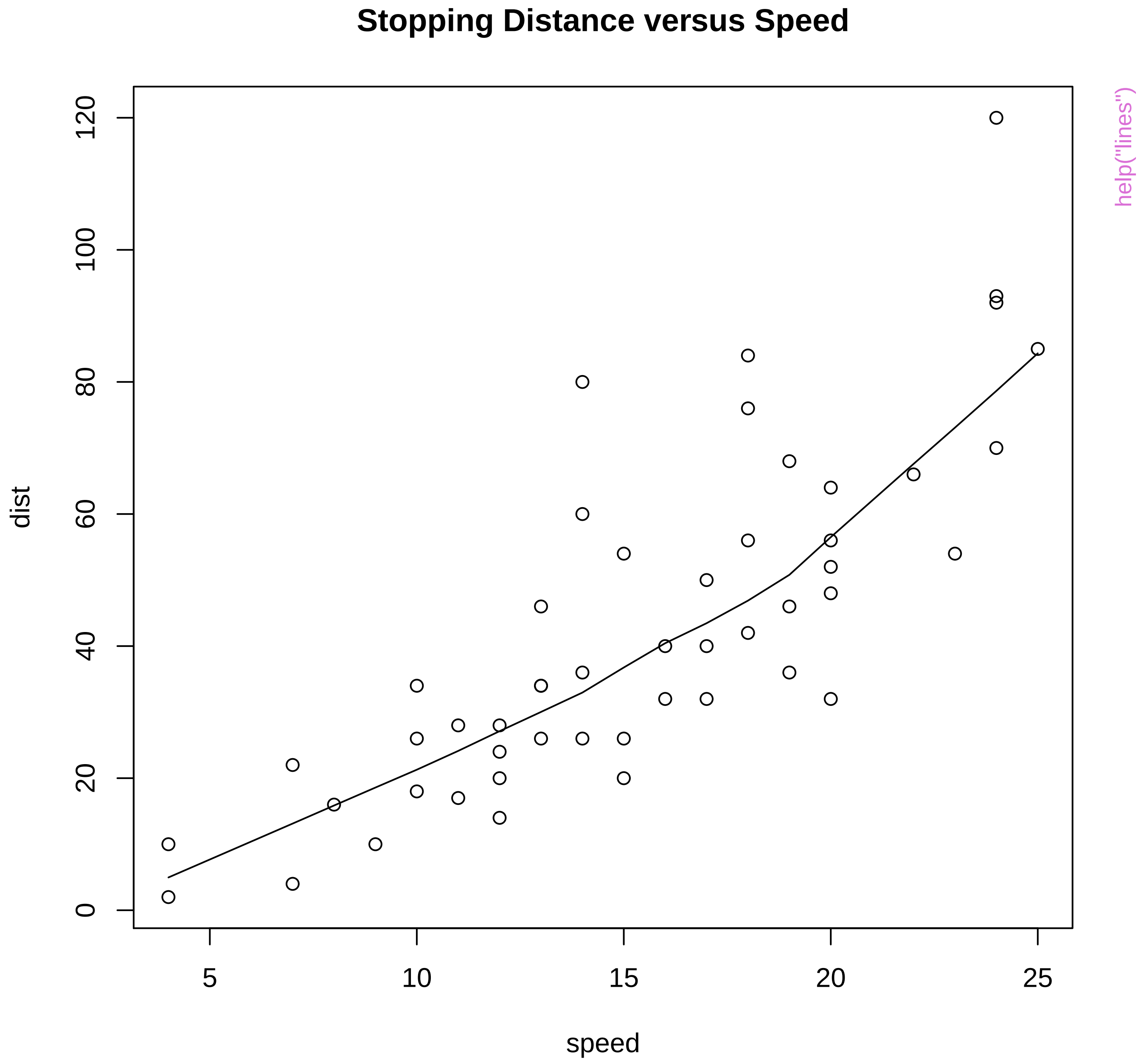

sin(1 pi * x)
sin(2 pi * x)
sin(3 pi * x)
sin(4 pi * x)
sin(5 pi * x)
sin(6 pi * x)
sin(7 pi * x)
sin(5 pi * x)
sin(6 pi * x)
sin(7 pi * x)
outer(x, 1:7, function(x, k) sin(k * pi * x))
x
−1.0
−0.5
0.0
0.5
1.0
1.5
0.0
0.2
0.4
0.6
0.8
1.0
help("legend")

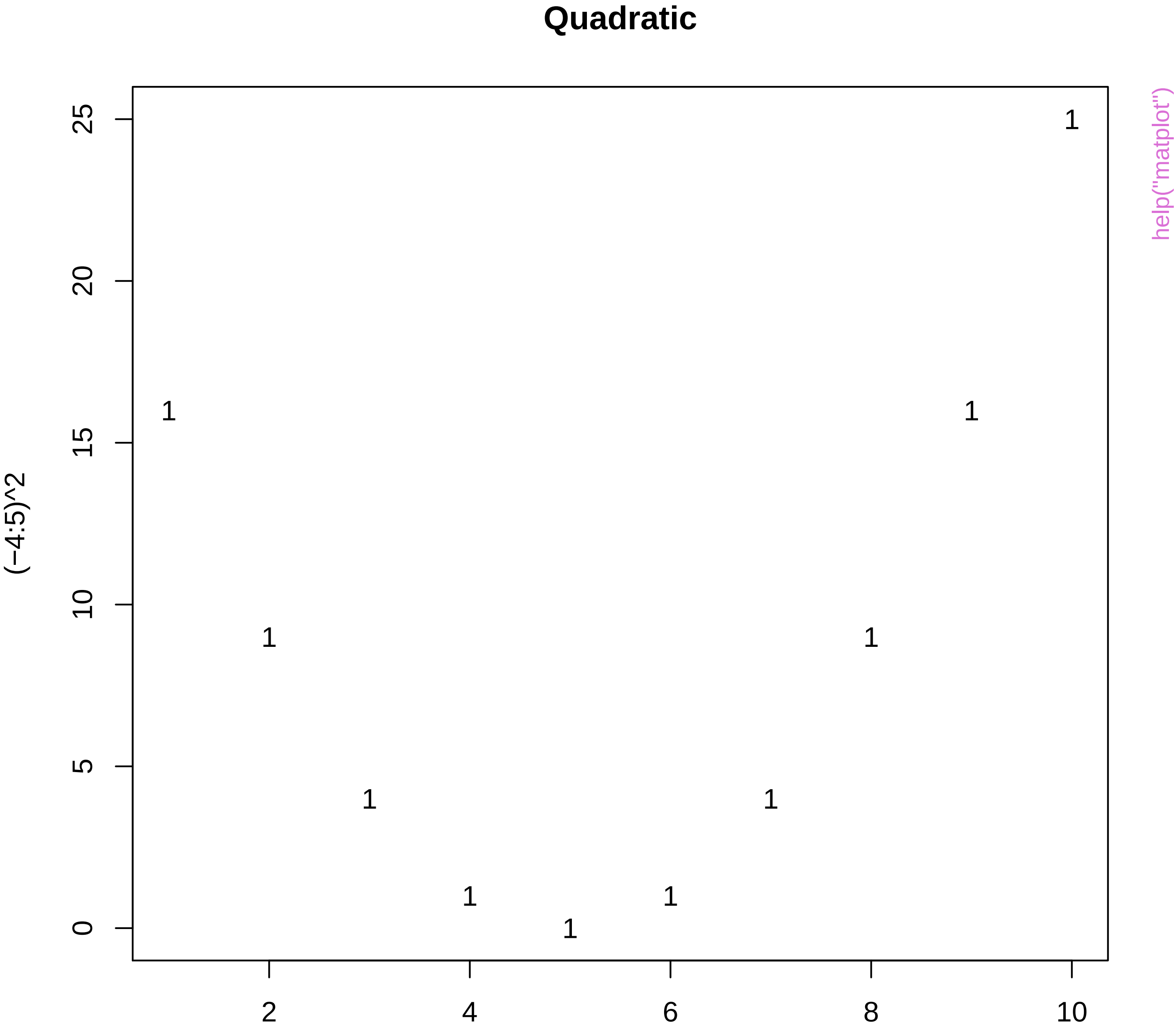
points with bg & legend(*, pt.bg)

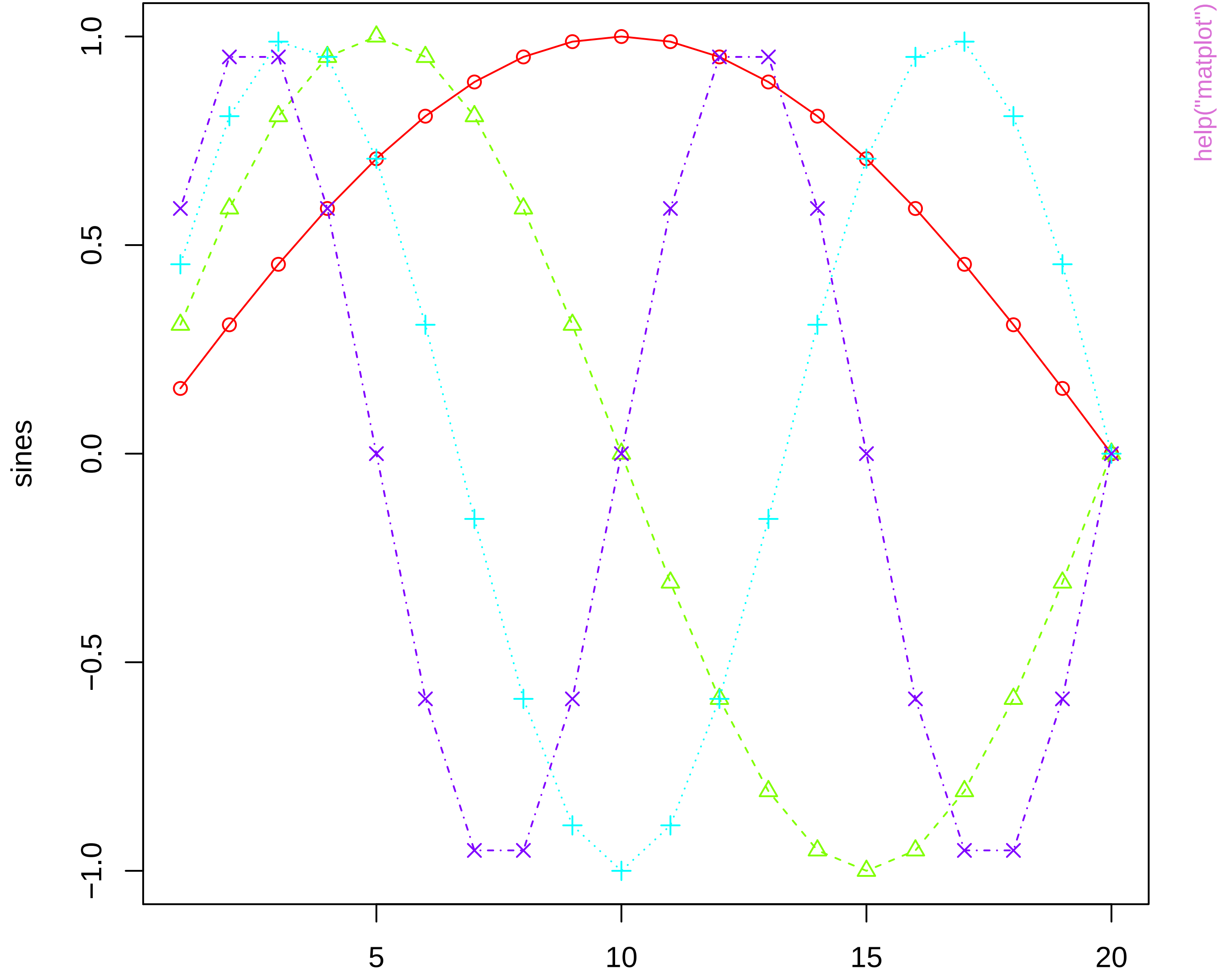


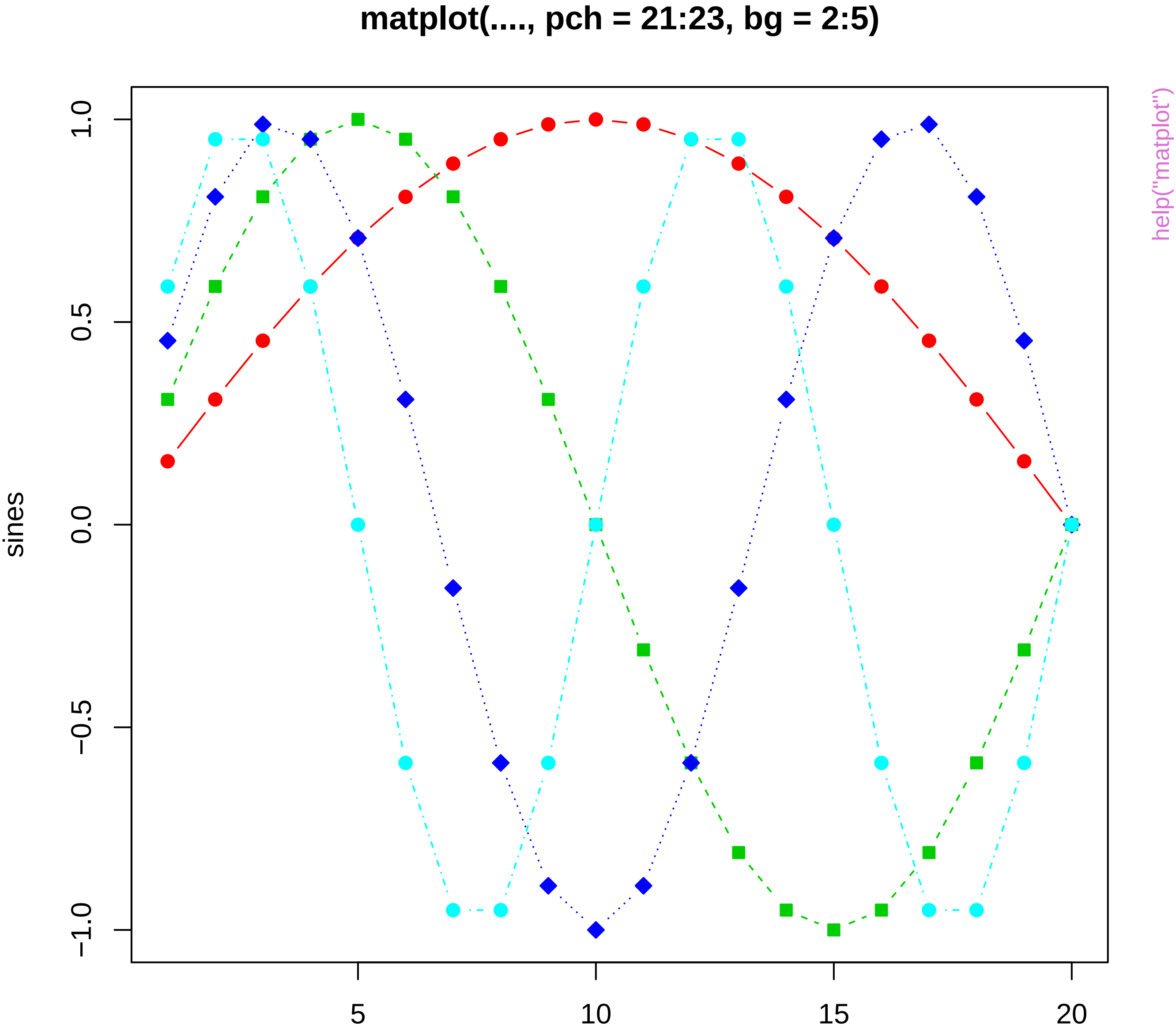

topleft, inset = .05
(x,y)
top
(x,y)
topright, inset = .02
(x,y)
left
(x,y)
center
(x,y)
right
(x,y)
bottomleft
(x,y)
bottom
(x,y)
bottomright
(x,y)
1.0
0.5
0.0
−0.5
−1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x
help("legend")

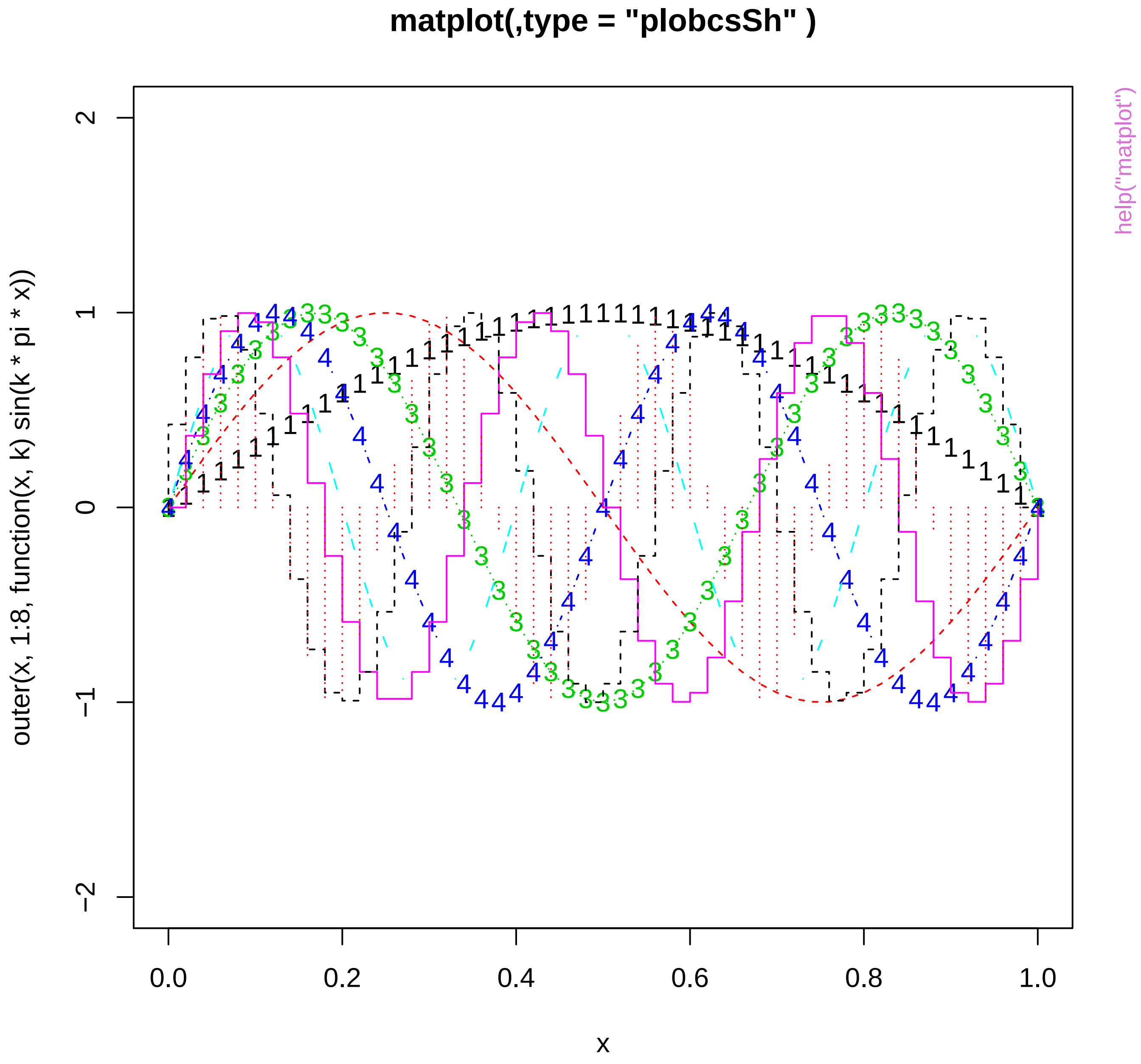

text.font = 1
A
B
C
D
E
F
text.font = 2
A
B
C
D
E
F
text.font = 3
A
B
C
D
E
F
text.font = 4
A
B
C
D
E
F
help("legend")

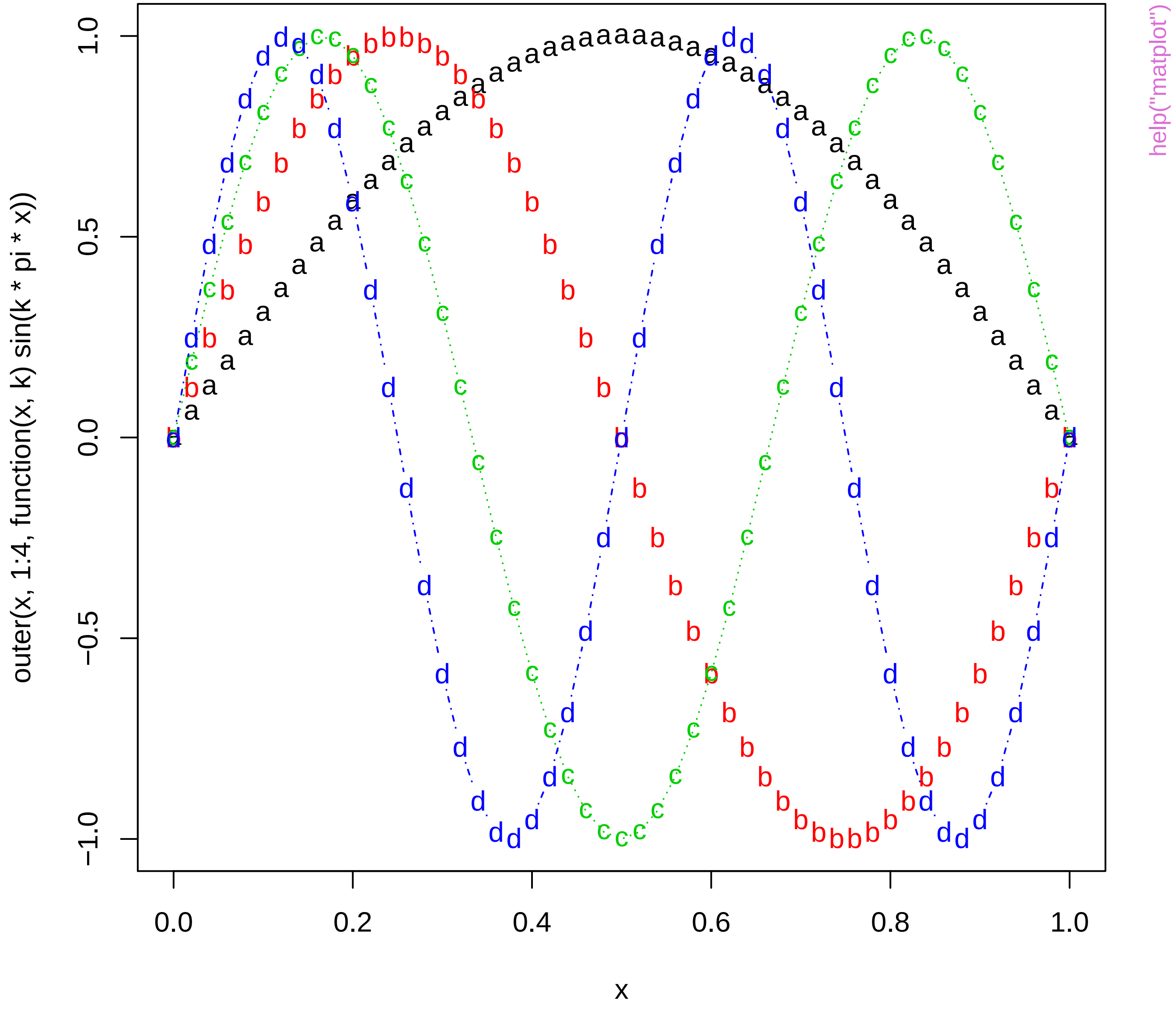

Stopping Distance versus Speed
dist
speed
0
20
40
60
80
100
120
5
10
15
20
25
help("lines")

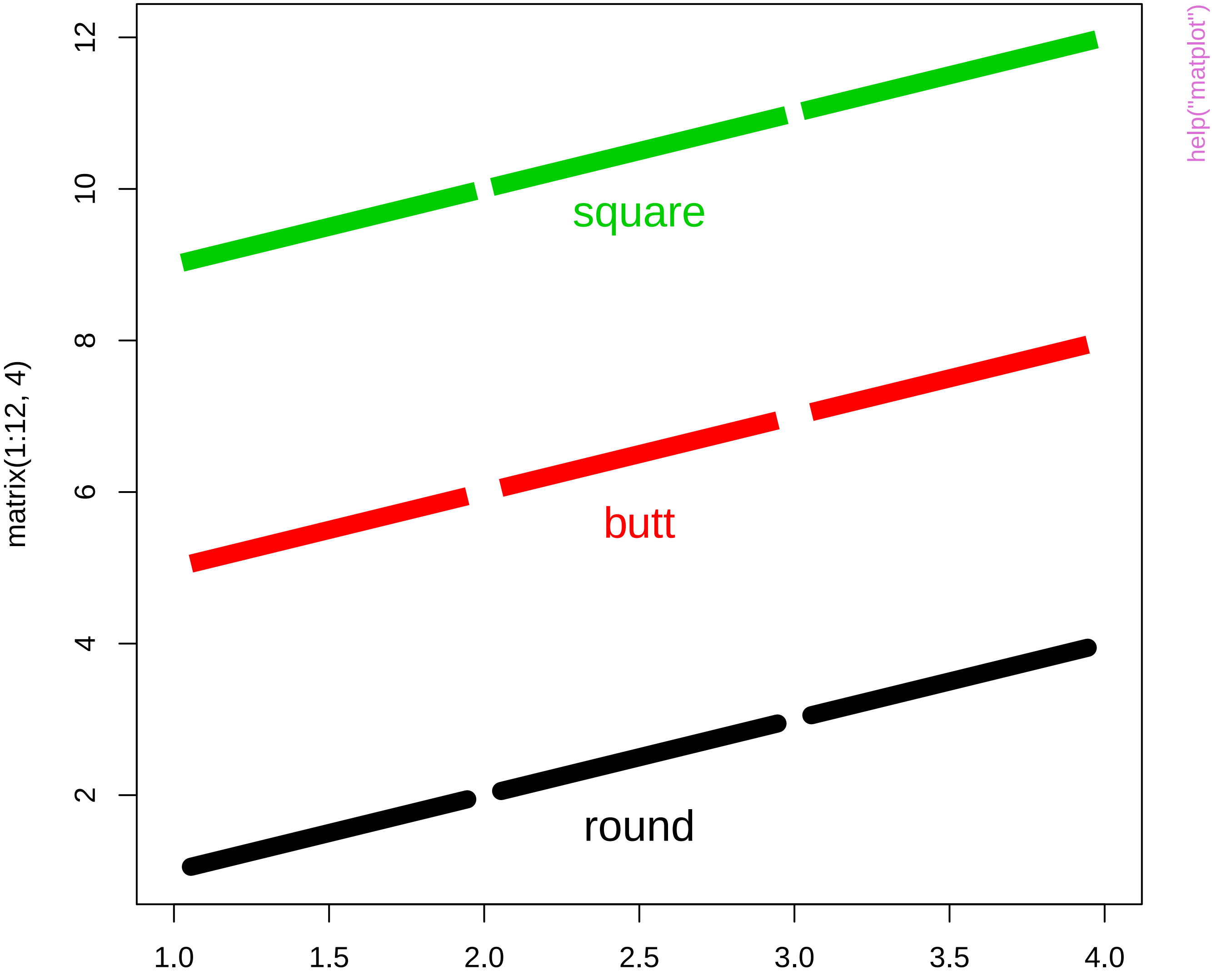

Quadratic
(−4:5)^2
0
5
10
15
20
25
2
4
6
8
10
1
help("matplot")

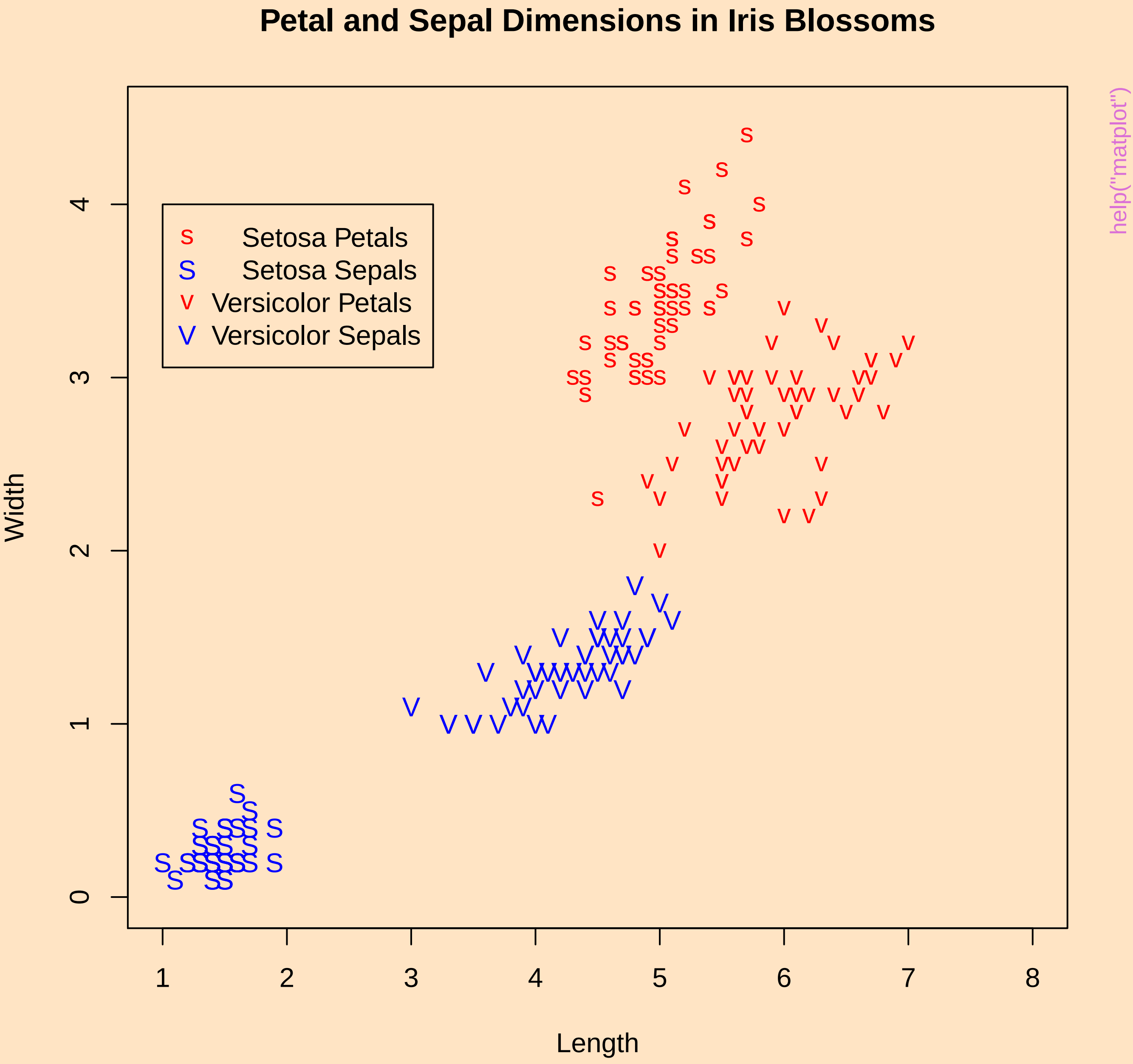

sines
1.0
0.5
0.0
−0.5
−1.0
5
10
15
20
help("matplot")

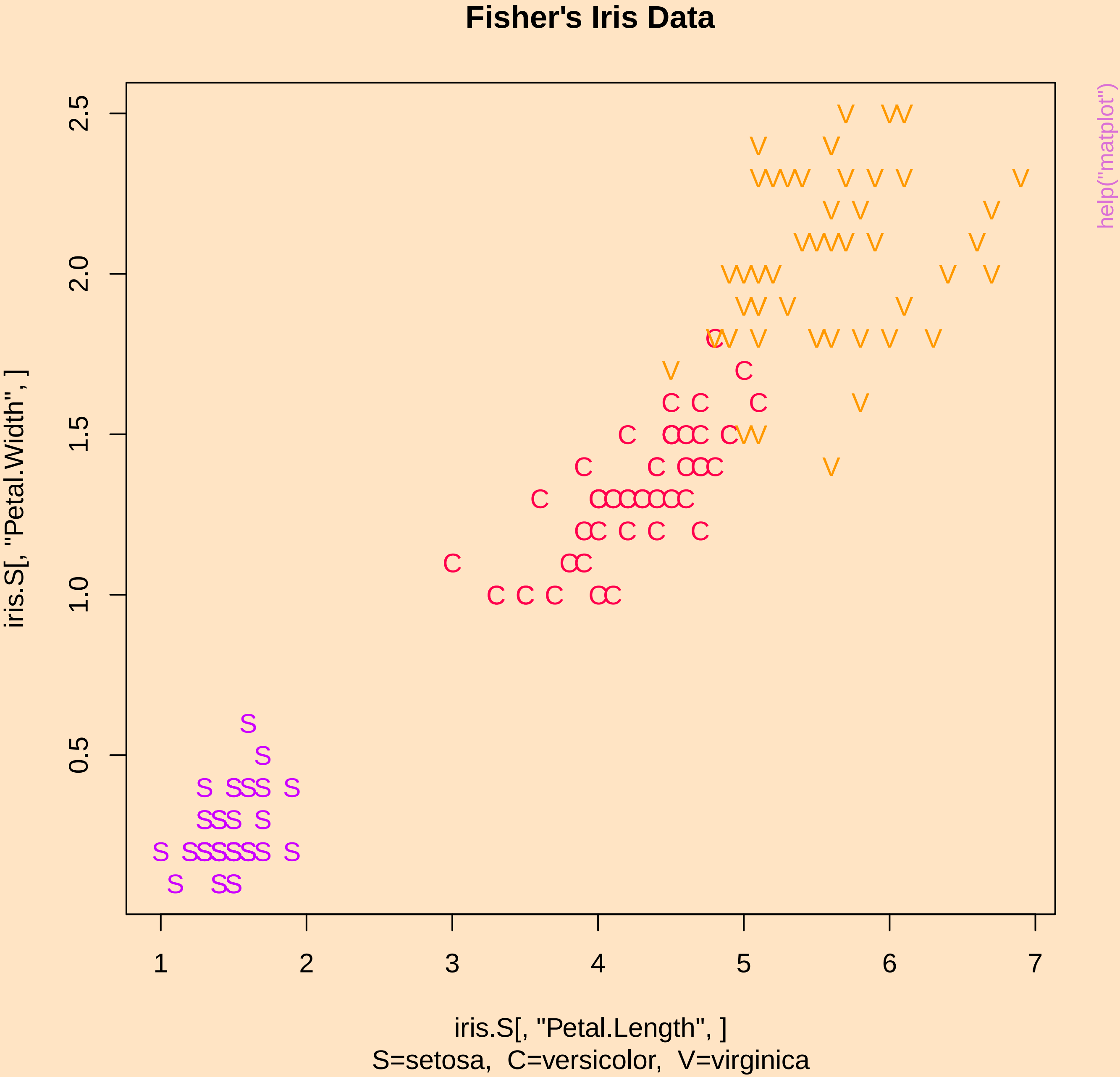

matplot(...., pch = 21:23, bg = 2:5)
sines
1.0
0.5
0.0
−0.5
−1.0
5
10
15
20
help("matplot")

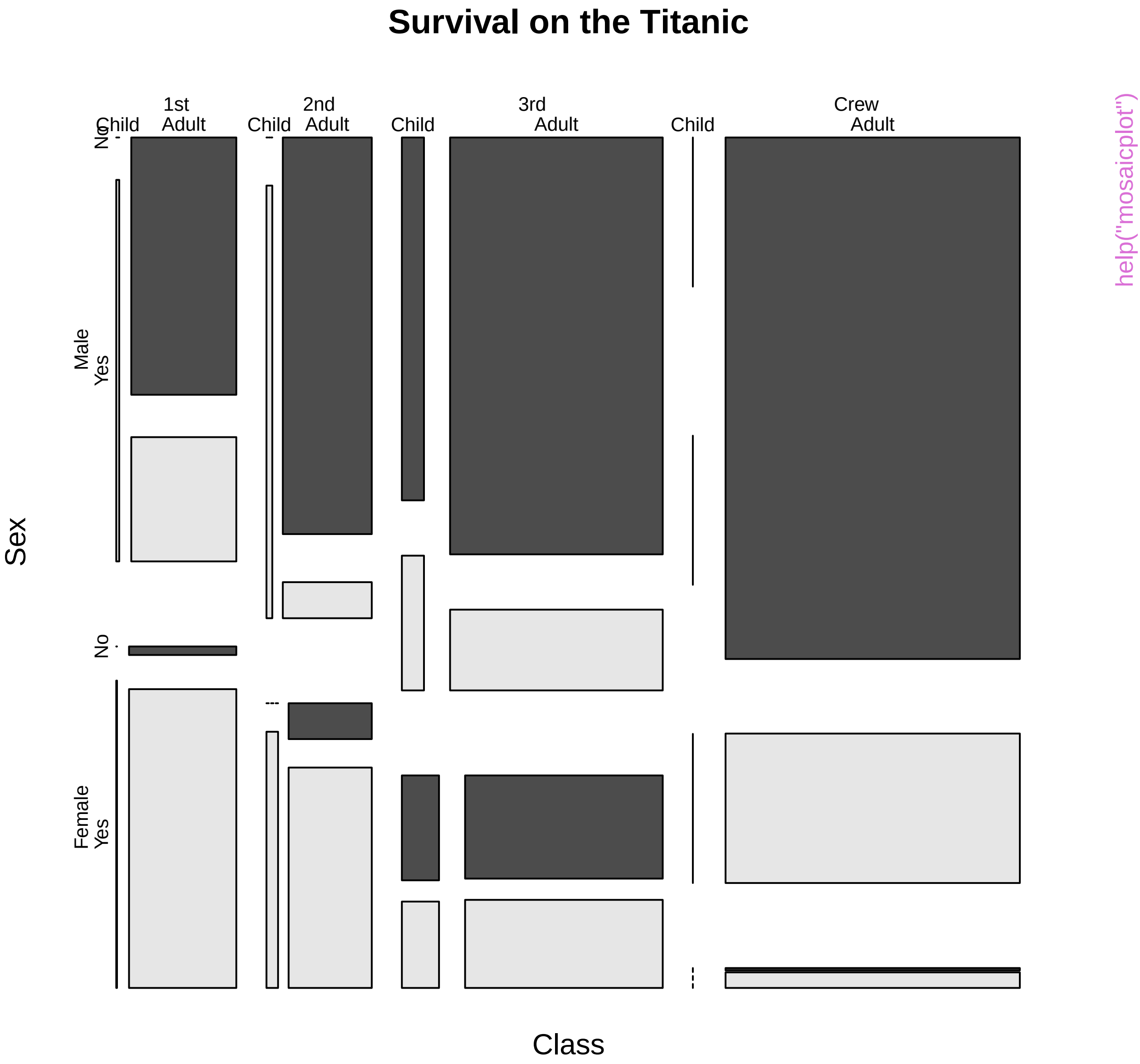

matplot(,type = "plobcsSh")
outer(x, 1:8, function(x, k) sin(k * pi * x))
x
0.0
0.2
0.4
0.6
0.8
1.0
−2
−1
0
1
2
help("matplot")

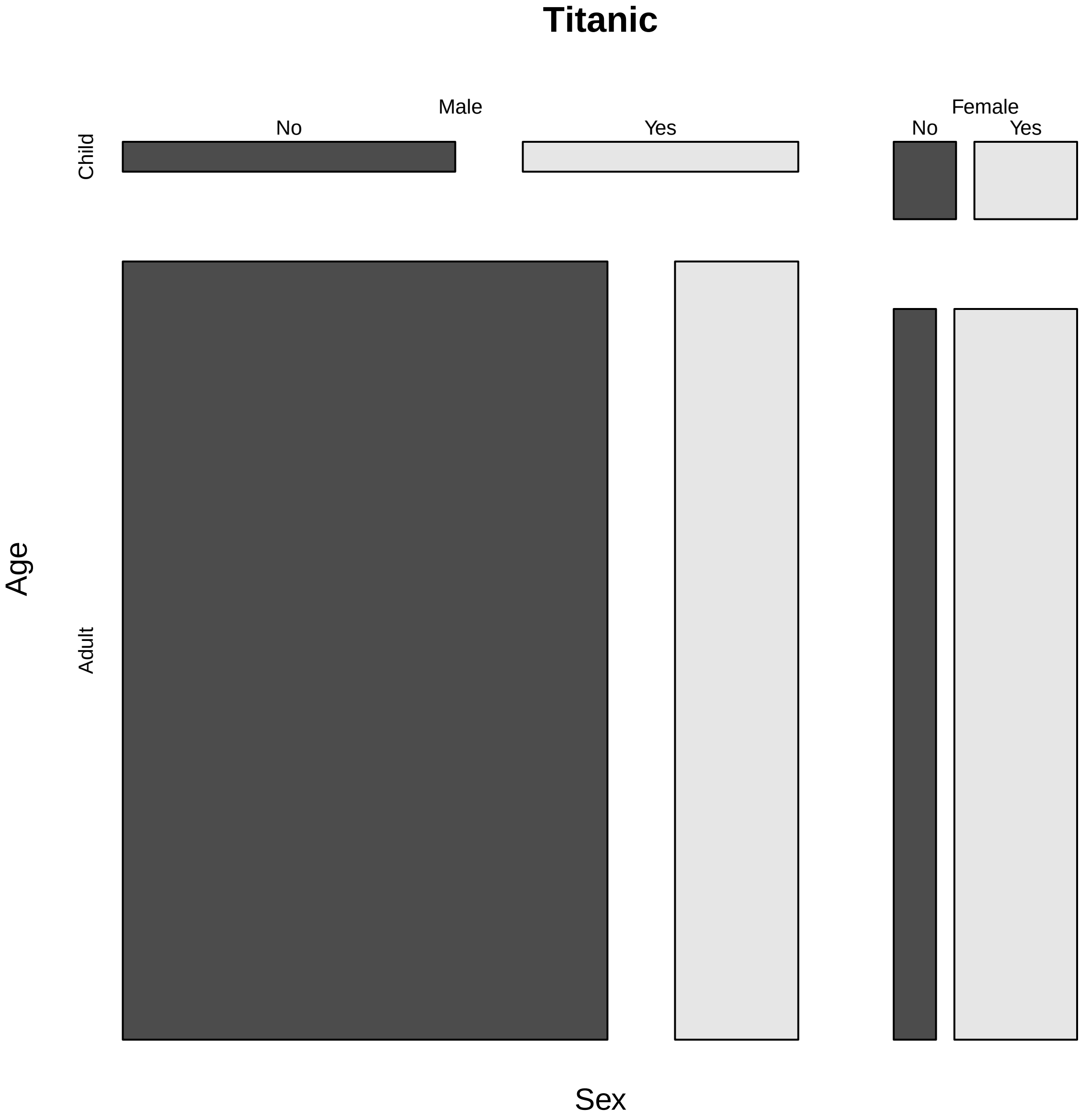

outer(x, 1:4, function(x, k) sin(k * pi * x))
x
0.0
0.2
0.4
0.6
0.8
1.0
−1.0
−0.5
0.0
0.5
1.0
a
b
c
d
help("matplot")


matrix(1:12, 4)
2
4
6
8
10
12
1.0
1.5
2.0
2.5
3.0
3.5
4.0
square
butt
round
help("matplot")

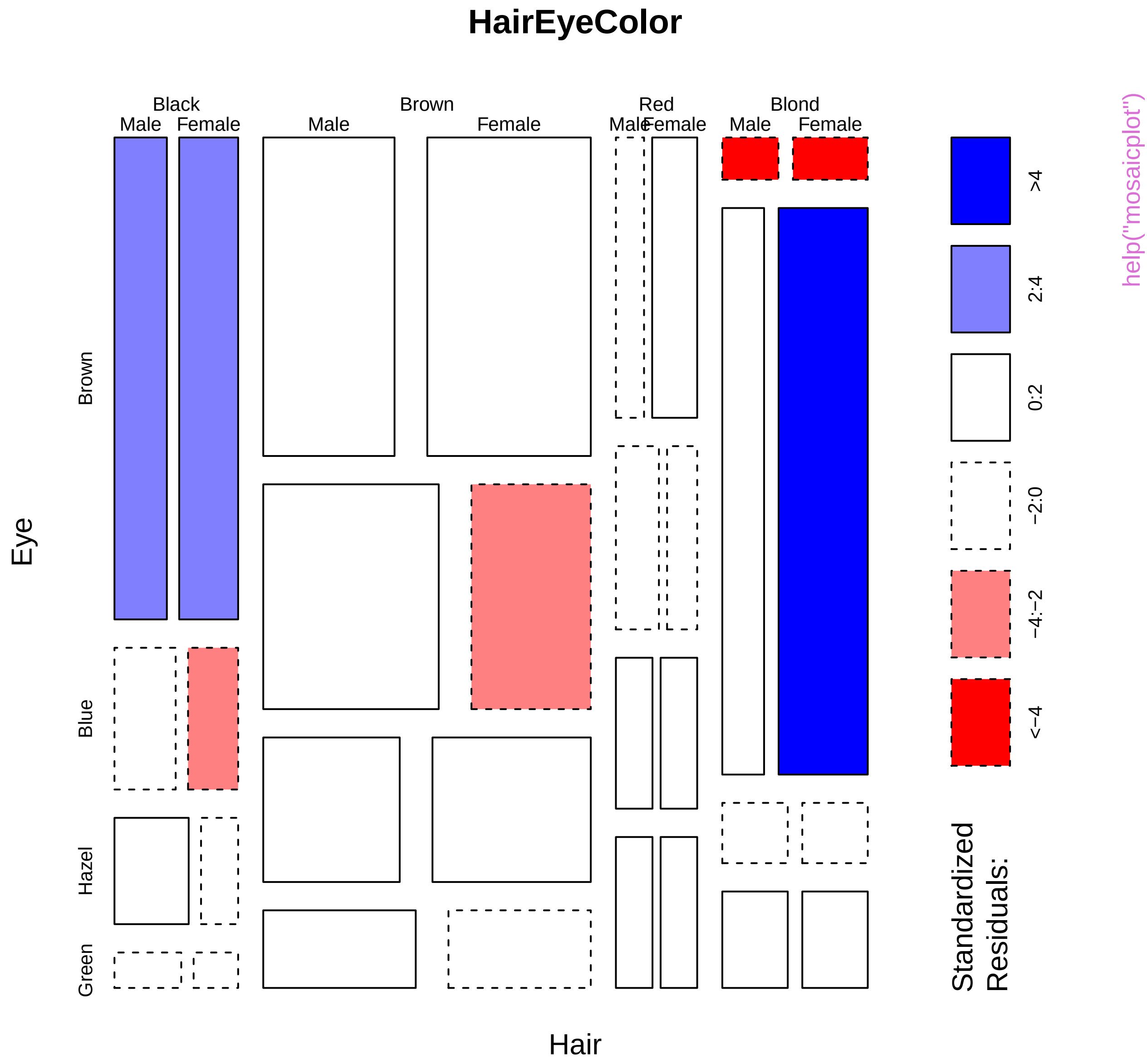

Petal and Sepal Dimensions in Iris Blossoms
s Setosa Petals
S Setosa Sepals
v Versicolor Petals
V Versicolor Sepals
Width
0
1
2
3
4
Length
1
2
3
4
5
6
7
8
help("matplot")


Fisher's Iris Data
help("matplot")
2.5
2.0
1.5
1.0
0.5
iris.S[, "Petal.Width",]
1
2
3
4
5
6
7
iris.S[, "Petal.Length",]
S=setosa, C=versicolor, V=virginica

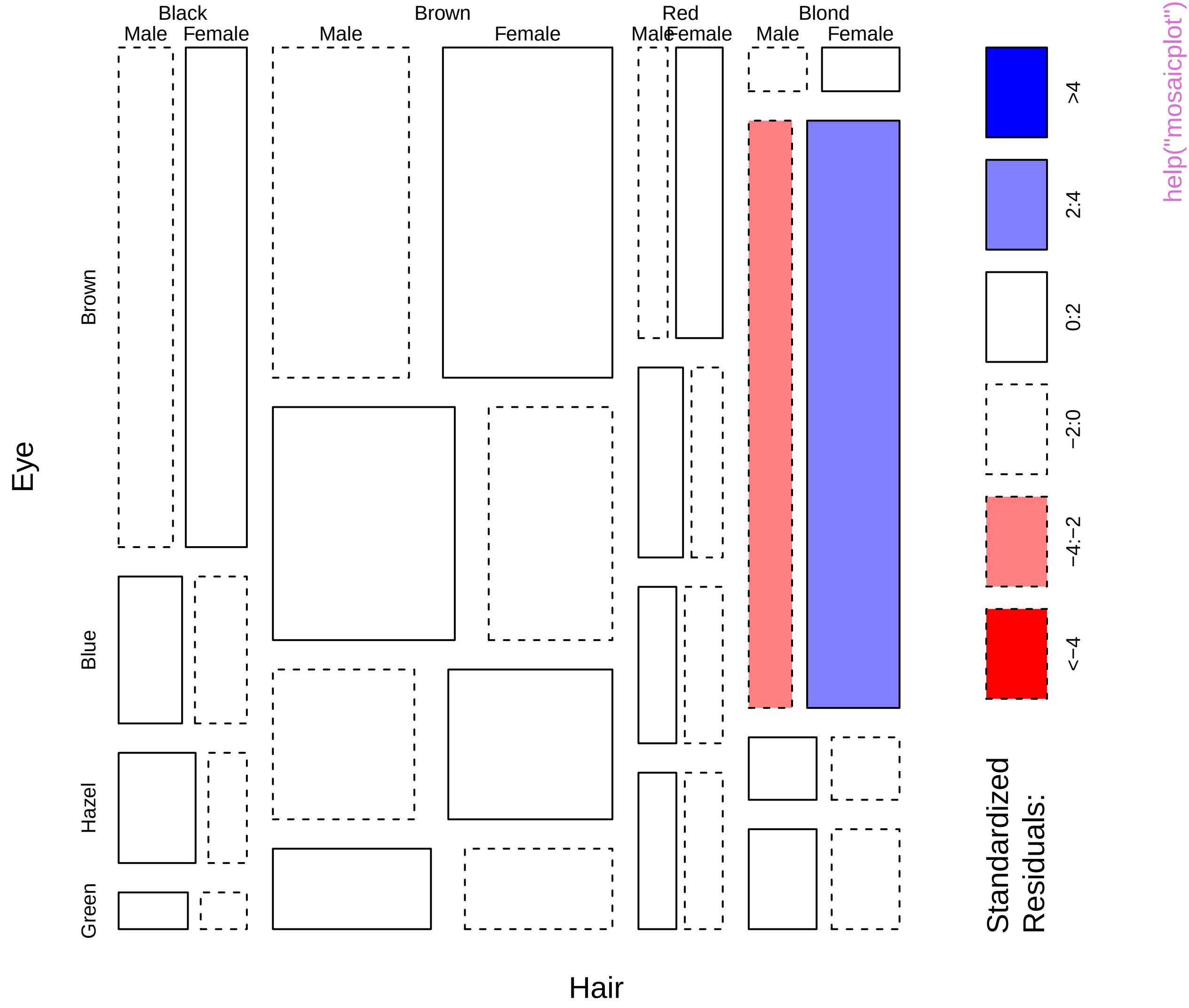

Survival on the Titanic
1st
2nd
3rd
Crew
Child
Adult
Child
Adult
Child
Adult
Child
Adult
No
Yes
Male
No
Yes
Female
Sex
Class
help("mosaicplot")

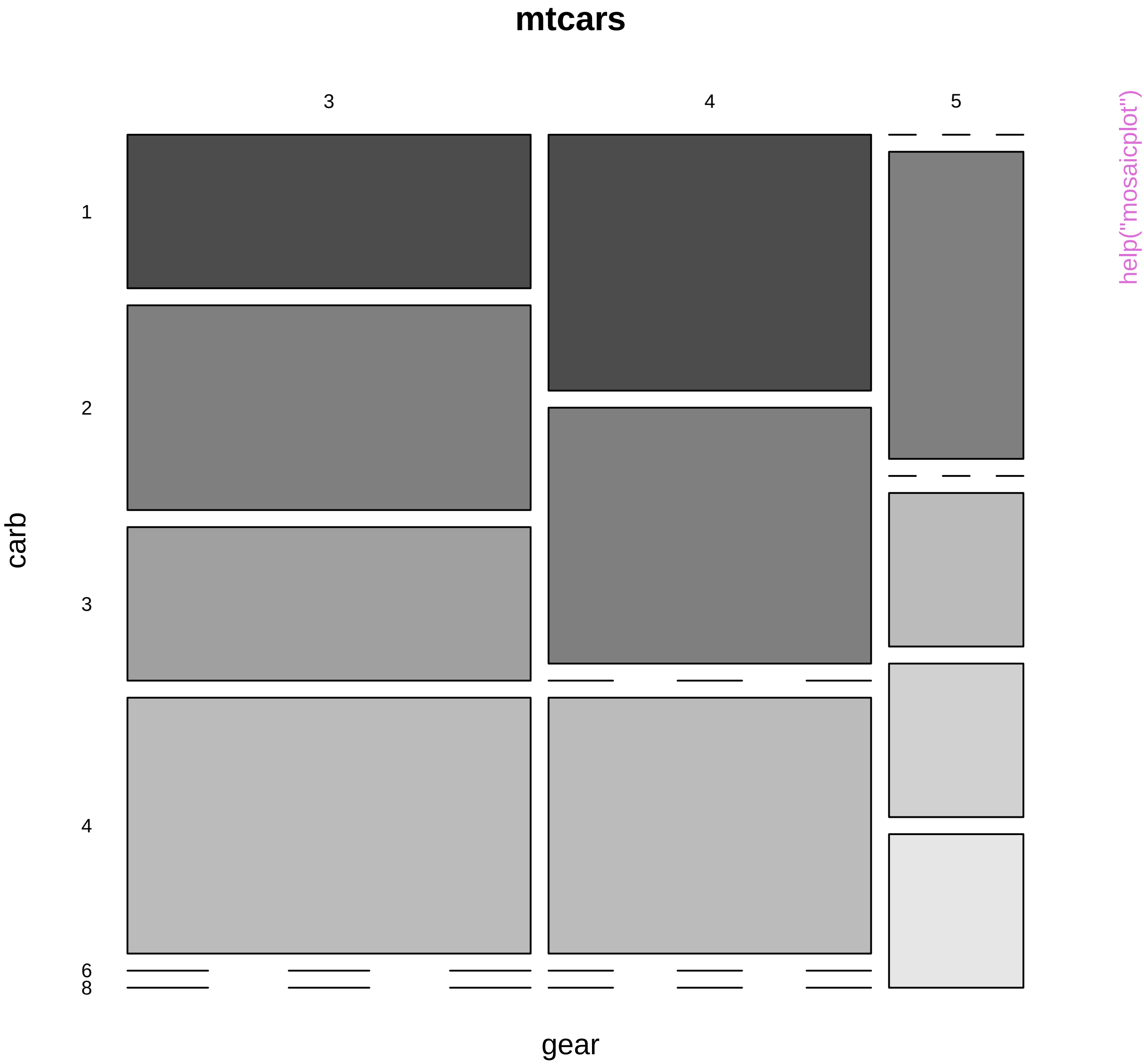


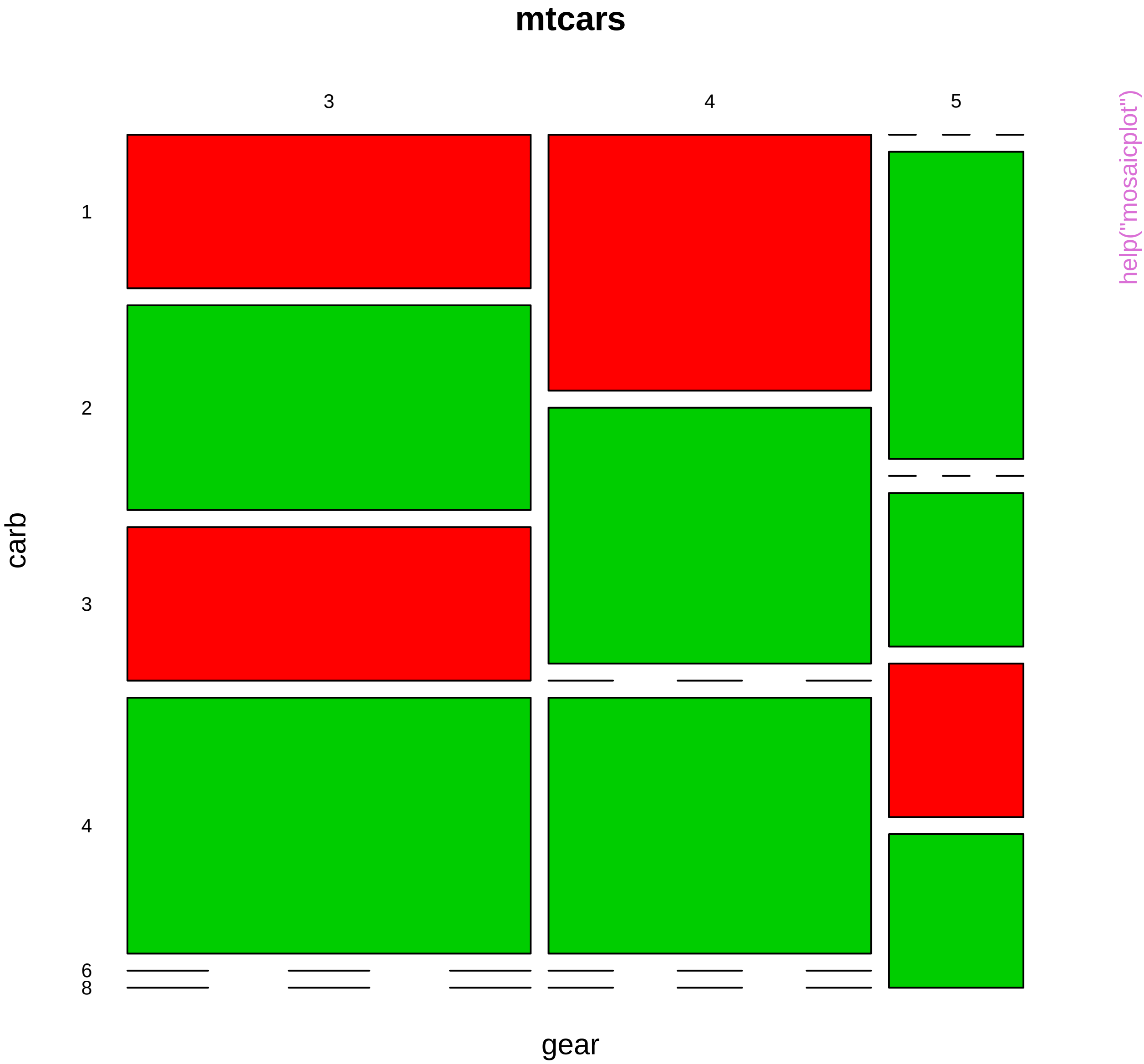
help("mosaicplot")

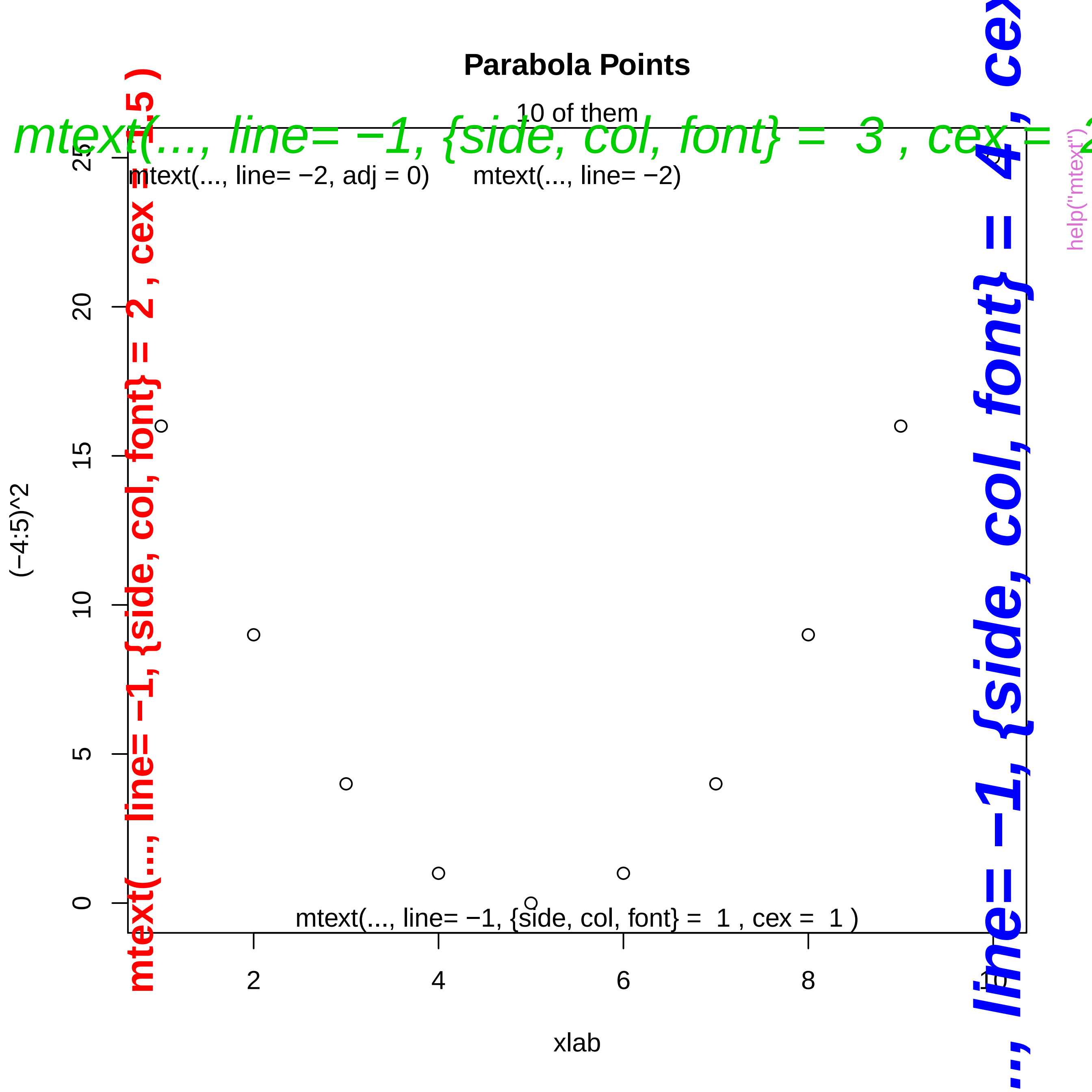

HairEyeColor
Black
Male
Female
Brown
Male
Female
Red
Male
Female
Blond
Male
Female
Eye
Brown
Blue
Hazel
Green
Hair
>4
2:4
0:2
−2:0
−4:−2
<−4
Standardized
Residuals:
help("mosaicplot")

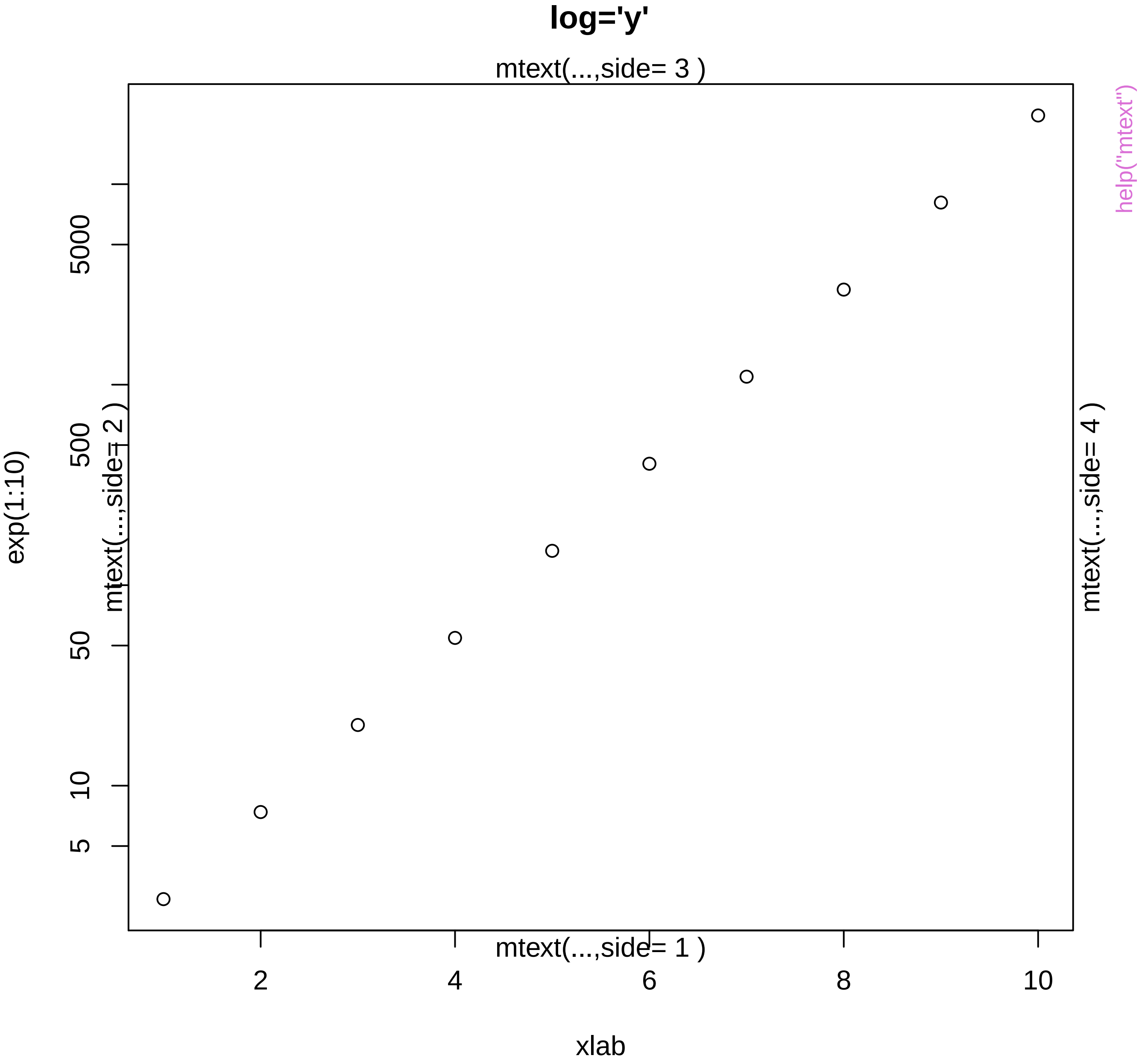
HairEyeColor



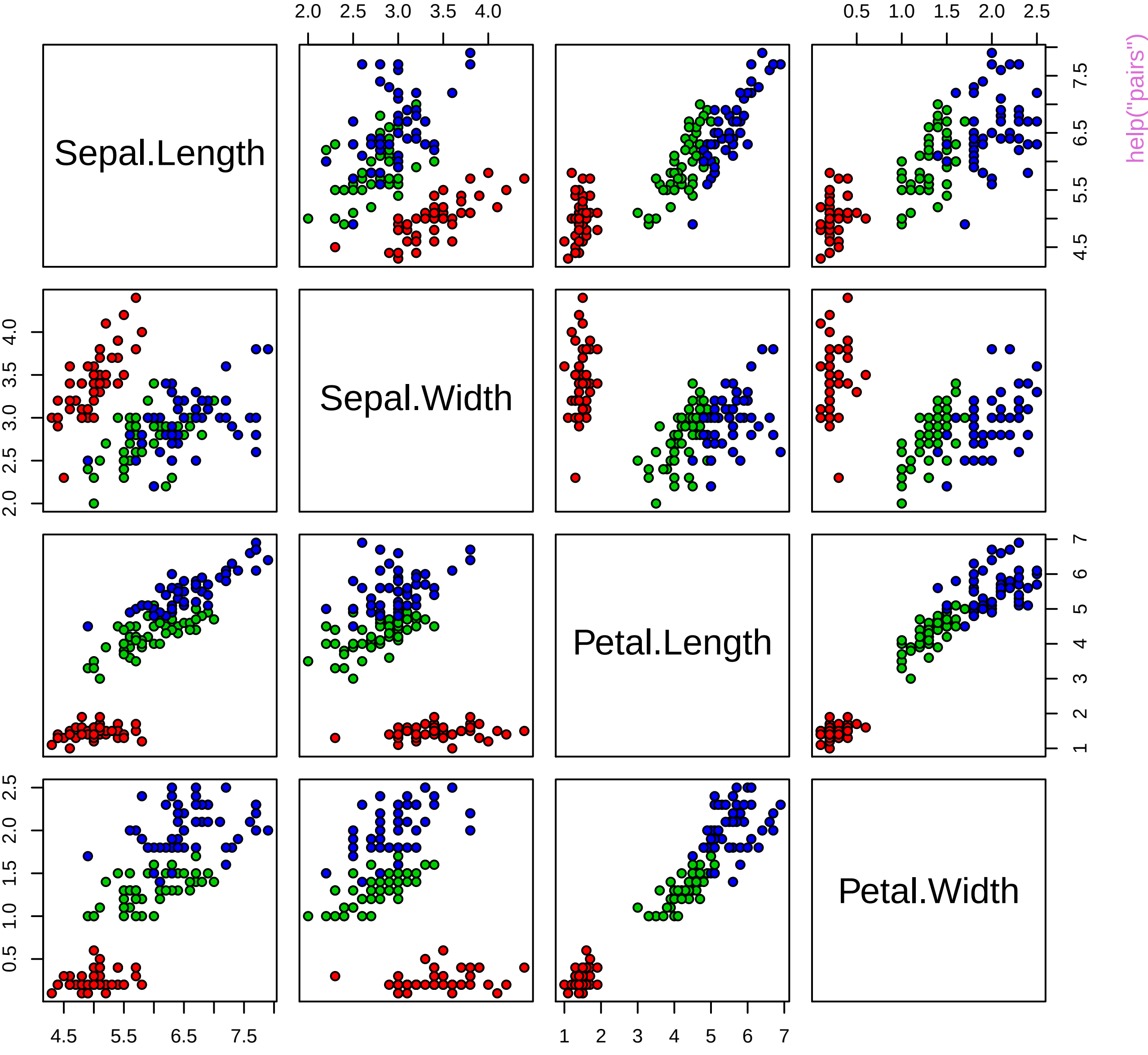

mtcars
3
4
5
1
2
3
4
6
8
carb
gear
help("mosaicplot")

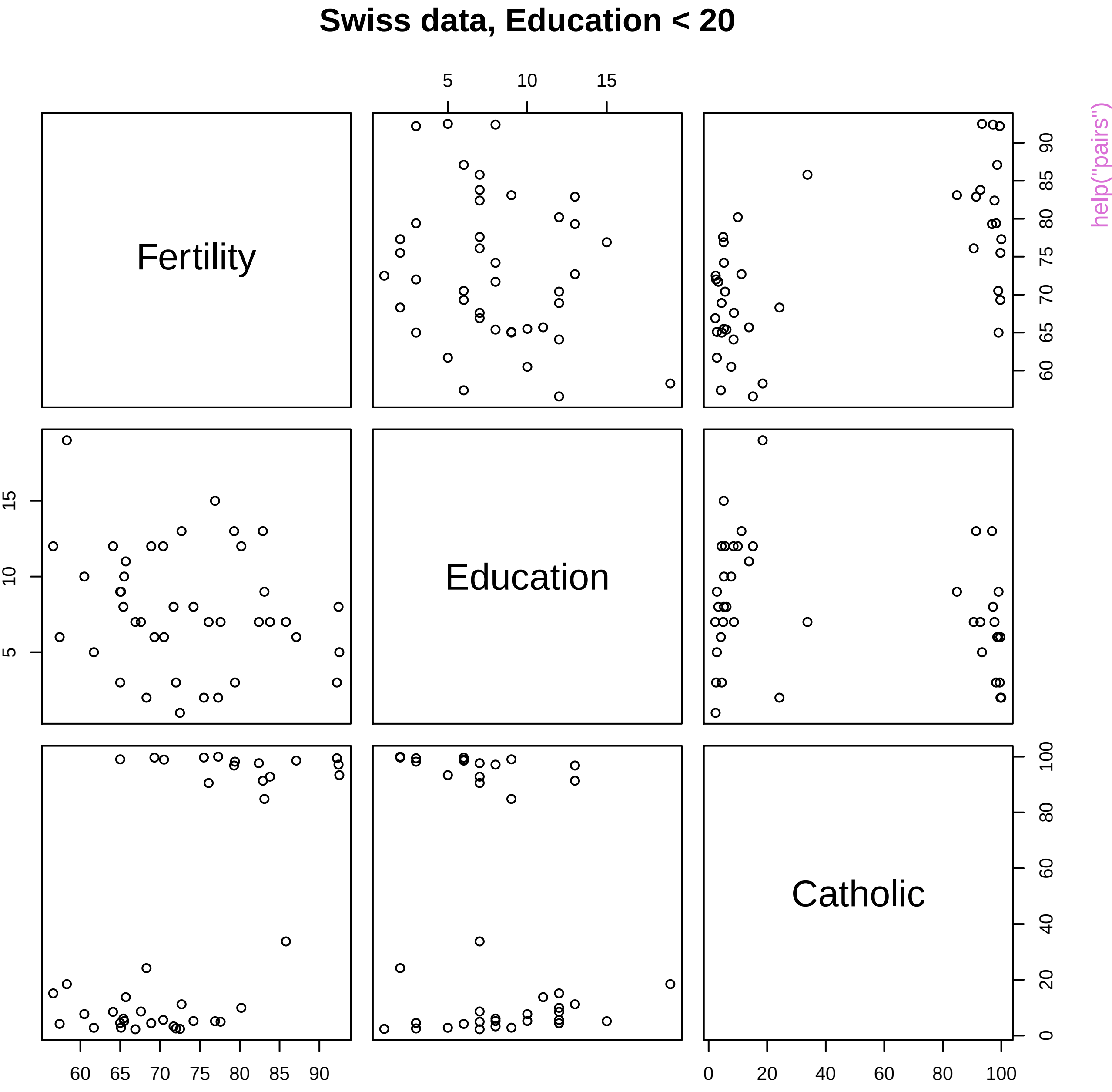

mtcars
3
4
5
1
2
3
4
6
8
carb
gear
help("mosaicplot")

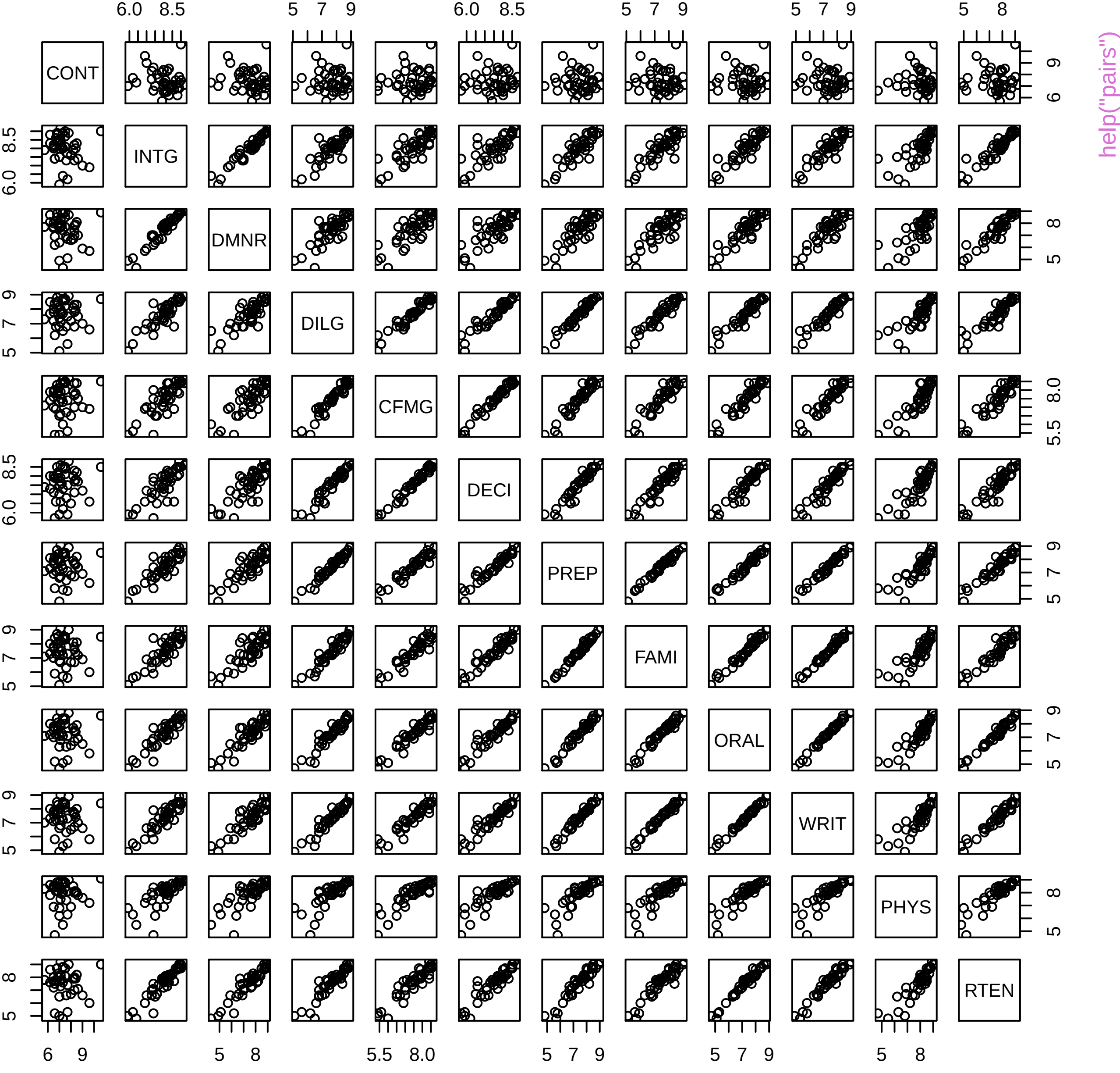

Parabola Points
10 of them
mtext(..., line= −1, {side, col, font} = 3 , cex = 2
mtext(..., line= −2, adj = 0)
mtext(..., line= −2)
mtext(..., line= −1, {side, col, font} = 2 , cex = 1.5)
..., line= −1, {side, col, font} = 4 , cex
help("mtext")
mtext(..., line= −1, {side, col, font} = 1 , cex = 1)
(−4:5)^2
0
5
10
15
20
25
2
4
6
8
10
xlab

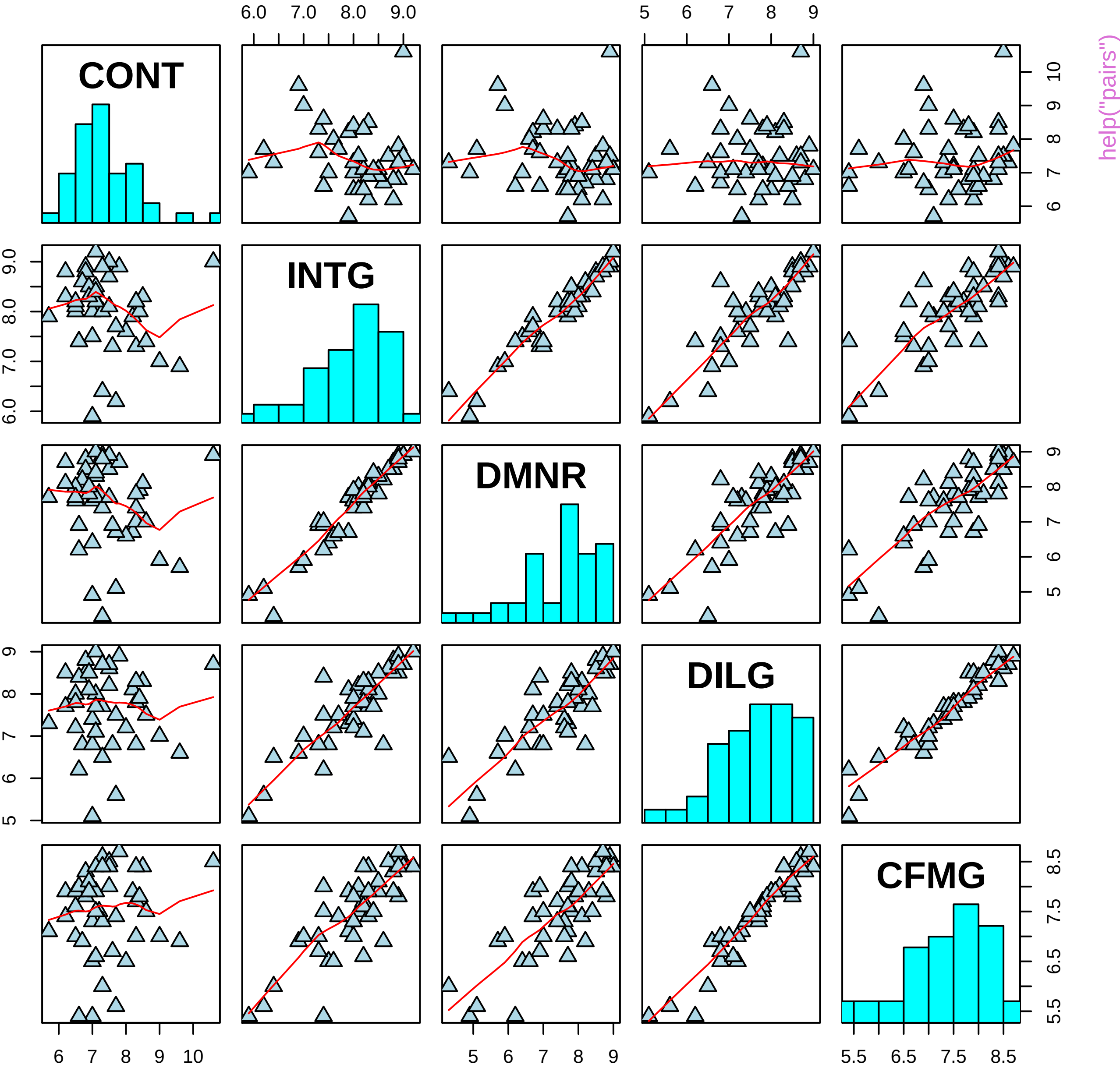

log='y'
mtext(...,side= 3)
help("mtext")
exp(1:10)
mtext(...,side= 2)
mtext(...,side= 4)
5000
500
50
10
5
mtext(...,side= 1)
2
4
6
8
10
xlab

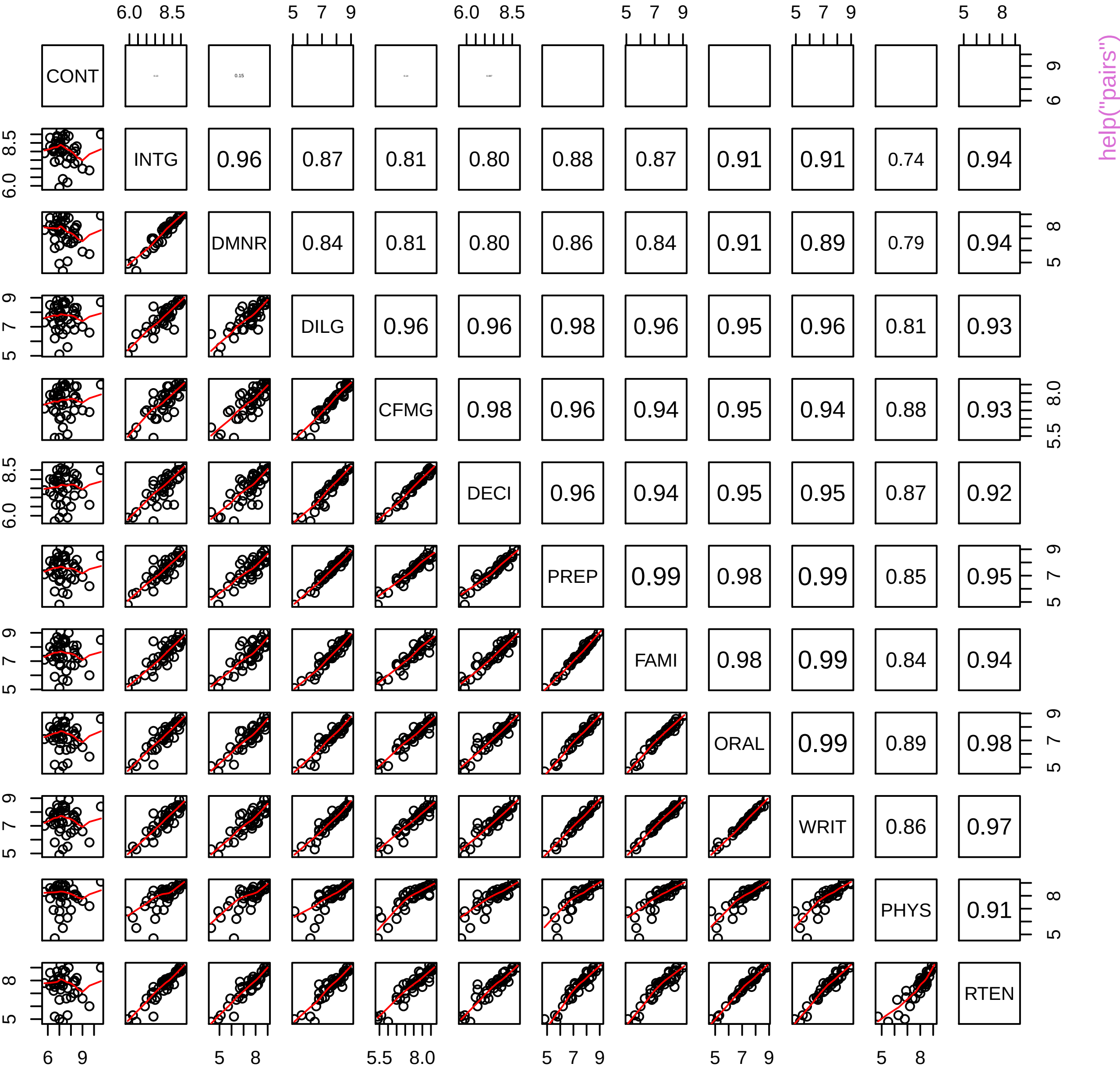
Anderson's Iris Data -- 3 species

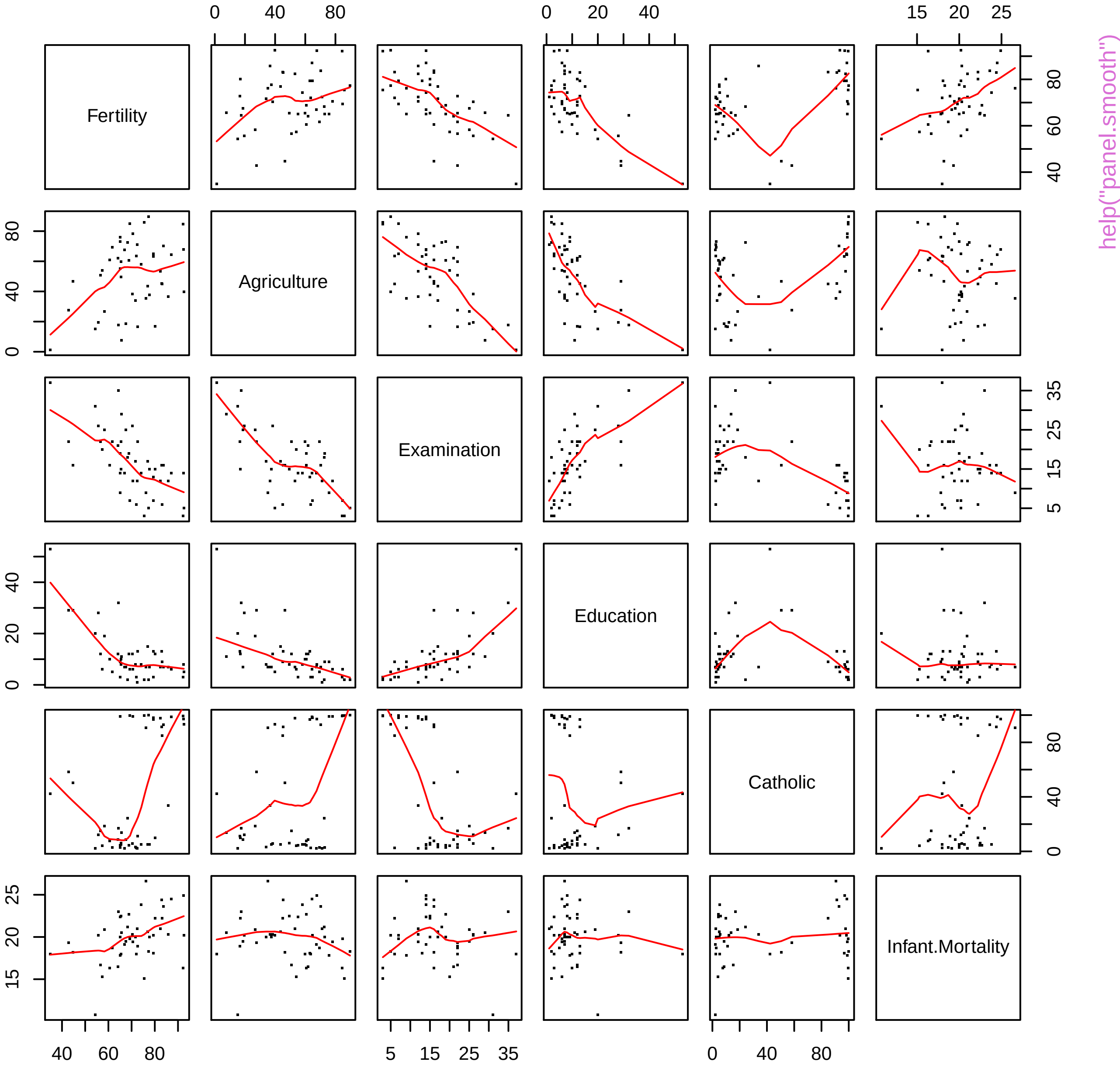


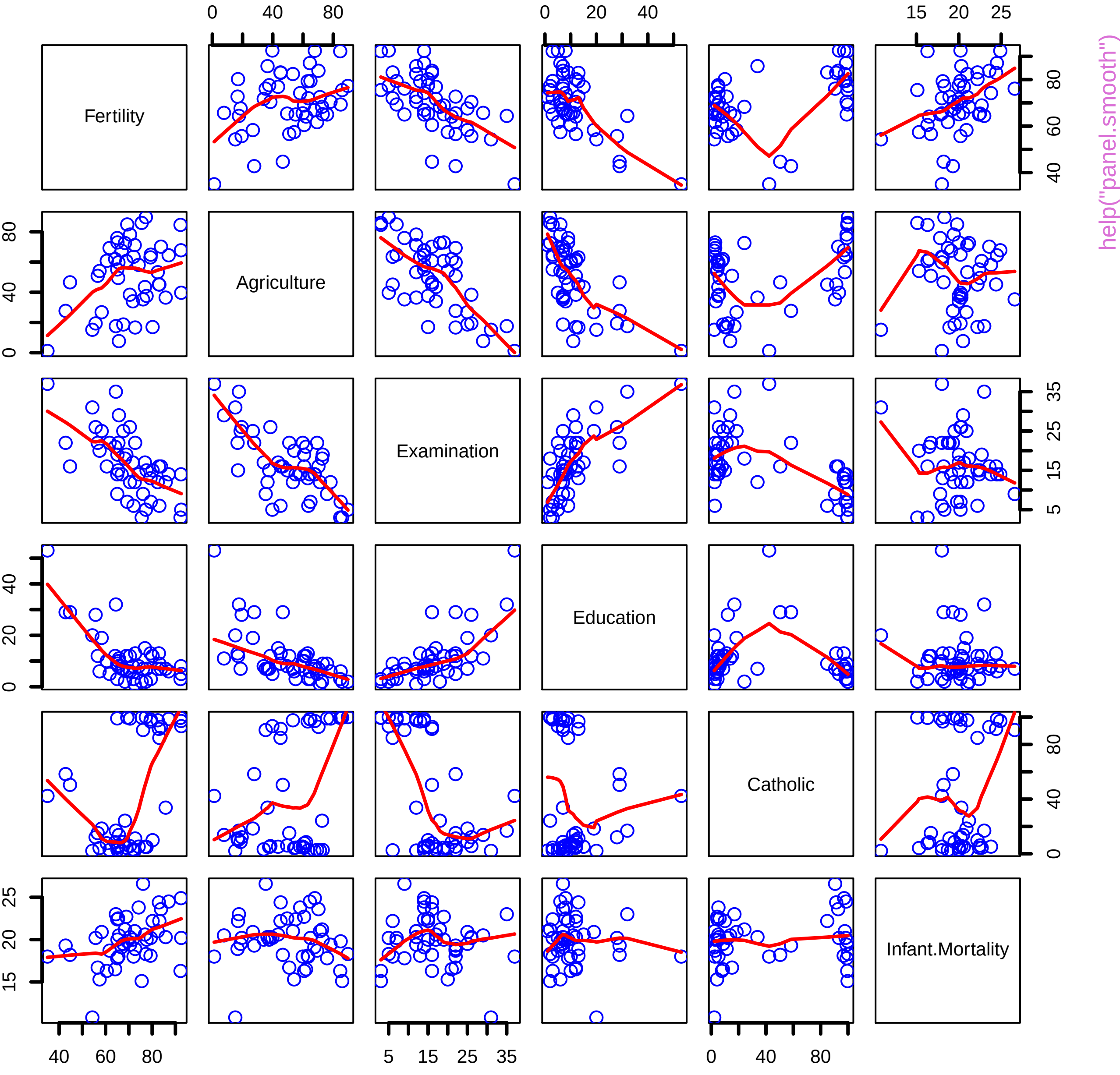

Swiss data, Education < 20
help("pairs")
Fertility
Education
Catholic
5
10
15
90
85
80
75
70
65
60
15
10
5
100
80
60
40
20
0
60
65
70
75
80
85
90
0
20
40
60
80
100

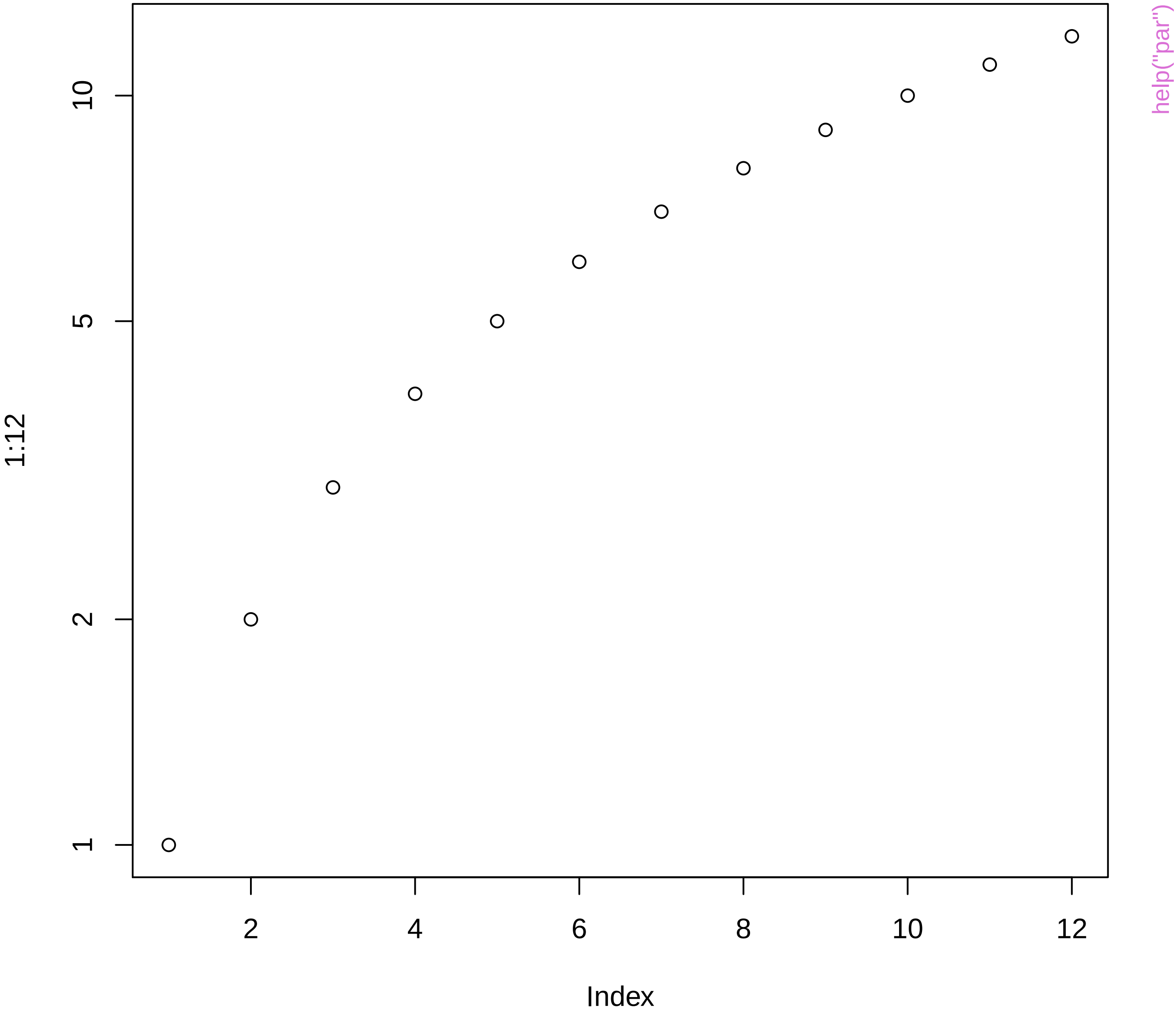

CONT
INTG
DMNR
DILG
CFMG
DECI
PREP
FAMI
ORAL
WRIT
PHYS
RTEN
6.0
8.5
5
7
9
5.5
8.0
6
9
5
8
help("pairs")


CONT
INTG
DMNR
DILG
CFMG
help("pairs")
6.0
7.0
8.0
9.0
5
6
7
8
9
10
5.5
6.5
7.5
8.5

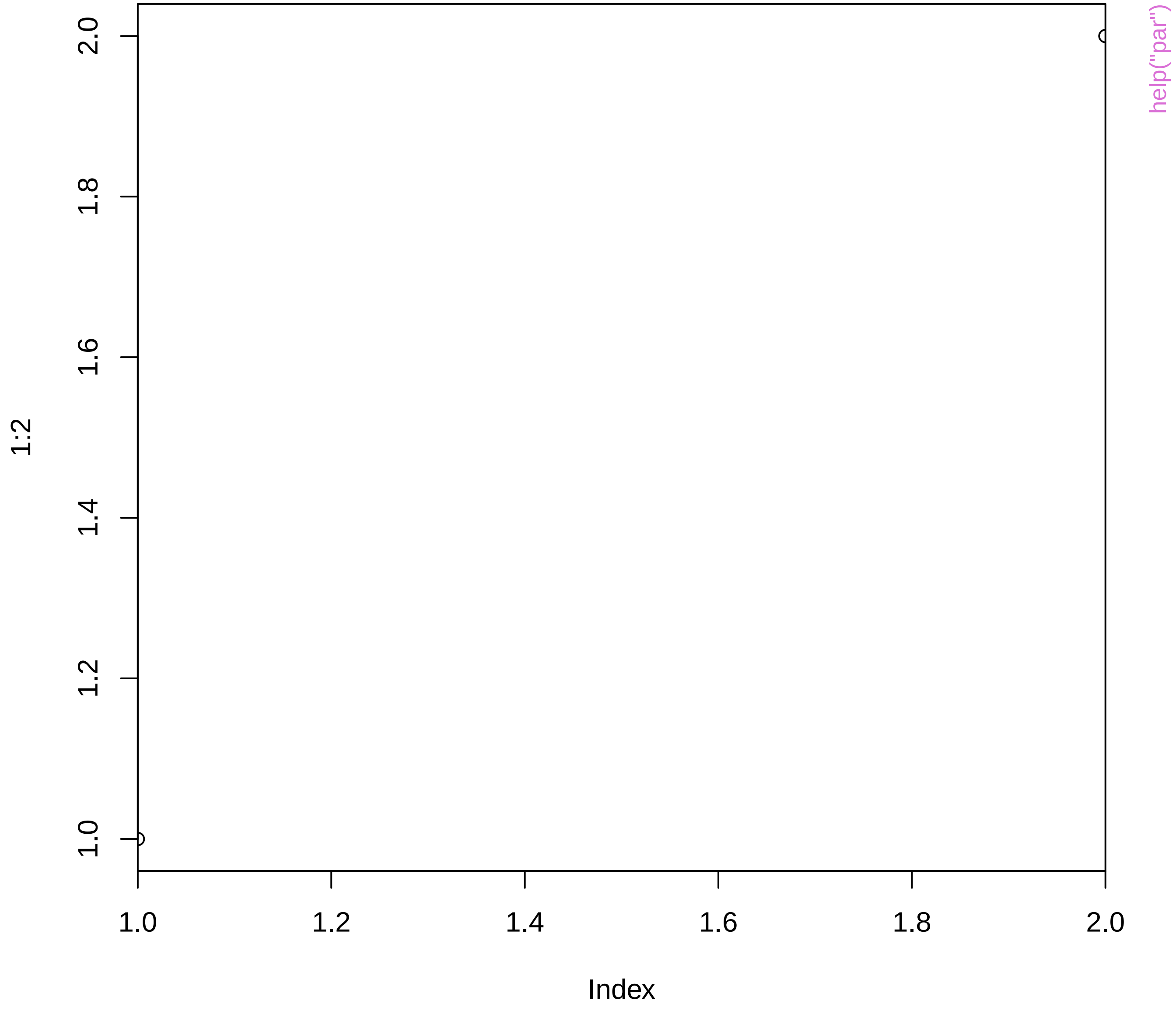

CONT
0.13
0.15
0.14
0.087
INTG 0.96 0.87 0.81 0.80 0.88 0.87 0.91 0.91 0.74 0.94
DMNR 0.84 0.81 0.80 0.86 0.84 0.91 0.89 0.79 0.94
DILG 0.96 0.96 0.98 0.96 0.95 0.96 0.81 0.93
CFMG 0.98 0.96 0.94 0.95 0.94 0.88 0.93
DECI 0.96 0.94 0.95 0.95 0.87 0.92
PREP 0.99 0.98 0.99 0.85 0.95
FAMI 0.98 0.99 0.84 0.94
ORAL 0.99 0.89 0.98
WRIT 0.86 0.97
PHYS 0.91
RTEN
6.0 8.5
5 7 9
6.0 8.5
5 7 9
5 7 9
5 8
6 9
8 5
8.0 5.5
9 7 5
9 7 5
8 5
6.0 8.5
6.0 8.5
9 7 5
9 7 5
9 7 5
8 5
6 9
5 8
5.5 8.0
5 7 9
5 7 9
5 8
help("pairs")

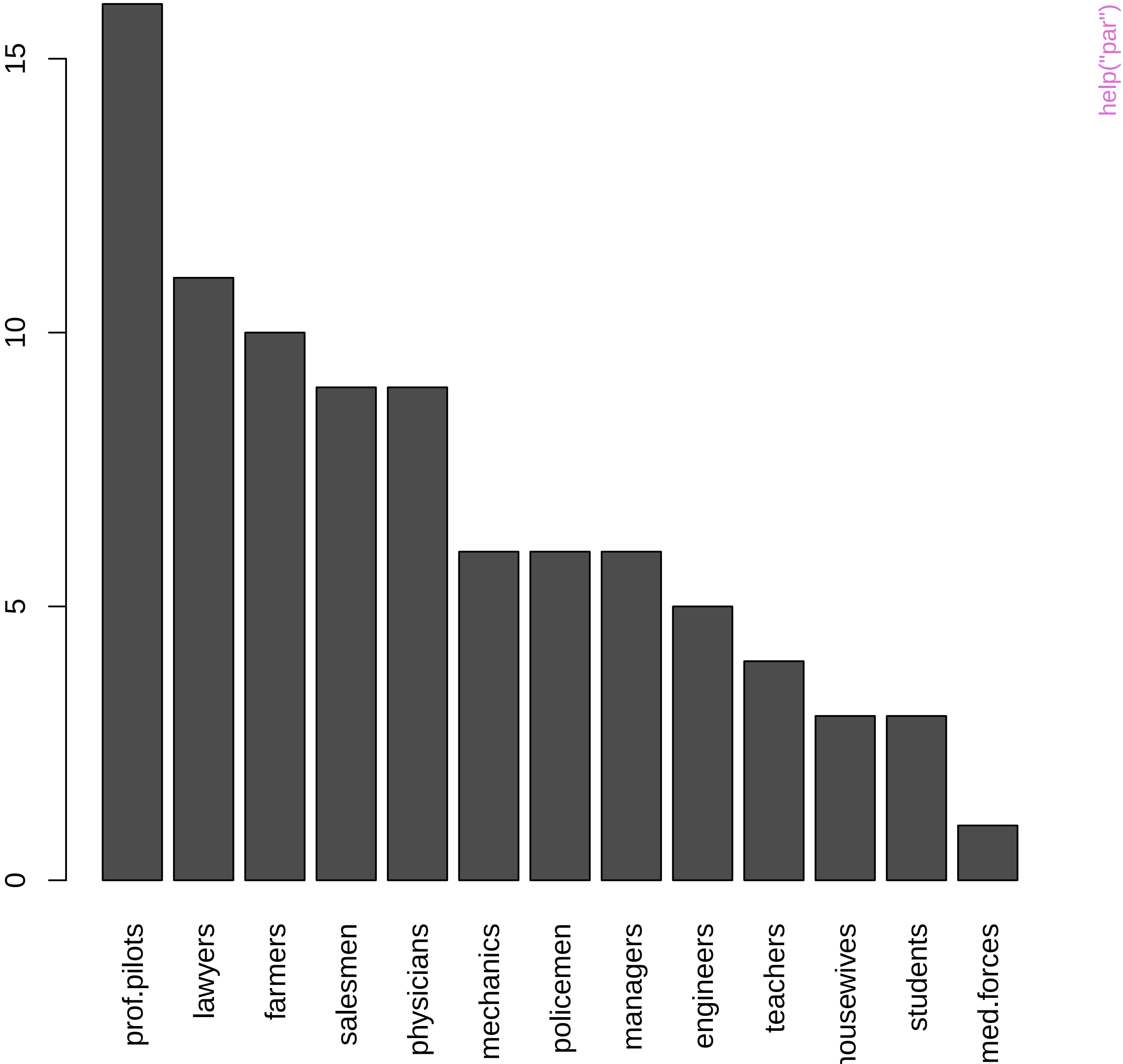

Fertility
Agriculture
Examination
Education
Catholic
Infant.Mortality
0
40
80
20
15
25
60
35
5
help("panel.smooth")

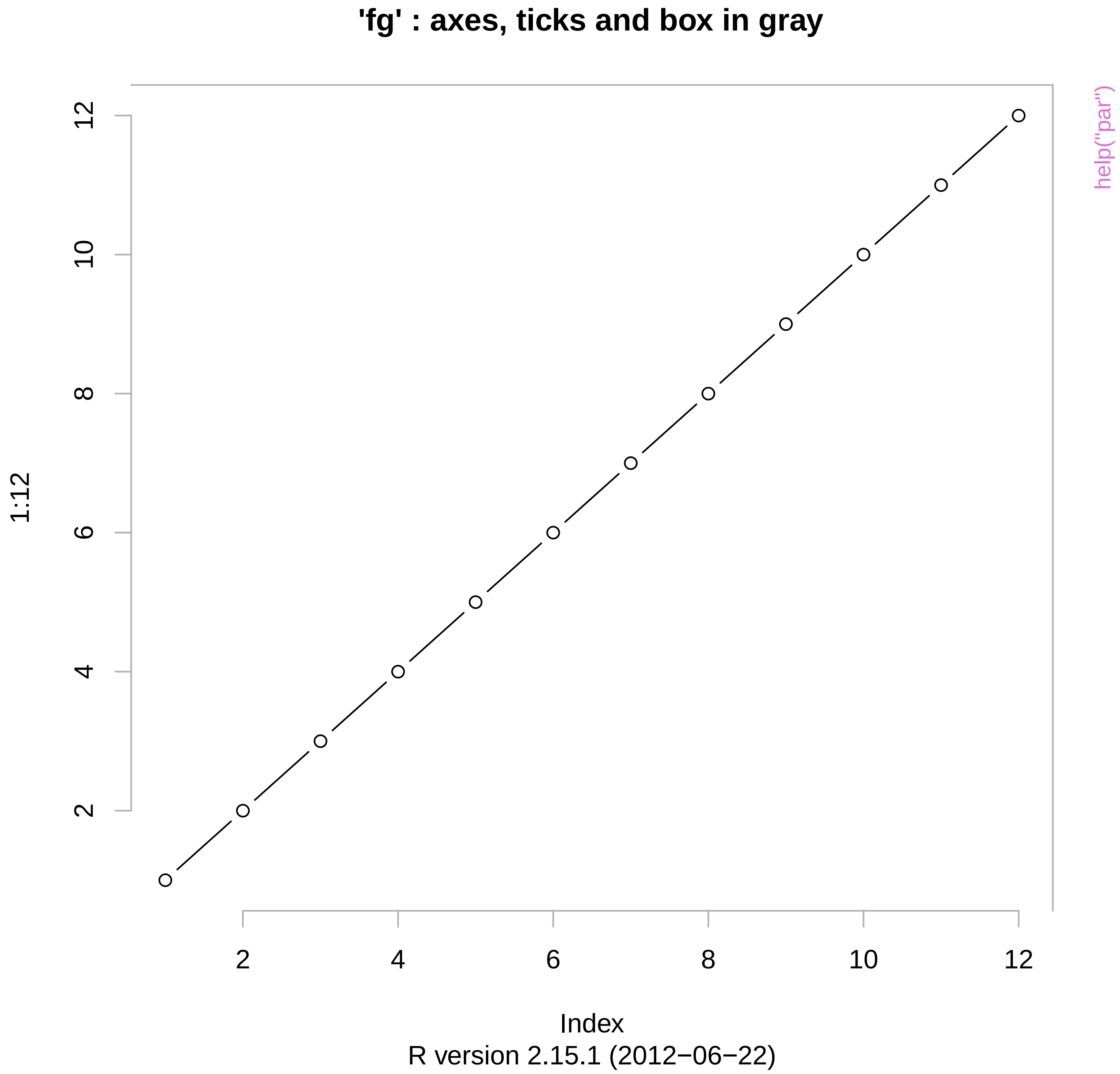

Fertility
Agriculture
Examination
Education
Catholic
Infant.Mortality
0
40
80
0
20
40
15
20
25
40
60
80
5
15
25
35
help("panel.smooth")

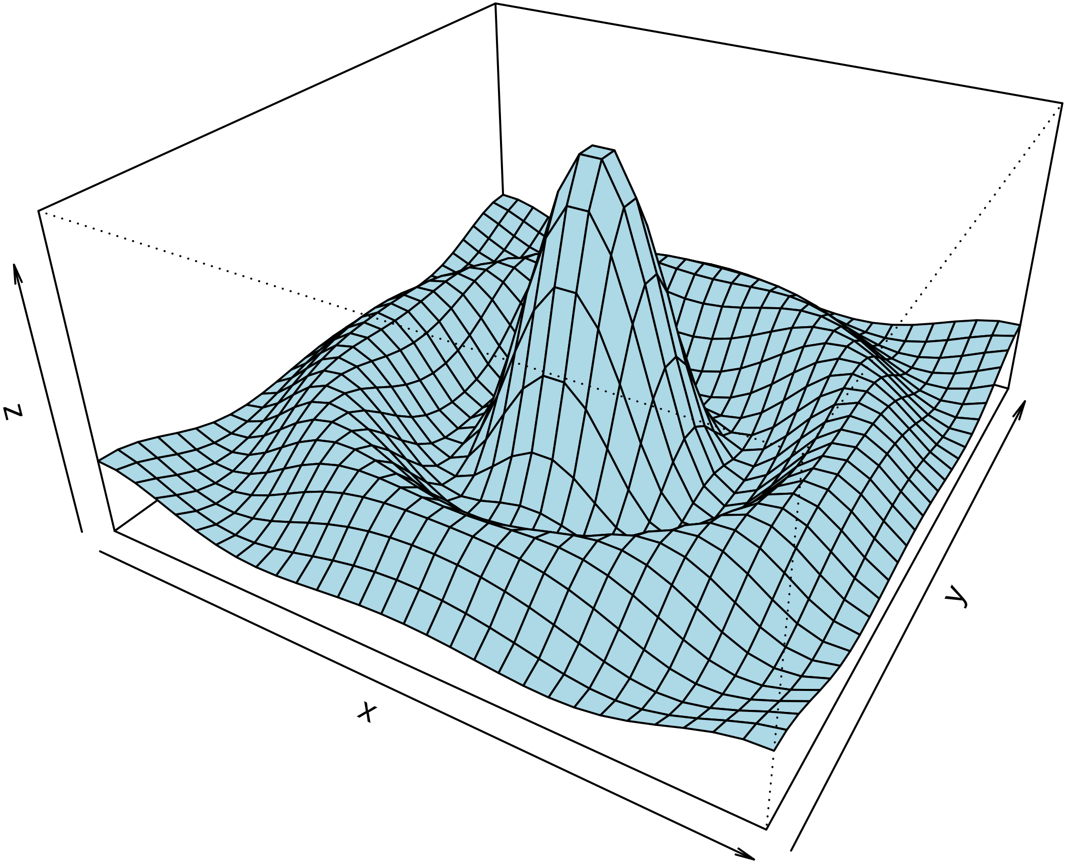


10
5
2
1
1:12
2
4
6
8
10
12
Index
help("par")

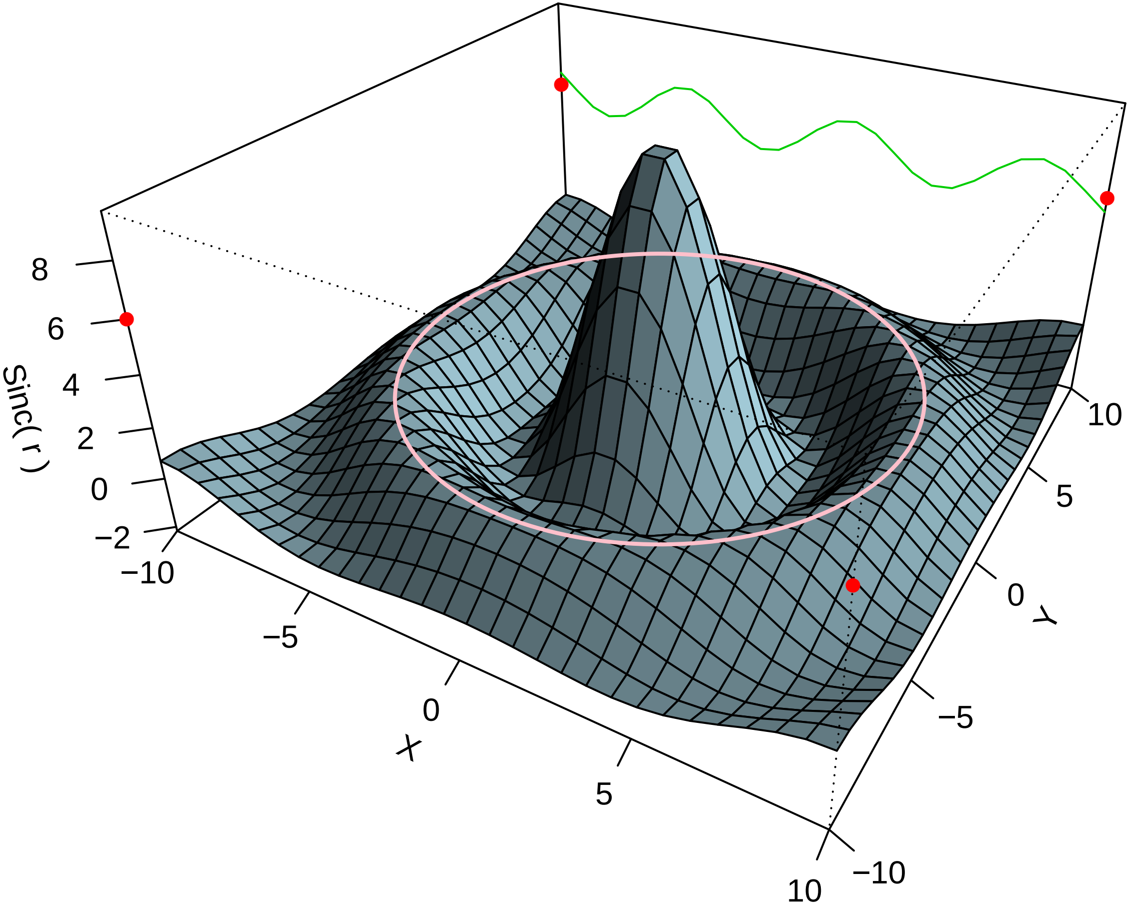

2.0
1.8
1.6
1.4
1.2
1.0
1:2
1.0
1.2
1.4
1.6
1.8
2.0
Index
help("par")


15
10
5
0
prof.pilots
lawyers
farmers
salesmen
physicians
mechanics
policemen
managers
engineers
teachers
ousewives
students
med.forces
help("par")

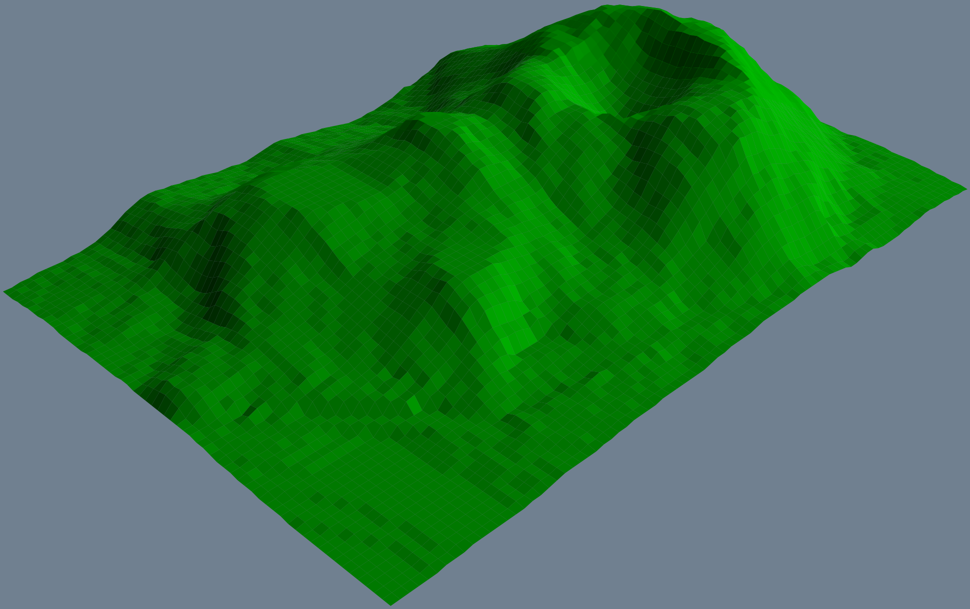

'fg' : axes, ticks and box in gray
help("par")
1:12
2
4
6
8
10
12
2
4
6
8
10
12
Index
R version 2.15.1 (2012−06−22)


z
x
y

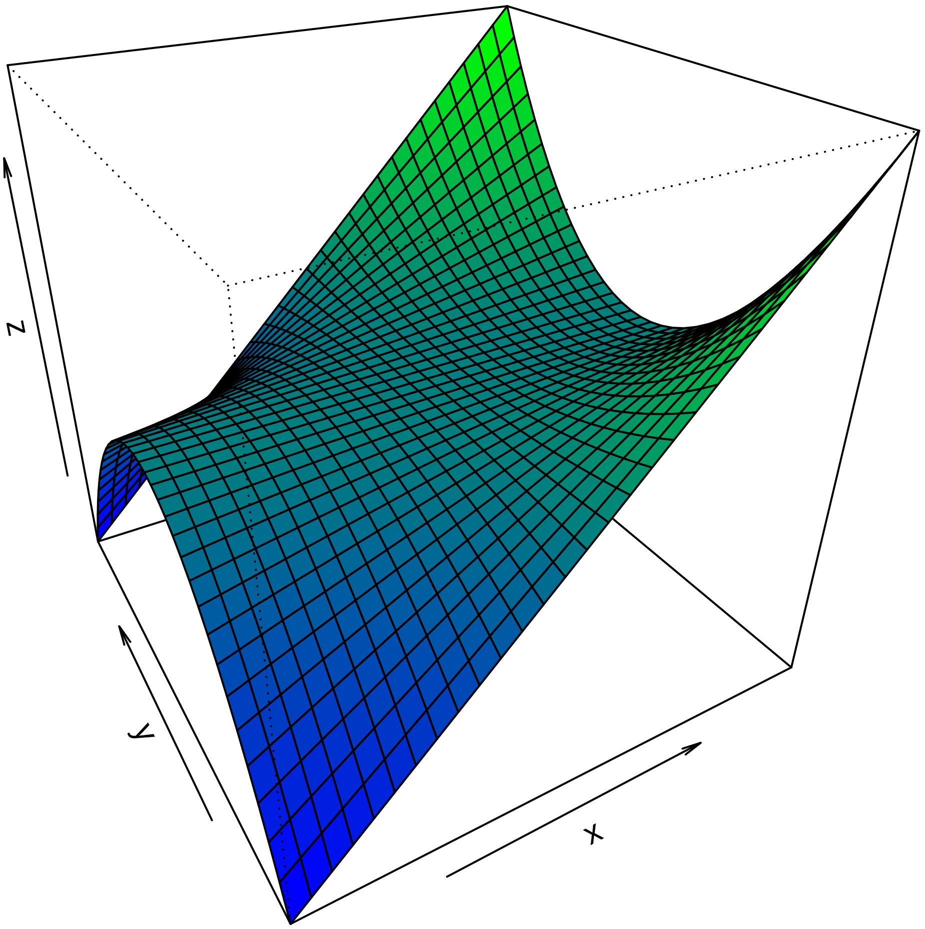
help("persp")


8
6
4
2
0
−2
Sinc(r)
−10
−5
0
5
10
X
10
5
0
−5
−10
Y

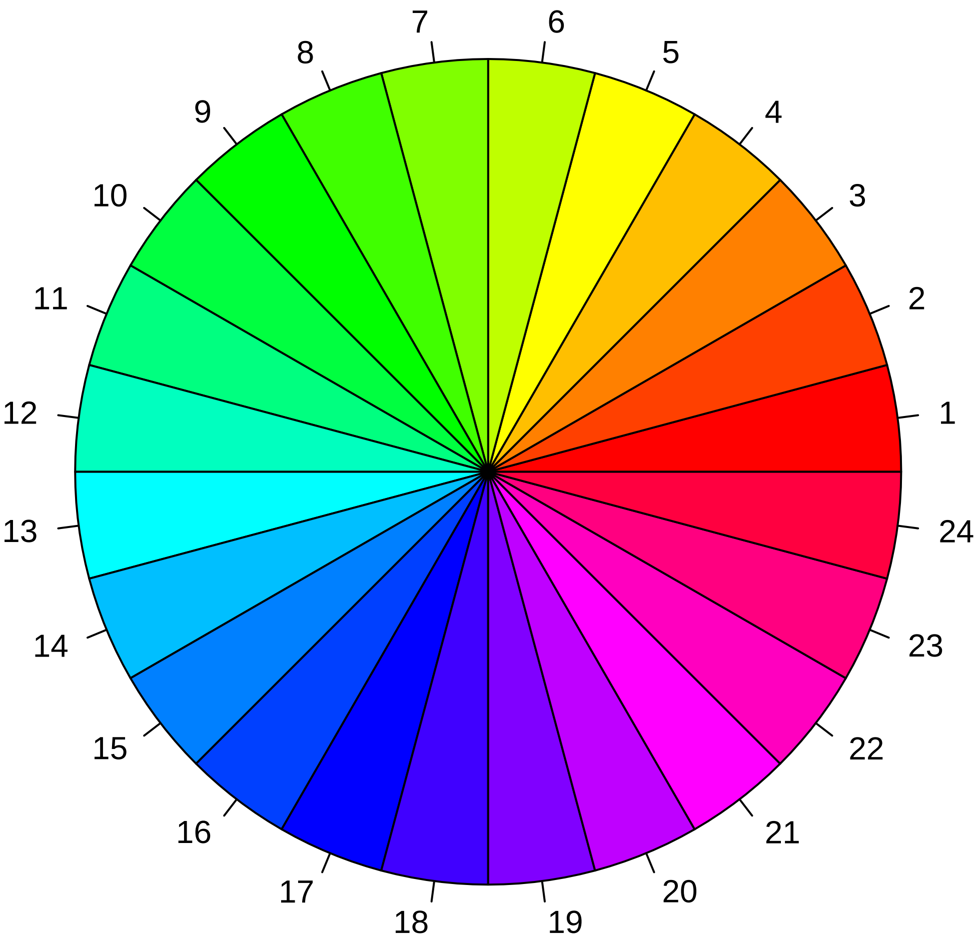
help("persp")



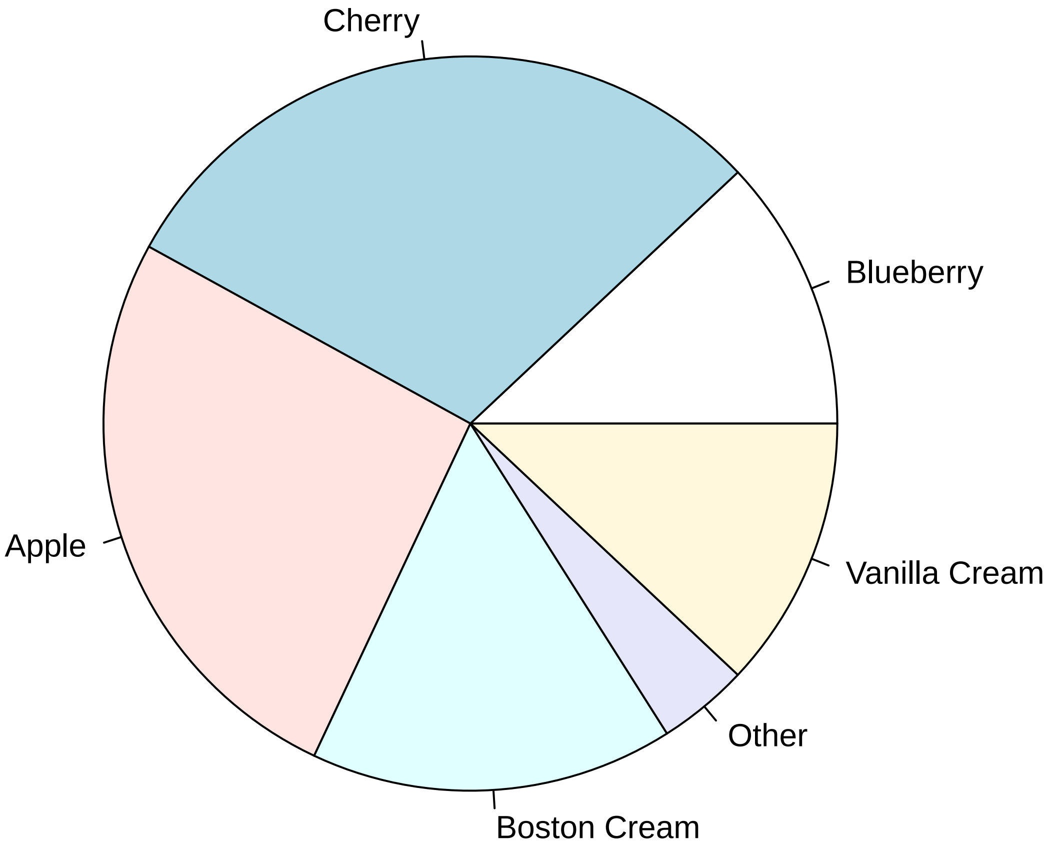
help("persp")



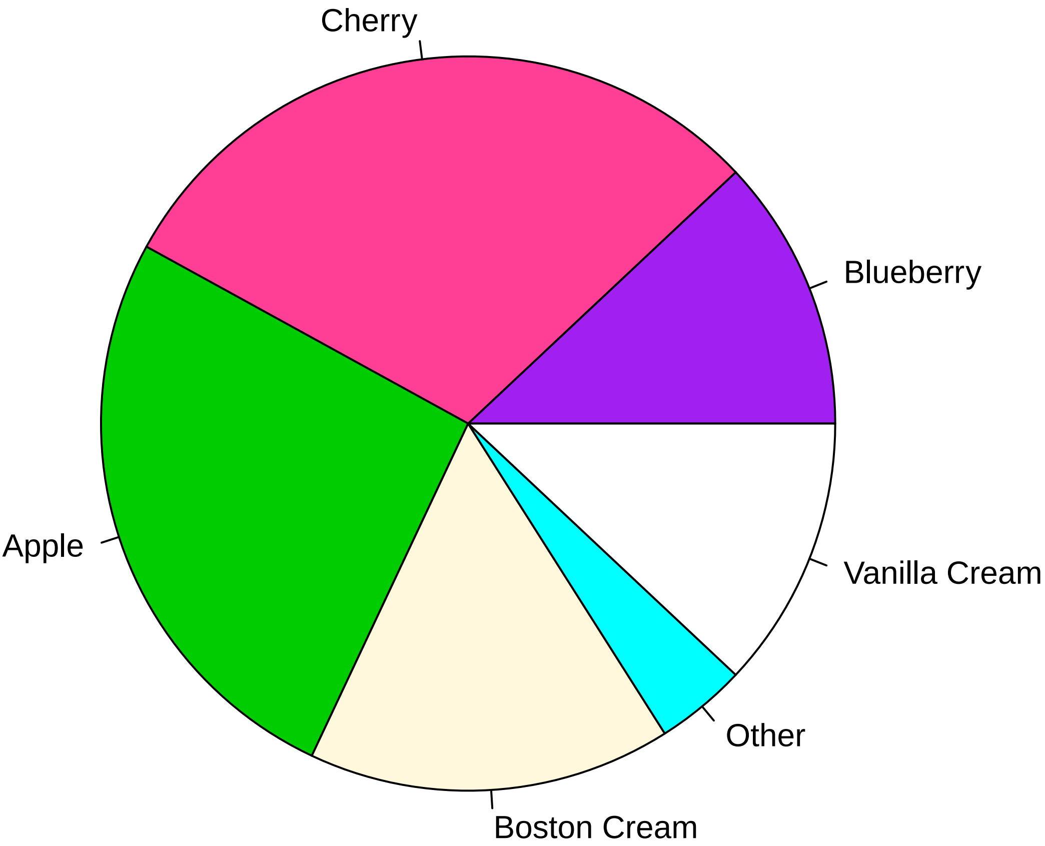
help("persp")



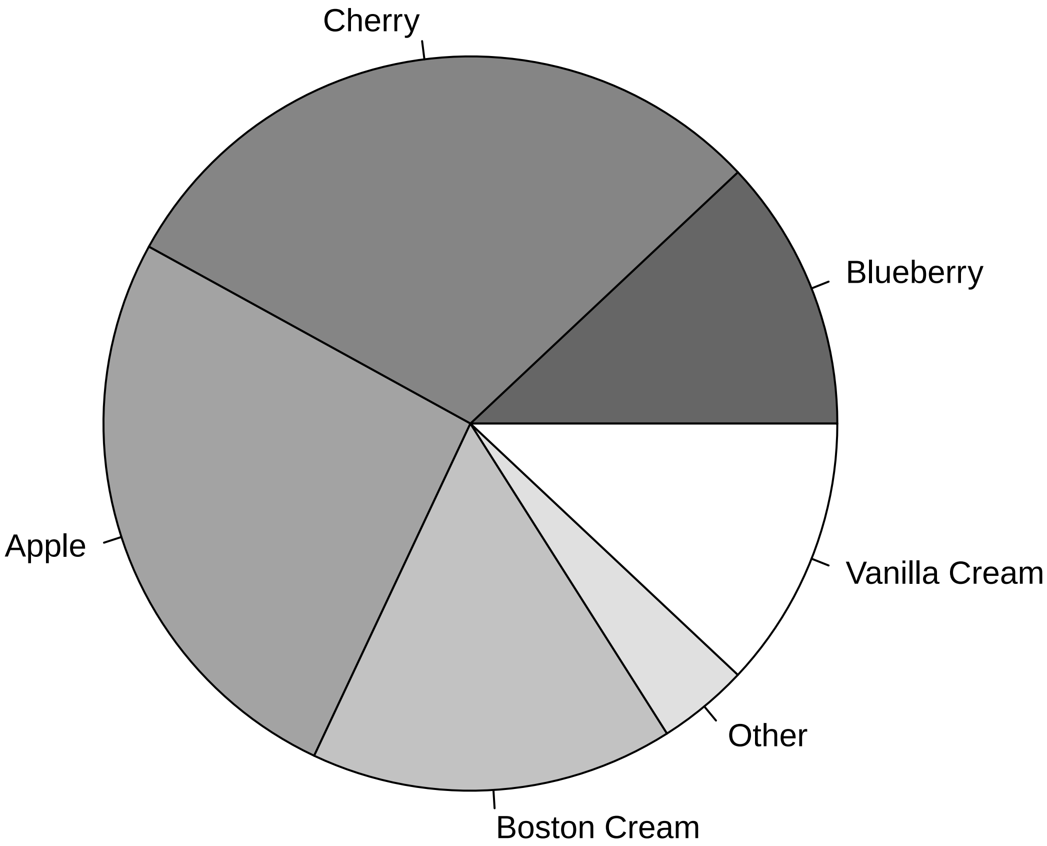
help("pie")


Cherry
Blueberry
Apple
Vanilla Cream
Other
Boston Cream

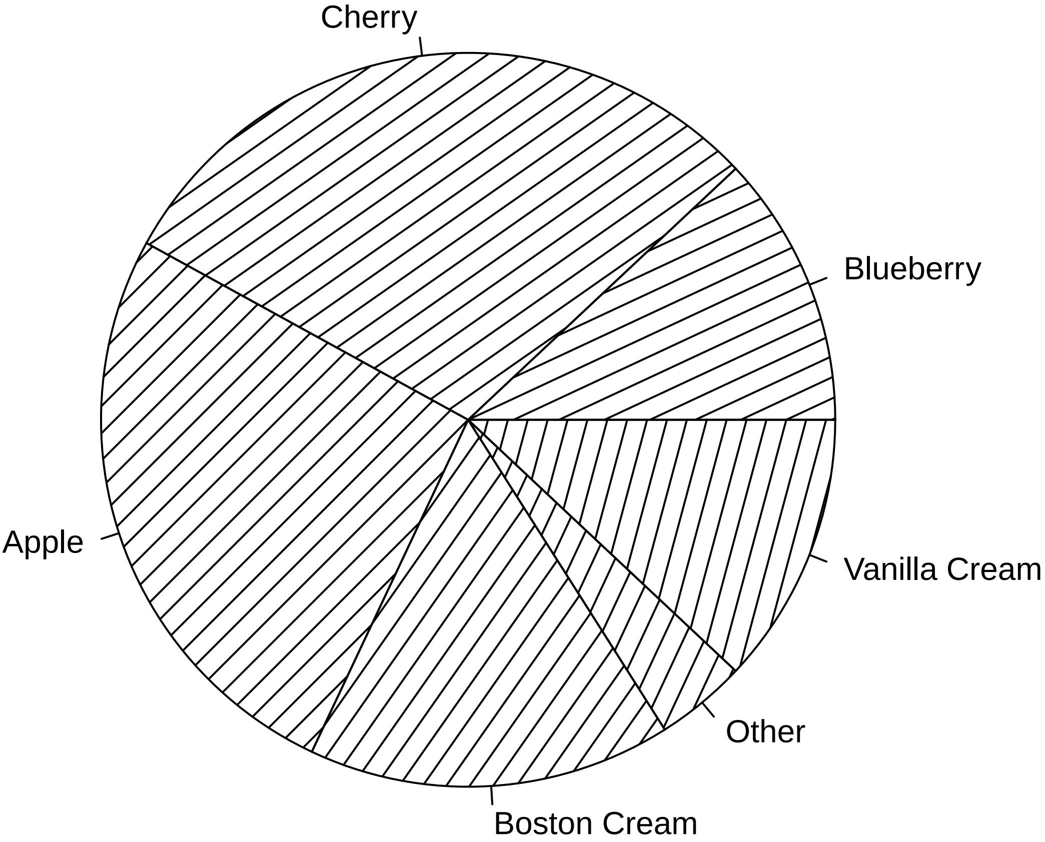
help("pie")



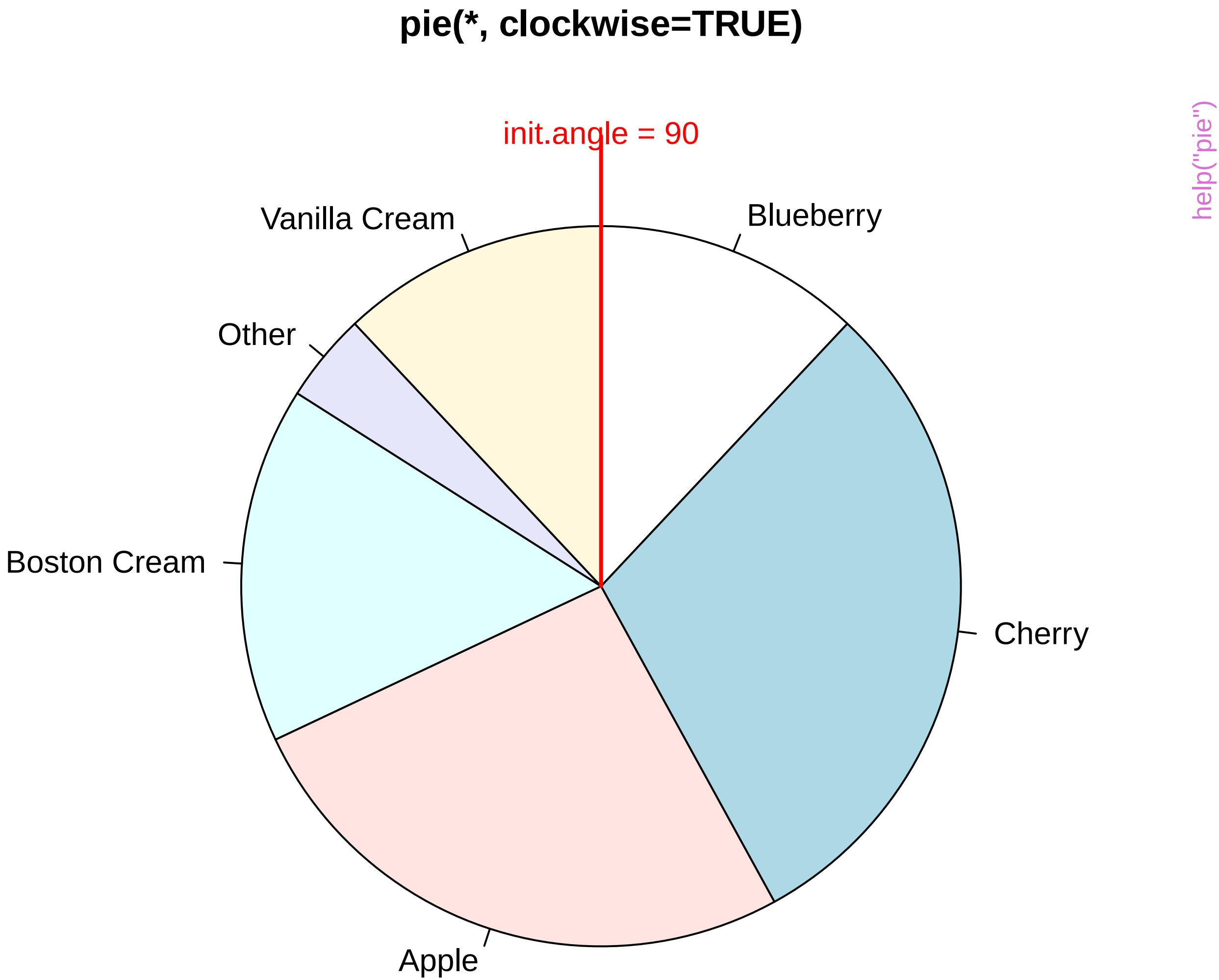
help("pie")



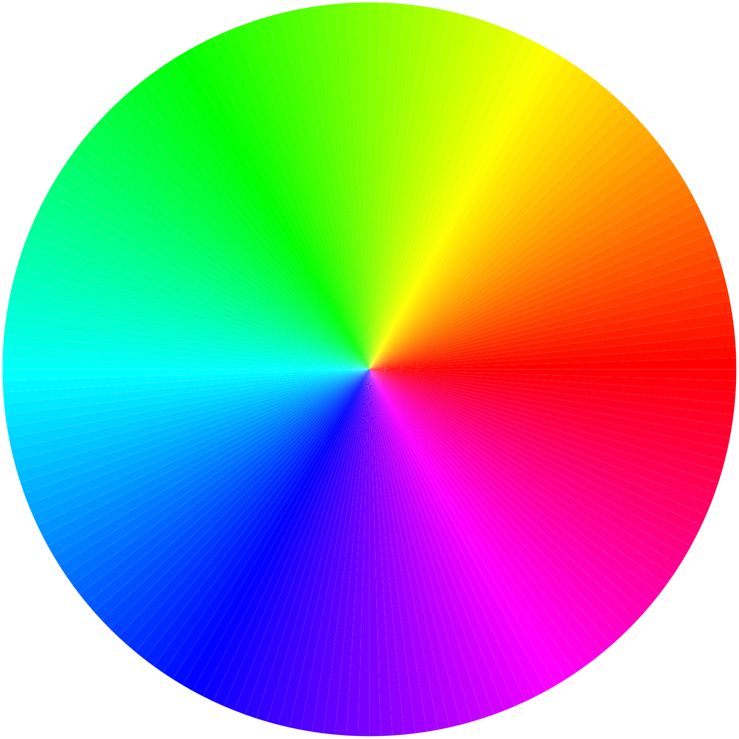
help("pie")


Cherry
Blueberry
Apple
Vanilla Cream
Other
Boston Cream

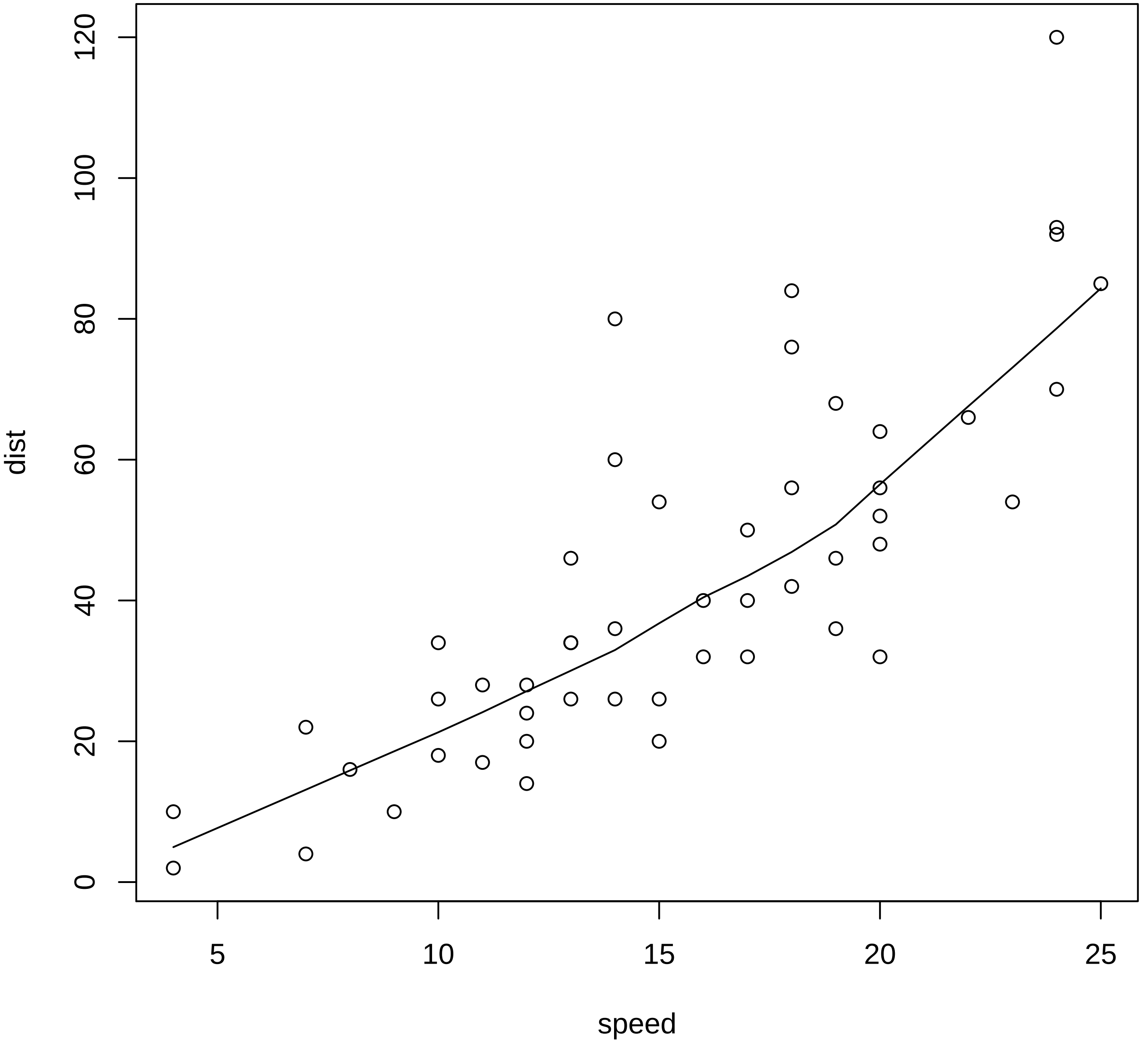
help("pie")


pie(*, clockwise=TRUE)
init.angle = 90
Blueberry
Vanilla Cream
Other
Boston Cream
Cherry
Apple
help("pie")

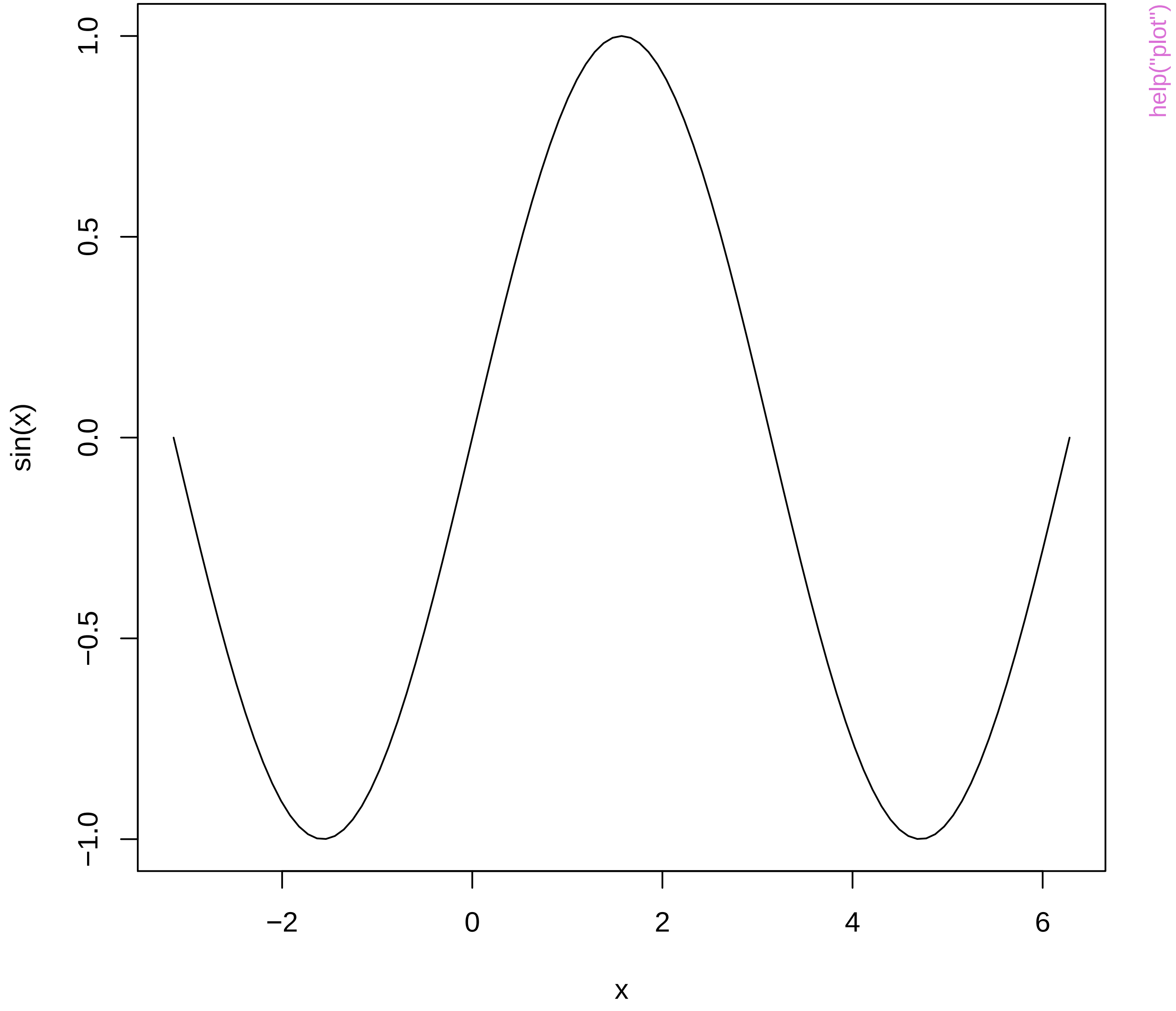
pie(*, labels="", col=rainbow(n), border=NA,..

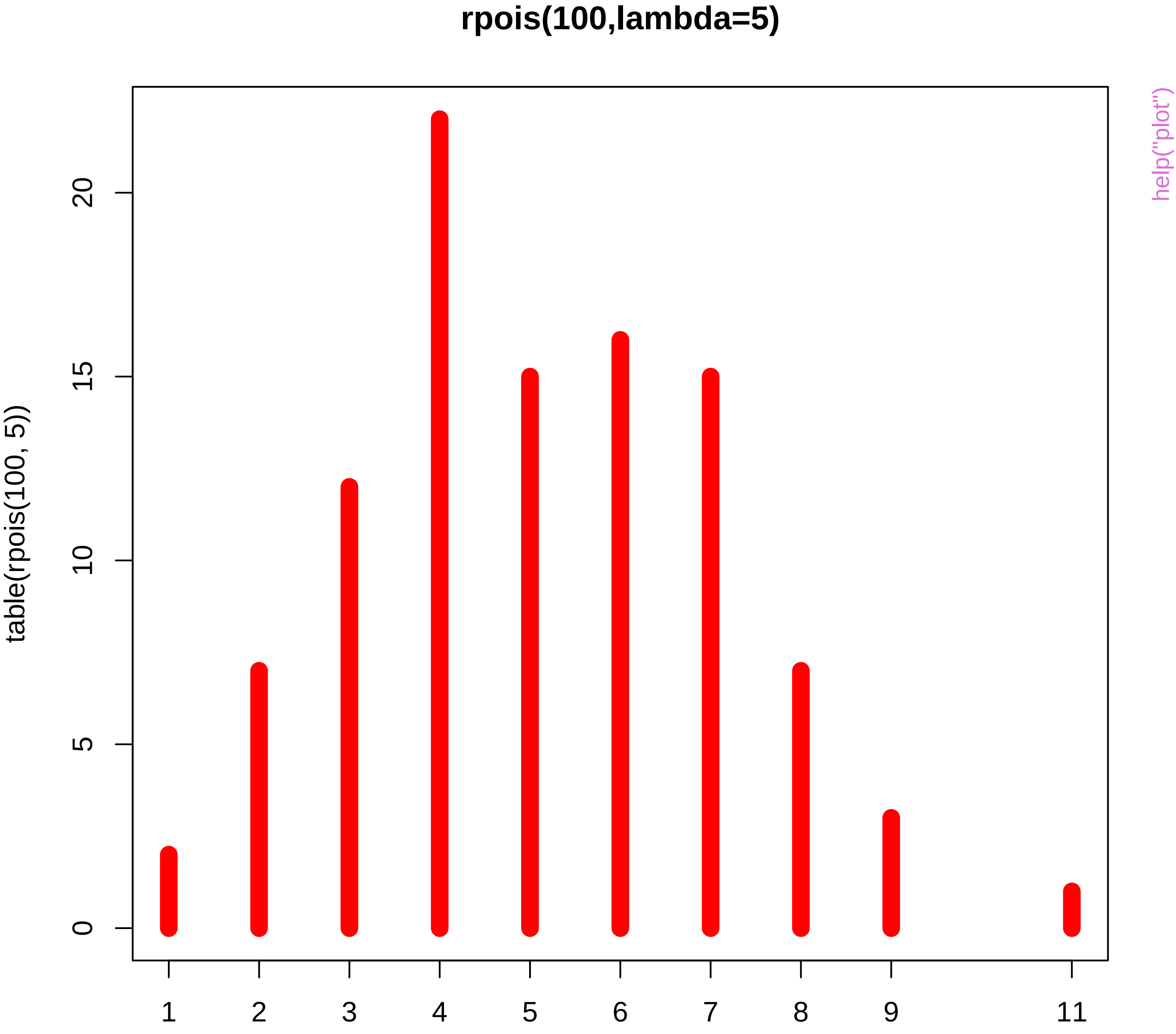


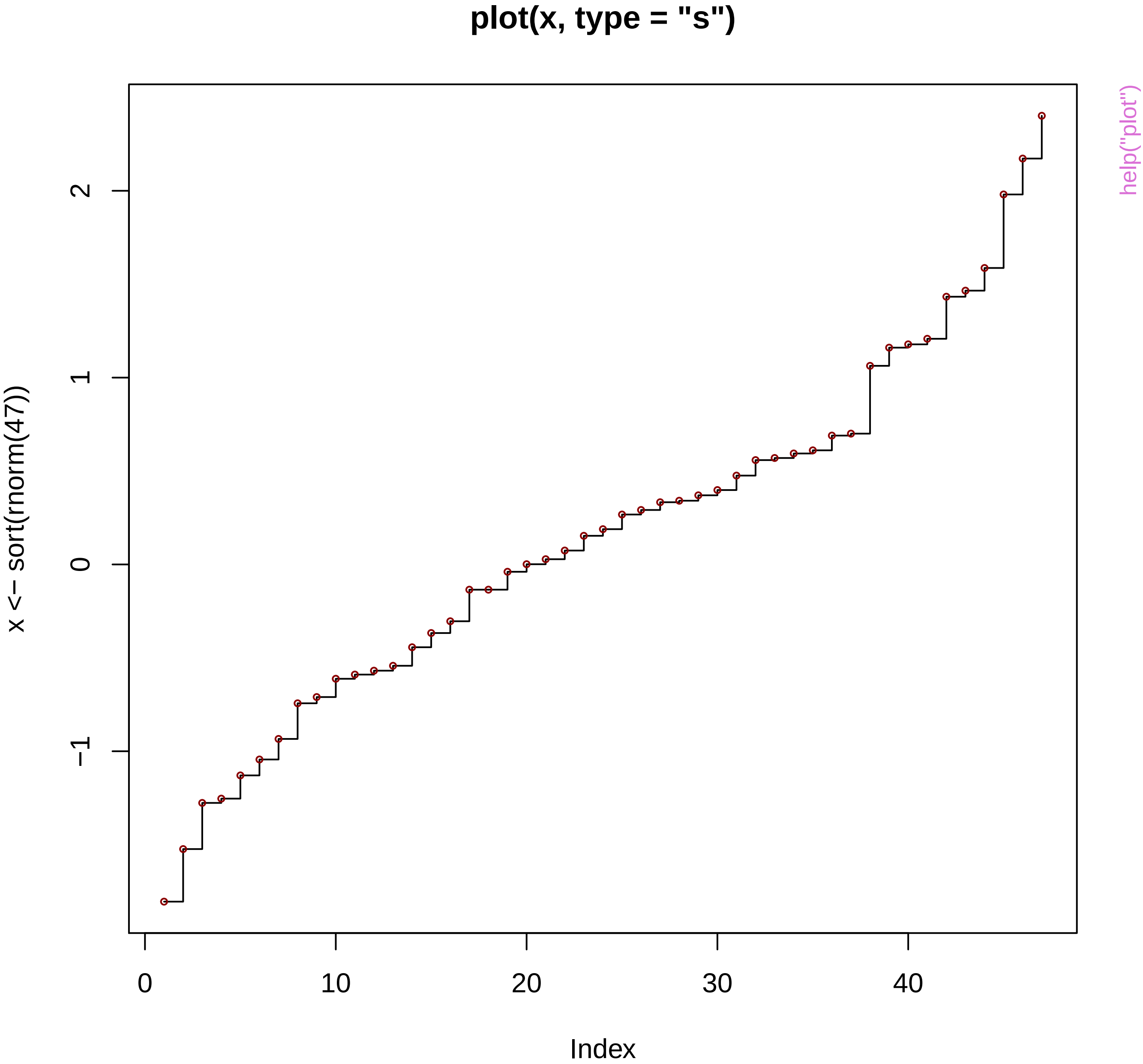
help("pie")

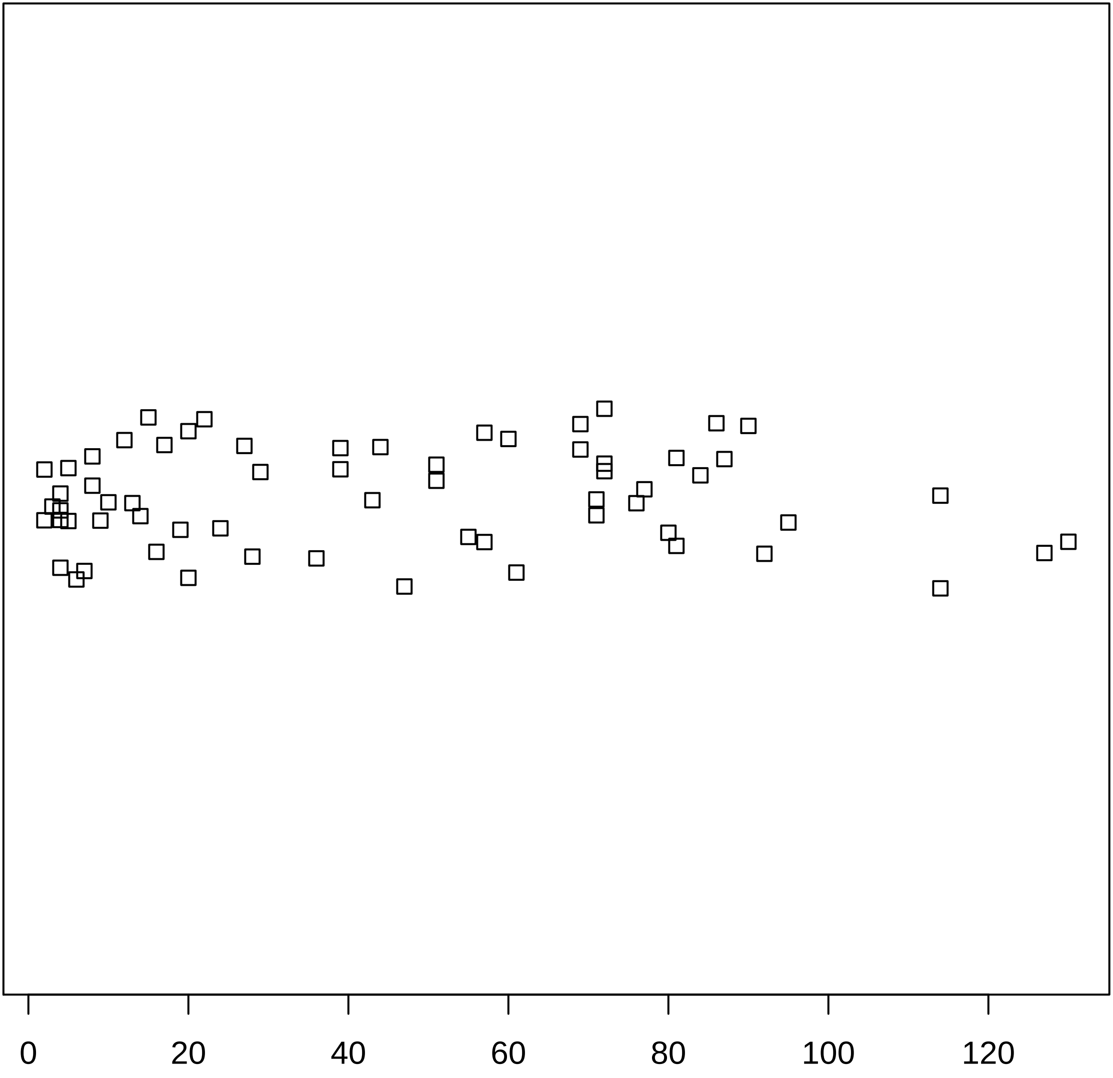


help("plot")

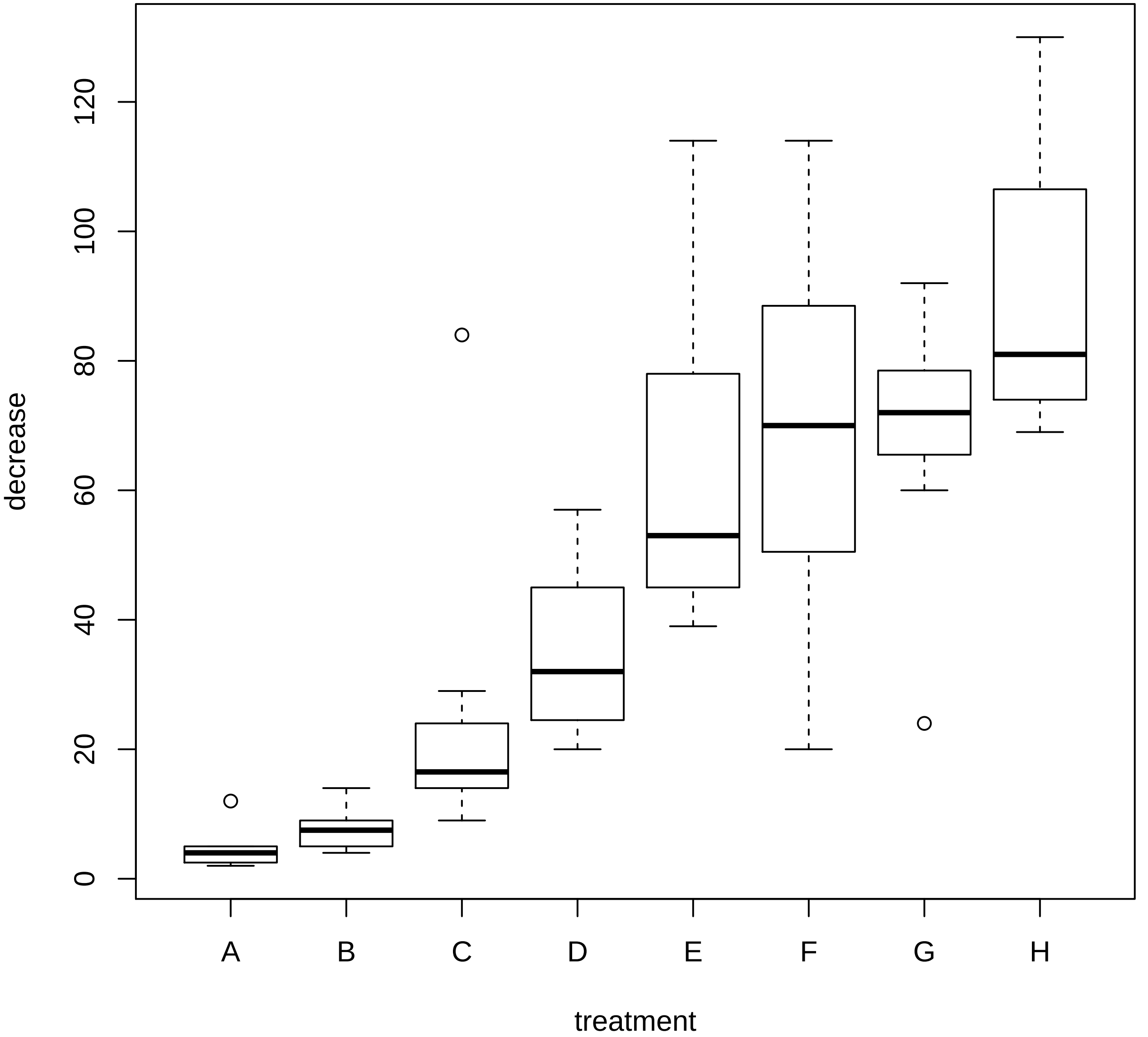

1.0
0.5
0.0
−0.5
−1.0
sin(x)
−2
0
2
4
6
x
help("plot")


rpois(100,lambda=5)
table(rpois(100, 5))
0
5
10
15
20
1
2
3
4
5
6
7
8
9
11
help("plot")

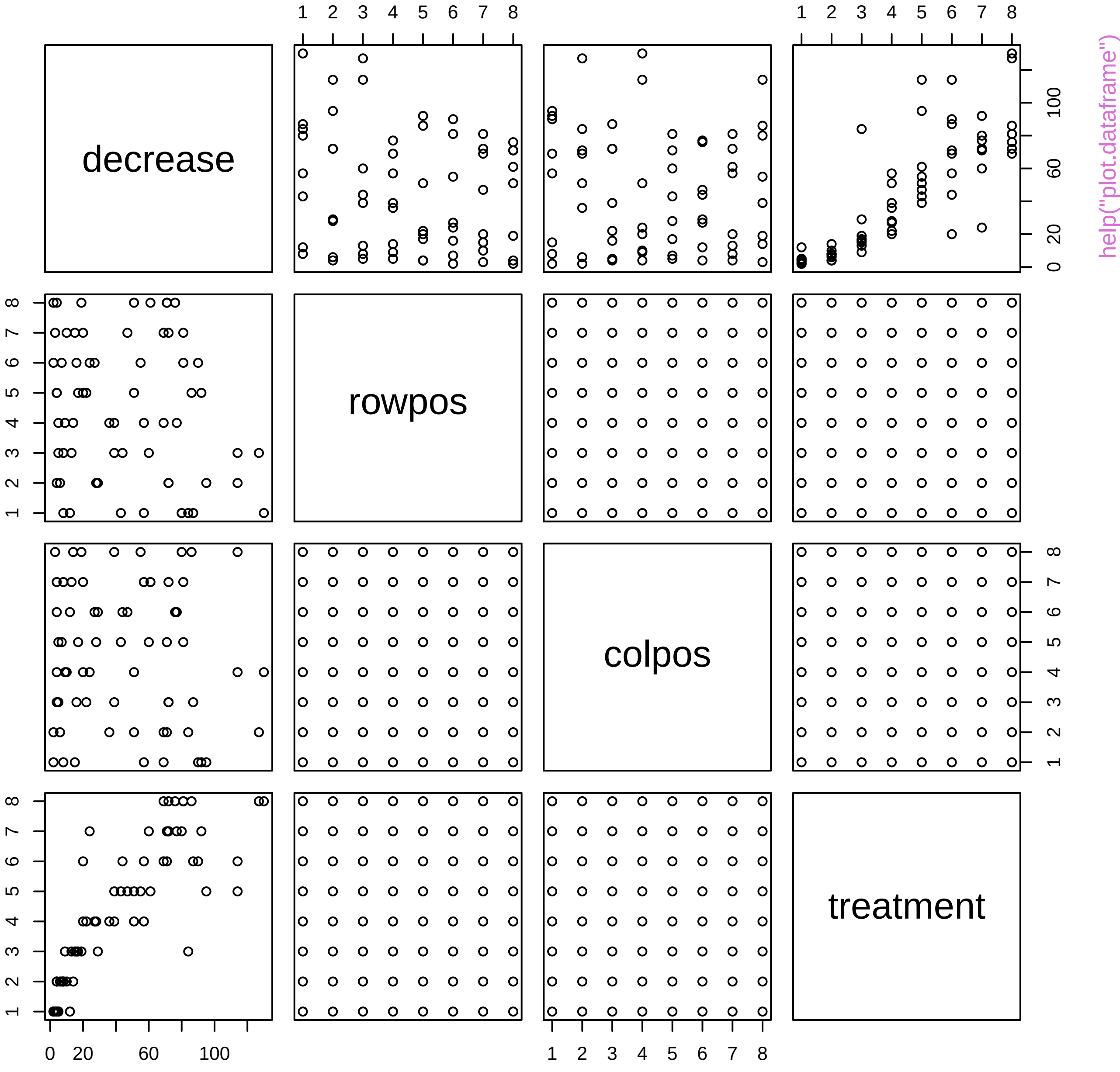

plot(x, type = "s")
x <− sort(rnorm(47))
Index
−1
0
1
2
0
10
20
30
40
help("plot")

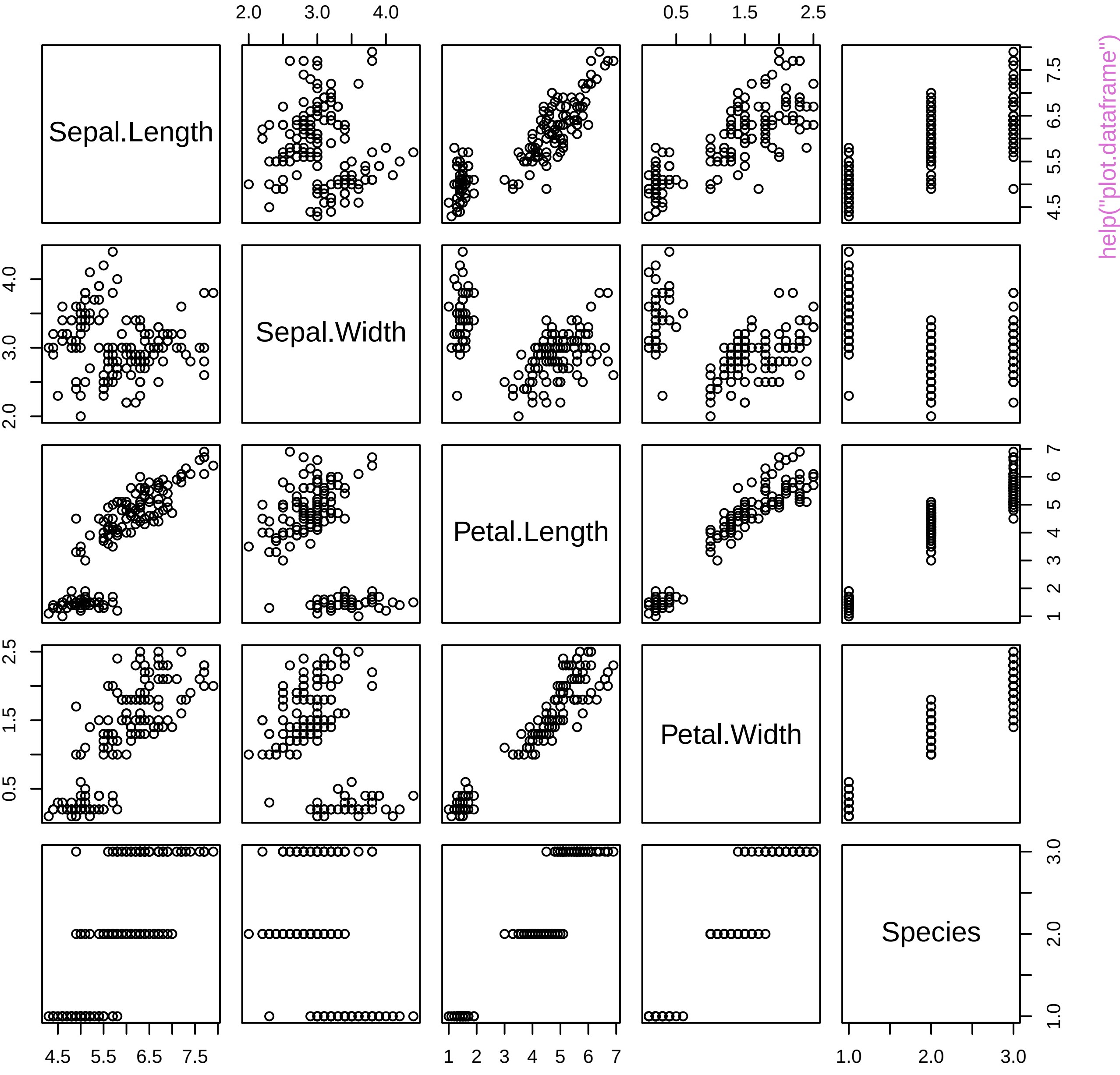


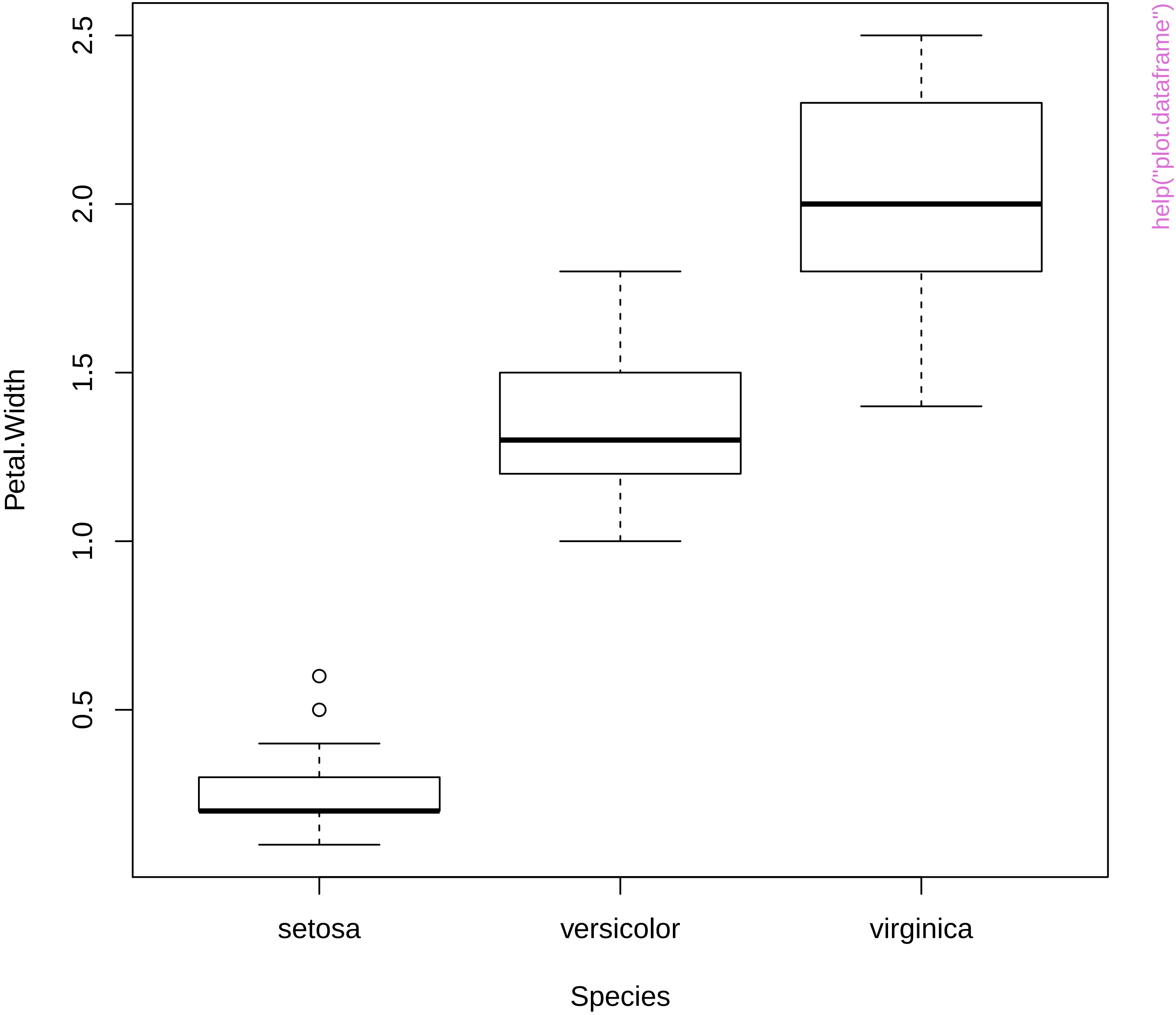
help("plot.dataframe")

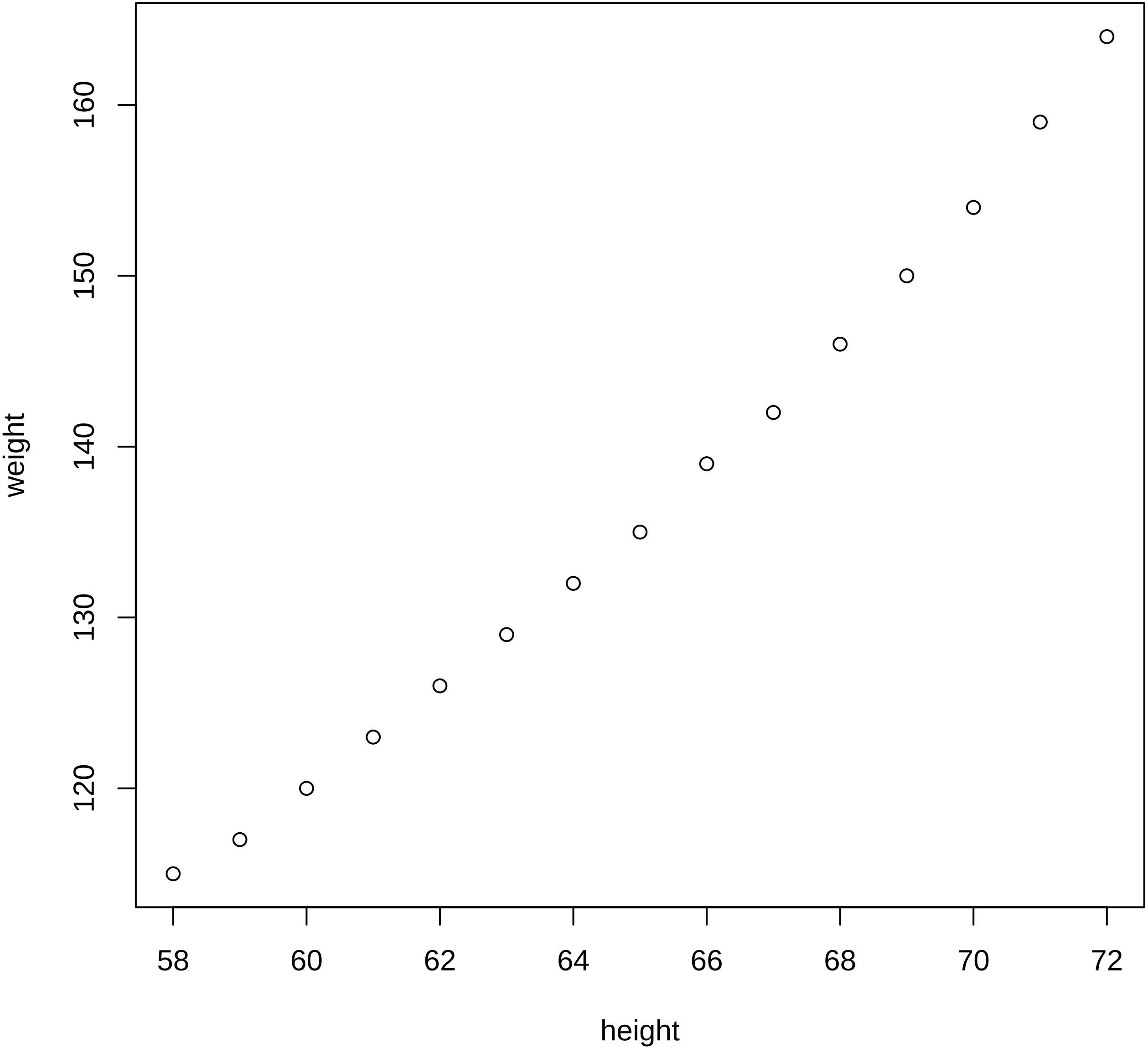


help("plot.dataframe")

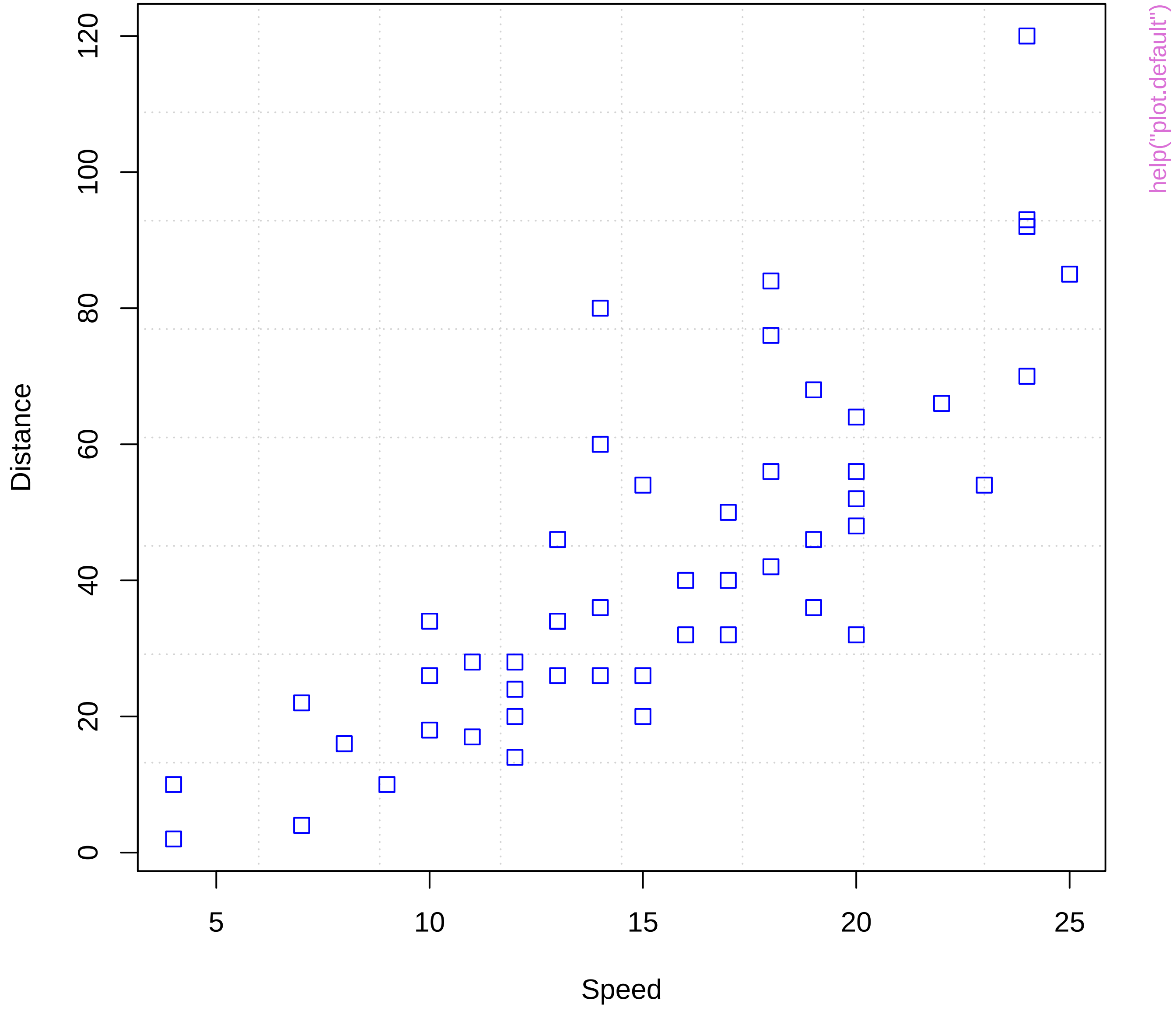

decrease
rowpos
colpos
treatment
1 2 3 4 5 6 7 8
0 20 60 100
help("plot.dataframe")

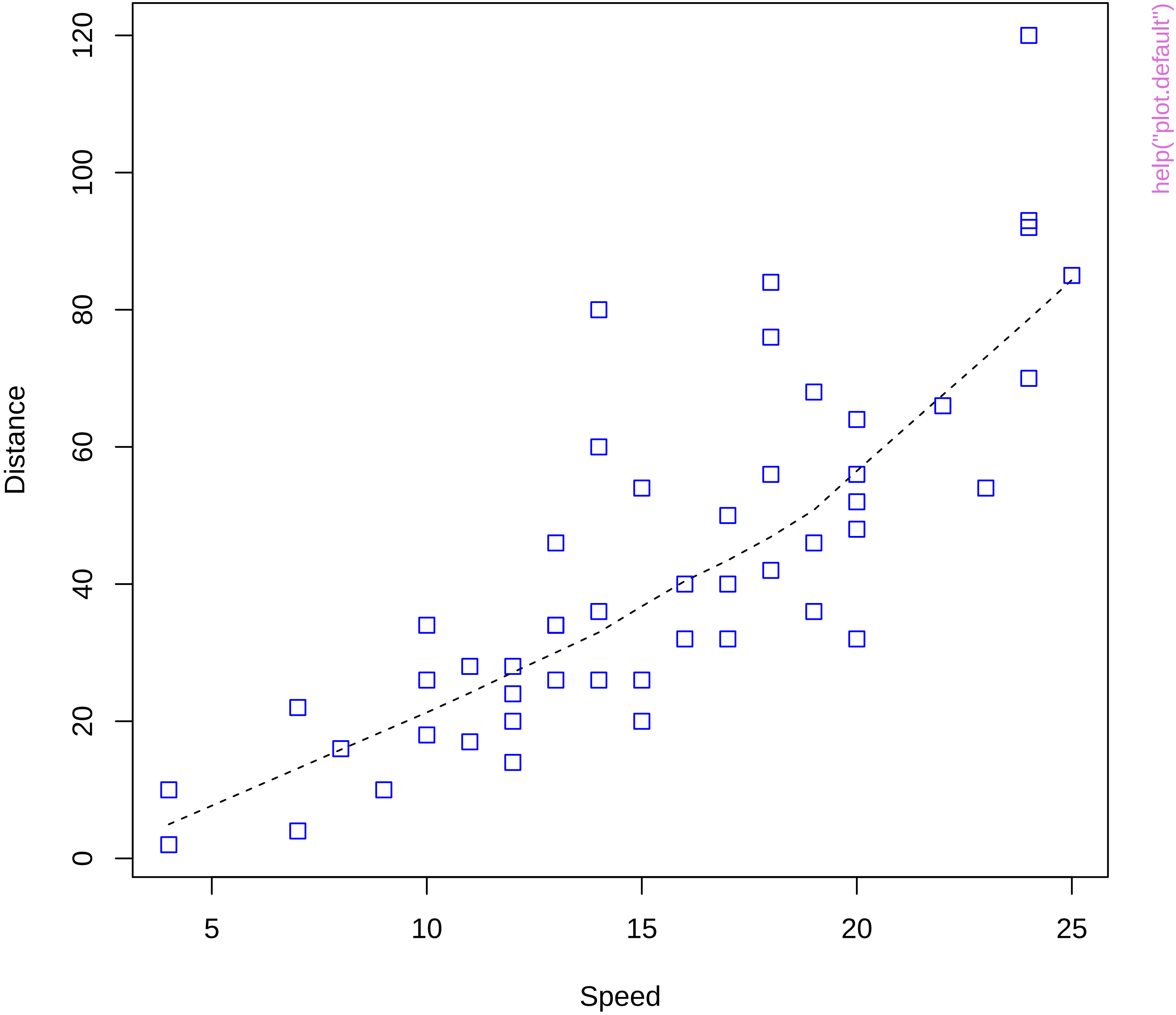

2.0
3.0
4.0
0.5
1.5
2.5
Sepal.Length
4.5
5.5
6.5
7.5
help("plot.dataframe")
4.0
3.0
2.0
Sepal.Width
Petal.Length
1
2
3
4
5
6
7
2.5
1.5
0.5
Petal.Width
Species
1.0
2.0
3.0
4.5
5.5
6.5
7.5
1
2
3
4
5
6
7
1.0
2.0
3.0

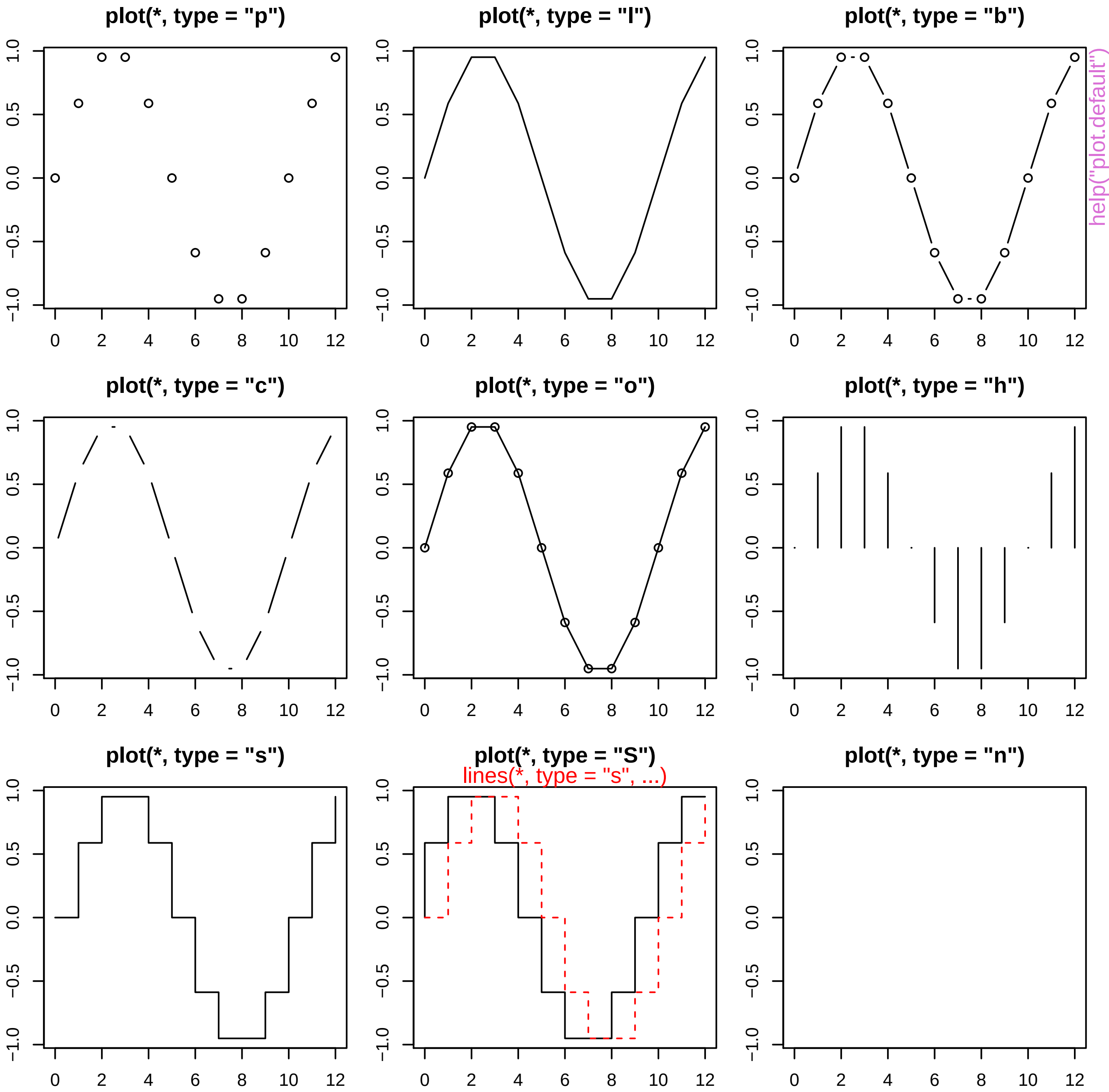

Petal.Width
0.5
1.0
1.5
2.0
2.5
setosa
versicolor
virginica
Species
help("plot.dataframe")

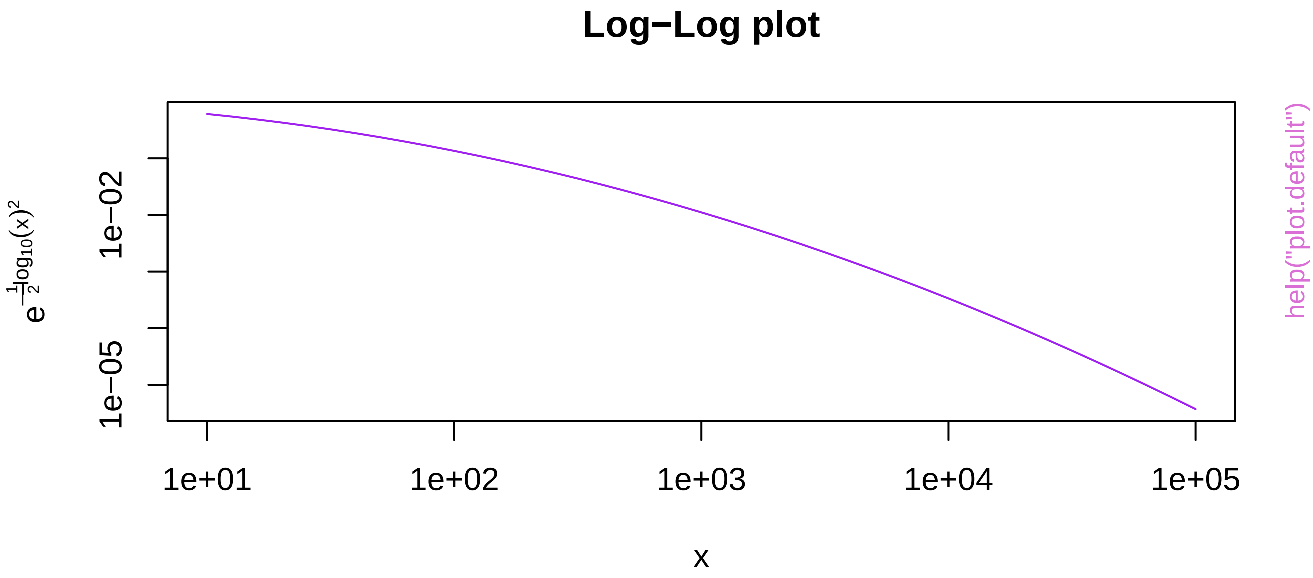


help("plot.dataframe")

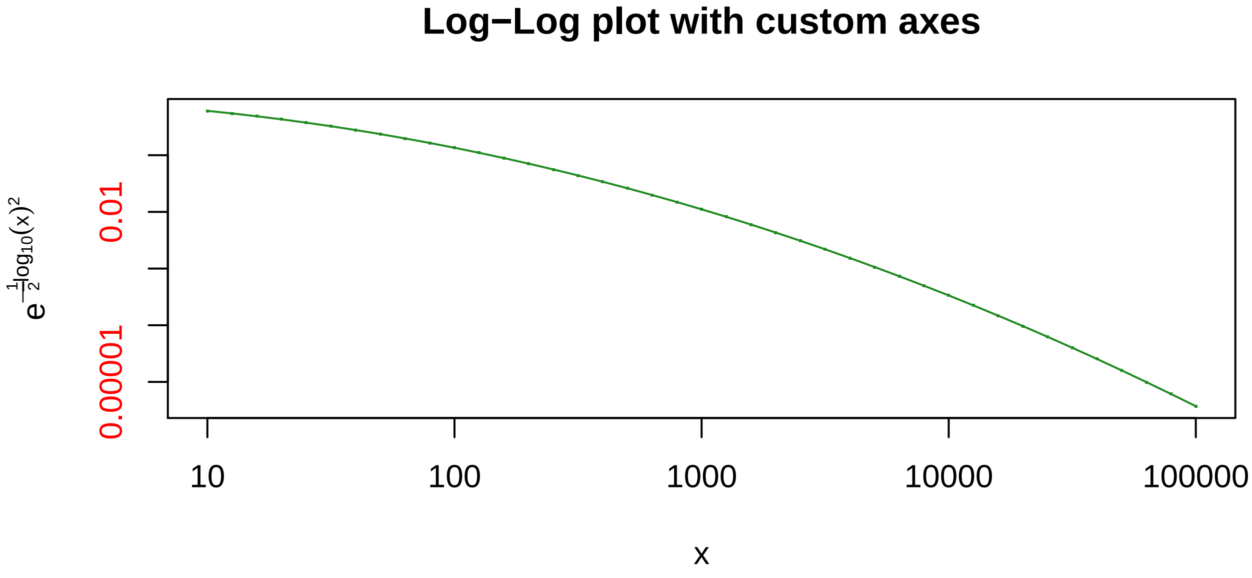

Distance
0
20
40
60
80
100
120
5
10
15
20
25
Speed
help("plot.default")


0
20
40
60
80
100
120
Distance
5
10
15
20
25
Speed
help("plot.default")

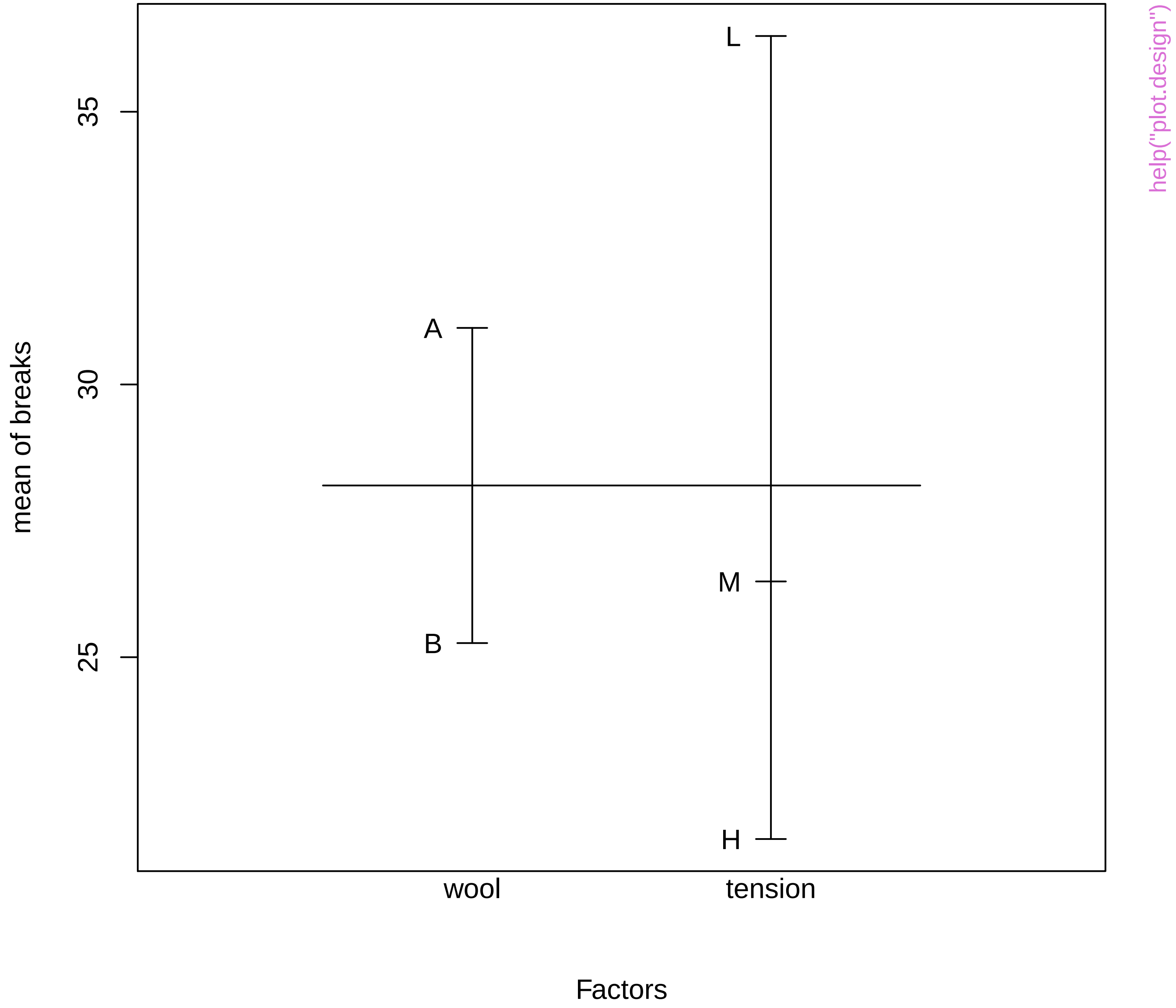

plot(*, type = "p")
plot(*, type = "l")
plot(*, type = "b")
plot(*, type = "c")
plot(*, type = "o")
plot(*, type = "h")
plot(*, type = "s")
plot(*, type = "S")
lines(*, type = "s", ...)
plot(*, type = "n")
help("plot.default")
−1.0
−0.5
0.0
0.5
1.0
0
2
4
6
8
10
12



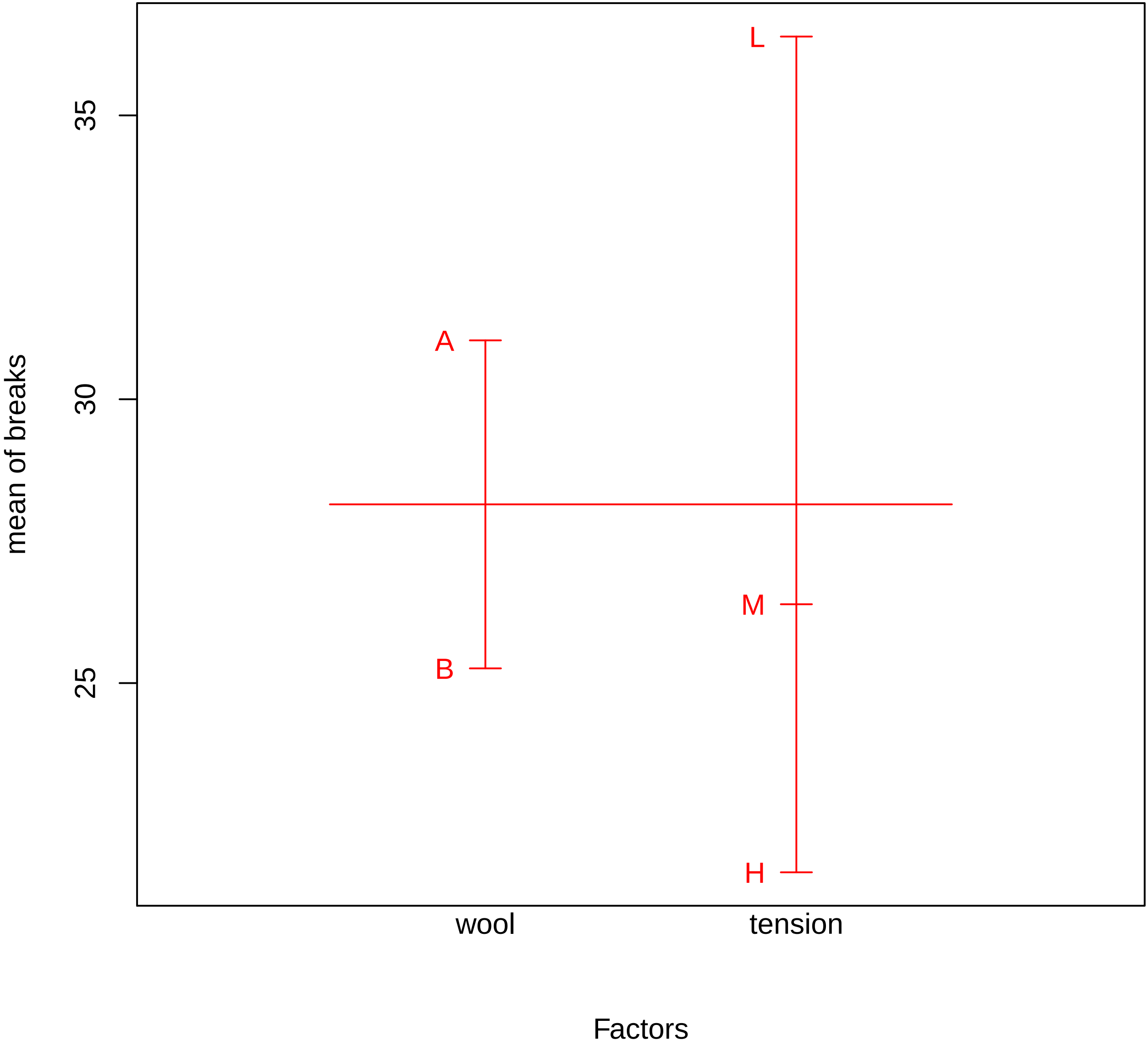
Log−Log plot



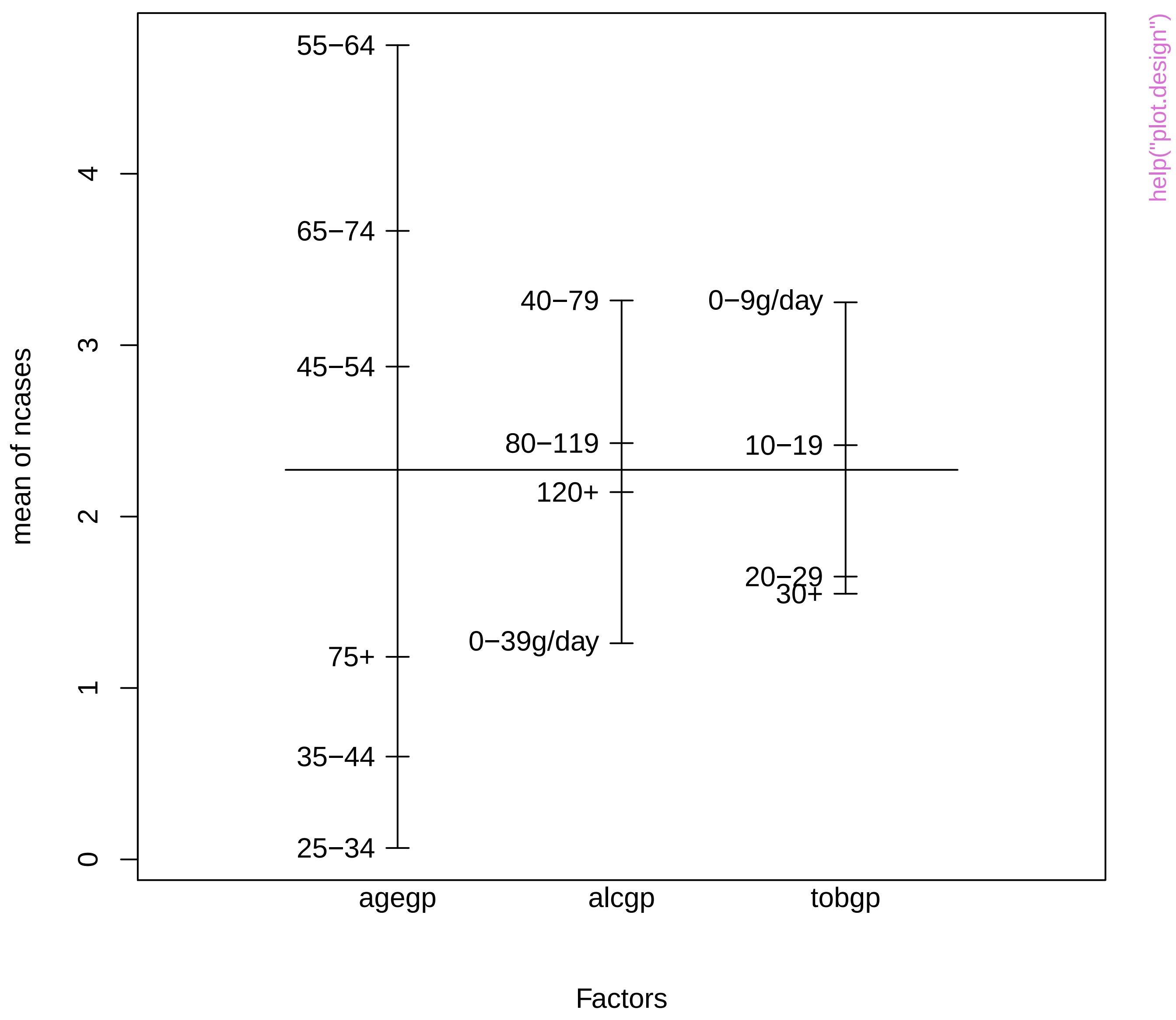
Log−Log plot with custom axes



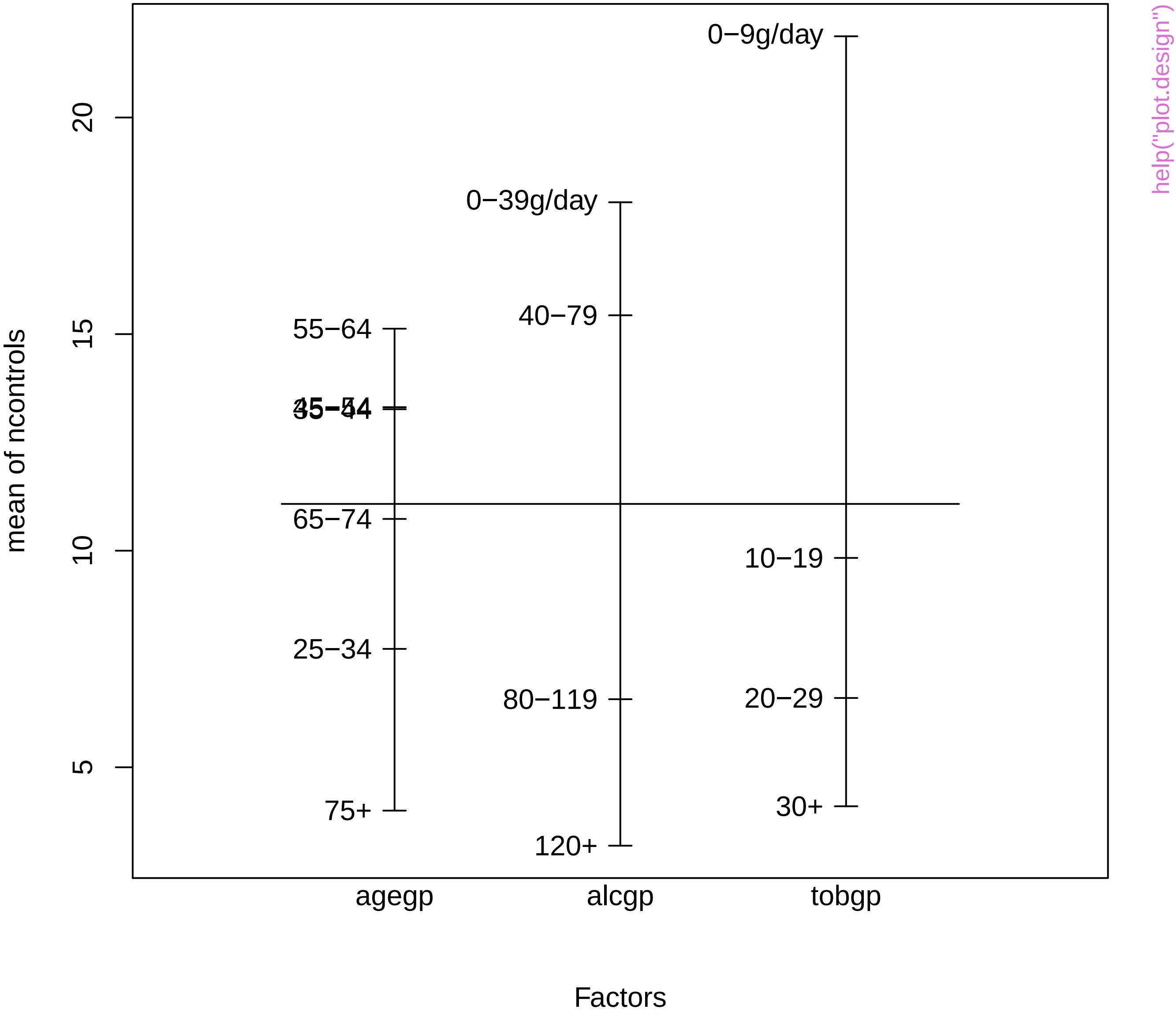
mean of breaks
35
30
25
L
A
M
B
H
wool
tension
Factors
help("plot.design")



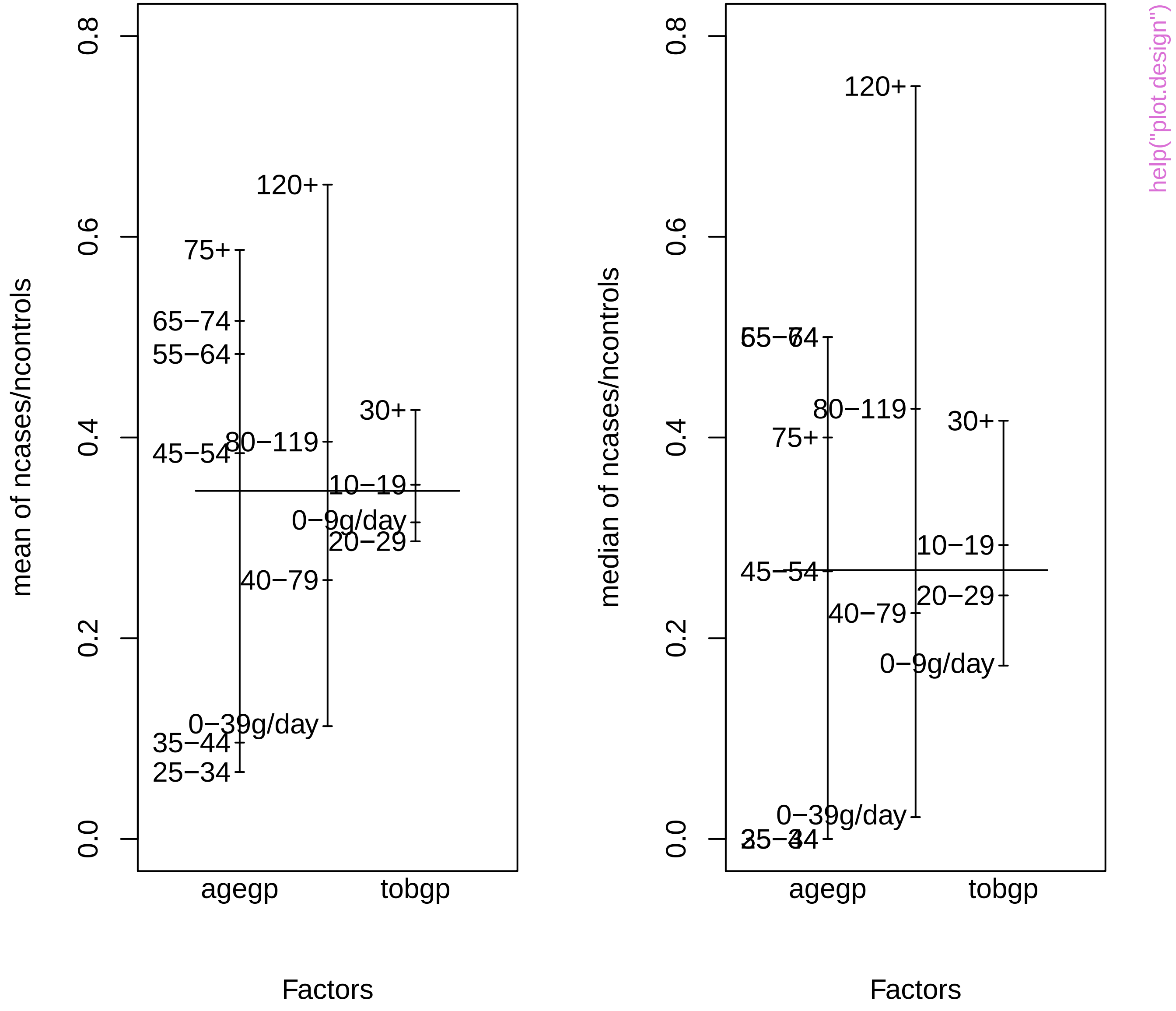
help("plot.design")

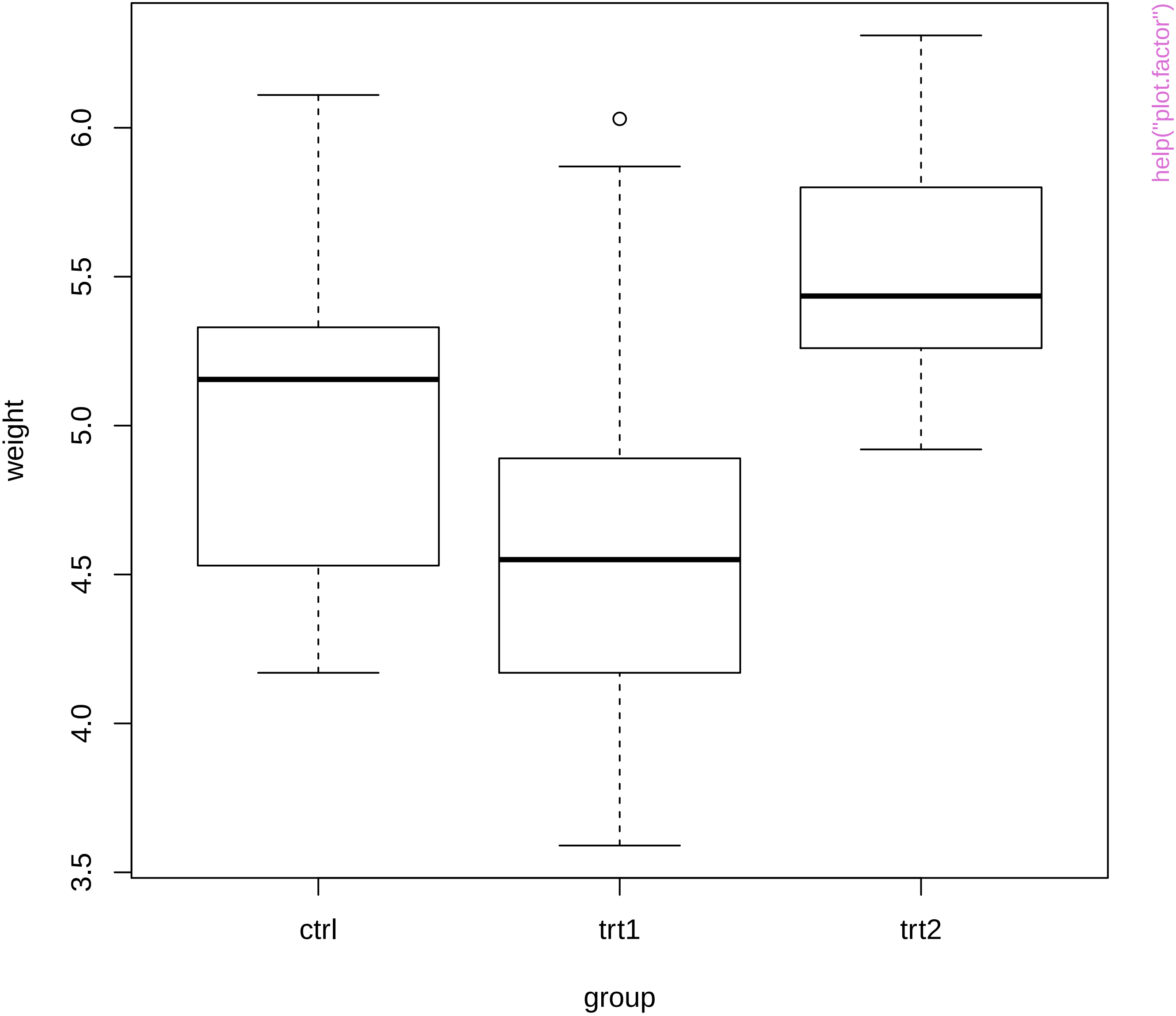


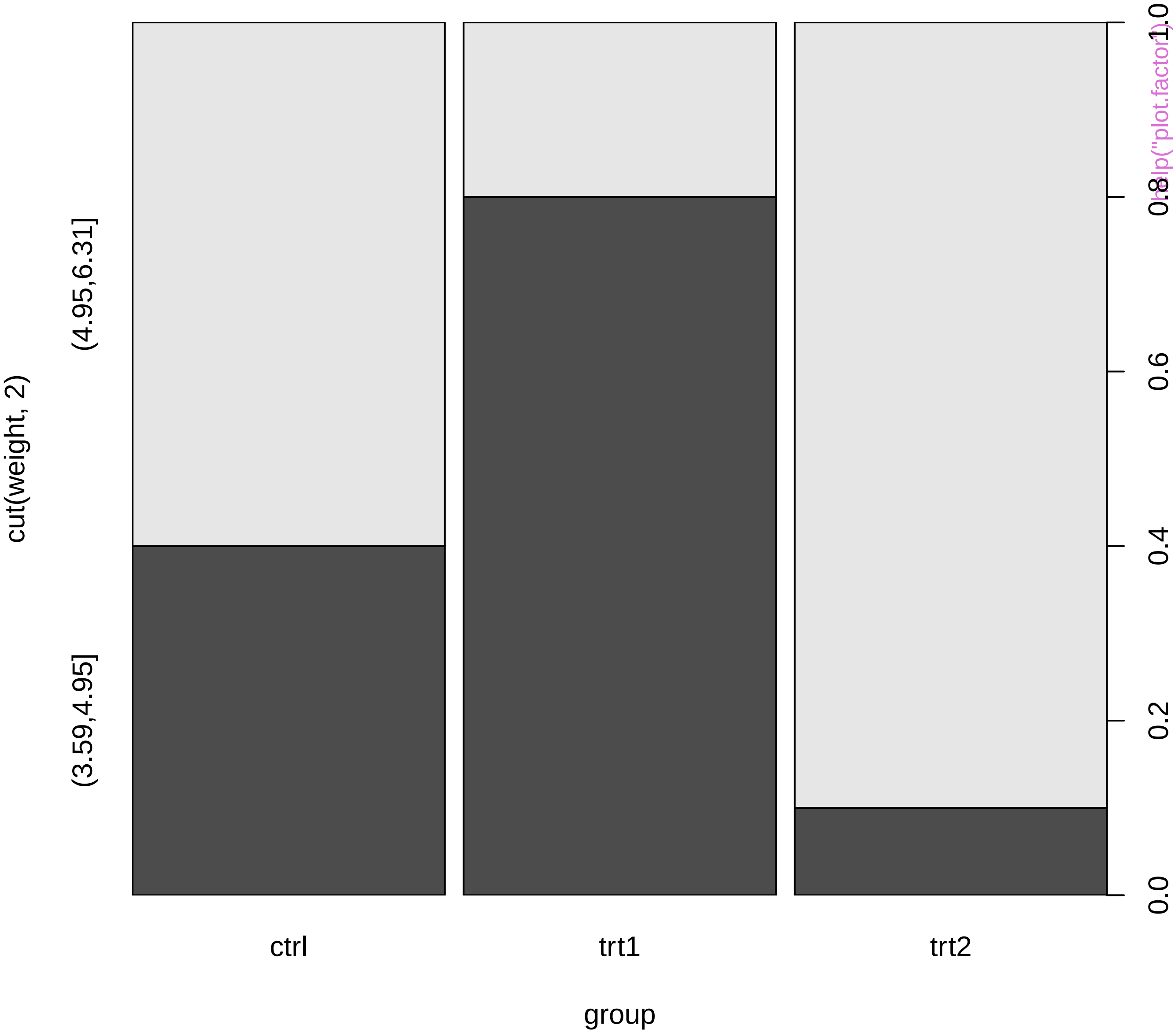
help("plot.design")

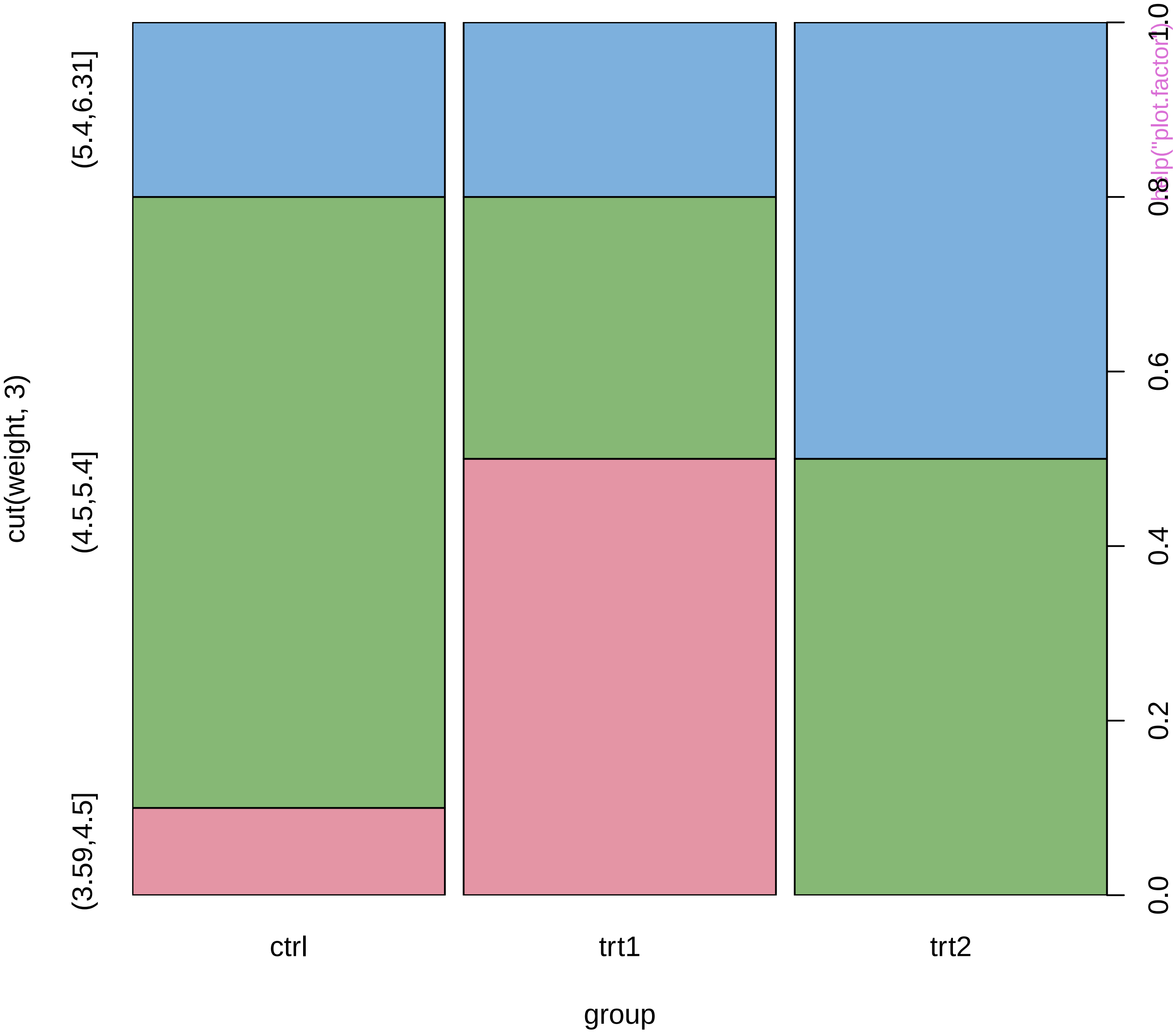


help("plot.design")
mean of ncontrols
20
15
10
5
0−9g/day
0−39g/day
40−79
55−64
45−54
35−44
65−74
10−19
25−34
80−119
20−29
75+
30+
120+
agegp
alcgp
tobgp
Factors

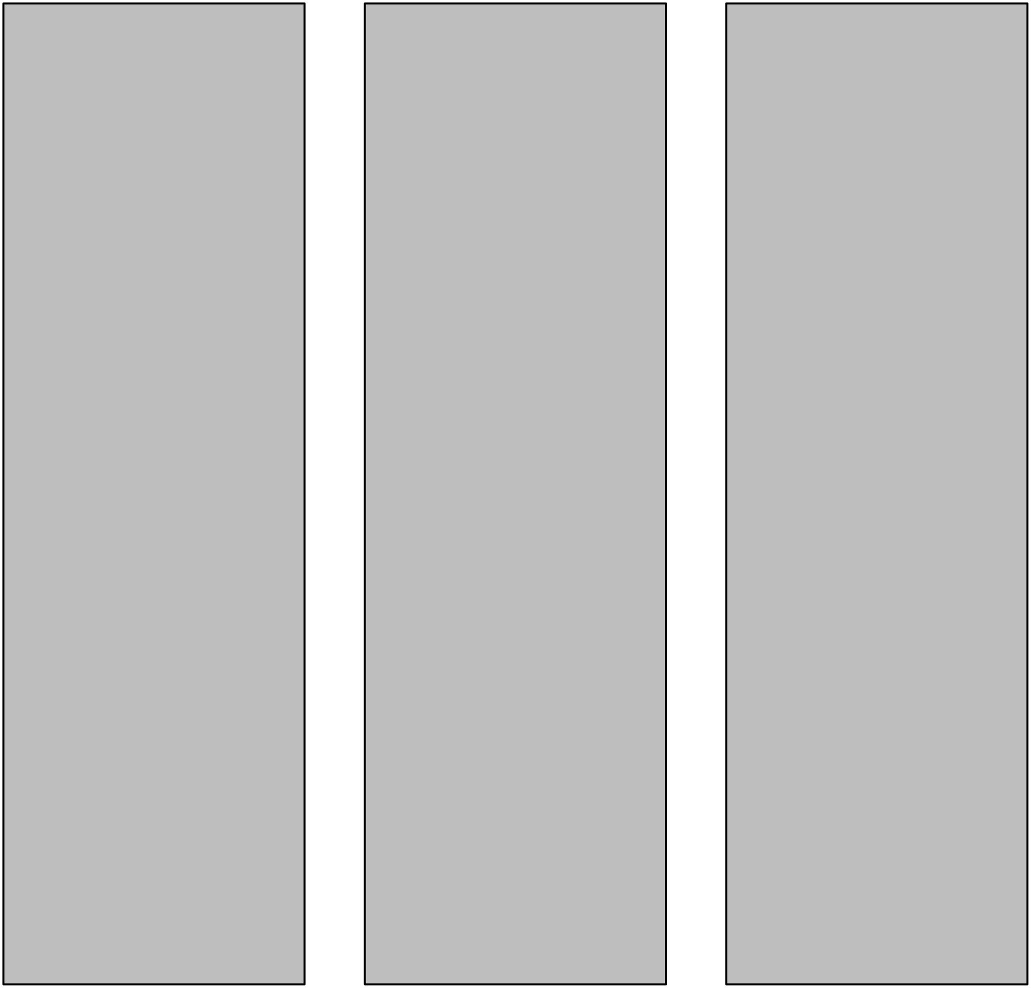

mean of ncases/ncontrols
0.0
0.2
0.4
0.6
0.8
75+
65−74
55−64
45−54
35−44
25−34
120+
80−119
40−79
0−39g/day
30+
10−19
0−9g/day
20−29
agegp
tobgp
Factors
median of ncases/ncontrols
0.0
0.2
0.4
0.6
0.8
55−64
65−74
75+
45−54
25−34
35−44
120+
80−119
40−79
0−39g/day
30+
10−19
20−29
0−9g/day
agegp
tobgp
Factors
help("plot.design")

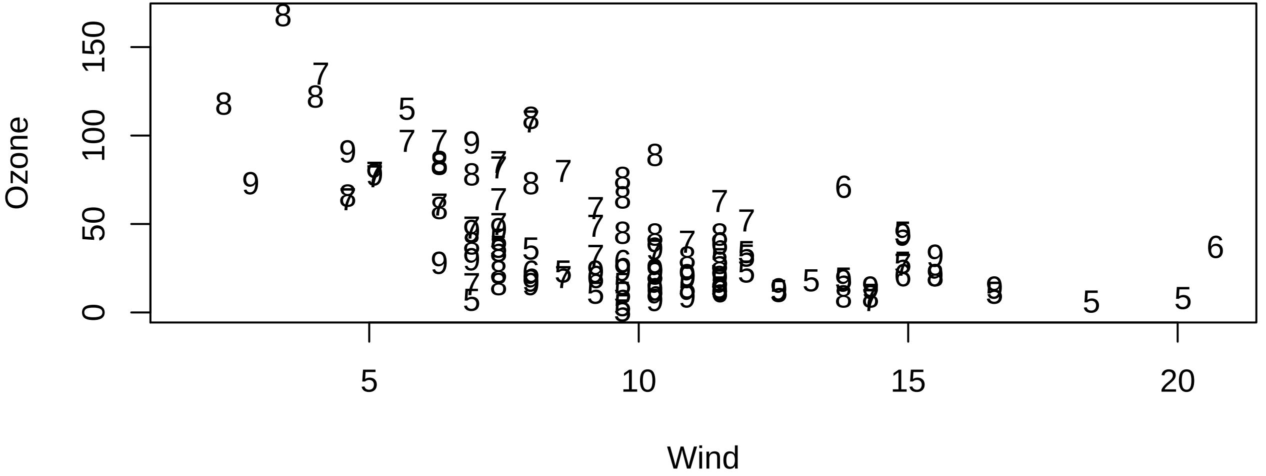

weight
3.5
4.0
4.5
5.0
5.5
6.0
ctrl
trt1
trt2
group
help("plot.factor")


cut(weight, 2)
(4.95,6.31]
(3.59,4.95]
ctrl
trt1
trt2
group
0.0
0.2
0.4
0.6
0.8
1.0
help("plot.factor")

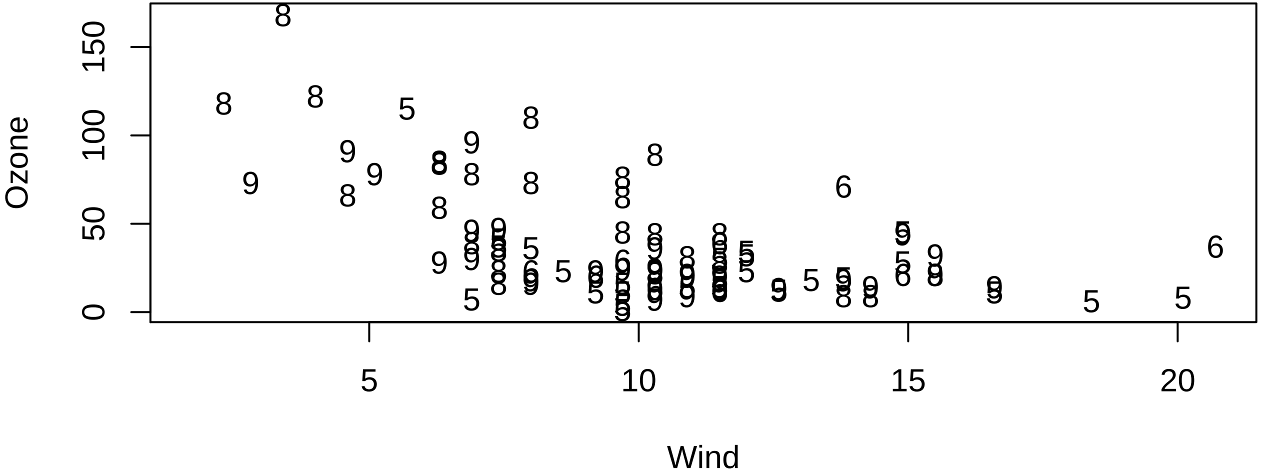

cut(weight, 3)
(3.59,4.5]
(4.5,5.4]
(5.4,6.31]
ctrl
trt1
trt2
group
0.0
0.2
0.4
0.6
0.8
1.0
help("plot.factor")

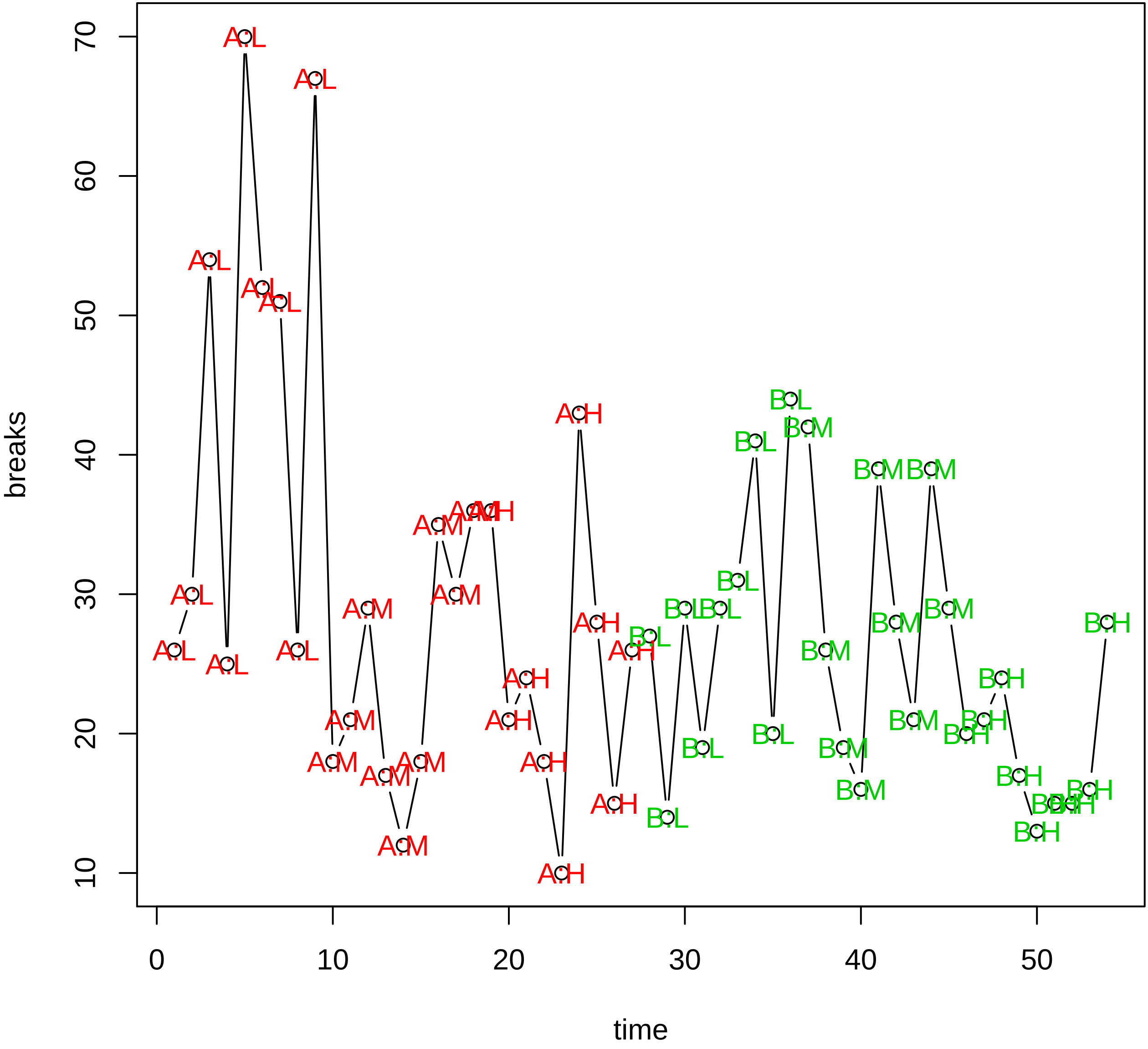
no axes



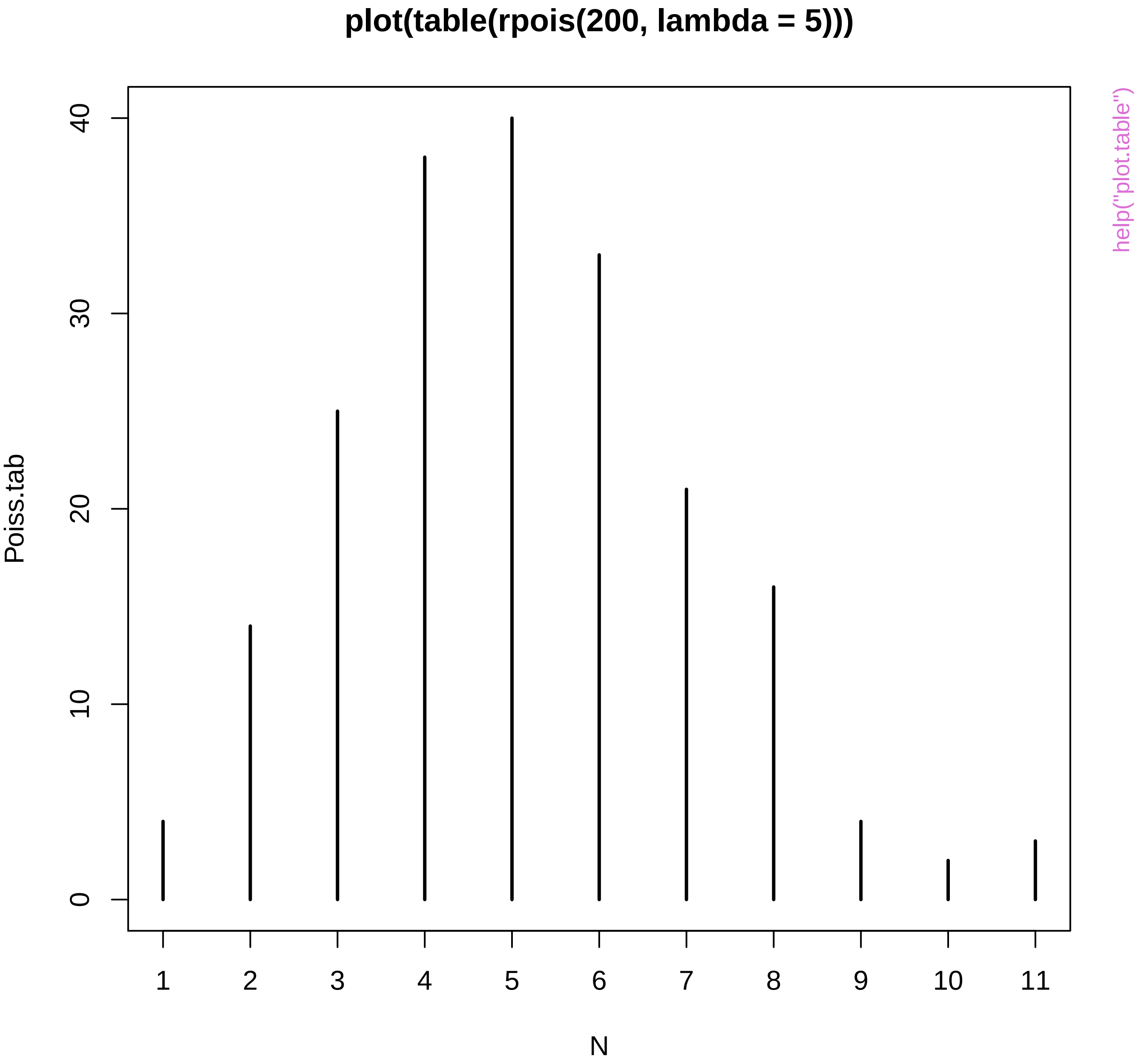


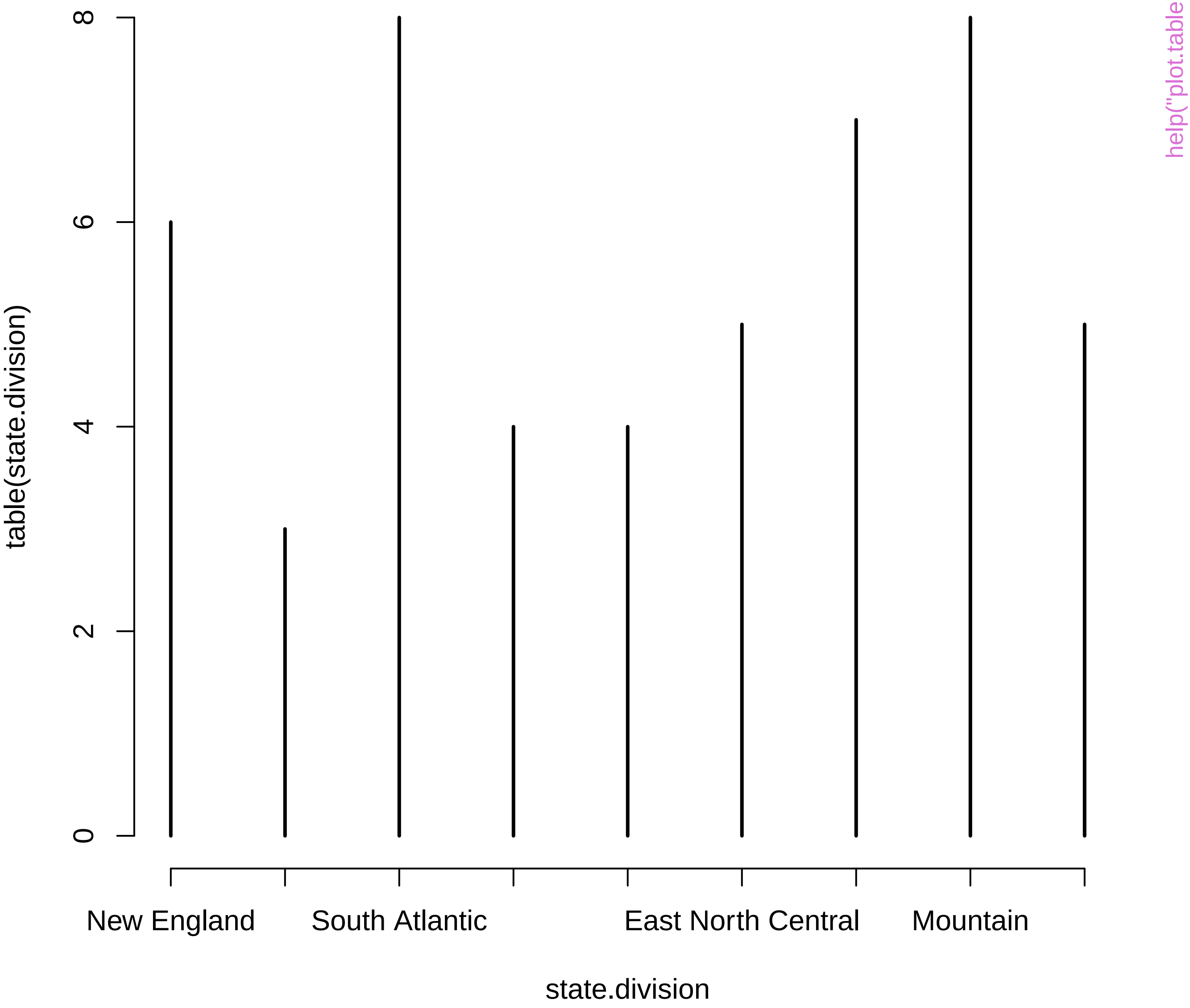
help("plot.formula")

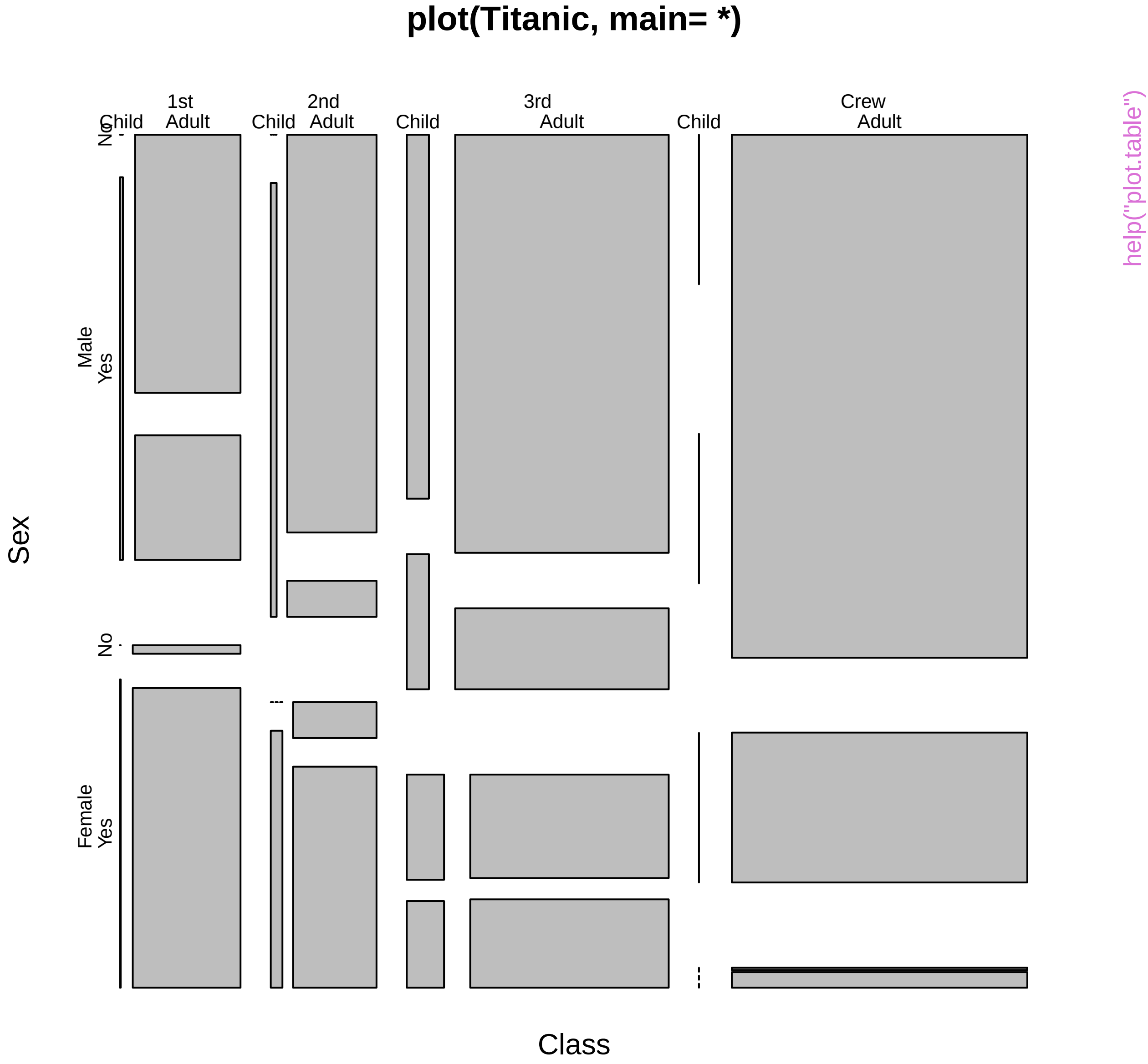


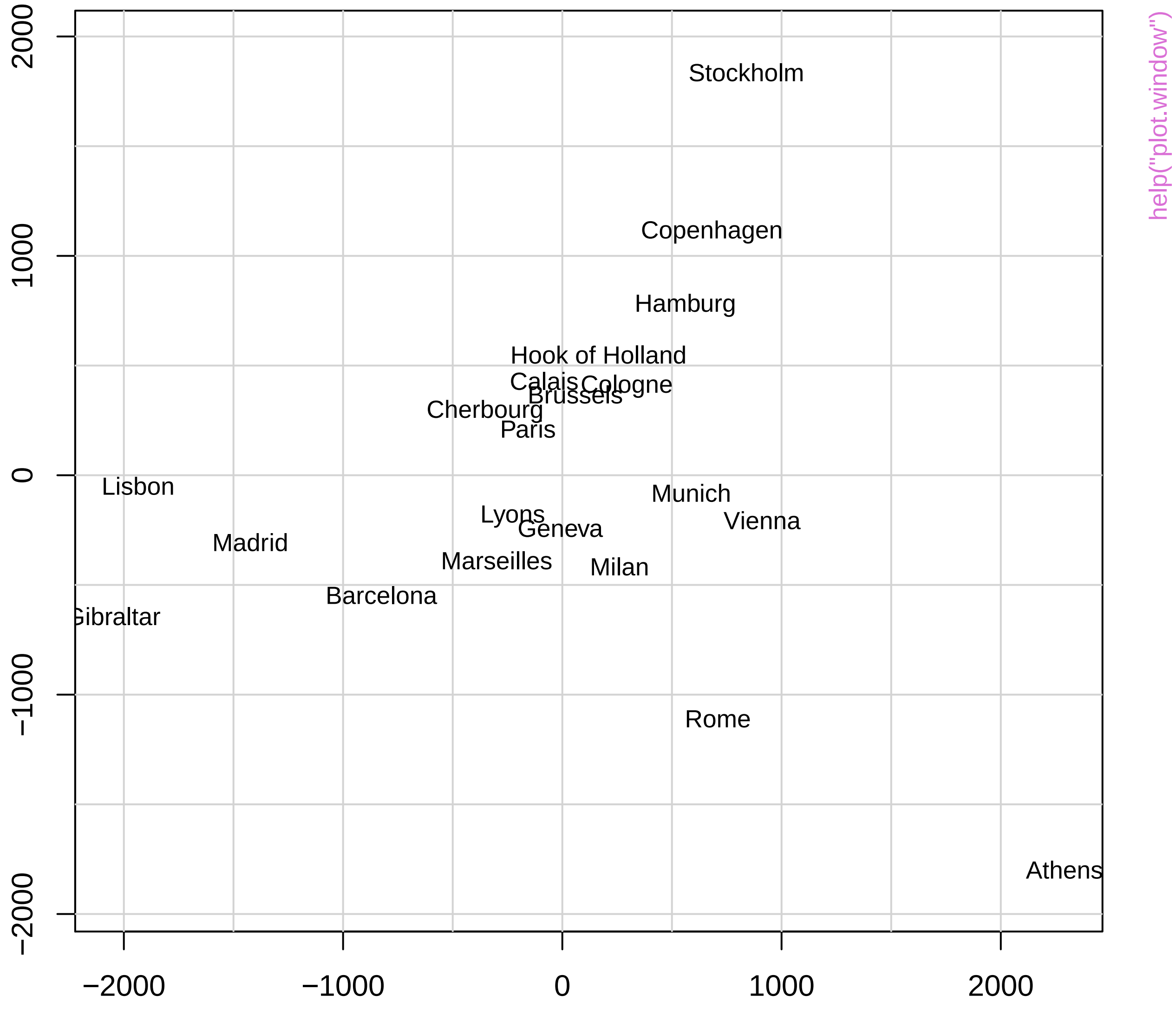


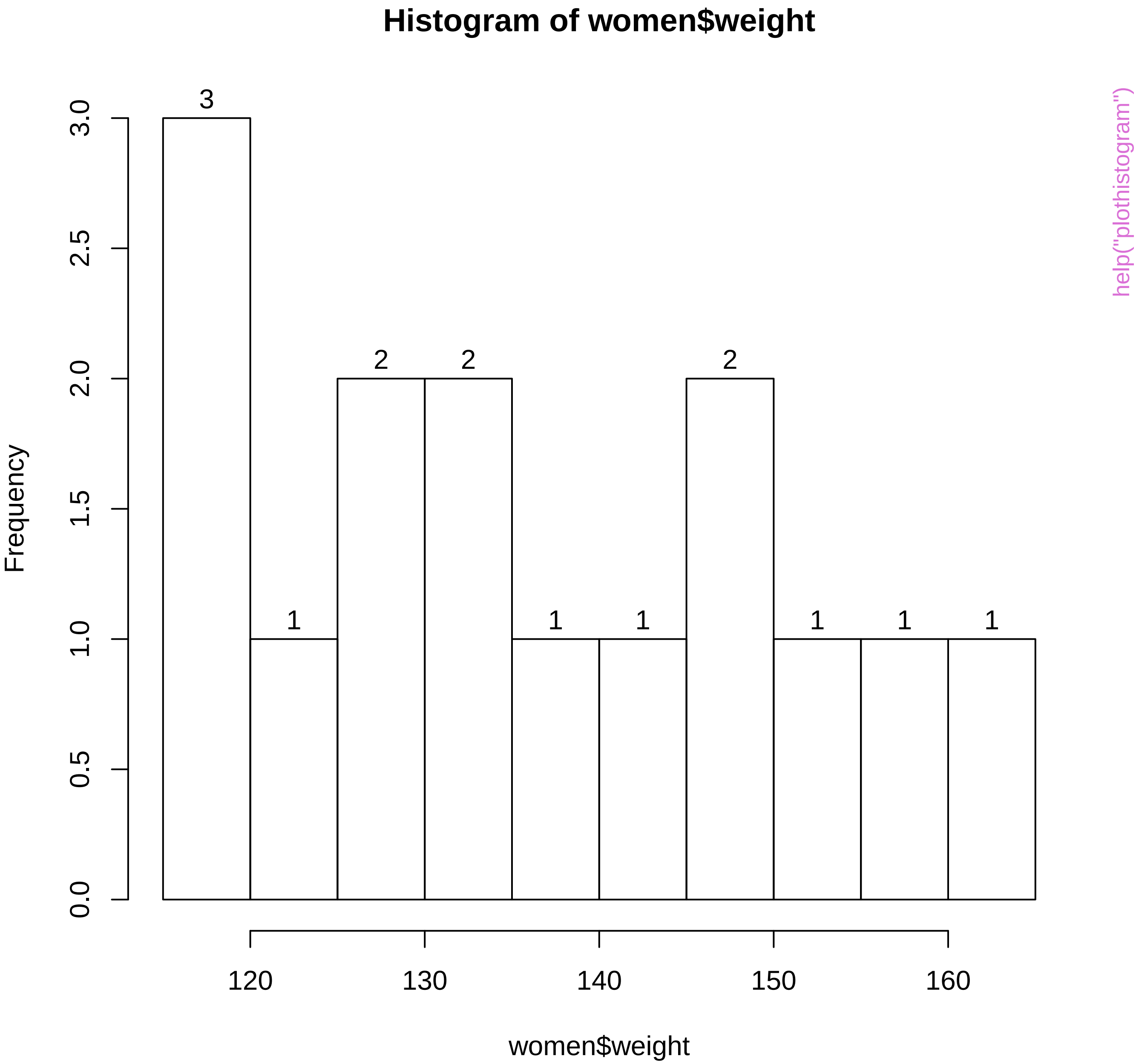
help("plot.formula")

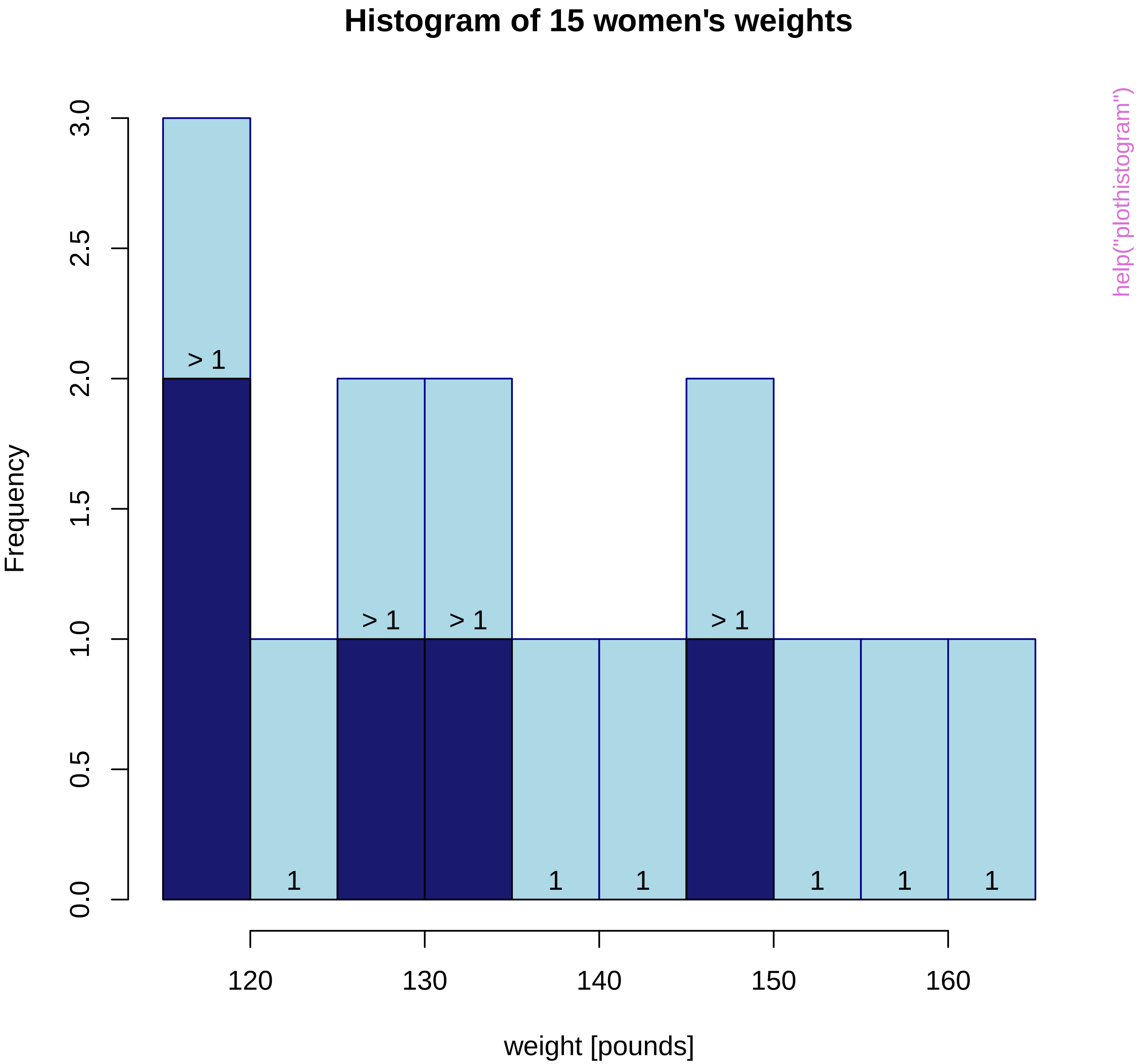

plot(table(rpois(200, lambda = 5)))
Poiss.tab
0
10
20
30
40
1
2
3
4
5
6
7
8
9
10
11
N
help("plot.table")

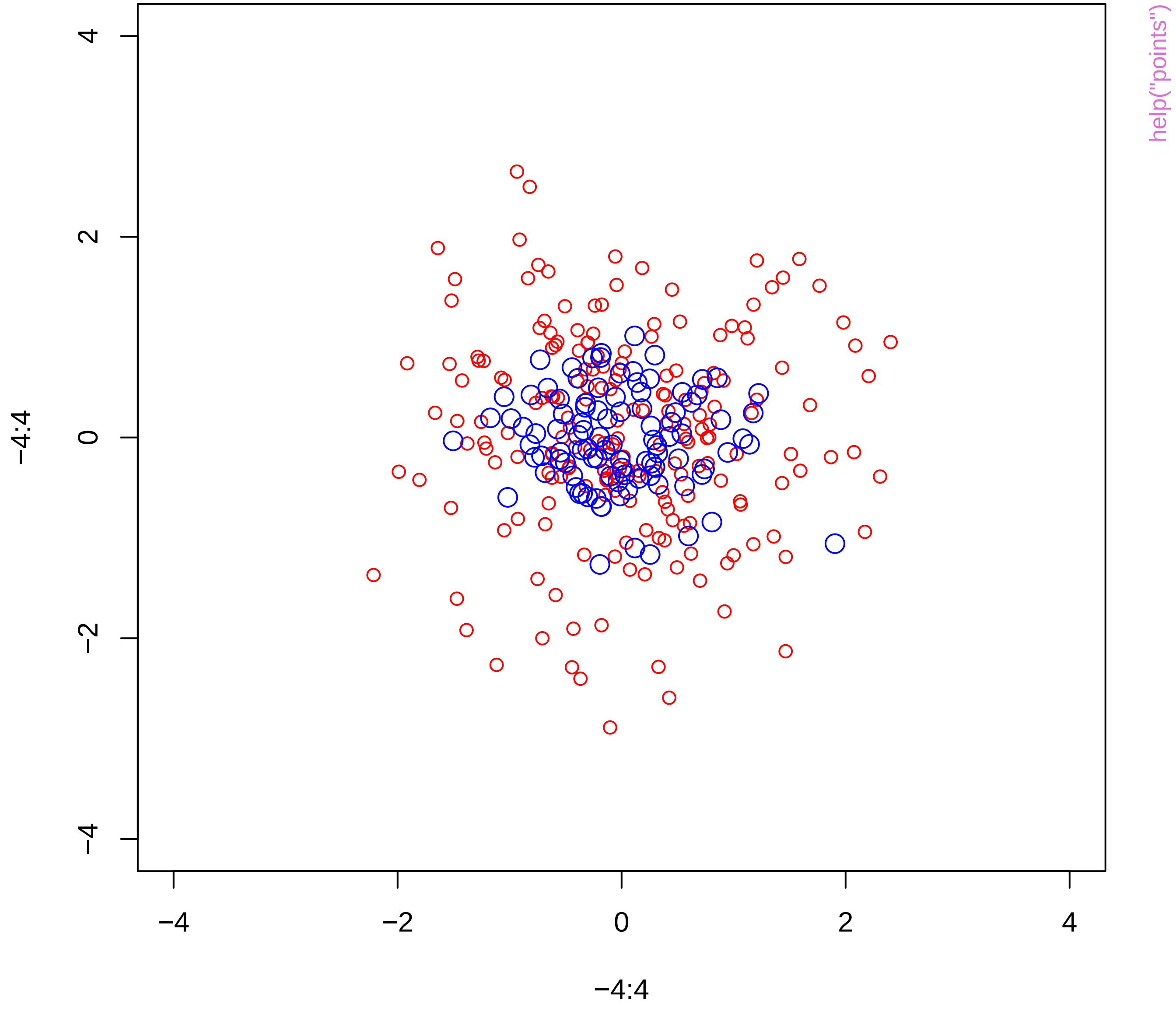

8
6
4
2
0
table(state.division)
New England
South Atlantic
East North Central
Mountain
state.division
help("plot.table")

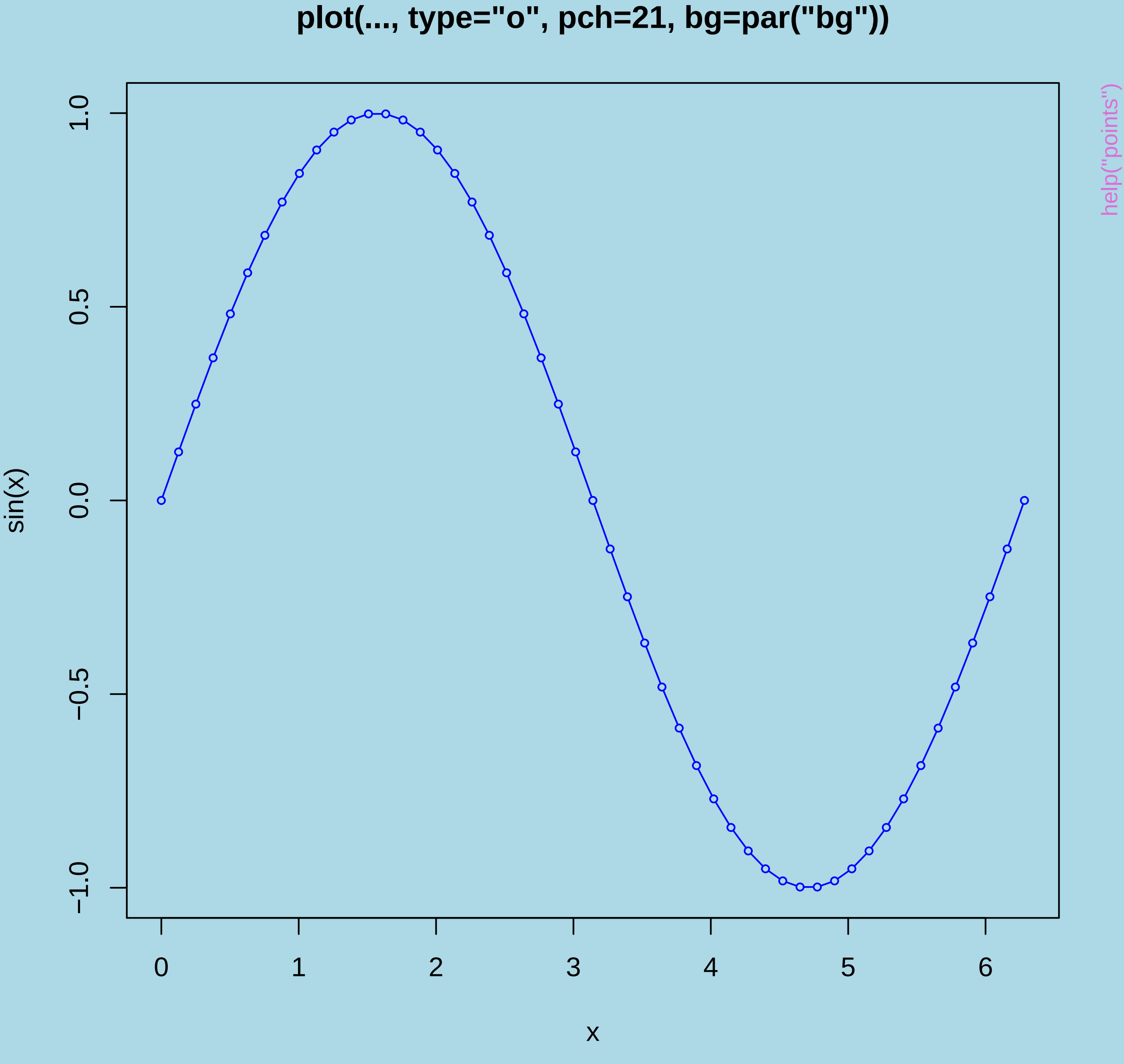

plot(Titanic, main= *)
1st
2nd
3rd
Crew
Child
Adult
Child
Adult
Child
Adult
Child
Adult
No
Male
Yes
No
Female
Yes
Sex
Class
help("plot.table")

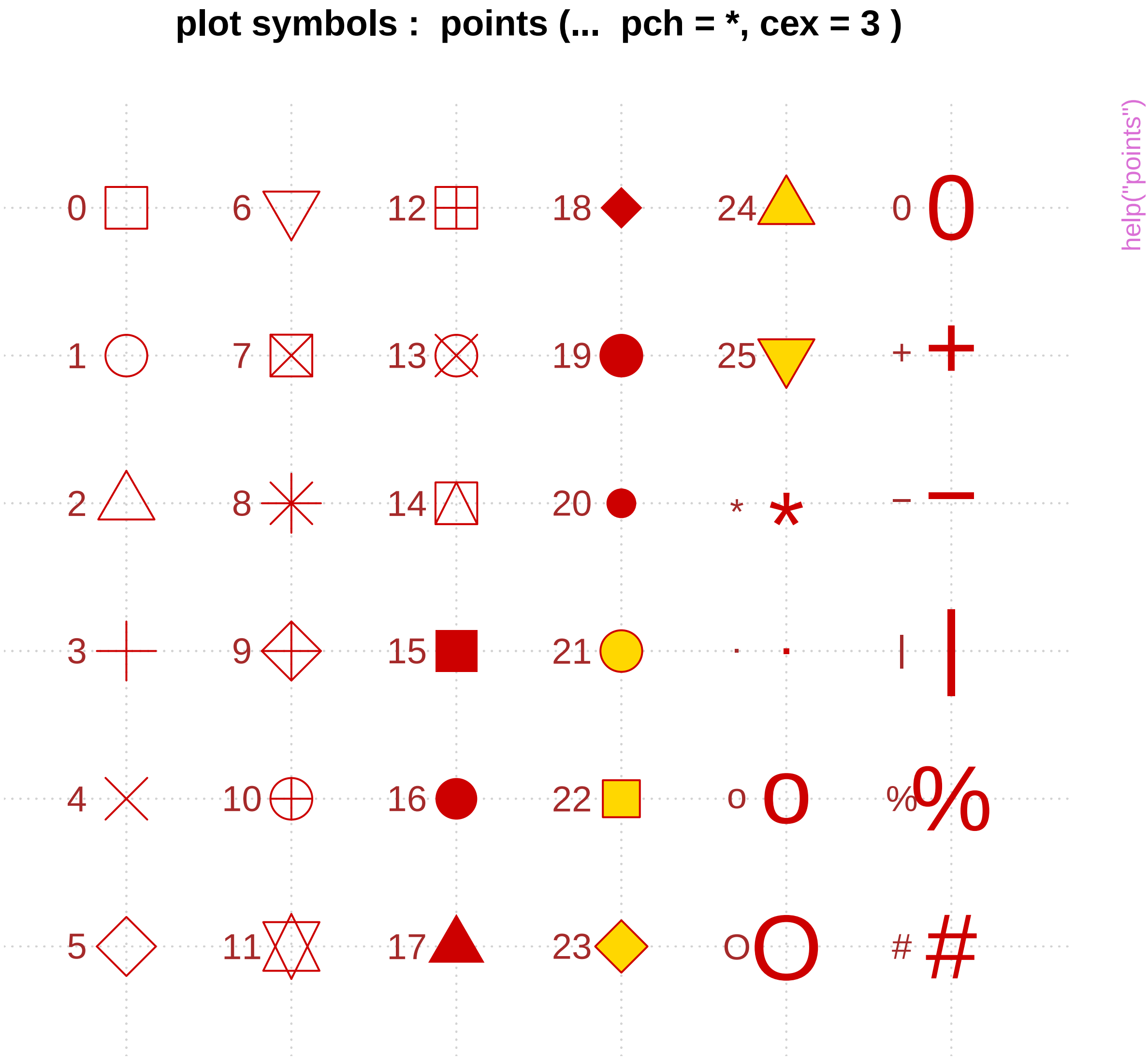

Stockholm
Copenhagen
Hamburg
Hook of Holland
Calais
Cologne
Brussels
Cherbourg
Paris
Lisbon
Munich
Lyons
Geneva
Vienna
Madrid
Marseilles
Milan
Barcelona
Gibraltar
Rome
Athens
2000
1000
0
−1000
−2000
−2000
−1000
0
1000
2000
help("plot.window")

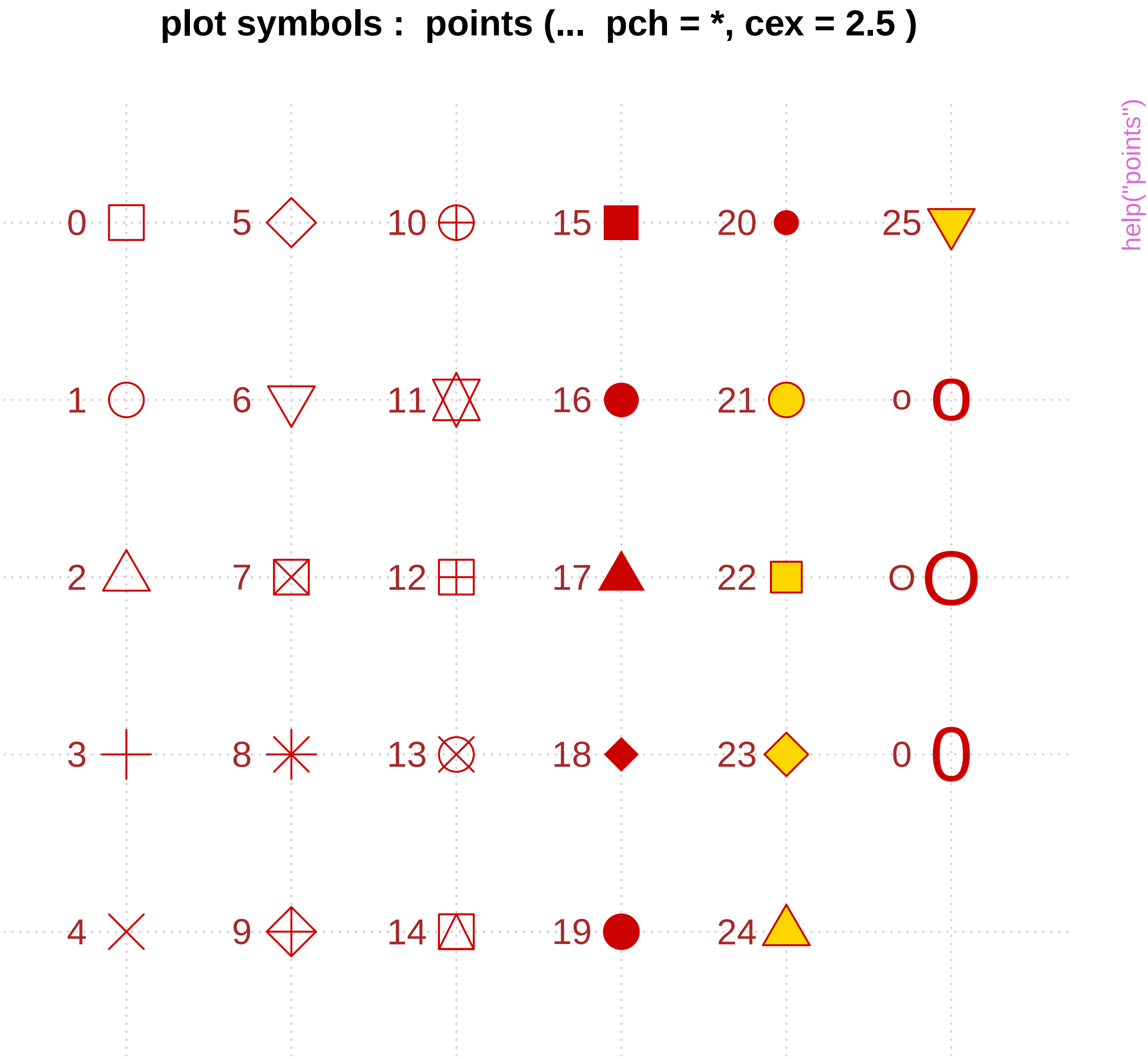

Histogram of women$weight
Frequency
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
1
2
2
1
1
2
1
1
1
120
130
140
150
160
women$weight
help("plothistogram")

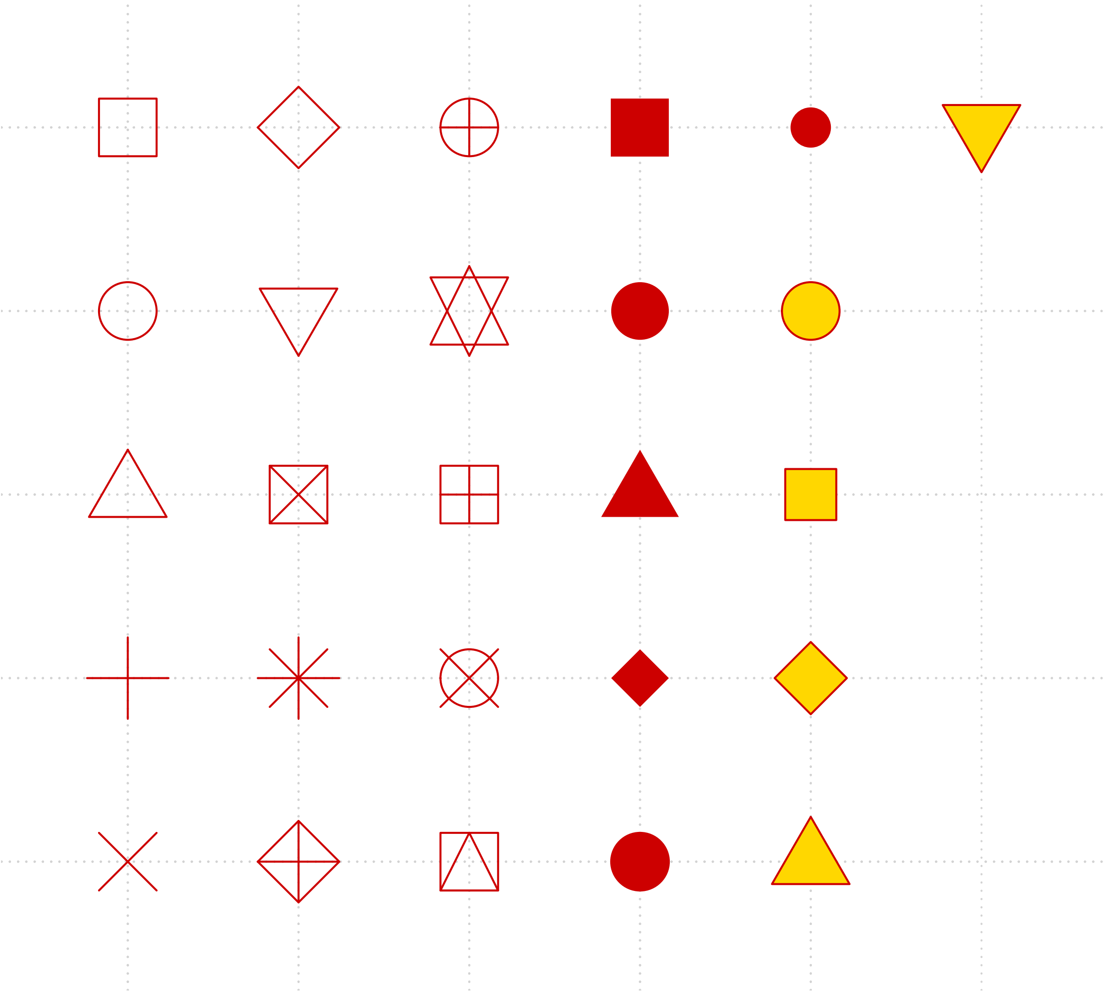

Histogram of 15 women's weights
Frequency
0.0
0.5
1.0
1.5
2.0
2.5
3.0
> 1
> 1
> 1
> 1
1
1
1
1
1
1
120
130
140
150
160
weight [pounds]
help("plothistogram")


−4:4
4
2
0
−2
−4
−4
−2
0
2
4
−4:4
help("points")

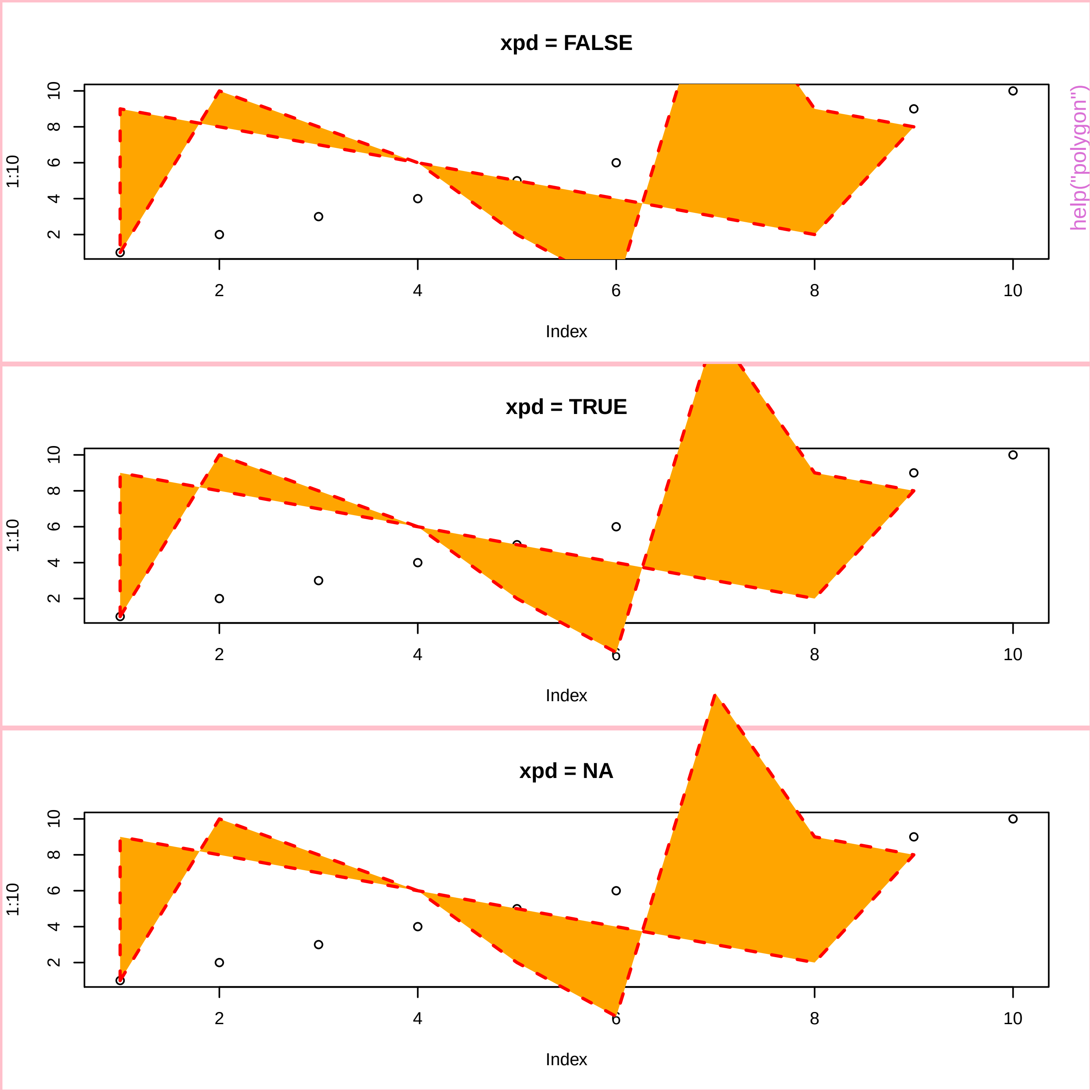

plot(..., type="o", pch=21, bg=par("bg"))
1.0
0.5
0.0
−0.5
−1.0
sin(x)
0
1
2
3
4
5
6
x
help("points")

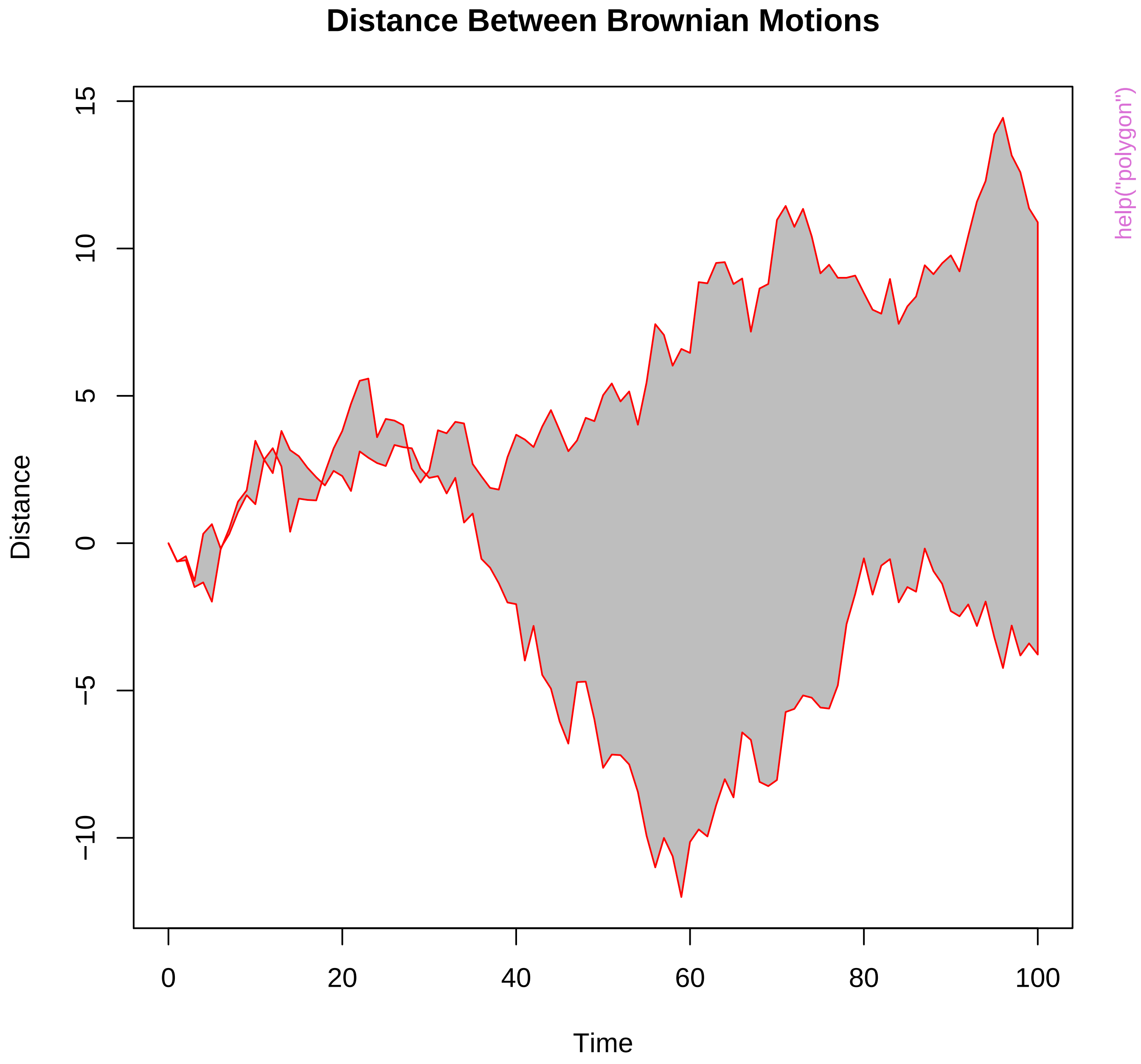

plot symbols : points (... pch = *, cex = 3)
0
6
12
18
24
0
1
7
13
19
25
+
2
8
14
20
*
-
3
9
15
21
.
|
4
10
16
22
o
%
5
11
17
23
O
#
help("points")


plot symbols : points (... pch = *, cex = 2.5)
help("points")
0
5
10
15
20
25
1
6
11
16
21
o
O
2
7
12
17
22
O
O
3
8
13
18
23
0
0
4
9
14
19
24

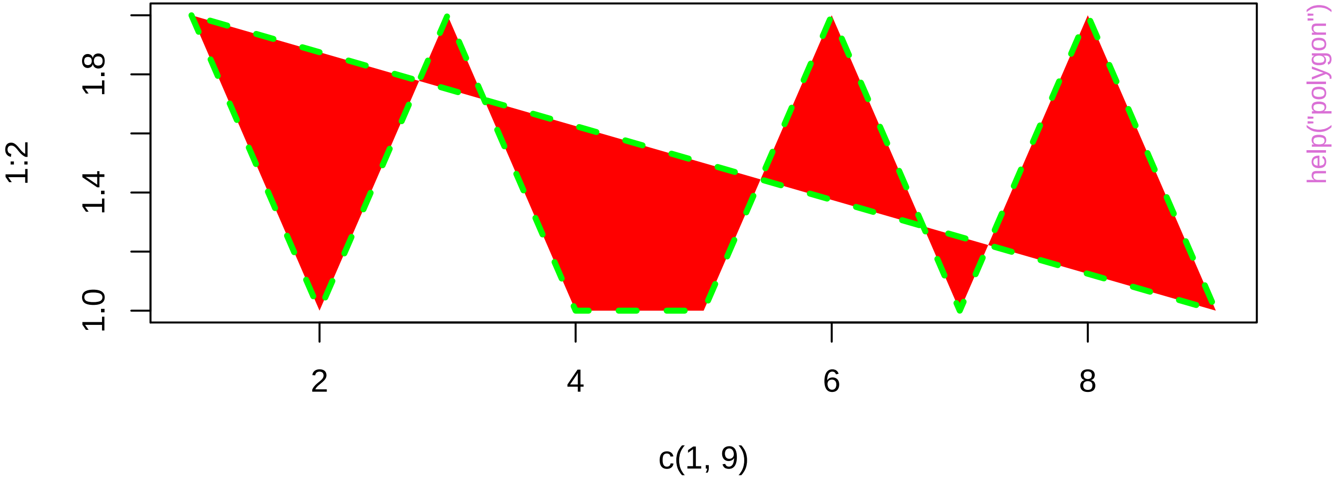


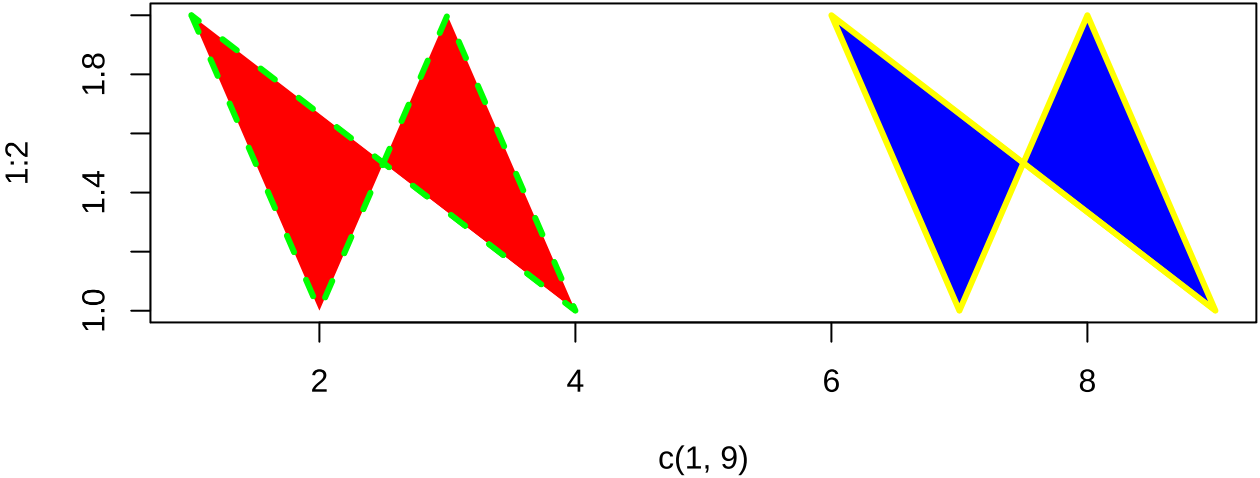
help("points")

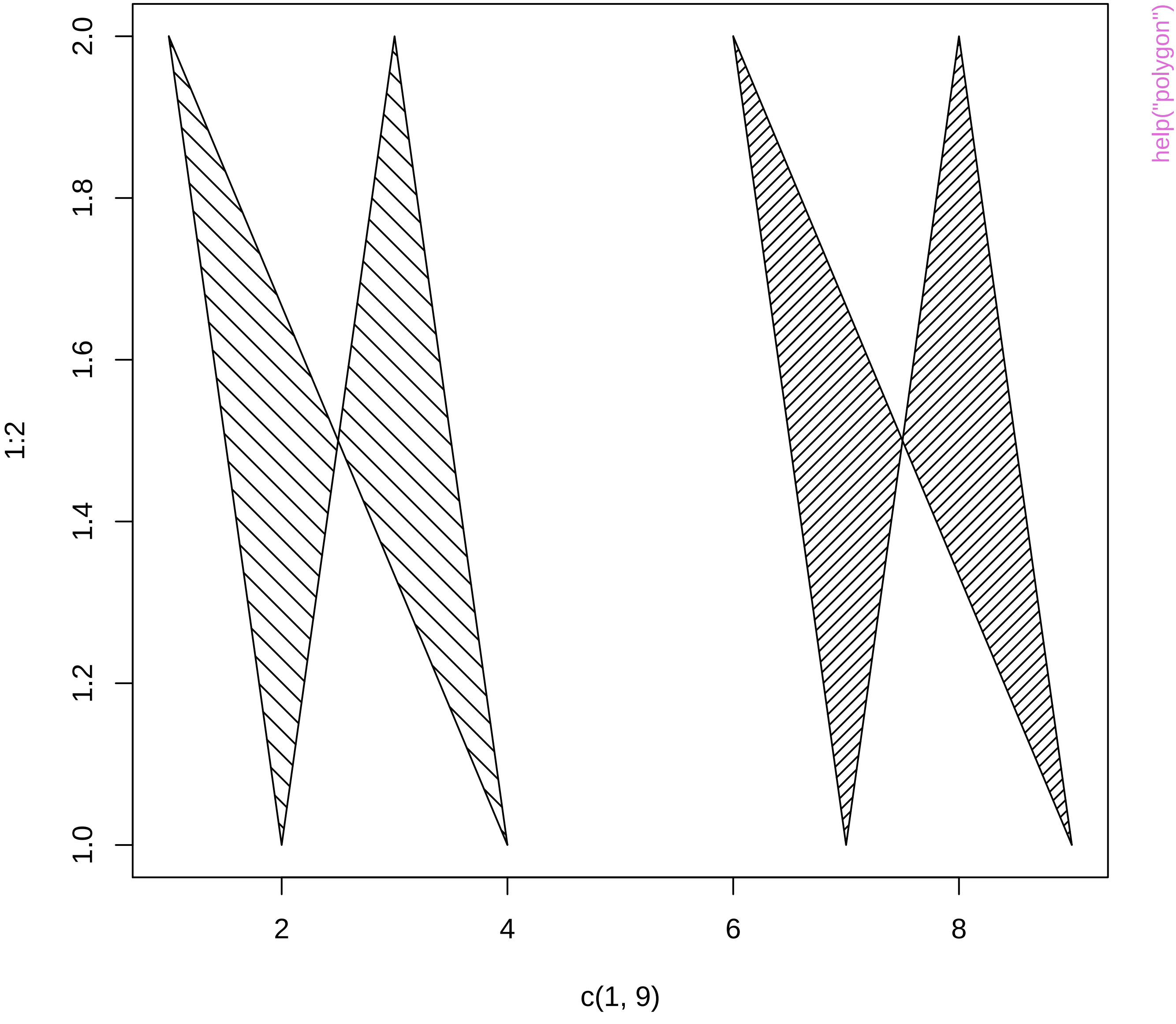

xpd = FALSE
1:10
2
4
6
8
10
Index
help("polygon")
xpd = TRUE
1:10
2
4
6
8
10
Index
xpd = NA
1:10
2
4
6
8
10
Index

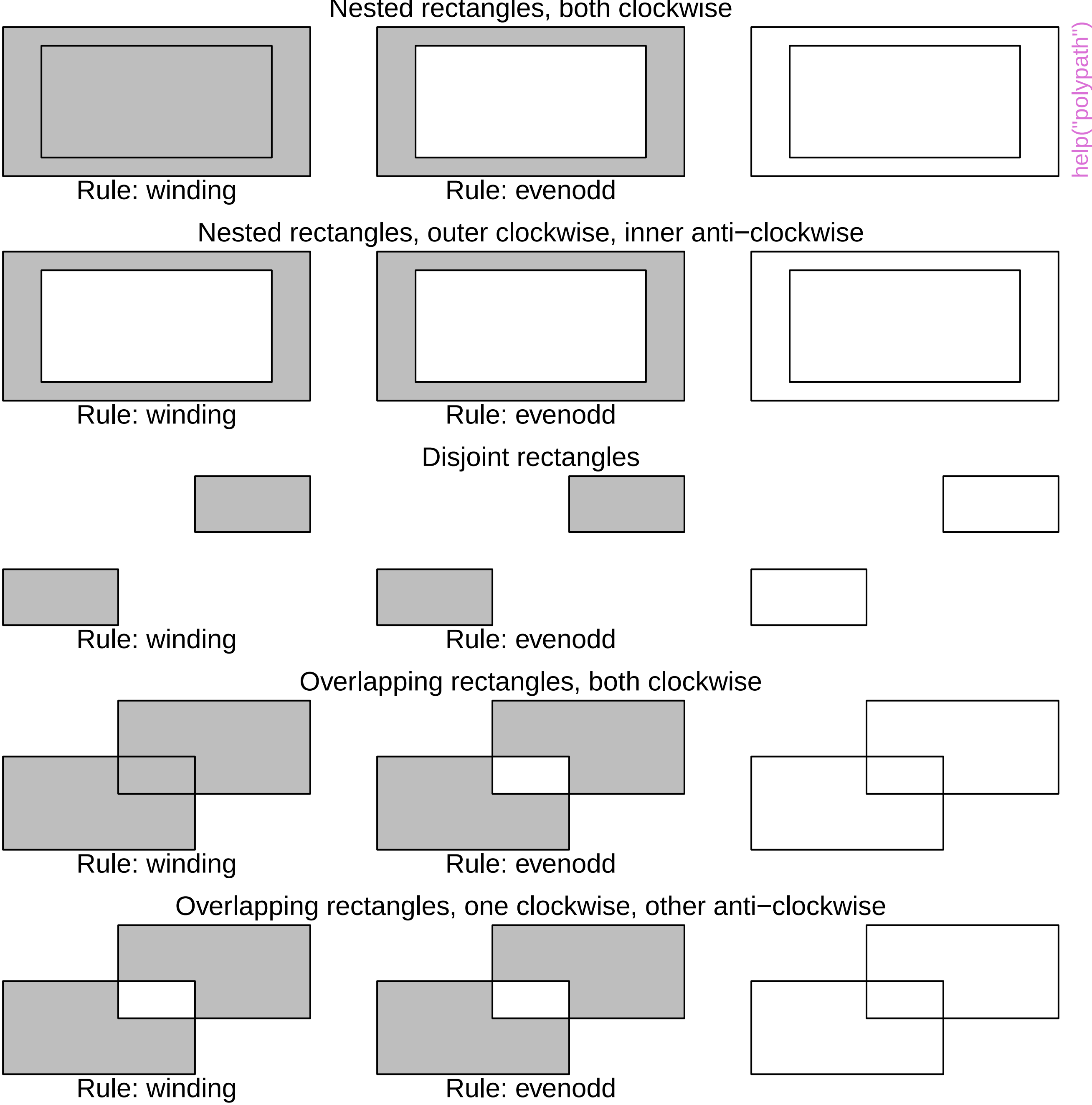


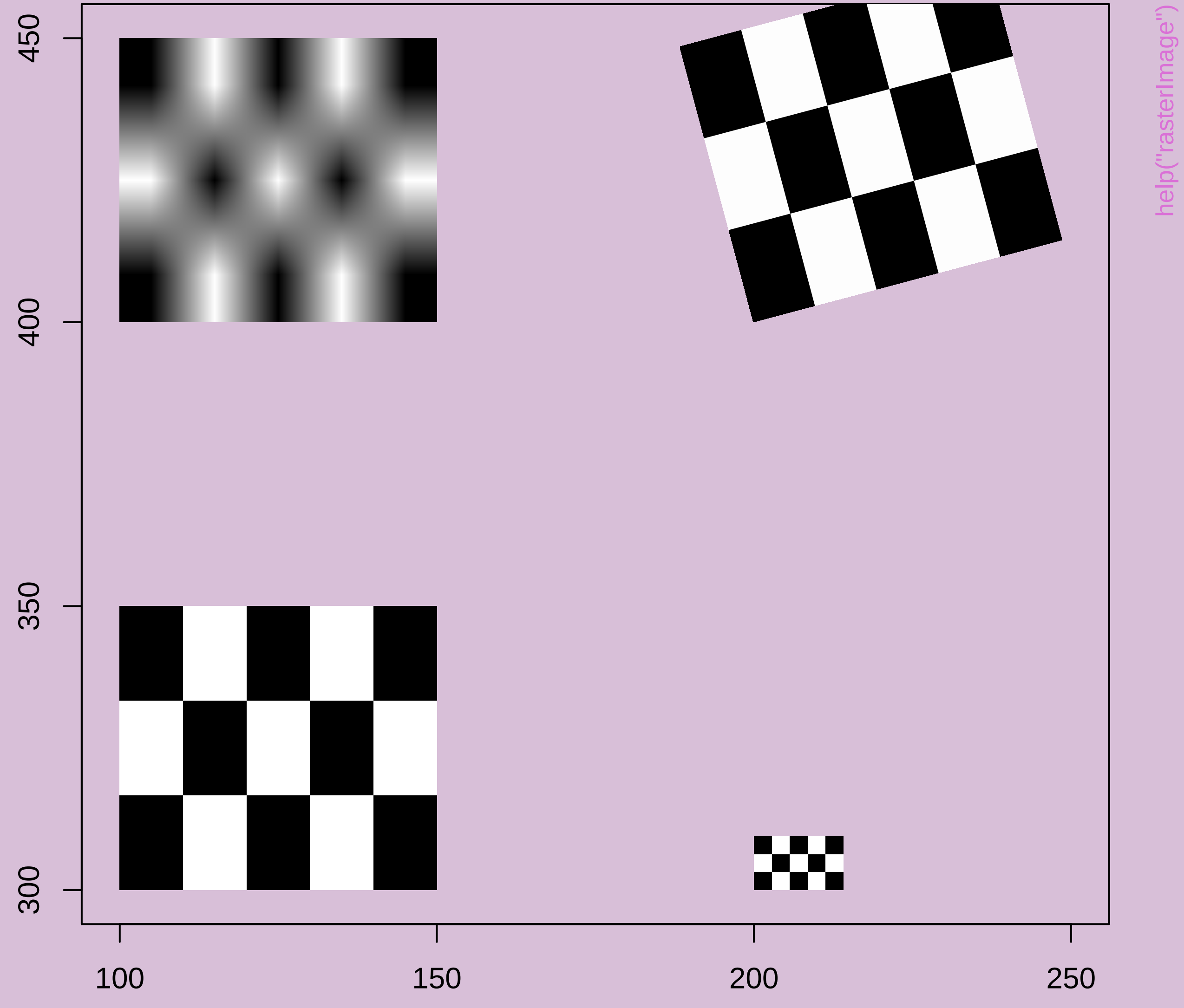
help("polygon")

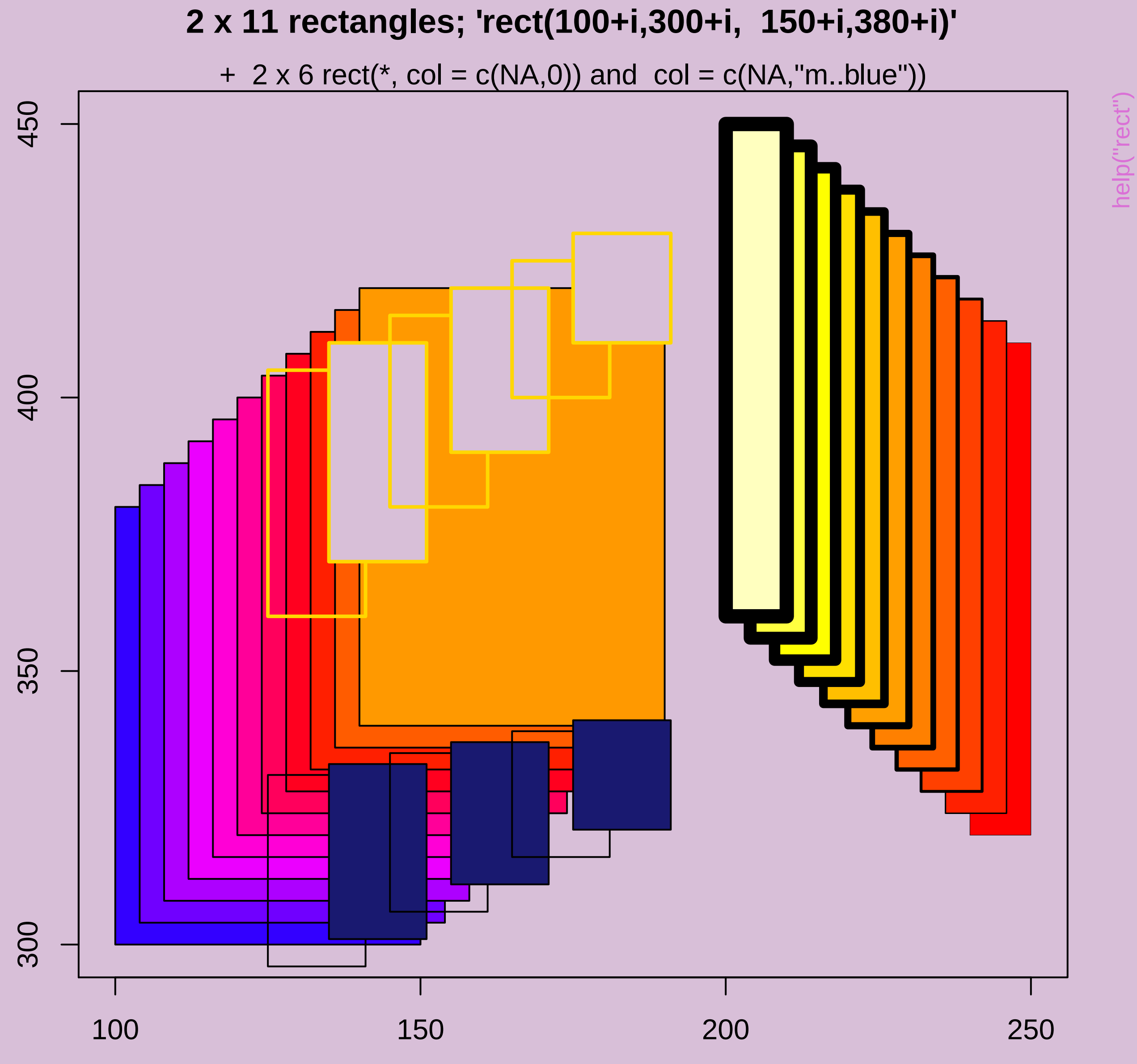

1:2
1.0
1.4
1.8
2
4
6
8
c(1, 9)
help("polygon")

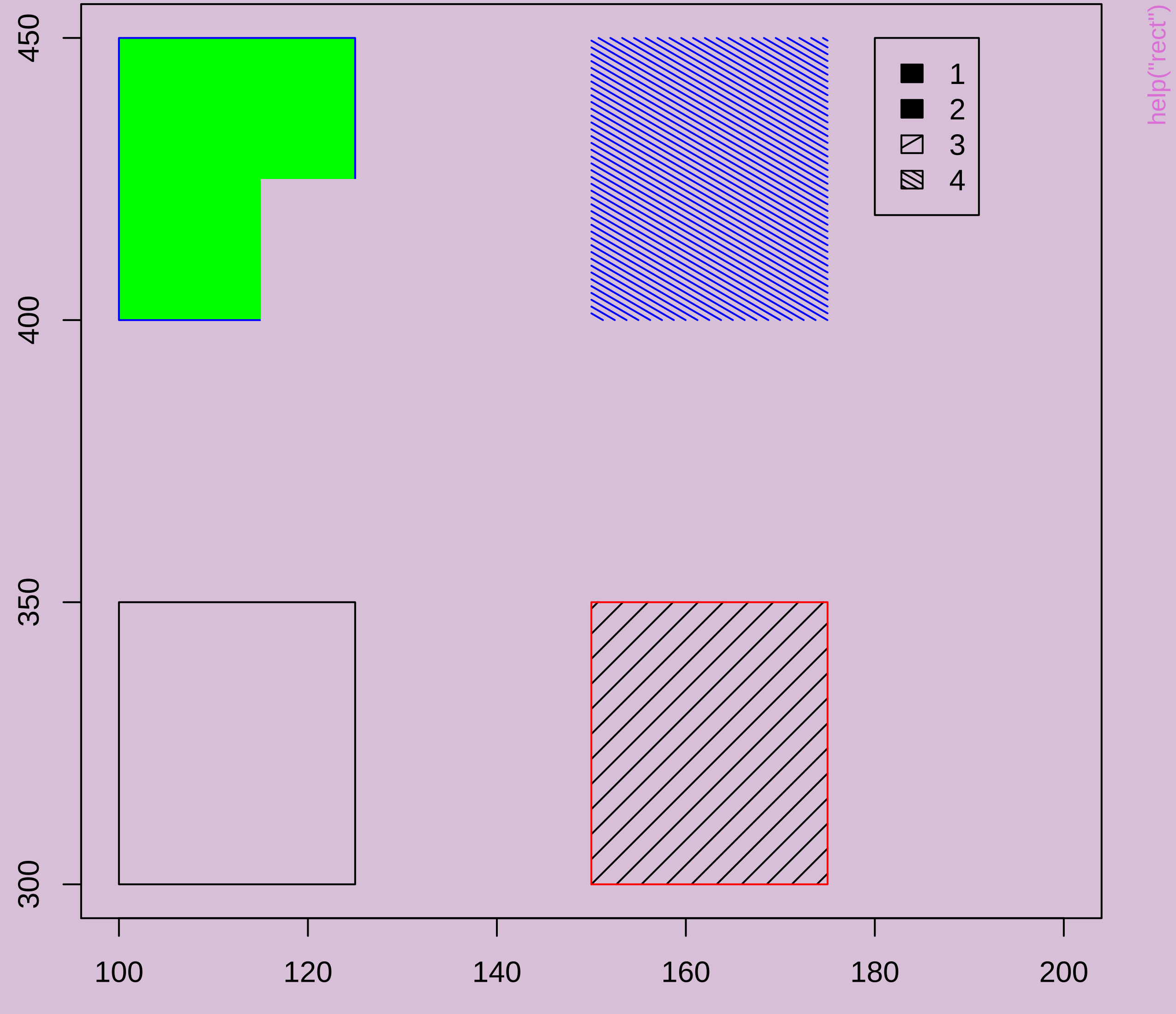

1:2
1.0
1.4
1.8
2
4
6
8
c(1, 9)

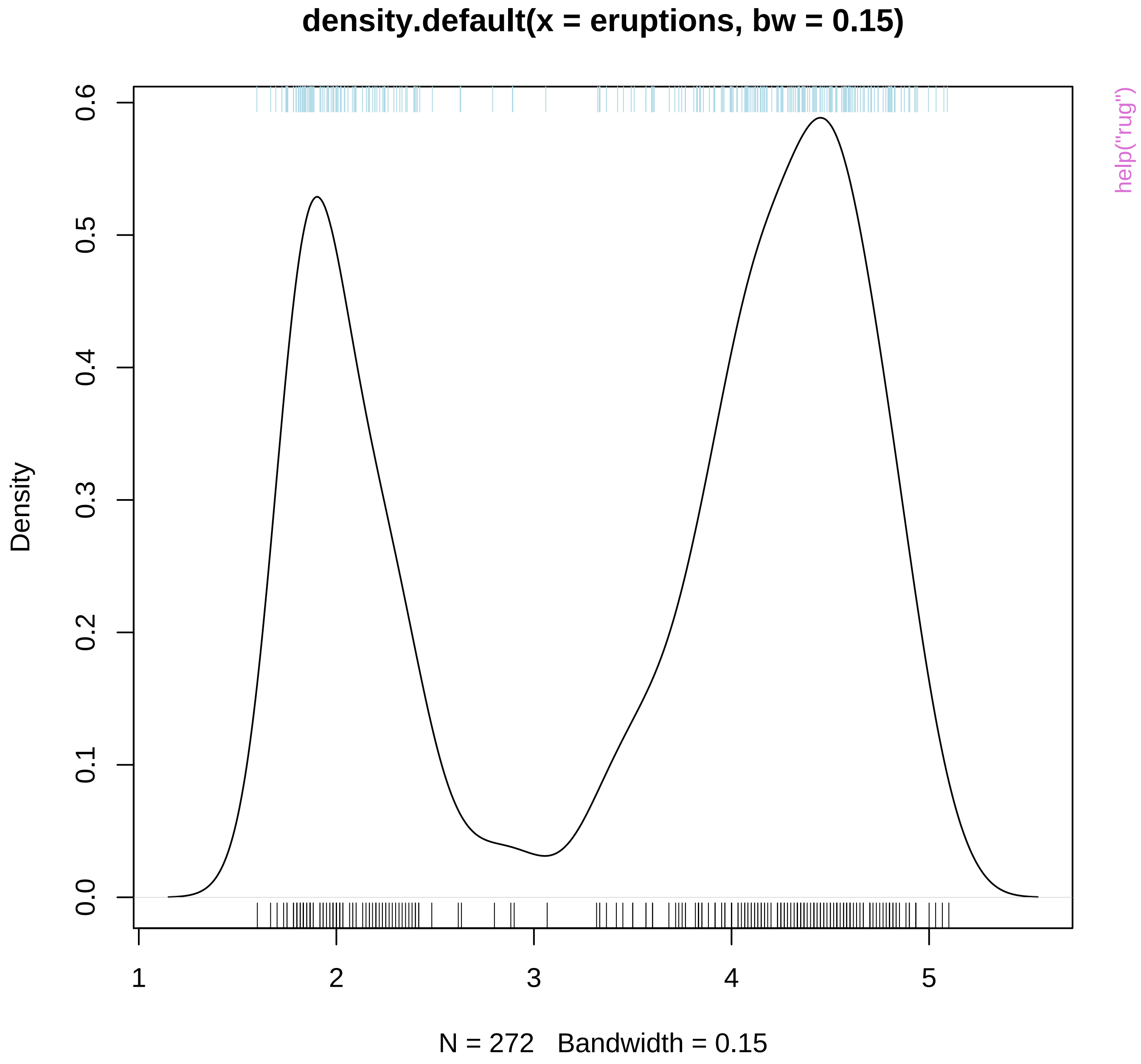

1:2
2.0
1.8
1.6
1.4
1.2
1.0
2
4
6
8
c(1, 9)
help("polygon")

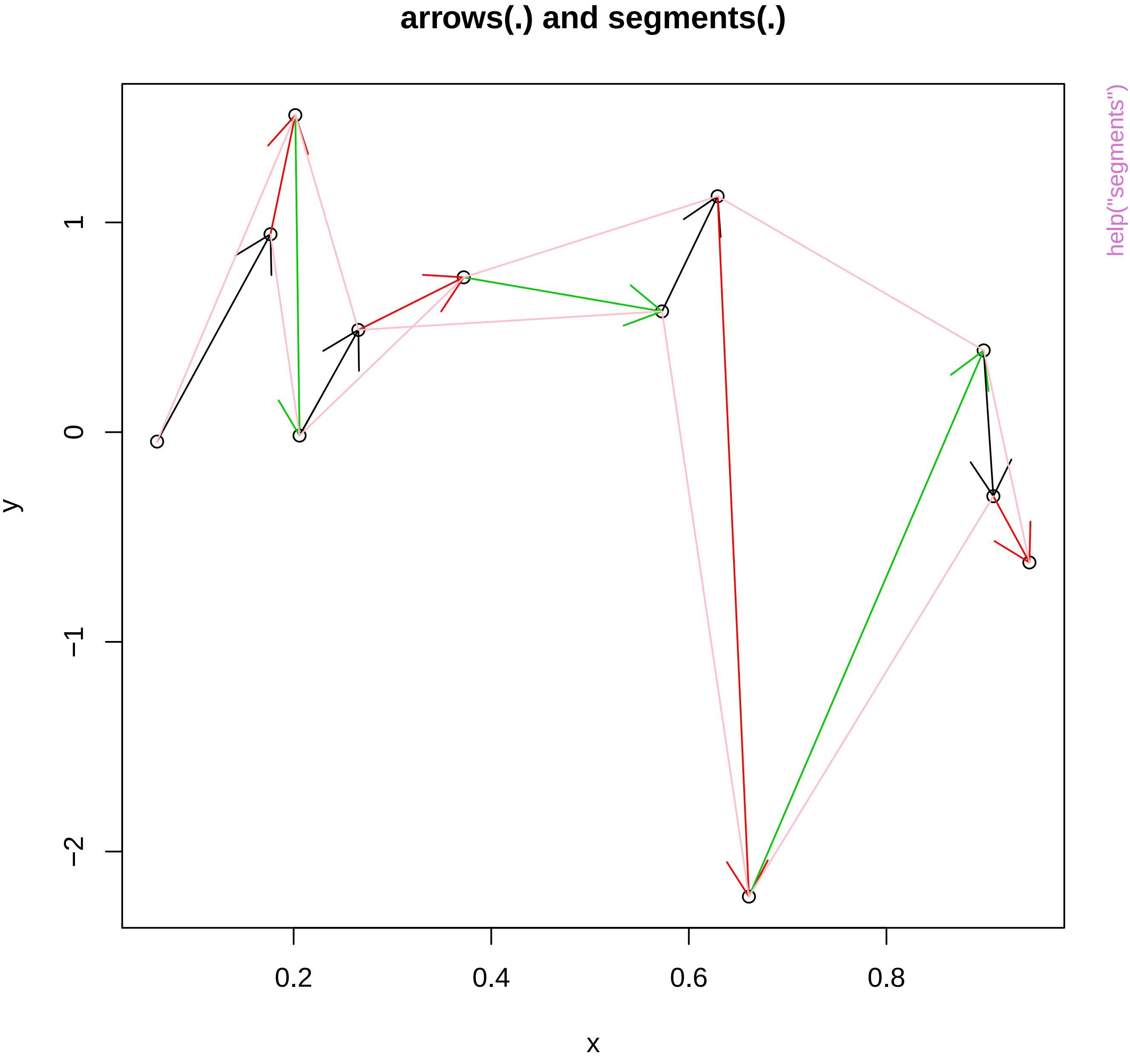

Nested rectangles, both clockwise
Rule: winding
Rule: evenodd
help("polypath")
Nested rectangles, outer clockwise, inner anti−clockwise
Rule: winding
Rule: evenodd
Disjoint rectangles
Rule: winding
Rule: evenodd
Overlapping rectangles, both clockwise
Rule: winding
Rule: evenodd
Overlapping rectangles, one clockwise, other anti−clockwise
Rule: winding
Rule: evenodd

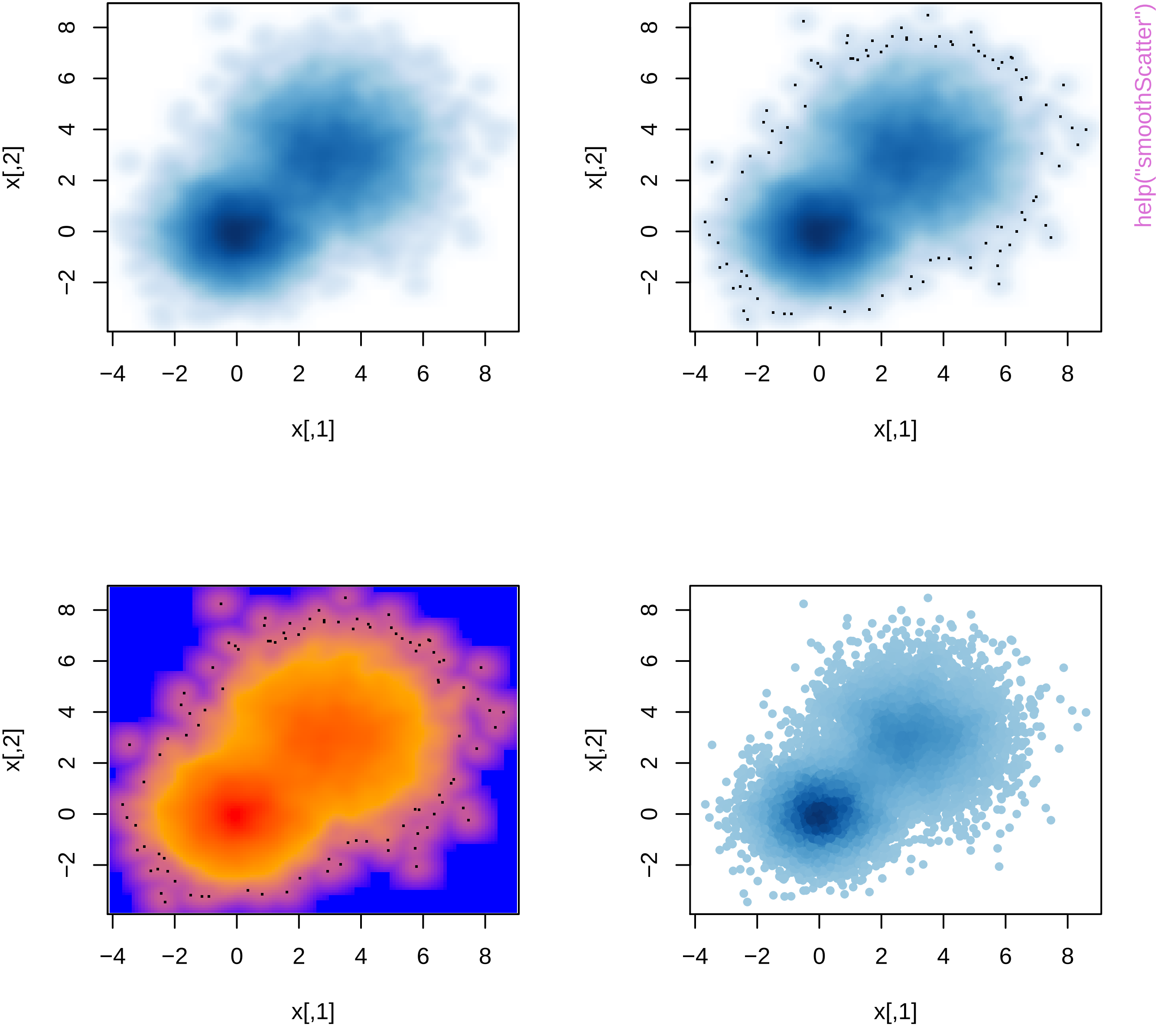

450
400
350
300
100
150
200
250
help("rasterImage")

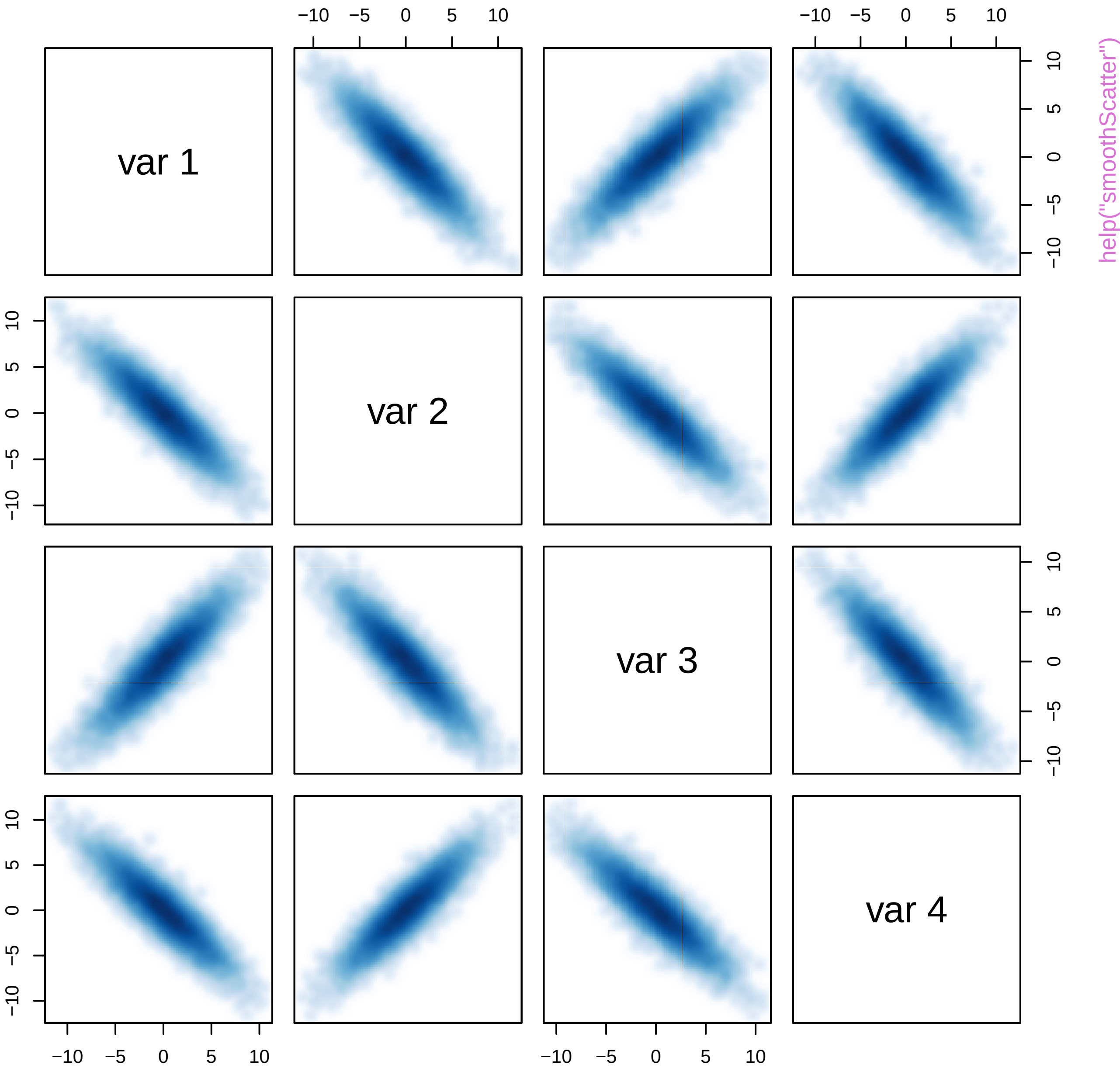

2 x 11 rectangles; 'rect(100+i,300+i, 150+i,380+i)'
+ 2 x 6 rect(*, col = c(NA,0)) and col = c(NA,"m..blue"))
450
400
350
300
100
150
200
250
help("rect")

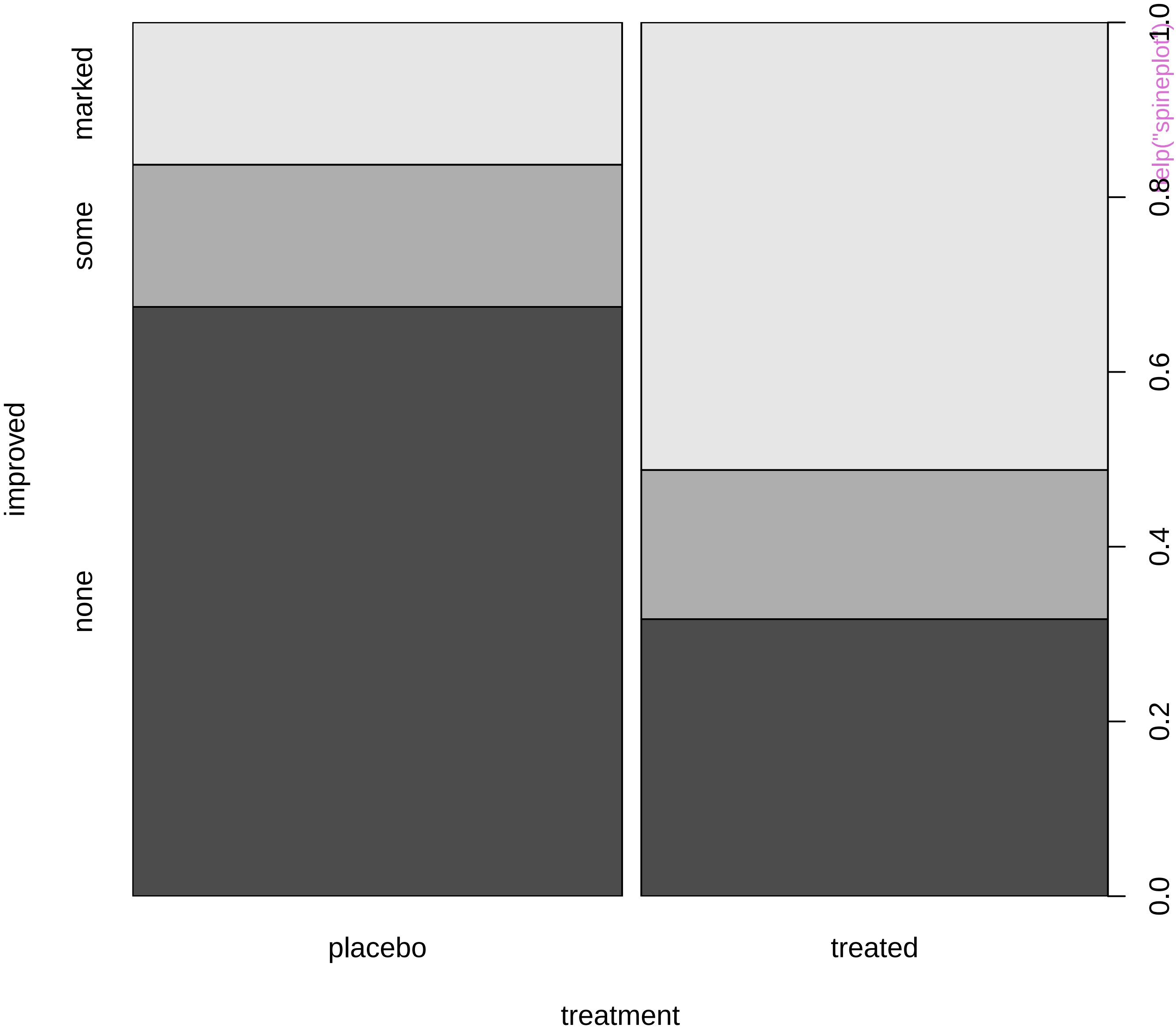

450
400
350
300
100
120
140
160
180
200
1
2
3
4
help("rect")

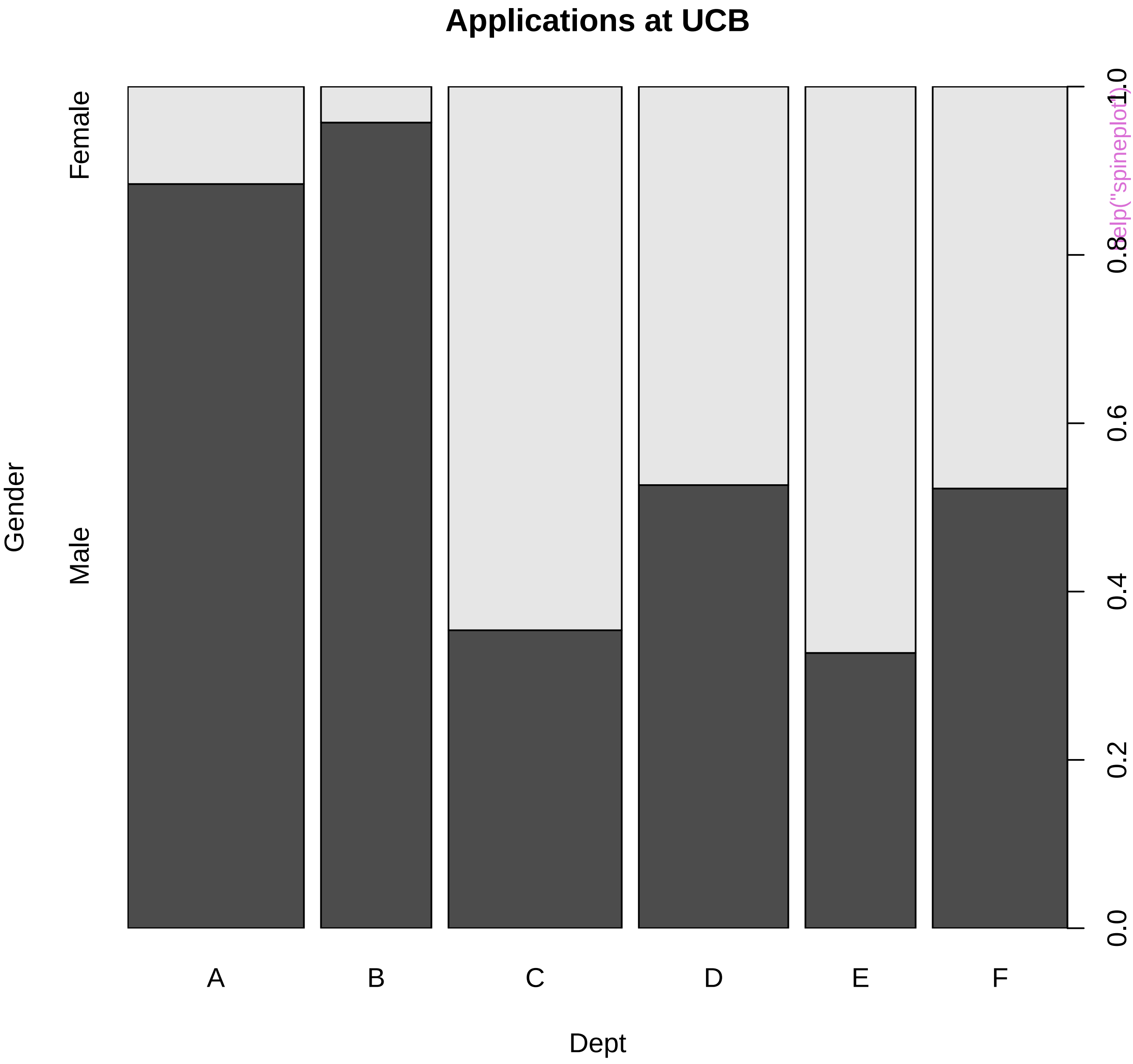

density.default(x = eruptions, bw = 0.15)
Density
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1
2
3
4
5
N = 272   Bandwidth = 0.15
help("rug")

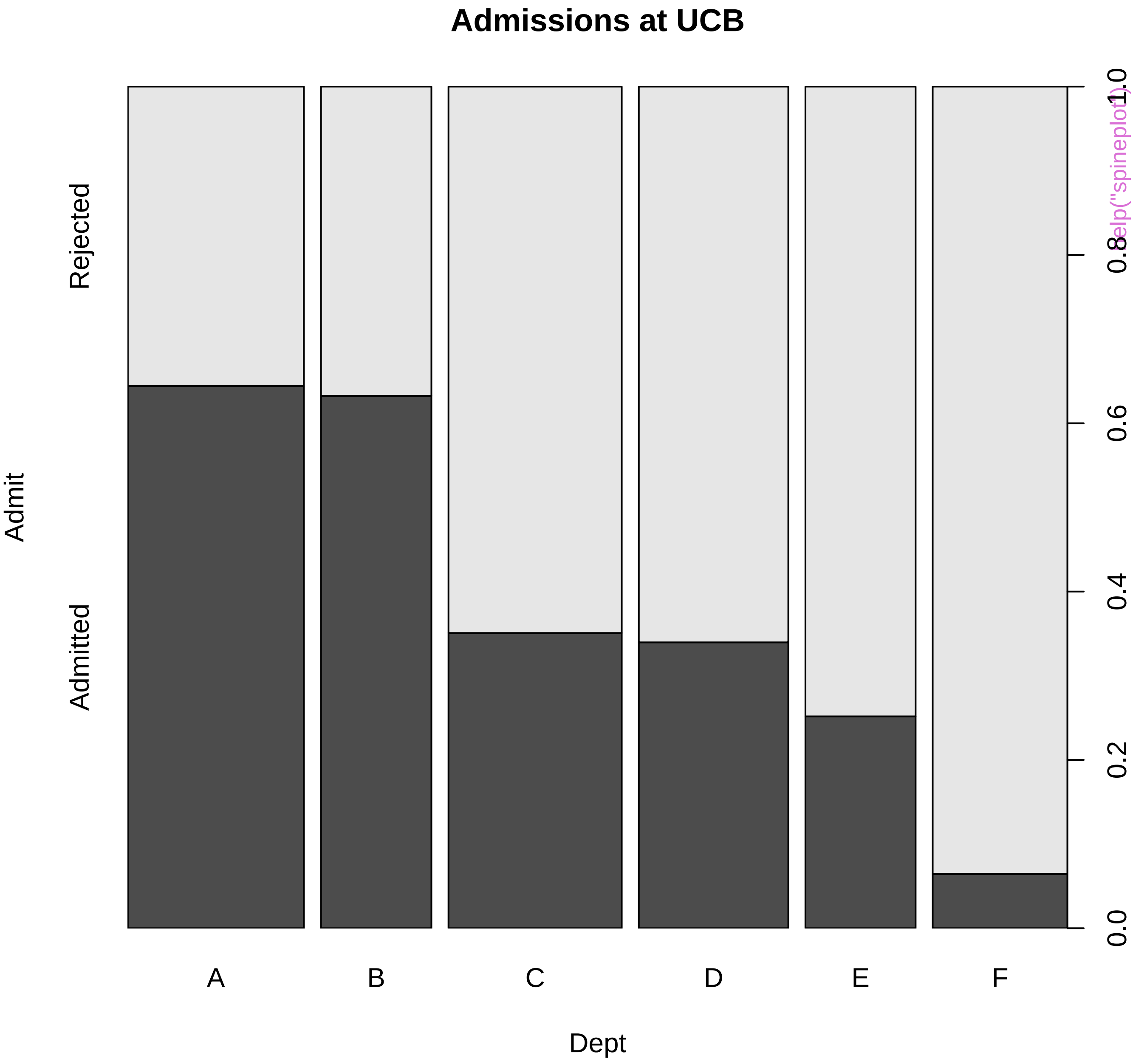

arrows(.) and segments(.)
help("segments")
y
1
0
−1
−2
x
0.2
0.4
0.6
0.8

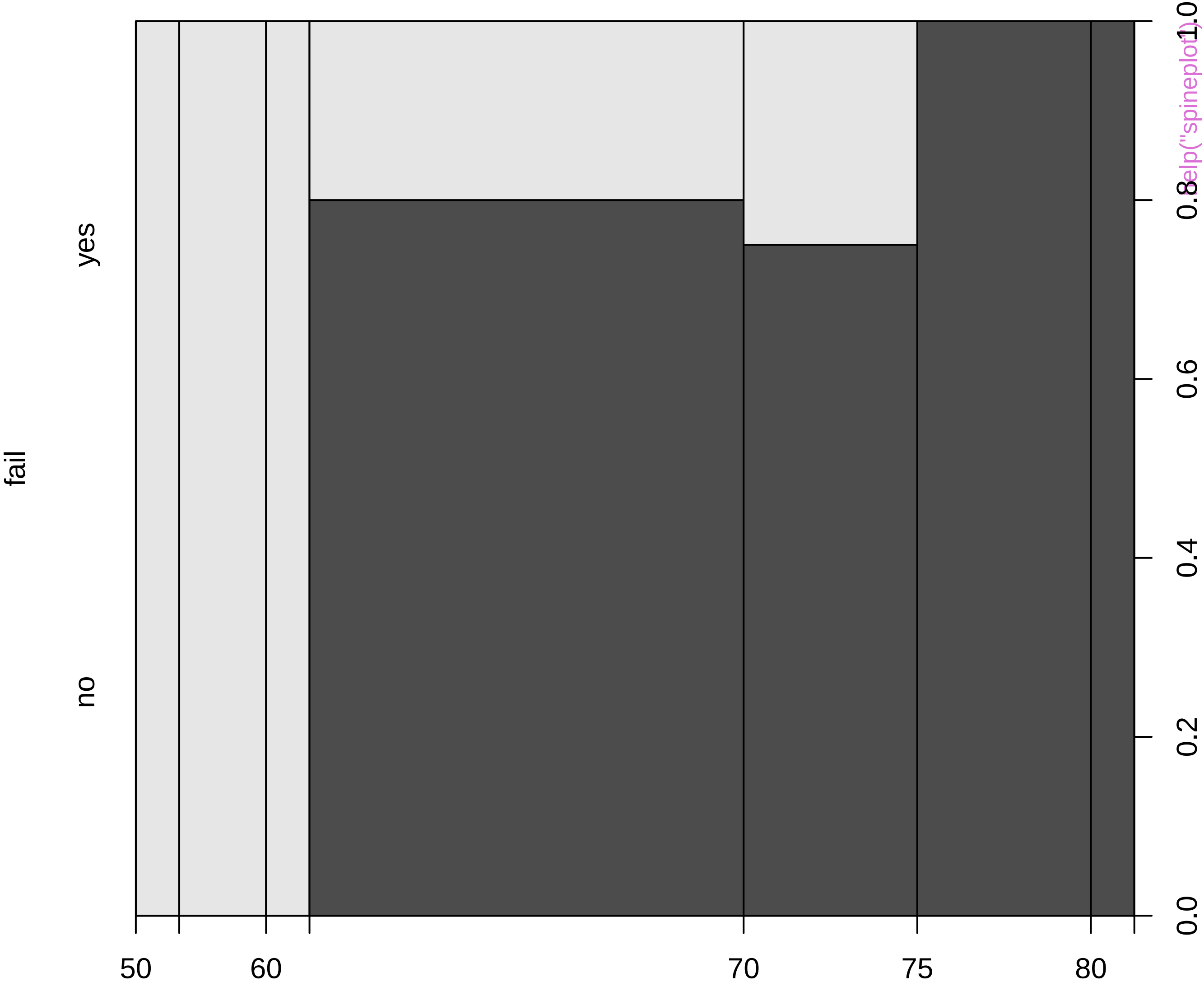

x[,1]
x[,2]
−4
−2
0
2
4
6
8
help("smoothScatter")

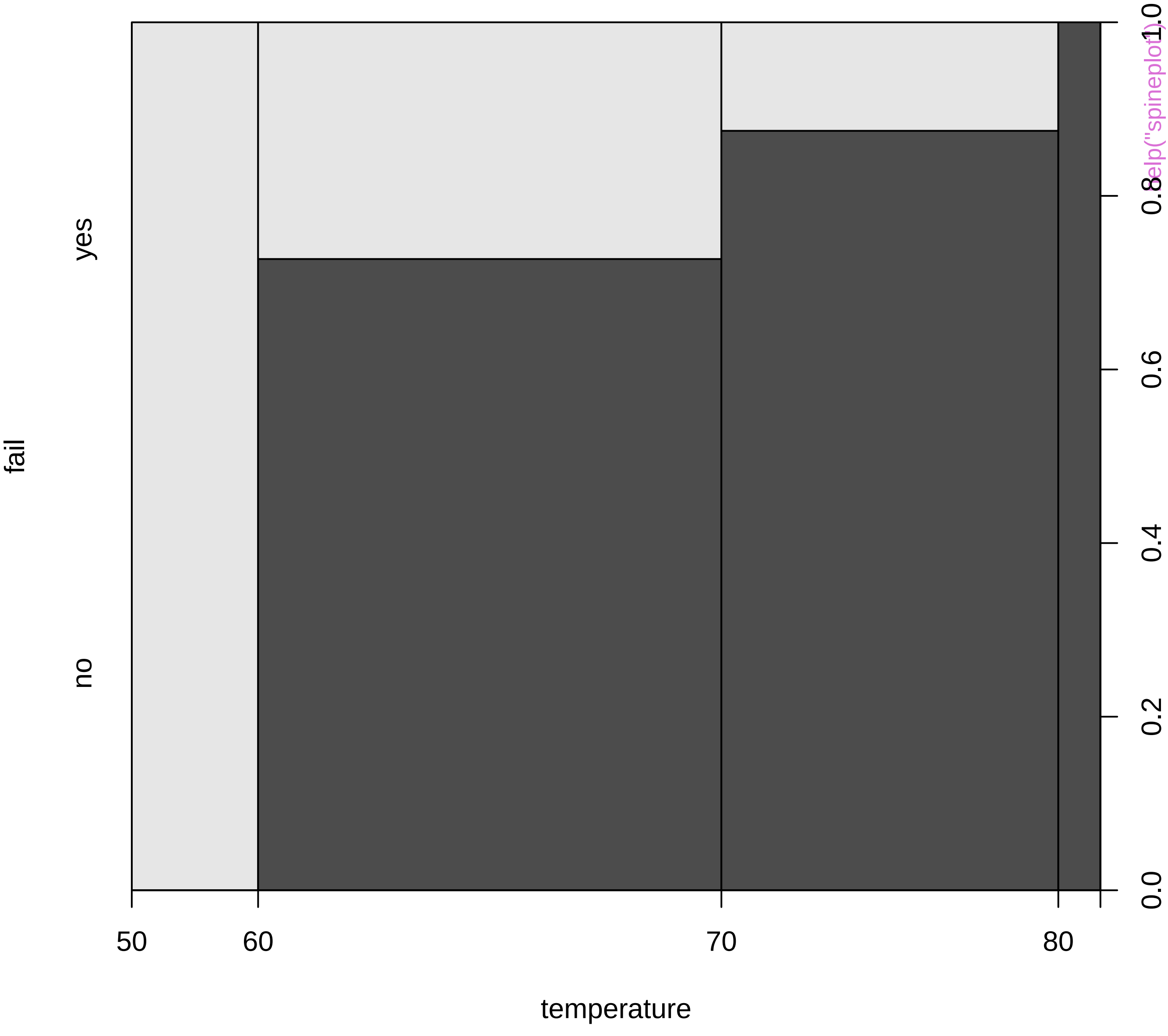

var 1
var 2
var 3
var 4
−10
−5
0
5
10
help("smoothScatter")

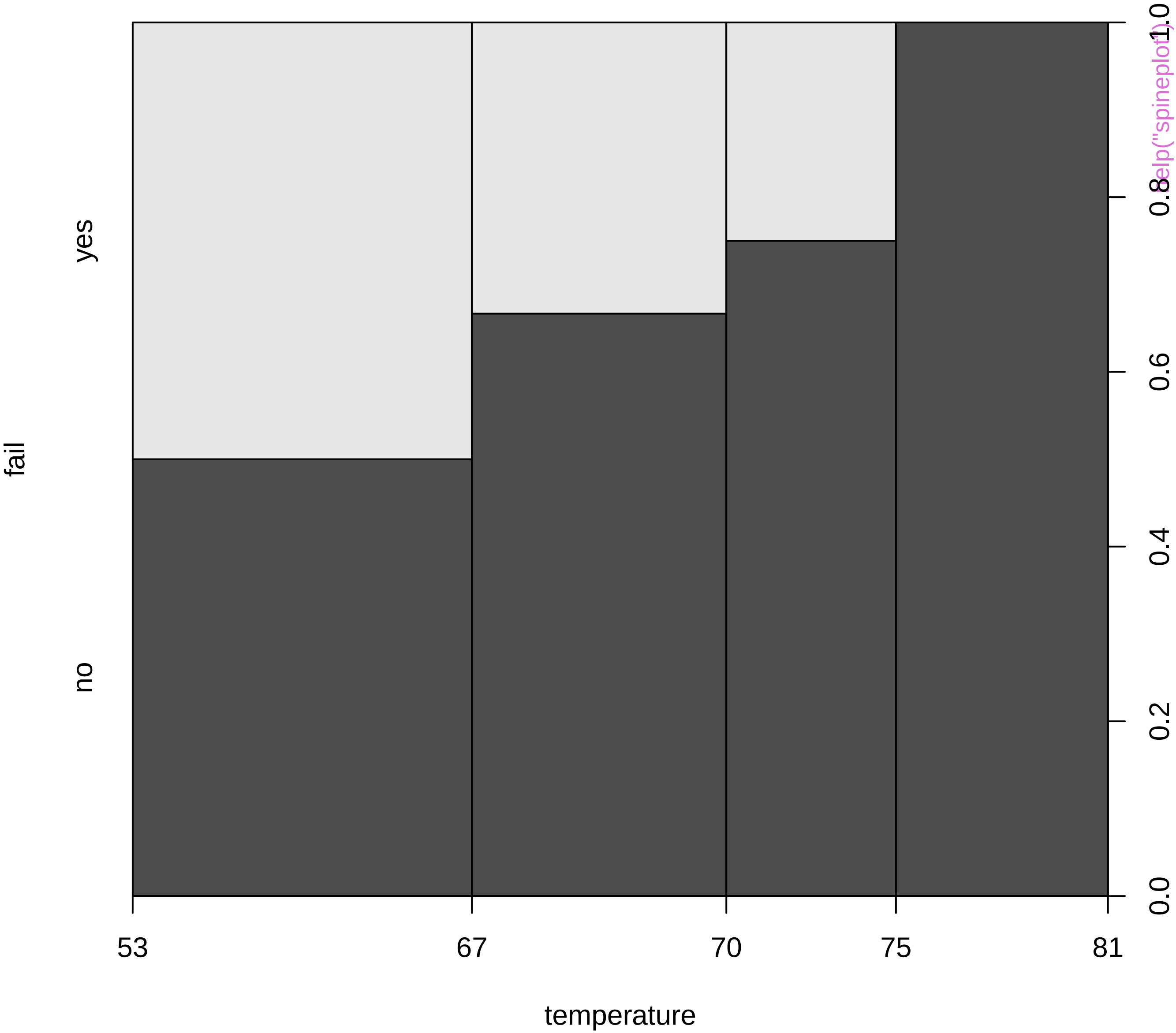

marked
some
none
improved
placebo
treated
treatment
0.0
0.2
0.4
0.6
0.8
1.0
help("spineplot")

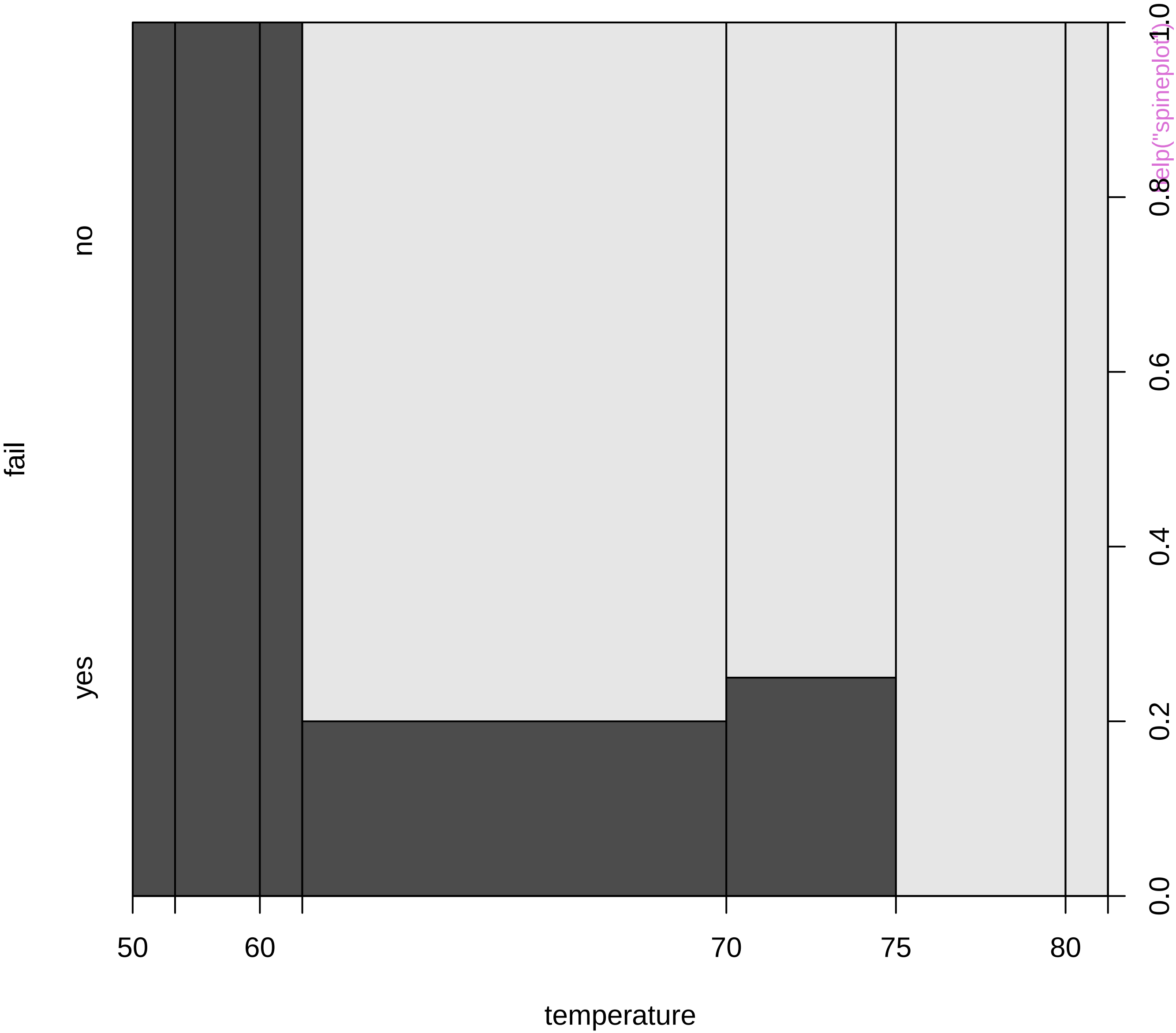

Applications at UCB
Female
Male
Gender
A
B
C
D
E
F
Dept
0.0
0.2
0.4
0.6
0.8
1.0
help("spineplot")


Admissions at UCB
Rejected
Admitted
Admit
A
B
C
D
E
F
Dept
0.0
0.2
0.4
0.6
0.8
1.0
help("spineplot")


yes
no
fail
0.0
0.2
0.4
0.6
0.8
1.0
elp("spineplot")
50
60
70
75
80
temperature

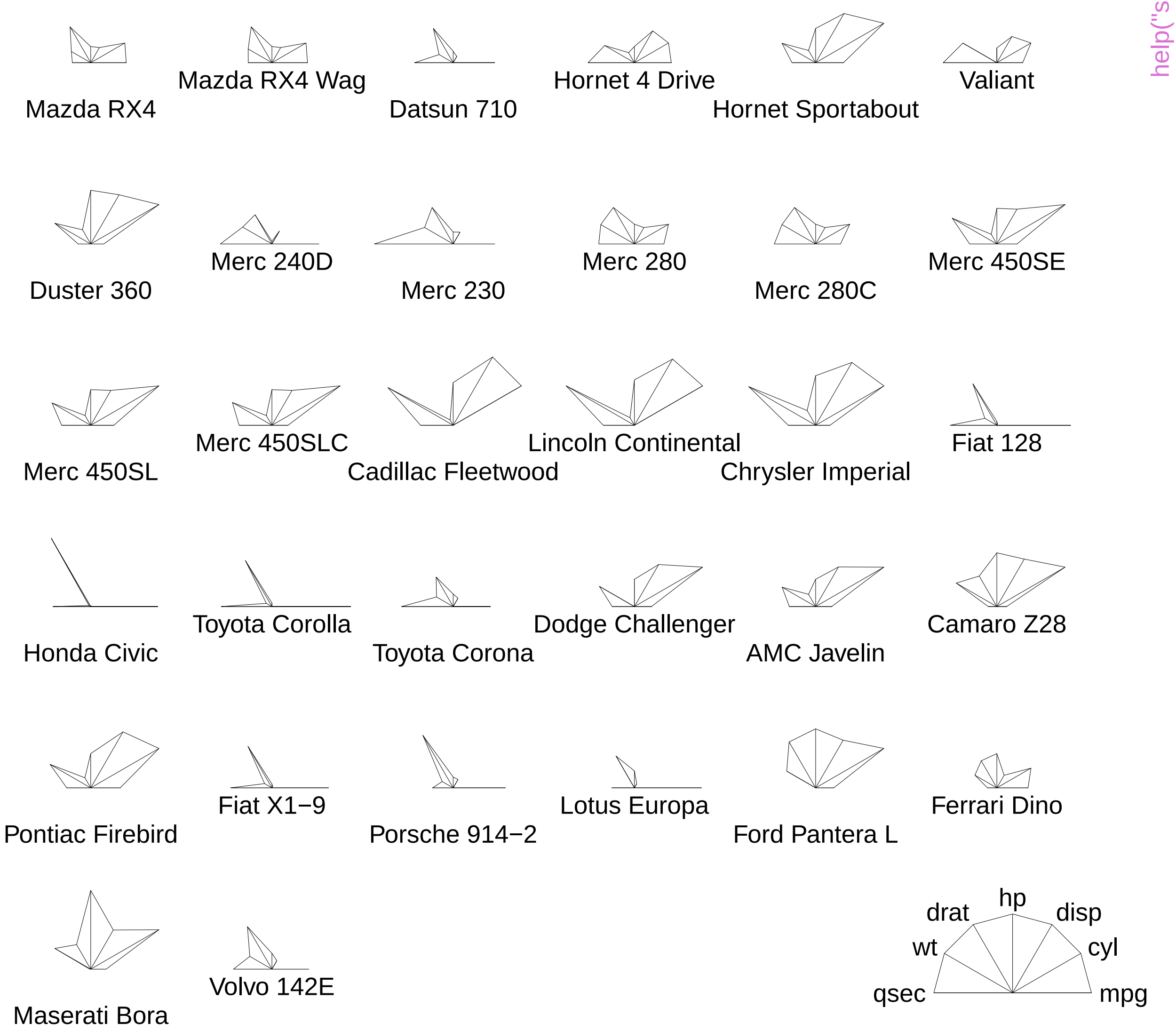

fail
yes
no
0.0
0.2
0.4
0.6
0.8
1.0
help("spineplot")
50
60
70
80
temperature

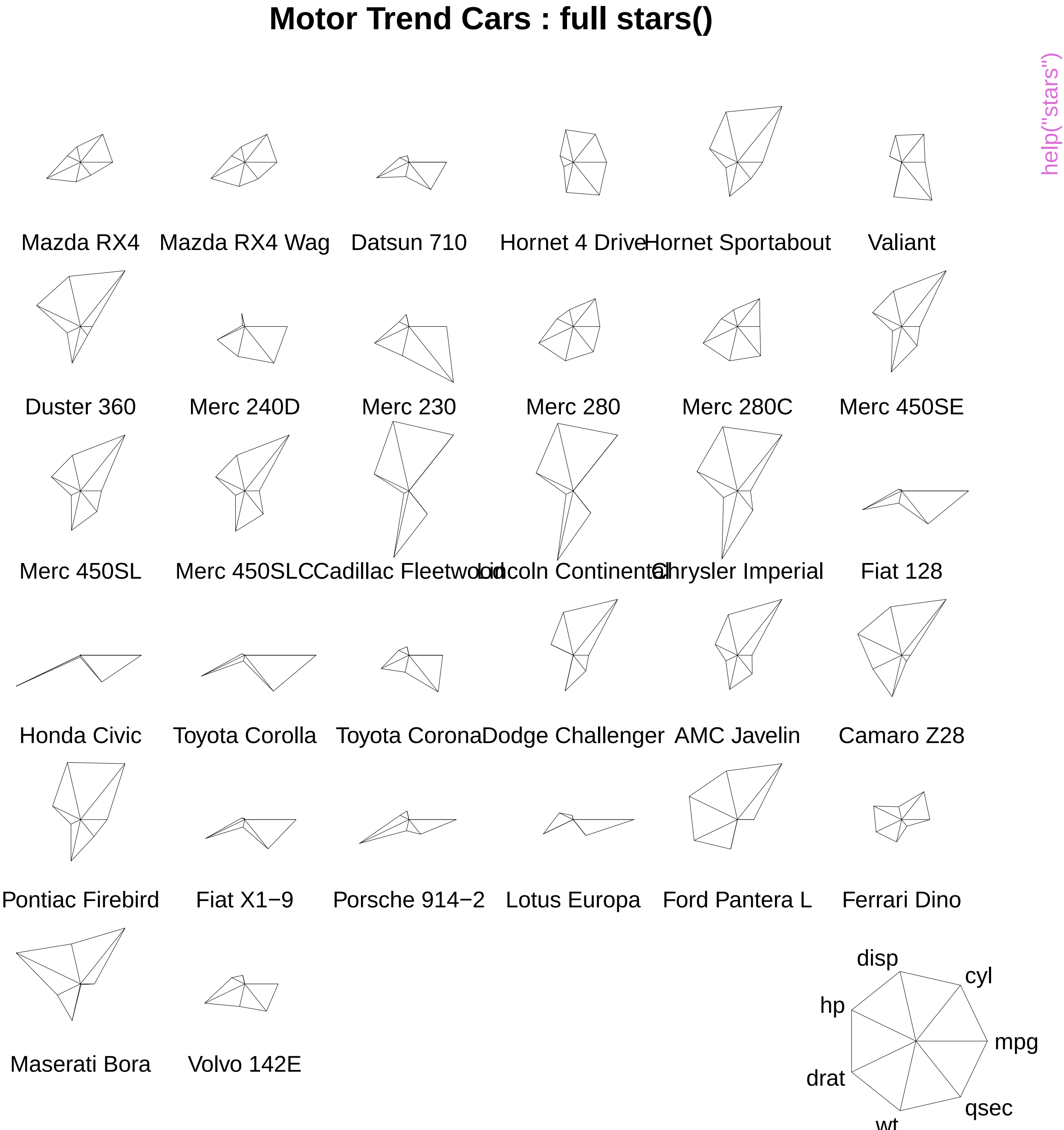

yes
no
fail
1.0
0.8
0.6
0.4
0.2
0.0
help("spineplot")
53
67
70
75
81
temperature



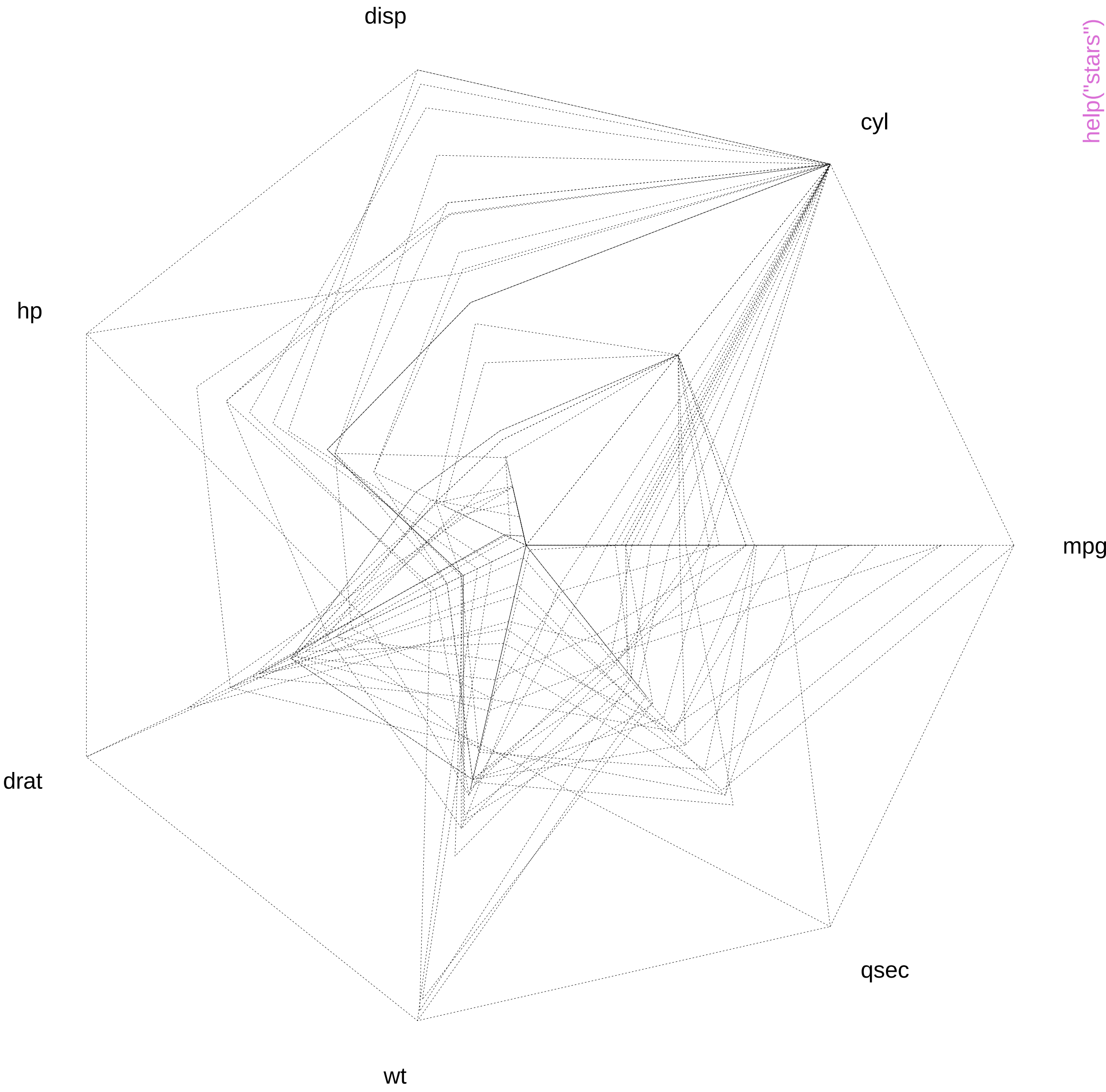
no
yes
fail
0.0
0.2
0.4
0.6
0.8
1.0
50
60
70
75
80
temperature
help("spineplot")

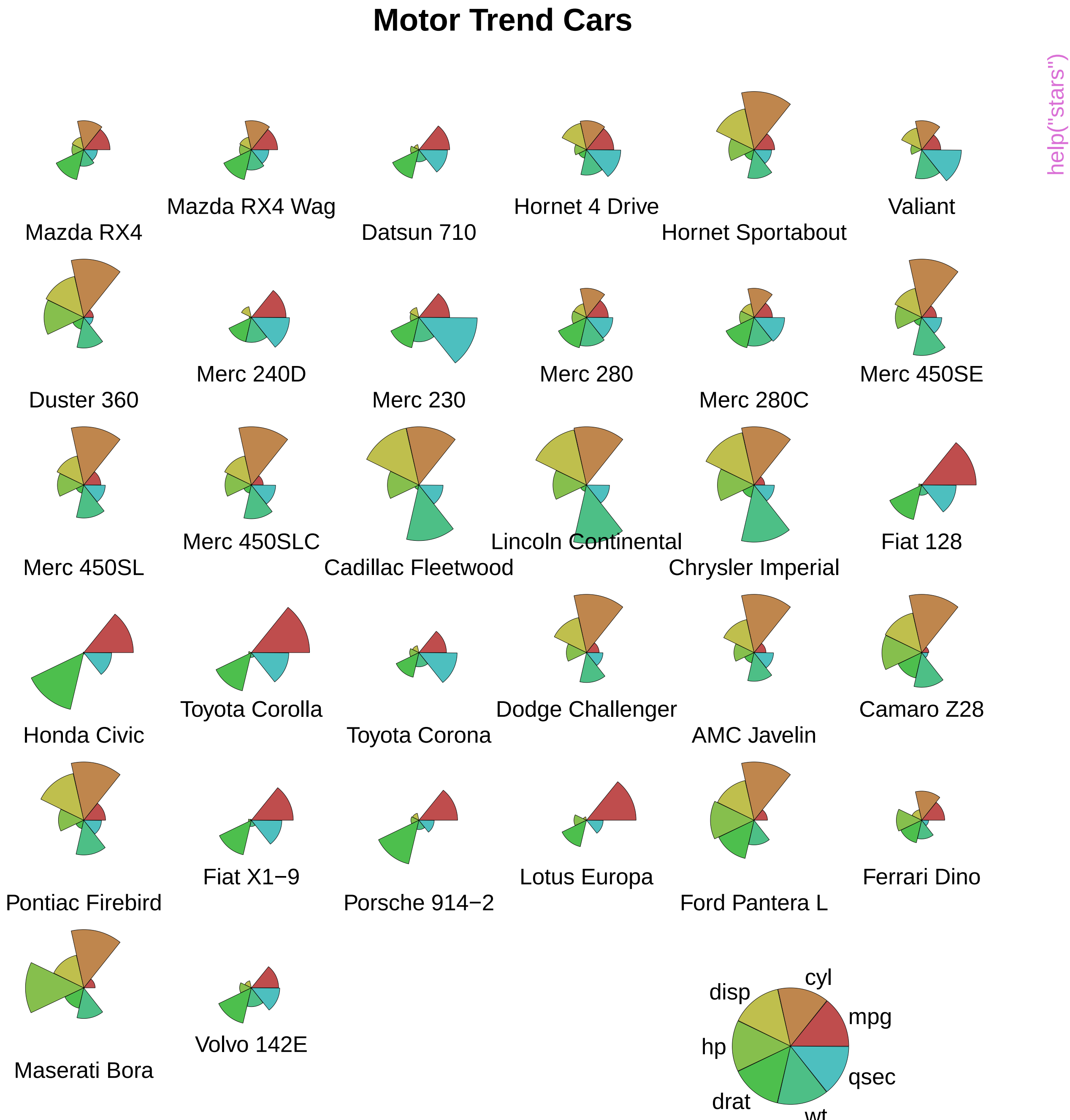
Motor Trend Cars : stars(*, full = F)



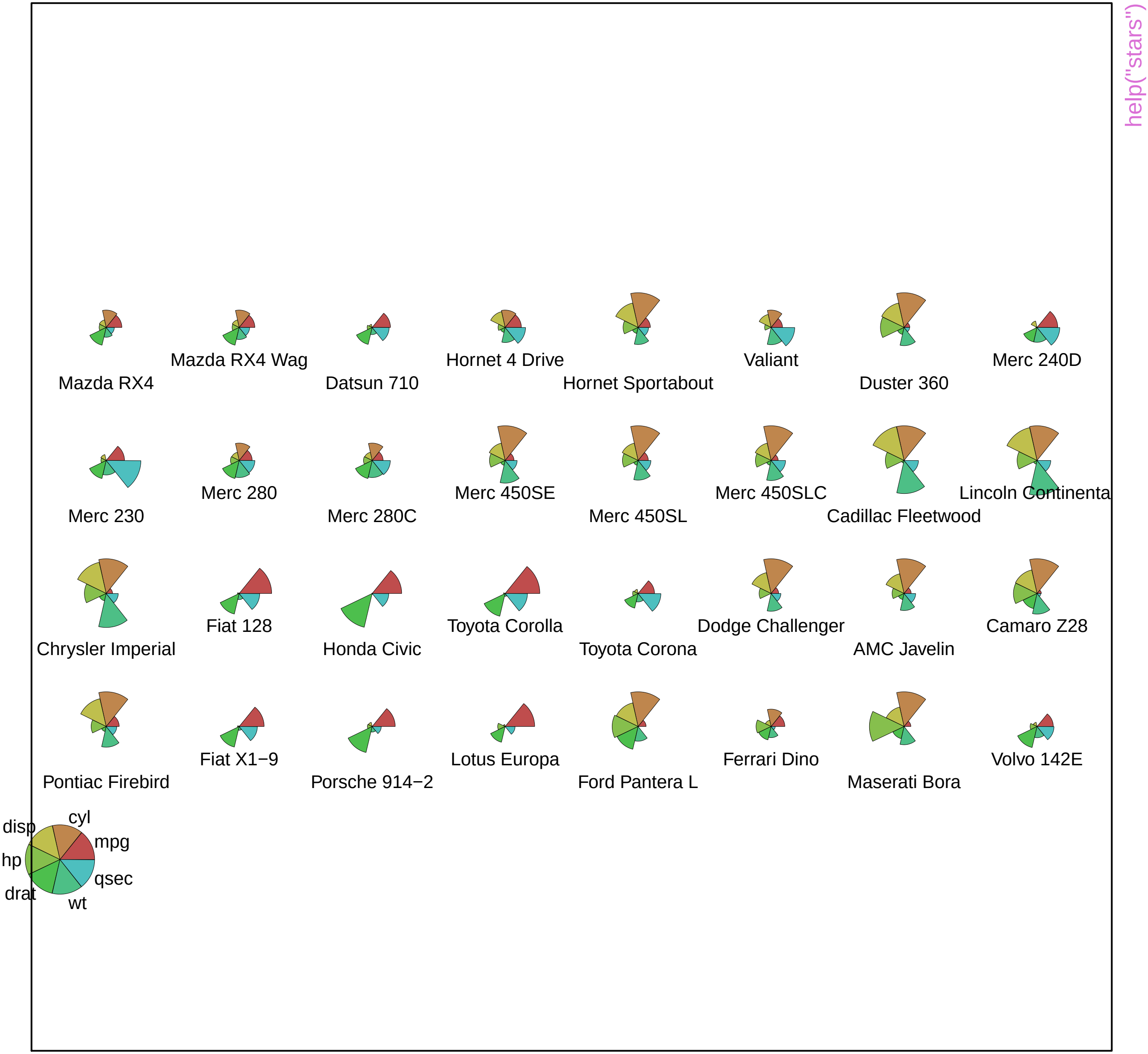

Motor Trend Cars : full stars()
help("stars")
Mazda RX4
Mazda RX4 Wag
Datsun 710
Hornet 4 Drive
Hornet Sportabout
Valiant
Duster 360
Merc 240D
Merc 230
Merc 280
Merc 280C
Merc 450SE
Merc 450SL
Merc 450SLC
Cadillac Fleetwood
Lincoln Continental
Chrysler Imperial
Fiat 128
Honda Civic
Toyota Corolla
Toyota Corona
Dodge Challenger
AMC Javelin
Camaro Z28
Pontiac Firebird
Fiat X1−9
Porsche 914−2
Lotus Europa
Ford Pantera L
Ferrari Dino
Maserati Bora
Volvo 142E
disp
cyl
hp
mpg
drat
qsec
wt

Motor Trend Cars

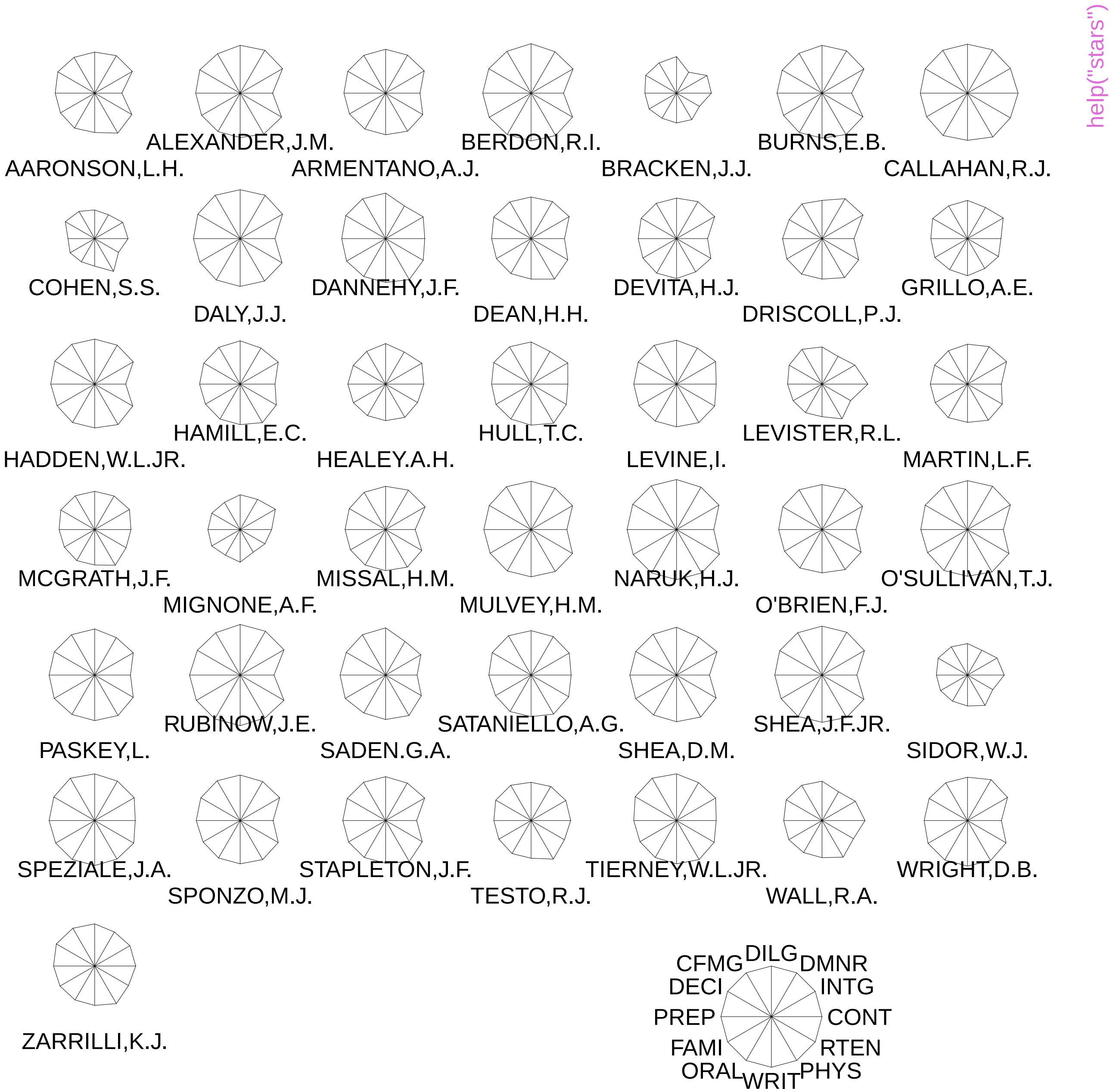


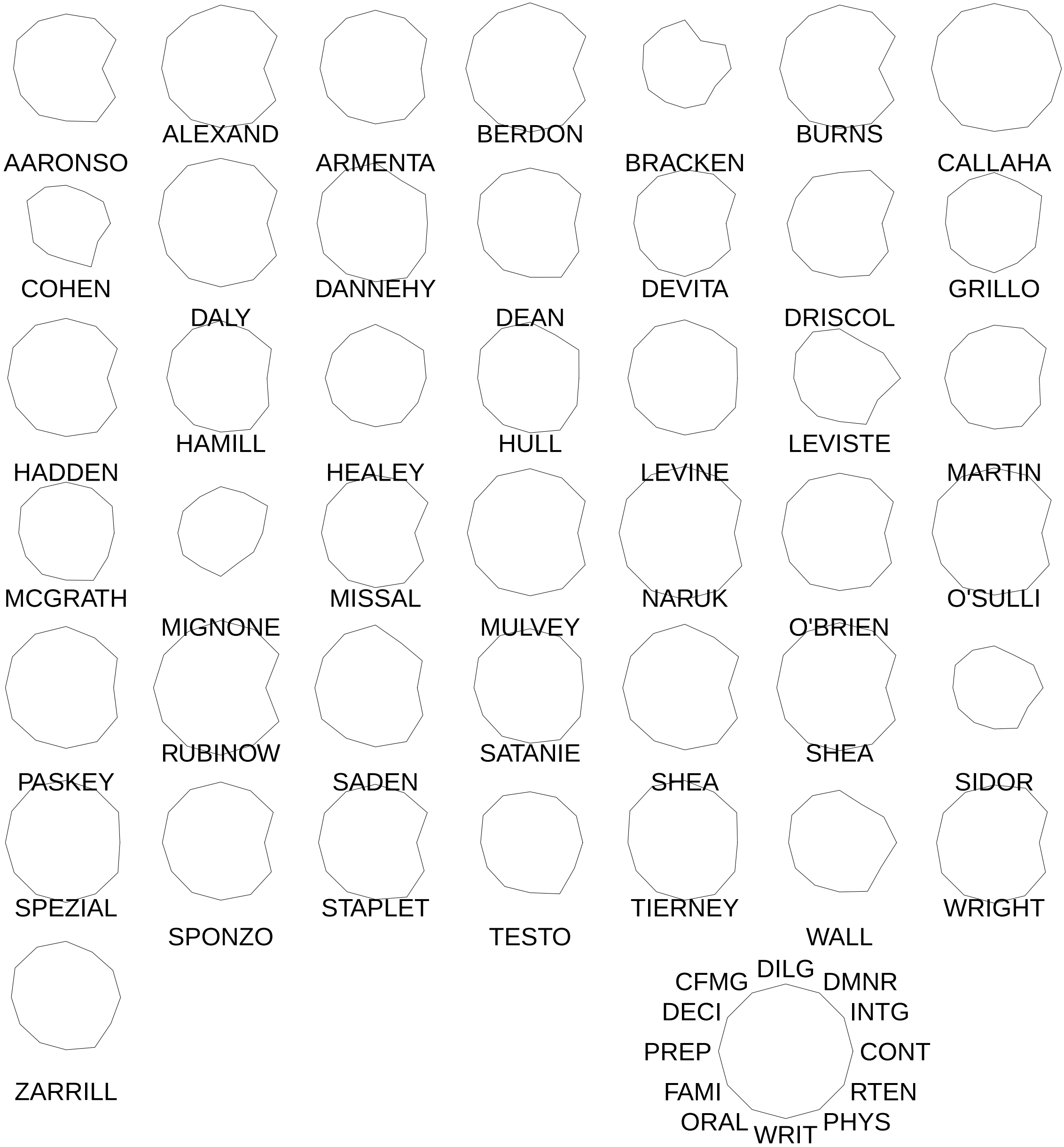

Motor Trend Cars
help("stars")
Mazda RX4
Mazda RX4 Wag
Datsun 710
Hornet 4 Drive
Hornet Sportabout
Valiant
Duster 360
Merc 240D
Merc 230
Merc 280
Merc 280C
Merc 450SE
Merc 450SL
Merc 450SLC
Cadillac Fleetwood
Lincoln Continental
Chrysler Imperial
Fiat 128
Honda Civic
Toyota Corolla
Toyota Corona
Dodge Challenger
AMC Javelin
Camaro Z28
Pontiac Firebird
Fiat X1−9
Porsche 914−2
Lotus Europa
Ford Pantera L
Ferrari Dino
Maserati Bora
Volvo 142E
cyl
disp
mpg
hp
qsec
drat
wt

Motor Trend Cars

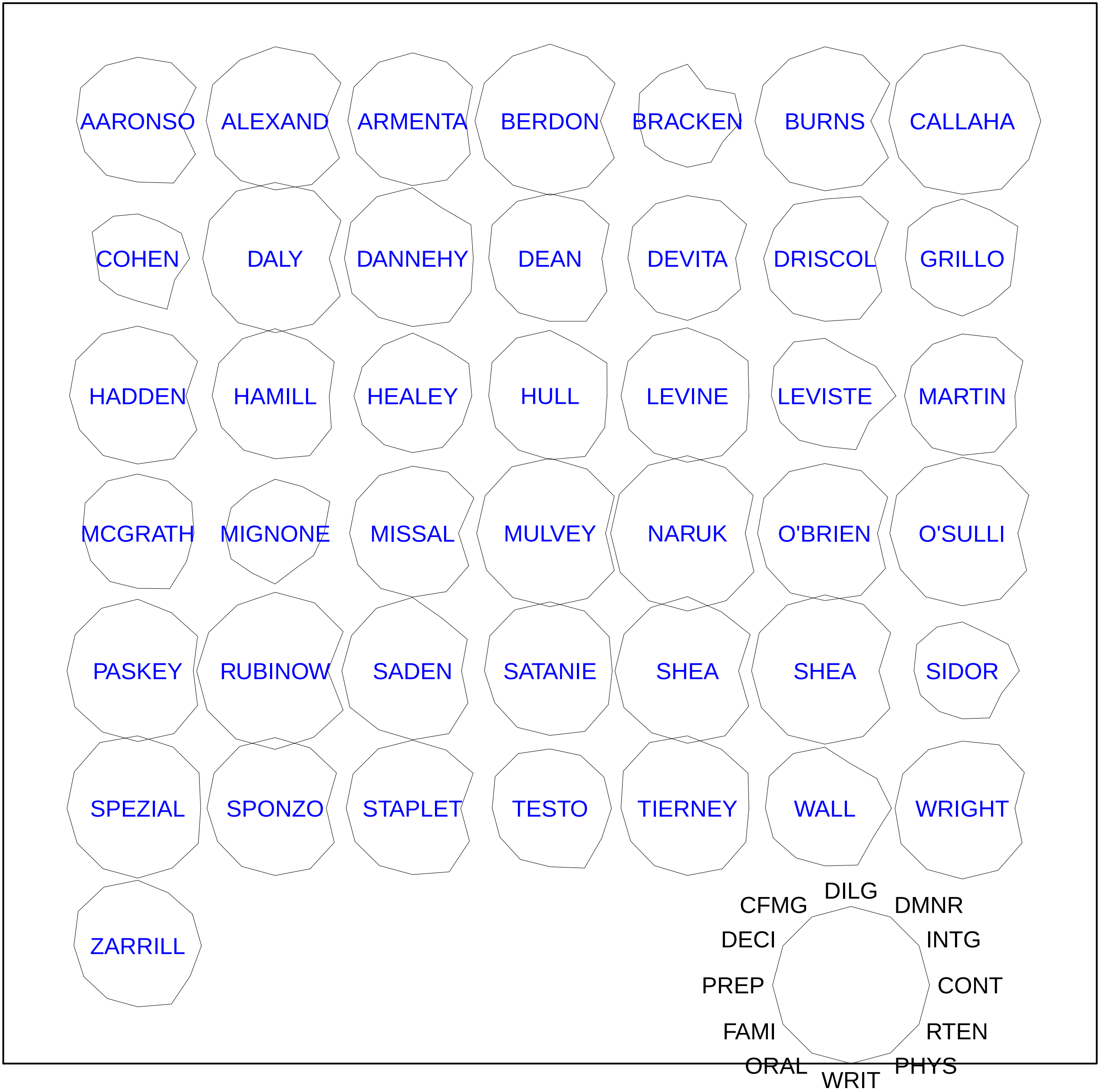


Judge not ...

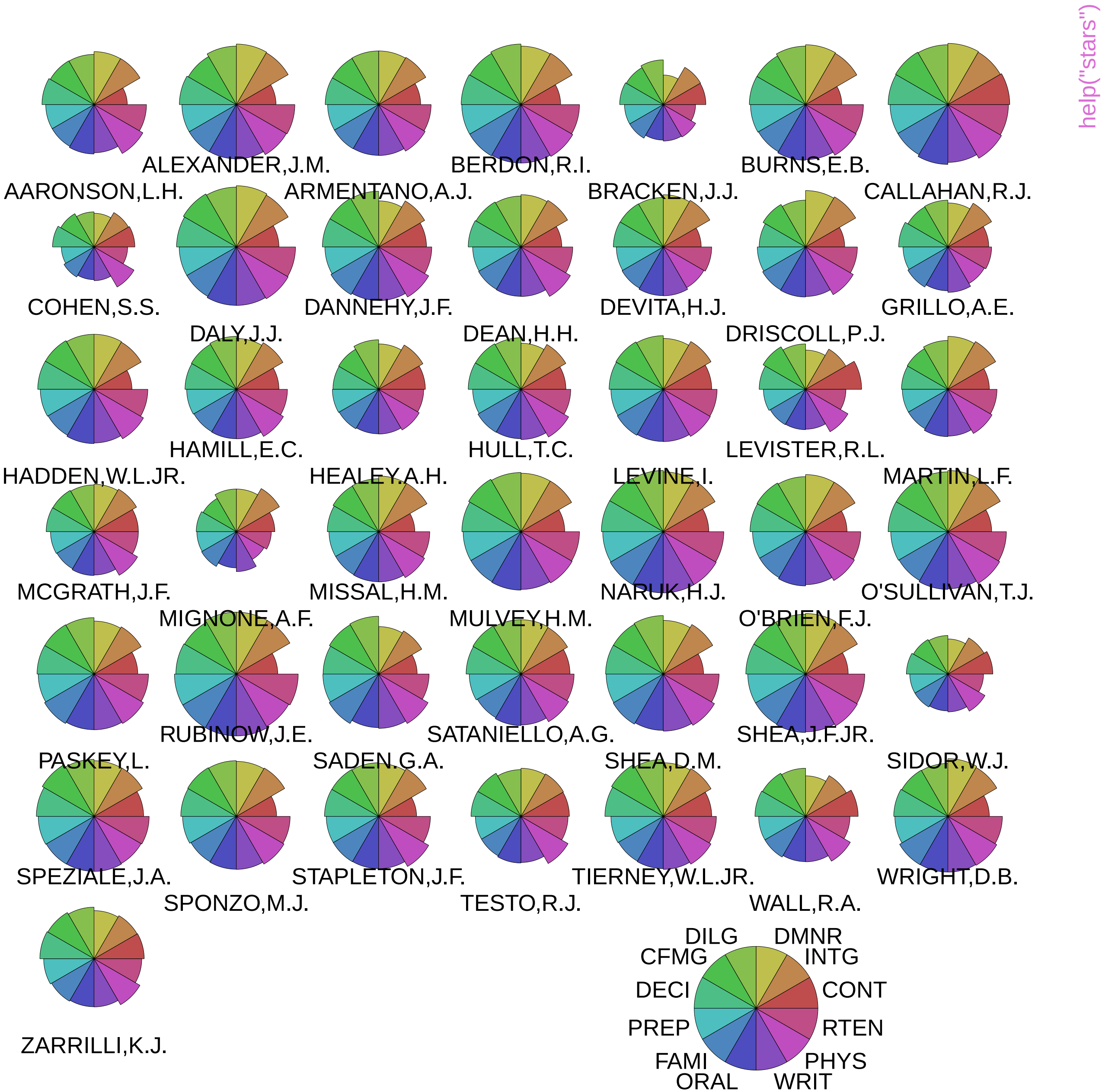

AARONSON,L.H.
ALEXANDER,J.M.
ARMENTANO,A.J.
BERDON,R.I.
BRACKEN,J.J.
BURNS,E.B.
CALLAHAN,R.J.
COHEN,S.S.
DALY,J.J.
DANNEHY,J.F.
DEAN,H.H.
DEVITA,H.J.
DRISCOLL,P.J.
GRILLO,A.E.
HADDEN,W.L.JR.
HAMILL,E.C.
HEALEY.A.H.
HULL,T.C.
LEVINE,I.
LEVISTER,R.L.
MARTIN,L.F.
MCGRATH,J.F.
MIGNONE,A.F.
MISSAL,H.M.
MULVEY,H.M.
NARUK,H.J.
O'BRIEN,F.J.
O'SULLIVAN,T.J.
PASKEY,L.
RUBINOW,J.E.
SADEN.G.A.
SATANIELLO,A.G.
SHEA,D.M.
SHEA,J.F.JR.
SIDOR,W.J.
SPEZIALE,J.A.
SPONZO,M.J.
STAPLETON,J.F.
TESTO,R.J.
TIERNEY,W.L.JR.
WALL,R.A.
WRIGHT,D.B.
ZARRILLI,K.J.
DILG
CFMG
DMNR
DECI
INTG
PREP
CONT
FAMI
RTEN
ORAL
WRIT
PHYS
help("stars")


AARONSO
ALEXAND
ARMENTA
BERDON
BRACKEN
BURNS
CALLAHA
COHEN
DALY
DANNEHY
DEAN
DEVITA
DRISCOL
GRILLO
HADDEN
HAMILL
HEALEY
HULL
LEVINE
LEVISTE
MARTIN
MCGRATH
MIGNONE
MISSAL
MULVEY
NARUK
O'BRIEN
O'SULLI
PASKEY
RUBINOW
SADEN
SATANIE
SHEA
SHEA
SIDOR
SPEZIAL
SPONZO
STAPLET
TESTO
TIERNEY
WALL
WRIGHT
ZARRILL
CFMG
DILG
DMNR
DECI
INTG
PREP
CONT
FAMI
RTEN
ORAL
WRIT
PHYS

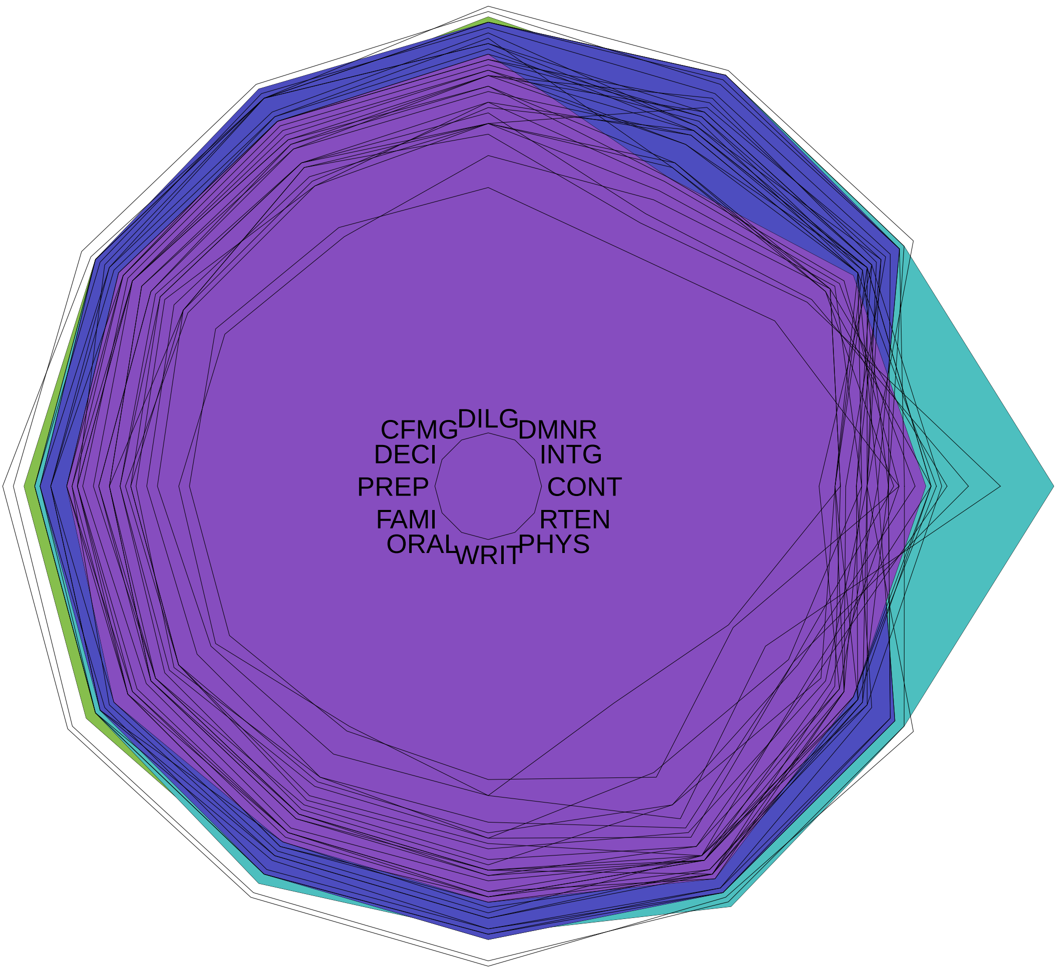
Judge not ...


AARONSO
ALEXAND
ARMENTA
BERDON
BRACKEN
BURNS
CALLAHA
COHEN
DALY
DANNEHY
DEAN
DEVITA
DRISCOL
GRILLO
HADDEN
HAMILL
HEALEY
HULL
LEVINE
LEVISTE
MARTIN
MCGRATH
MIGNONE
MISSAL
MULVEY
NARUK
O'BRIEN
O'SULLI
PASKEY
RUBINOW
SADEN
SATANIE
SHEA
SHEA
SIDOR
SPEZIAL
SPONZO
STAPLET
TESTO
TIERNEY
WALL
WRIGHT
ZARRILL
DILG
CFMG
DMNR
DECI
INTG
PREP
CONT
FAMI
RTEN
ORAL
PHYS
WRIT

help("stars")

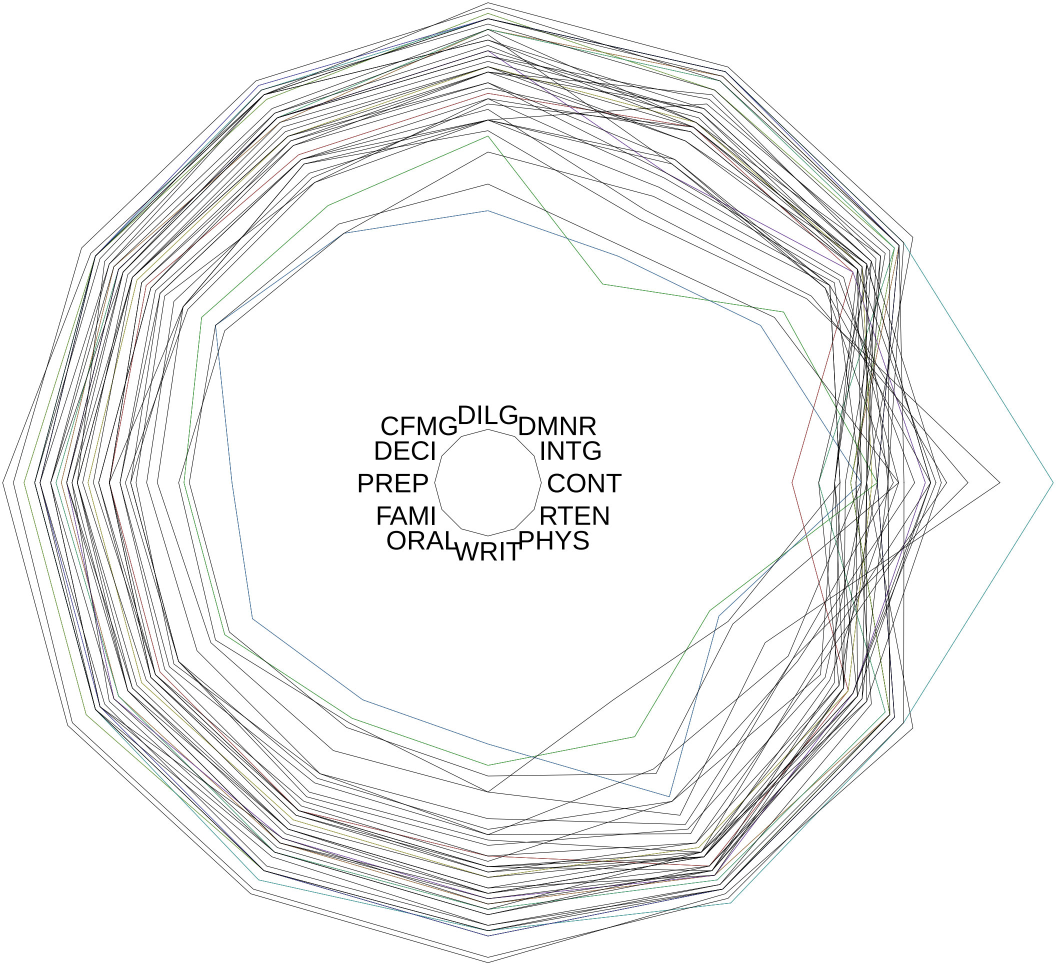

help("stars")
ALEXANDER,J.M.
BERDON,R.I.
BURNS,E.B.
AARONSON,L.H.
ARMENTANO,A.J.
BRACKEN,J.J.
CALLAHAN,R.J.
COHEN,S.S.
DANNEHY,J.F.
DEVITA,H.J.
GRILLO,A.E.
DALY,J.J.
DEAN,H.H.
DRISCOLL,P.J.
HAMILL,E.C.
HULL,T.C.
LEVISTER,R.L.
HADDEN,W.L.JR.
HEALEY.A.H.
LEVINE,I.
MARTIN,L.F.
MCGRATH,J.F.
MISSAL,H.M.
NARUK,H.J.
O'SULLIVAN,T.J.
MIGNONE,A.F.
MULVEY,H.M.
O'BRIEN,F.J.
RUBINOW,J.E.
SATANIELLO,A.G.
SHEA,J.F.JR.
PASKEY,L.
SADEN,G.A.
SHEA,D.M.
SIDOR,W.J.
SPEZIALE,J.A.
STAPLETON,J.F.
TIERNEY,W.L.JR.
WRIGHT,D.B.
SPONZO,M.J.
TESTO,R.J.
WALL,R.A.
ZARRILLI,K.J.
DILG
DMNR
CFMG
INTG
DECI
CONT
PREP
RTEN
FAMI
PHYS
ORAL
WRIT

US Judges rated

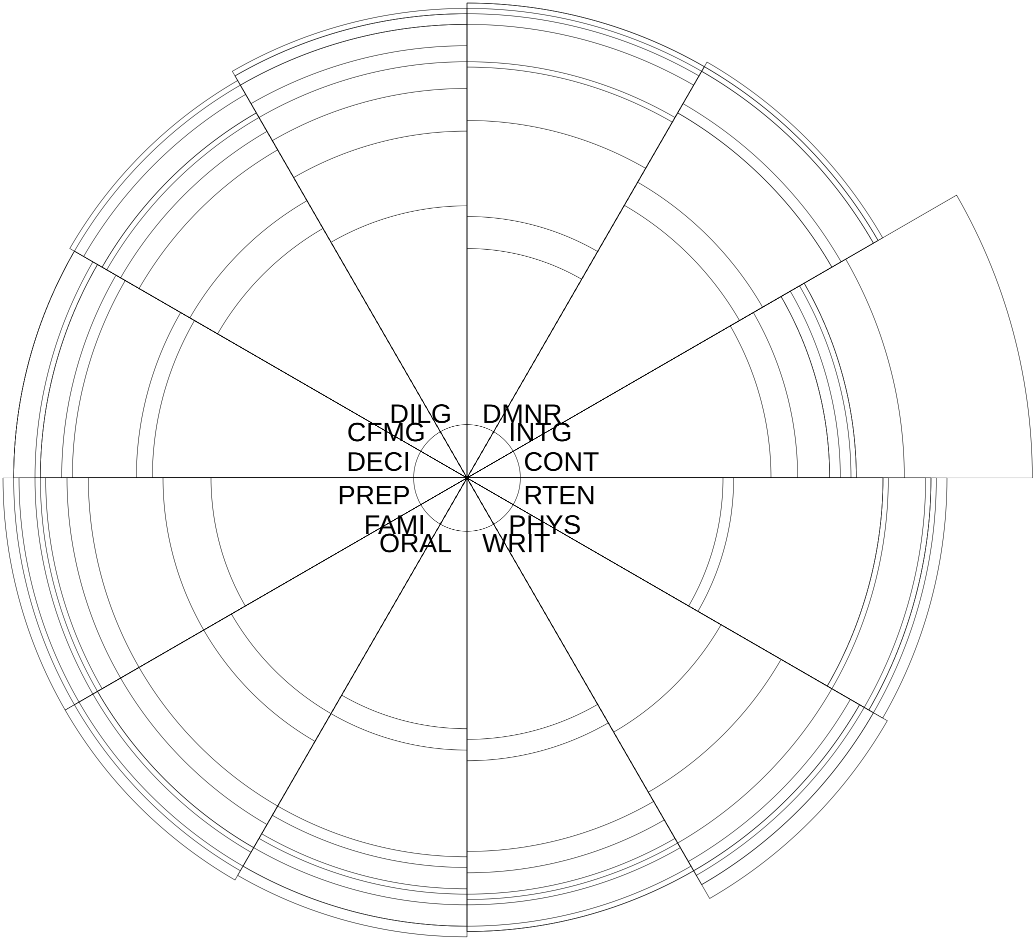


help("stars")

US Judges rated

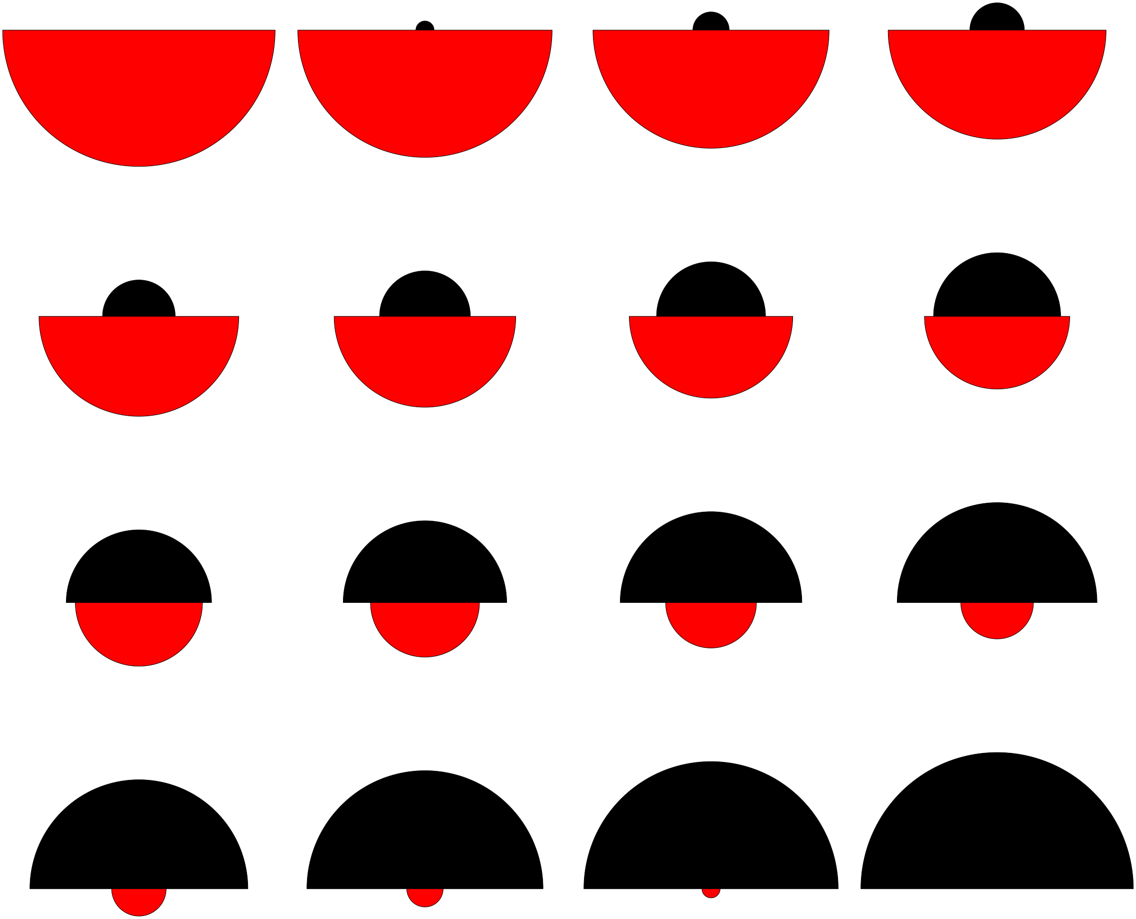


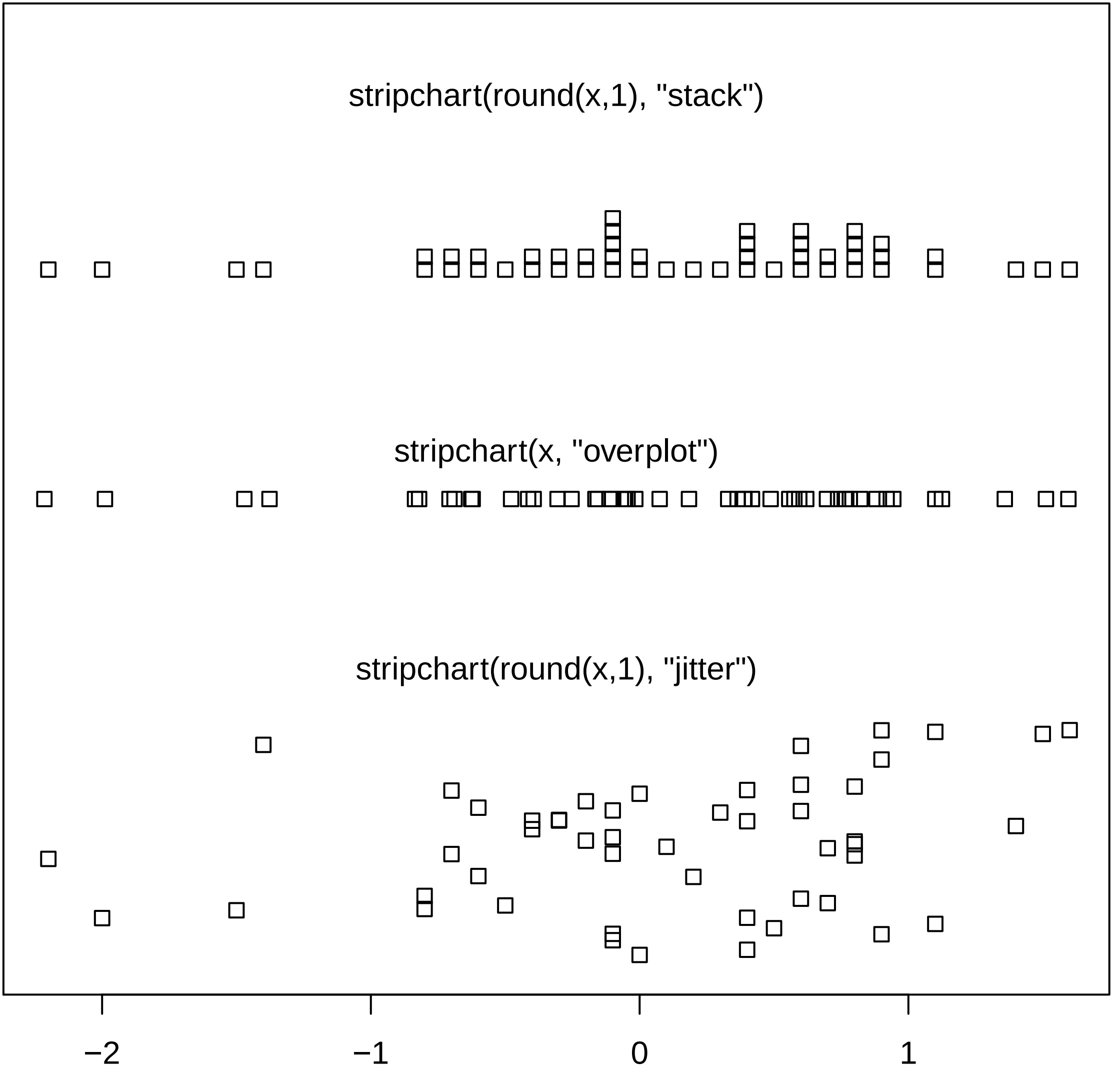
US Judges 1−10



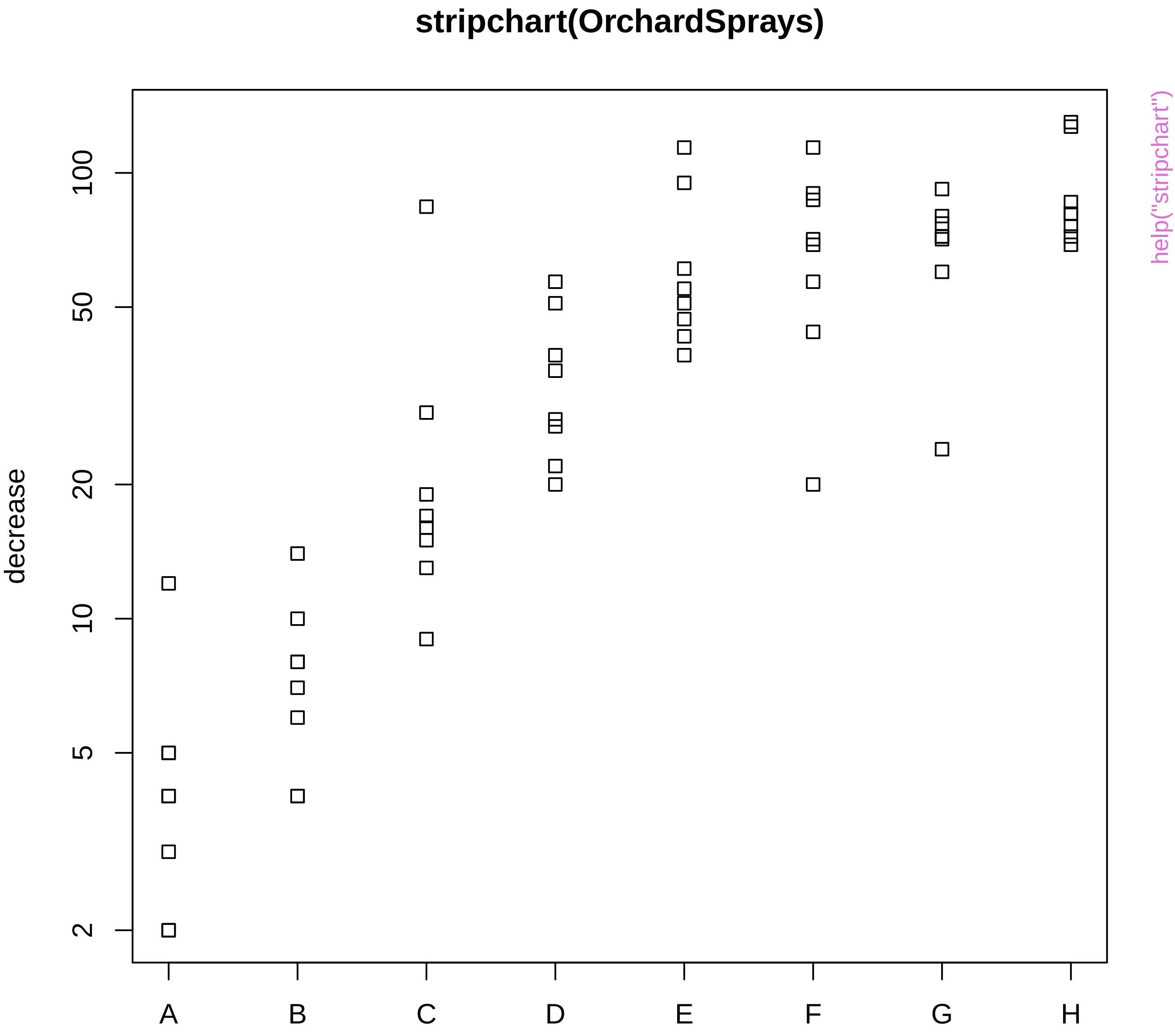
help("stars")

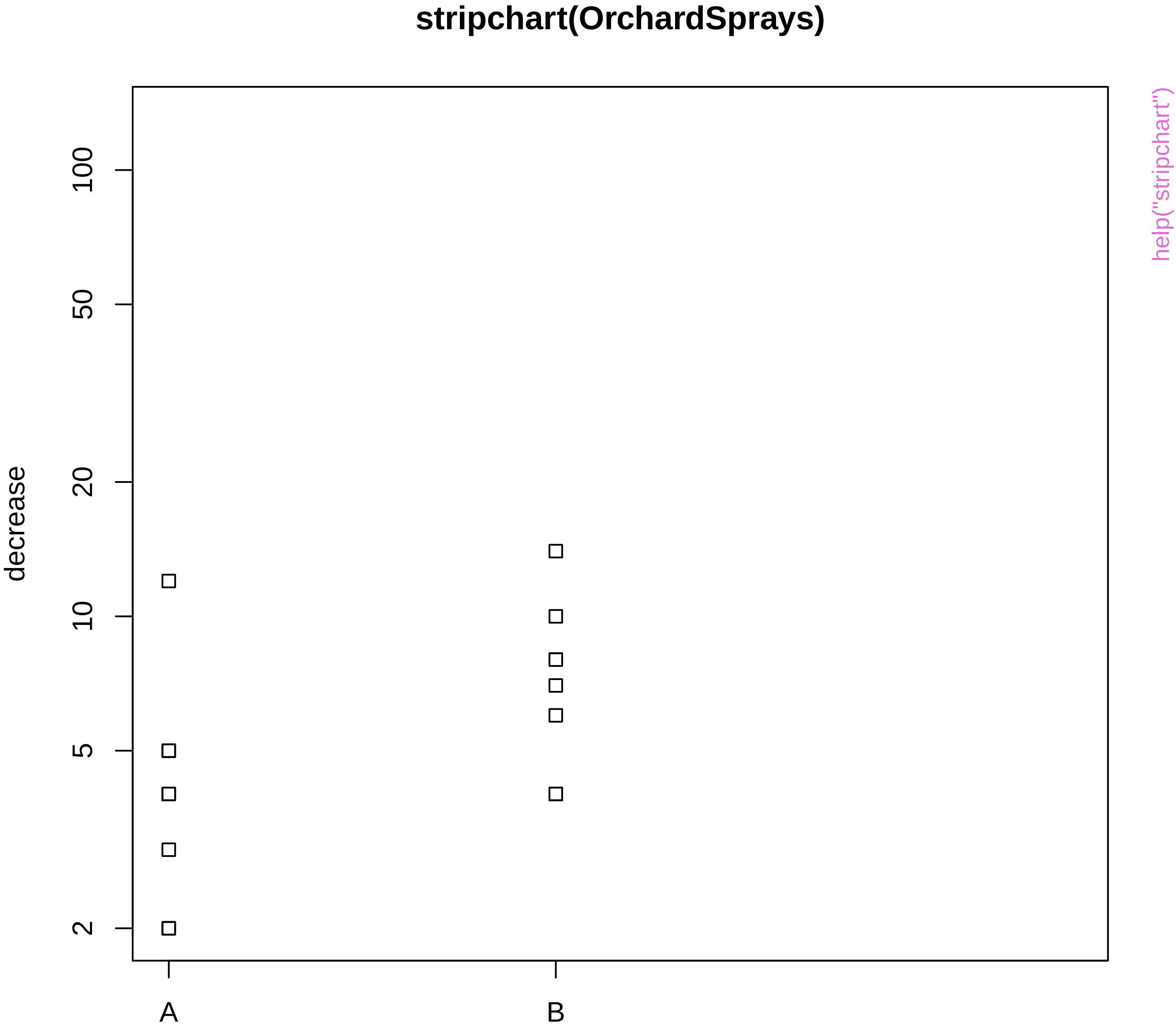
A Joke -- do *not* use symbols on 2D data!

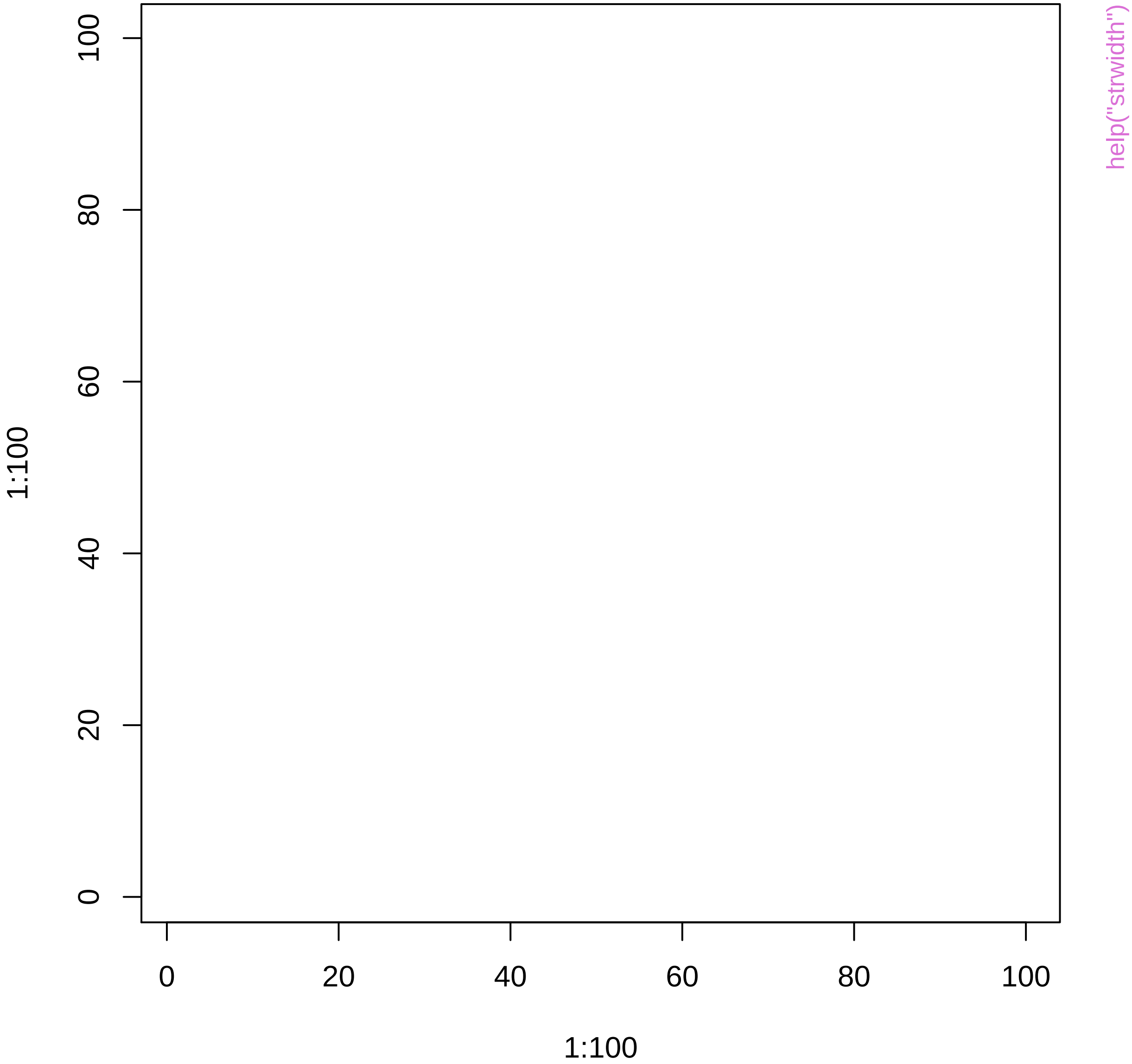


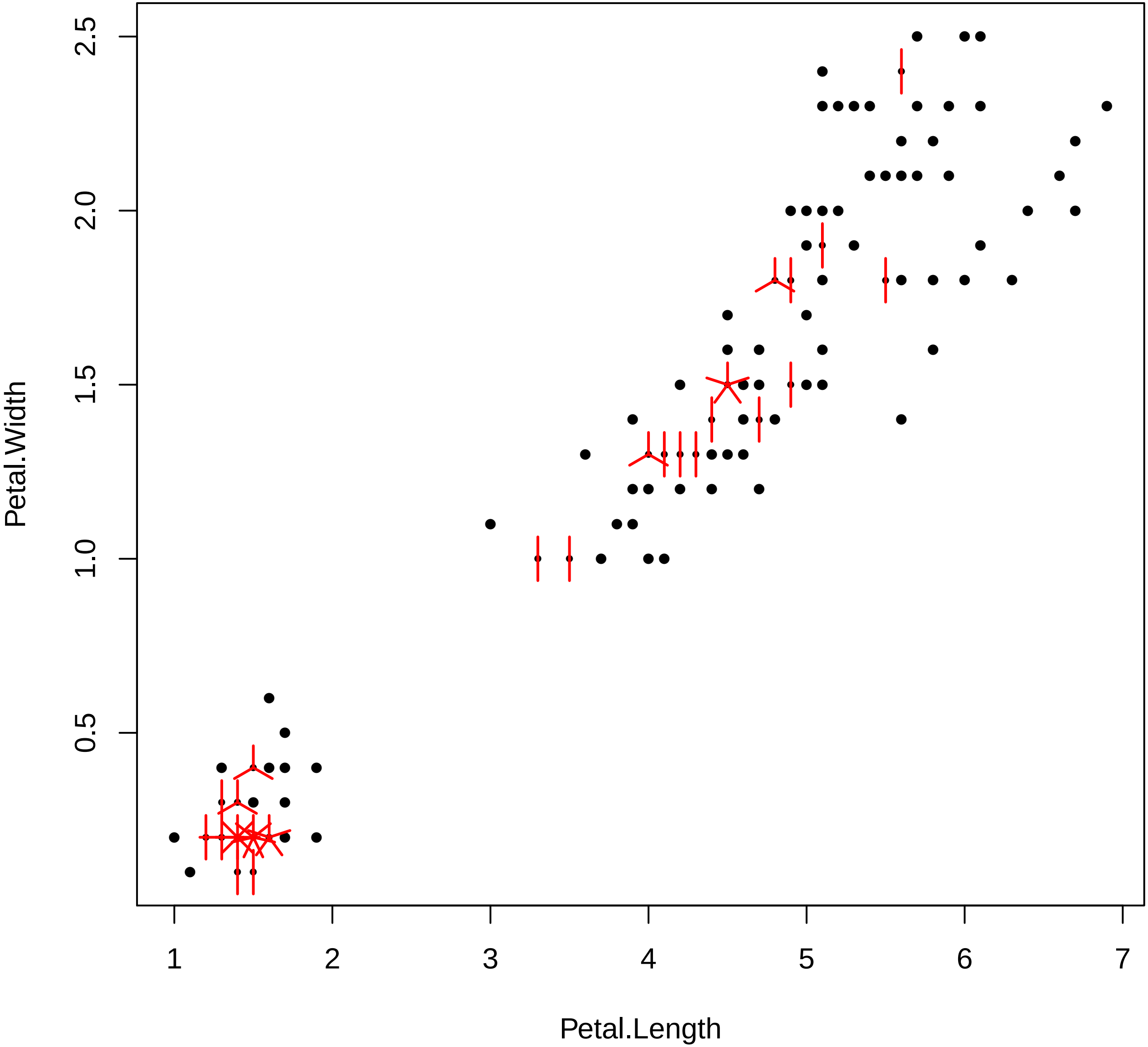


help("stripchart")

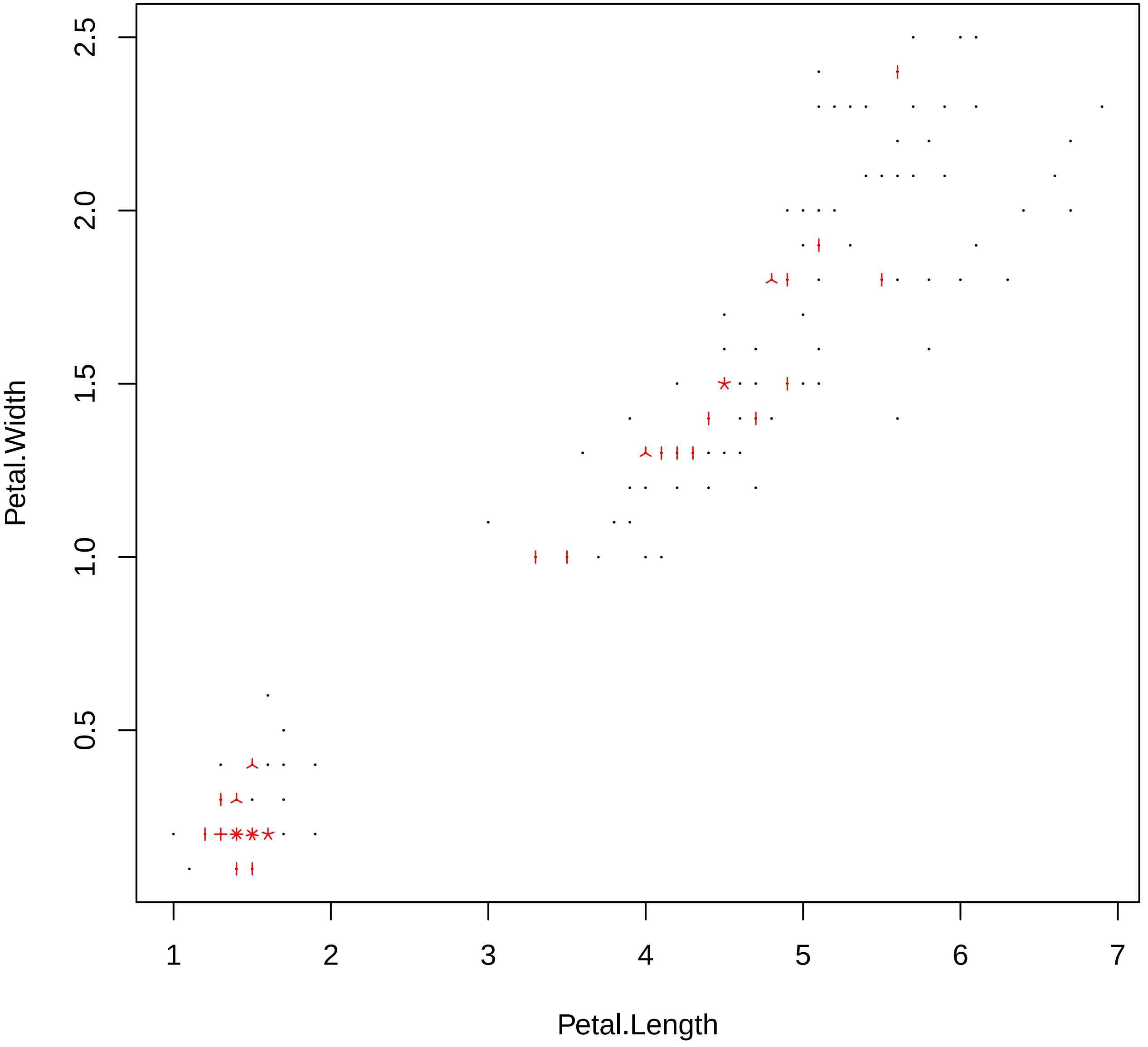

stripchart(OrchardSprays)
help("stripchart")
decrease
2
5
10
20
50
100
A
B
C
D
E
F
G
H


stripchart(OrchardSprays)
decrease
100
50
20
10
5
2
A
B
help("stripchart")

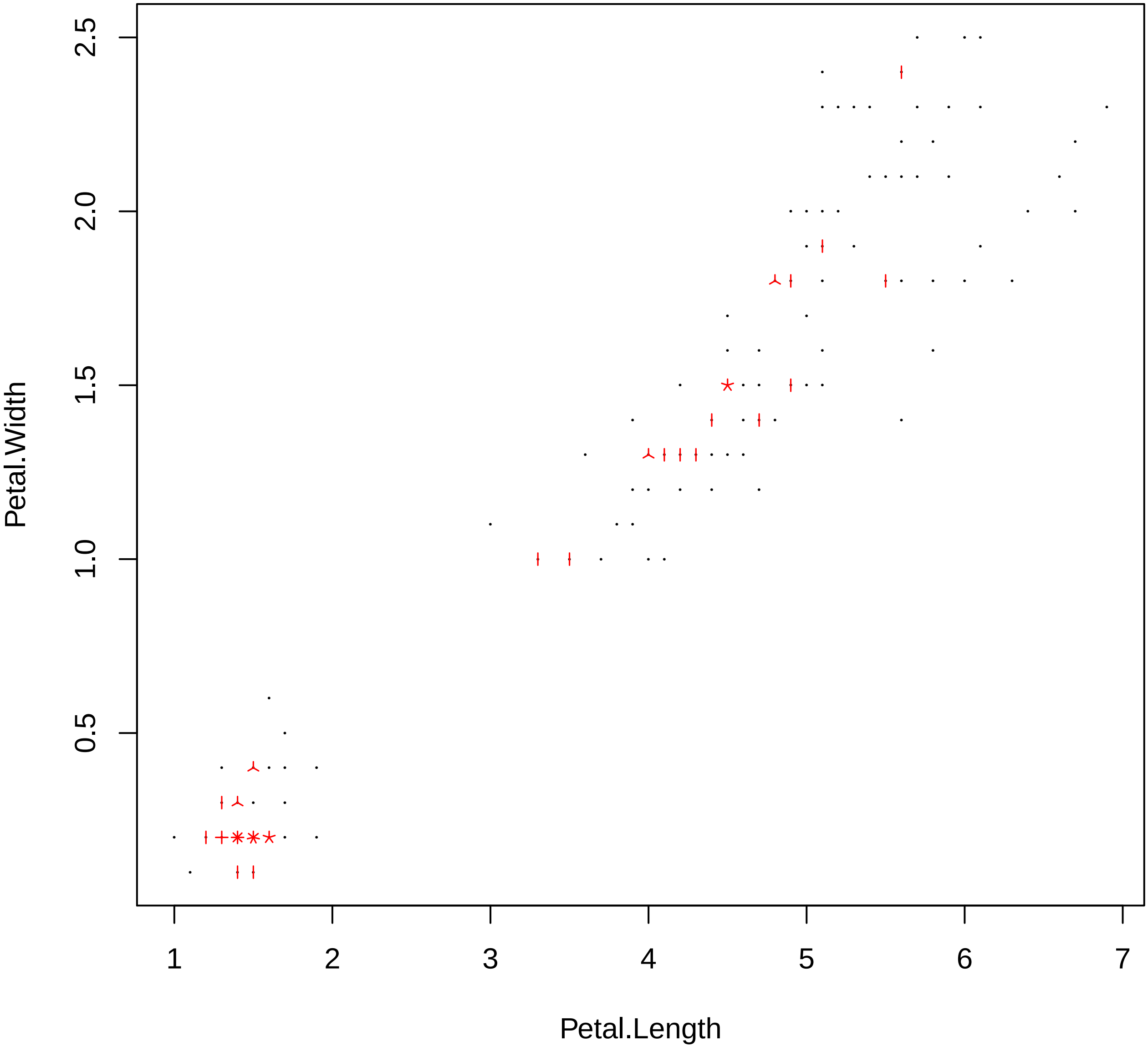

100
80
60
40
20
0
1:100
0
20
40
60
80
100
1:100
help("strwidth")



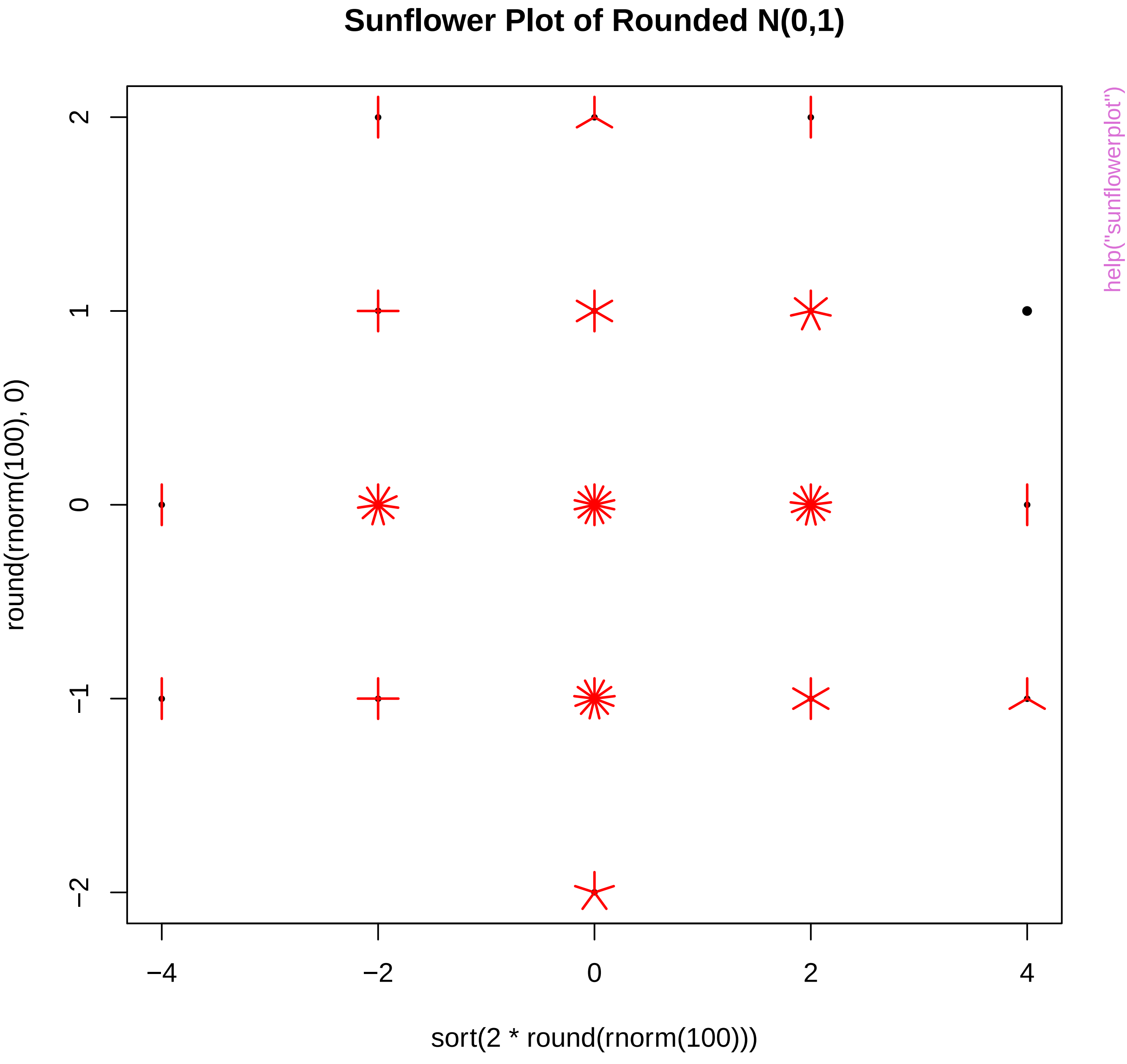
help("sunflowerplot")

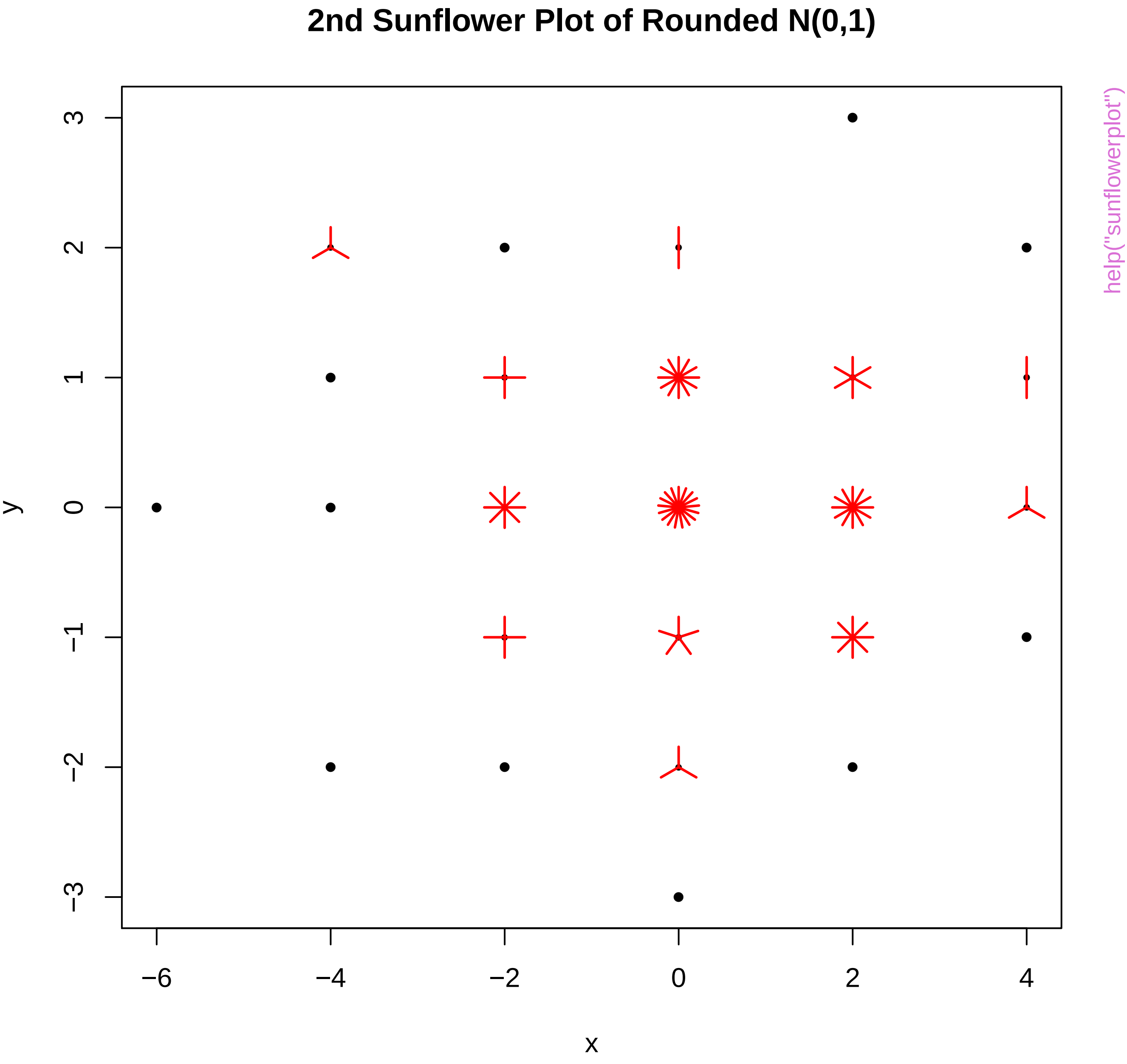


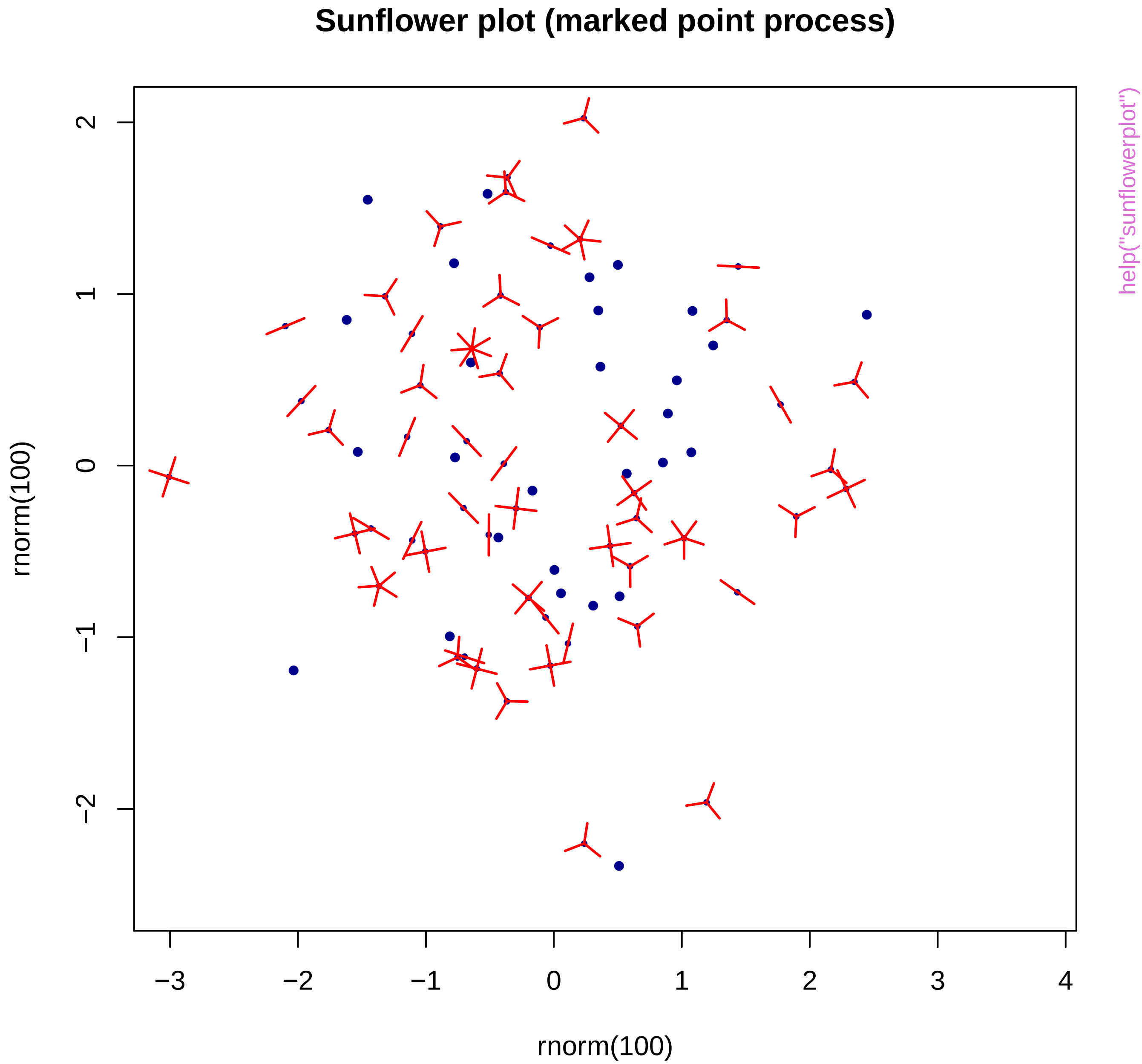
help("sunflowerplot")

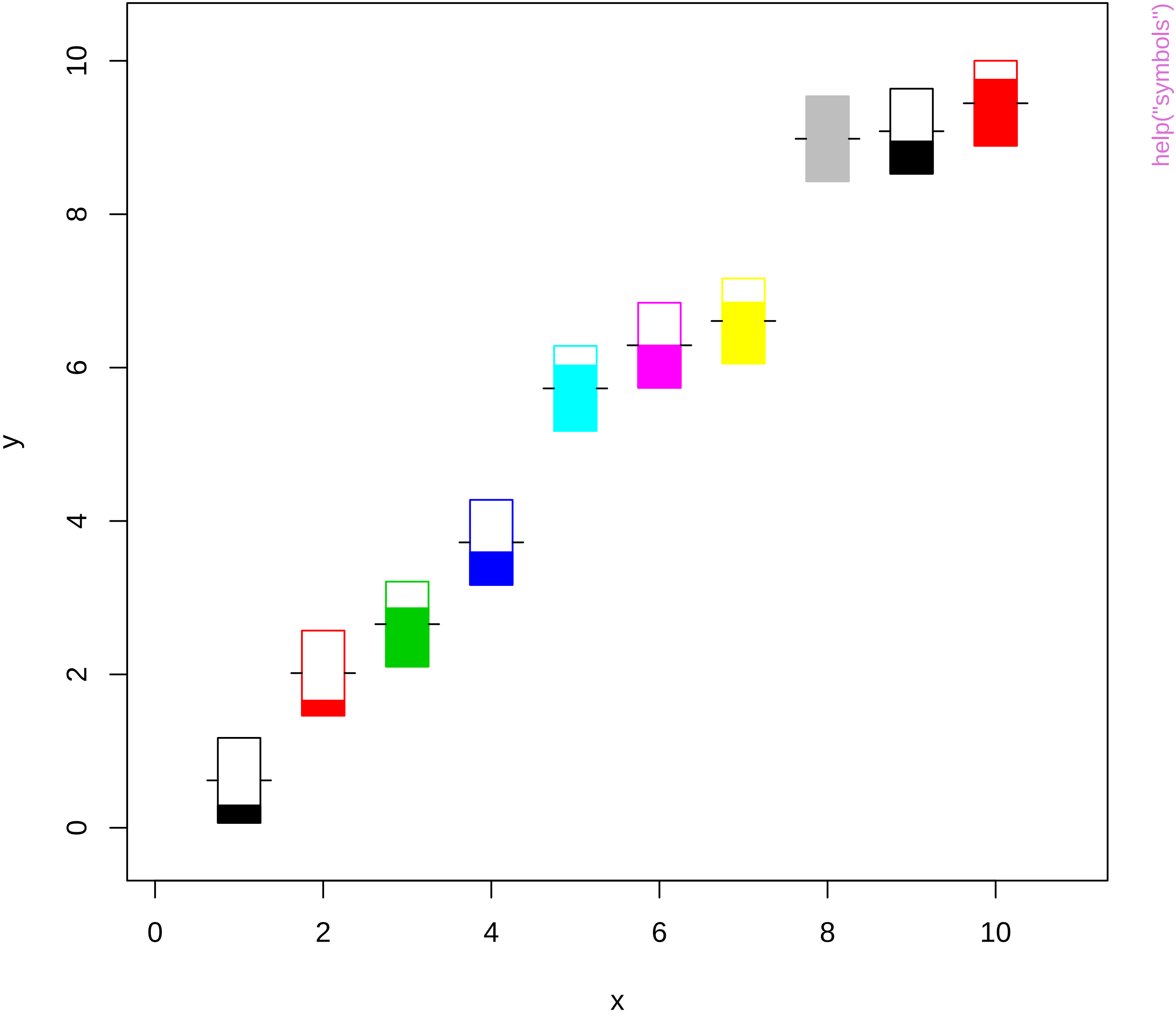


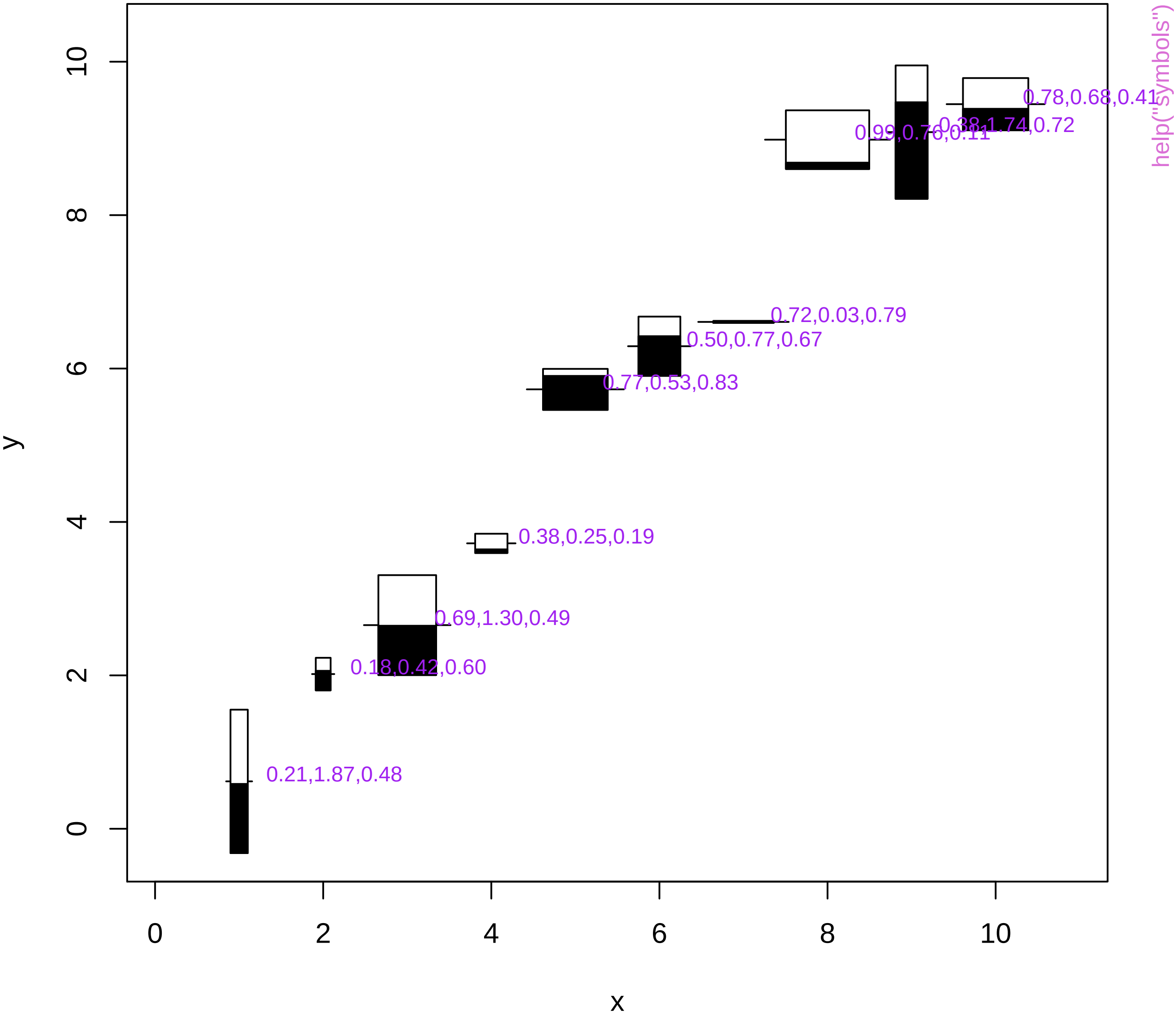
help("sunflowerplot")

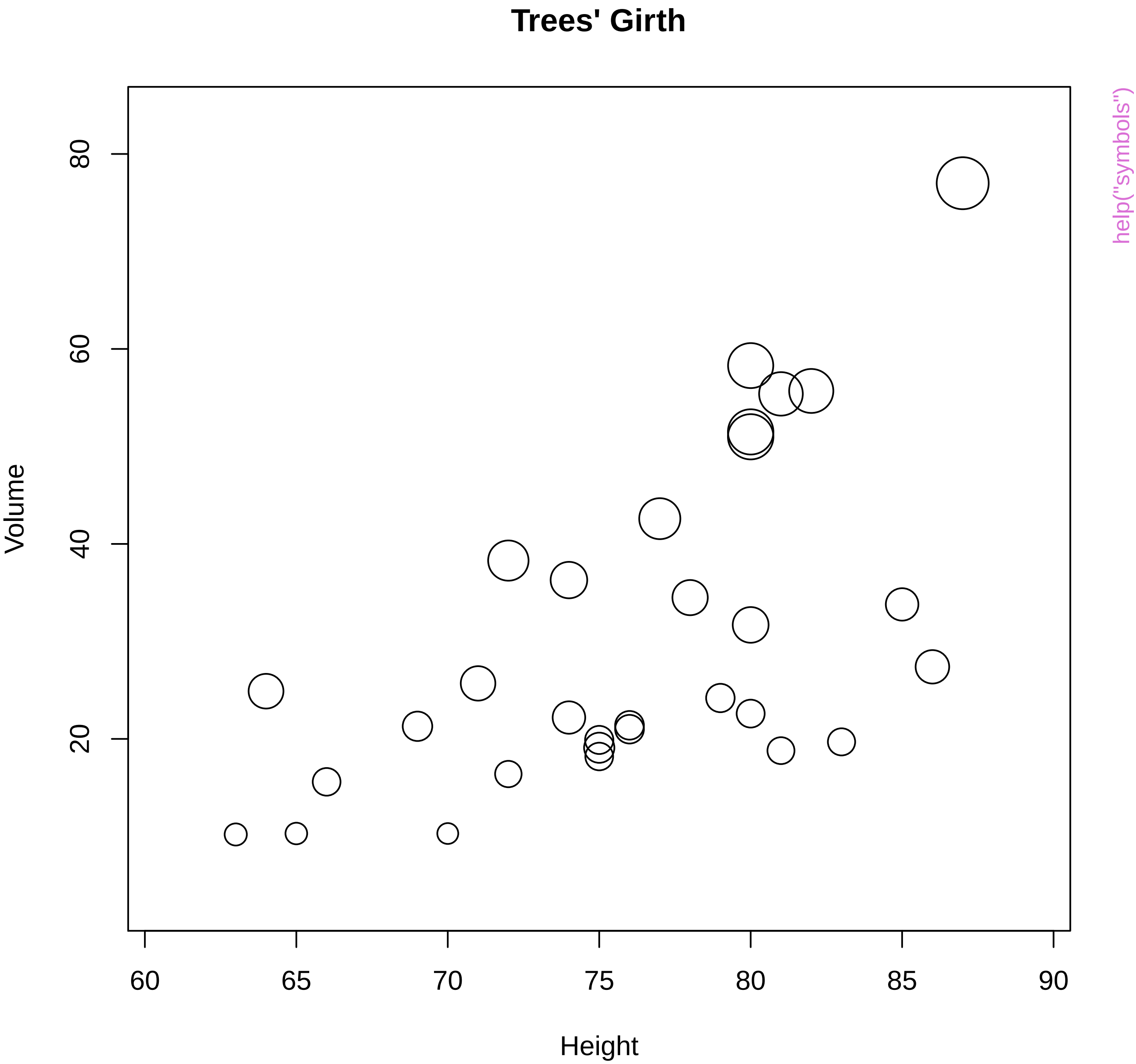

Sunflower Plot of Rounded N(0,1)
round(rnorm(100), 0)
sort(2 * round(rnorm(100)))
−4
−2
0
2
4
−2
−1
0
1
2
help("sunflowerplot")

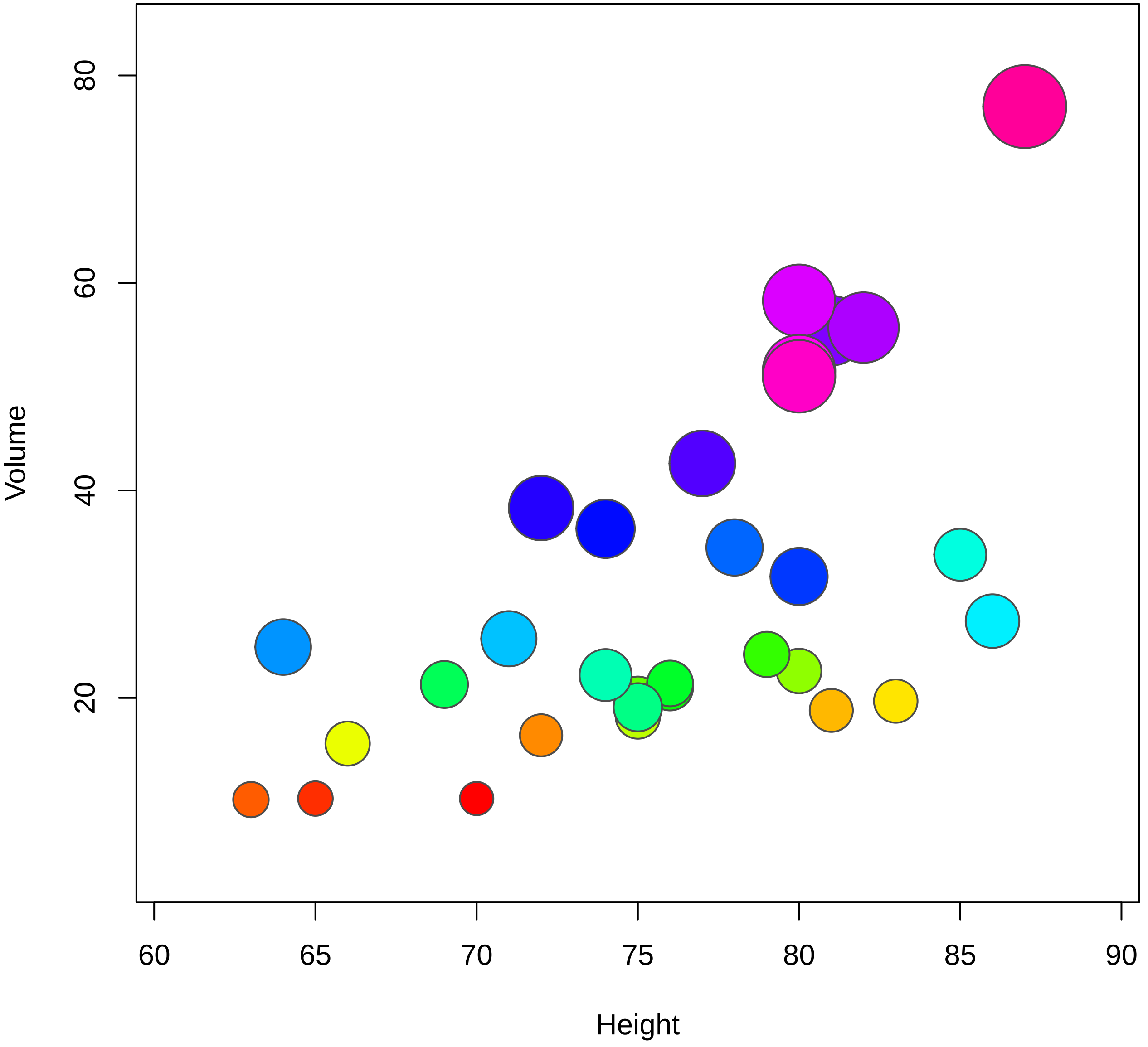

2nd Sunflower Plot of Rounded N(0,1)
help("sunflowerplot")
y
3
2
1
0
−1
−2
−3
−6
−4
−2
0
2
4
x


Sunflower plot (marked point process)
rnorm(100)
rnorm(100)
−3
−2
−1
0
1
2
3
4
2
1
0
−1
−2
help("sunflowerplot")

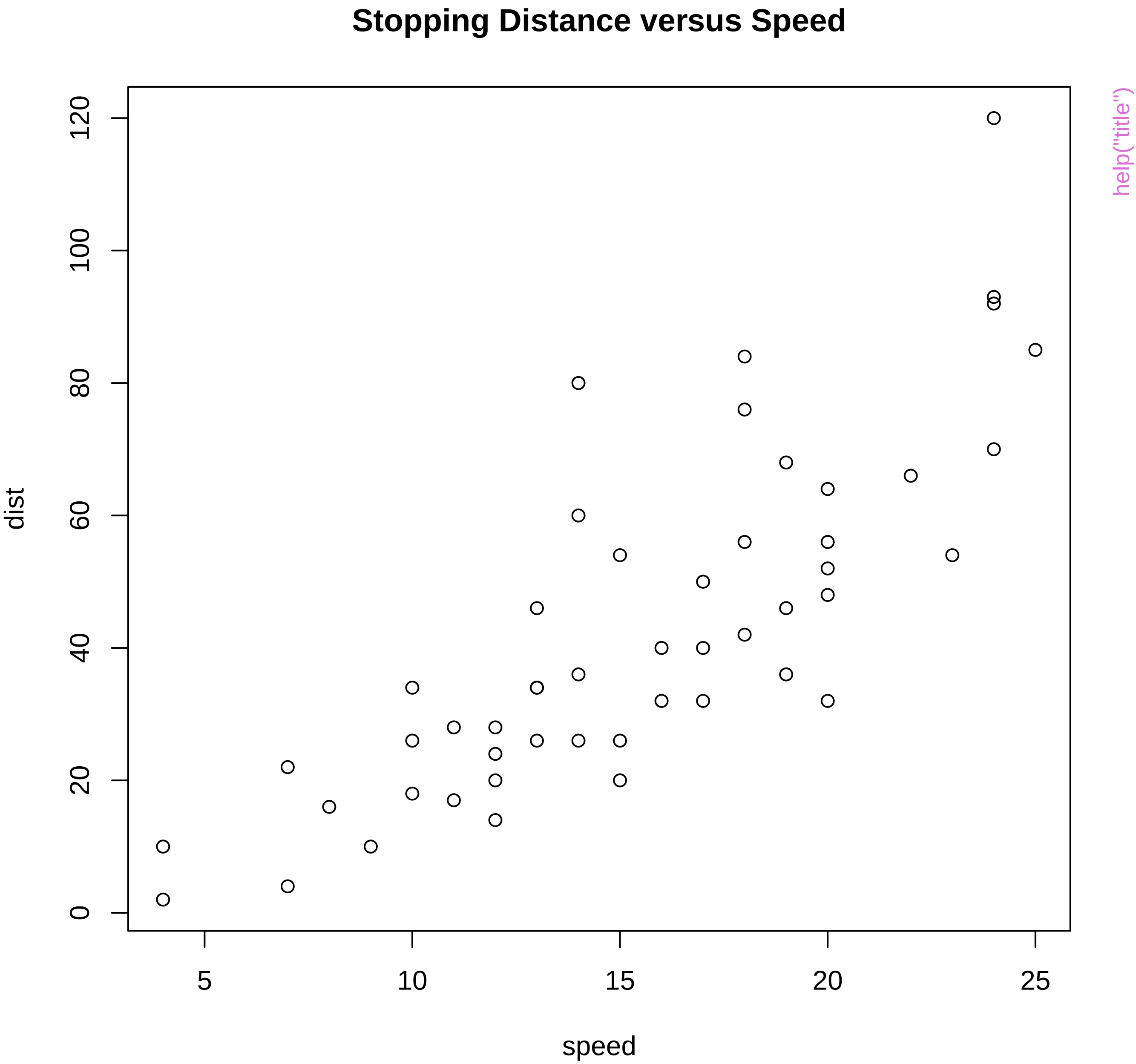

0
2
4
6
8
10
x
0
2
4
6
8
10
y
help("symbols")

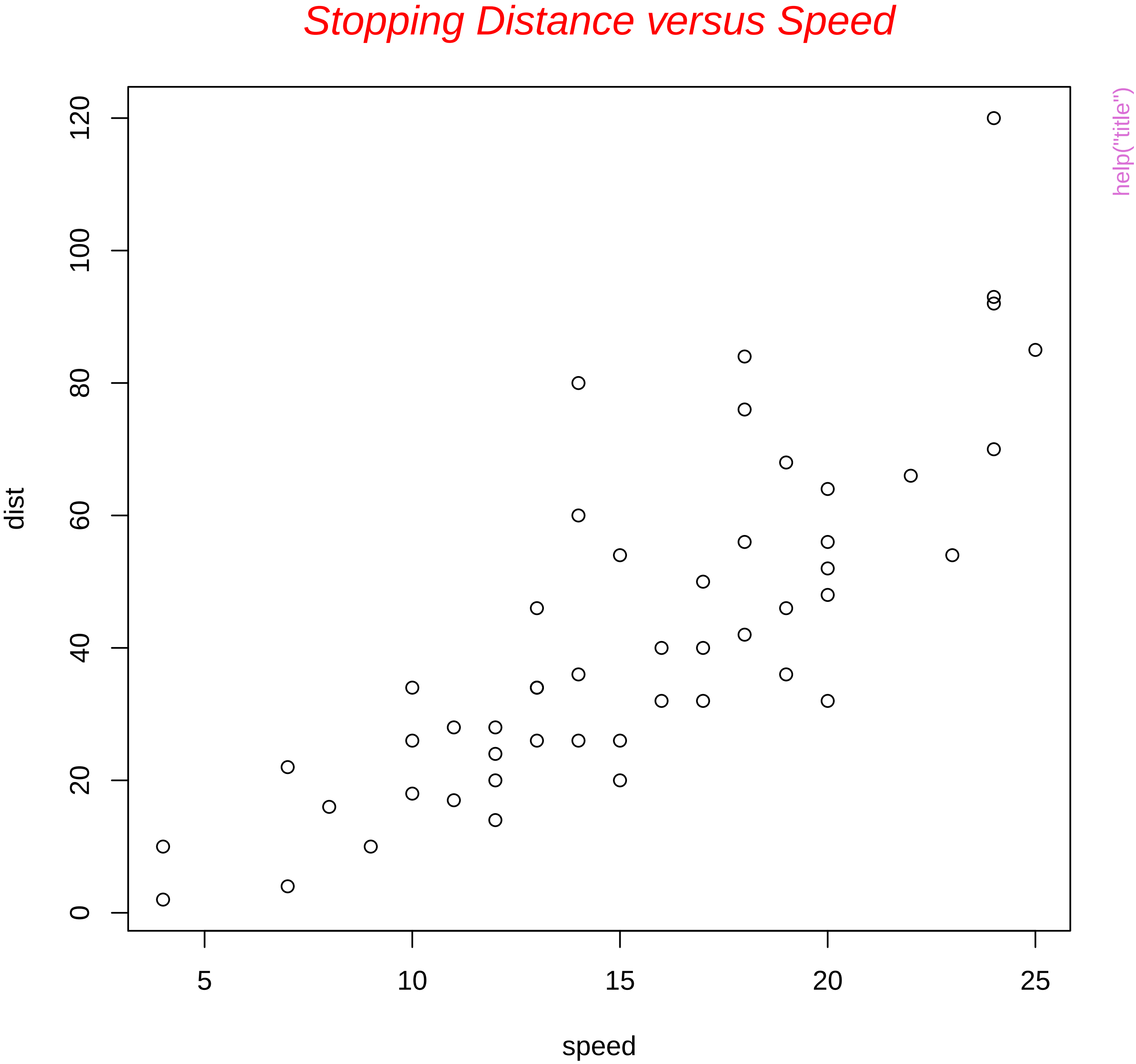

0.21,1.87,0.48
0.18,0.42,0.60
0.69,1.30,0.49
0.38,0.25,0.19
0.77,0.53,0.83
0.50,0.77,0.67
0.72,0.03,0.79
0.99,0.76,0.11
0.38,1.74,0.72
0.78,0.68,0.41
help("symbols")
y
0
2
4
6
8
10
x
0
2
4
6
8
10

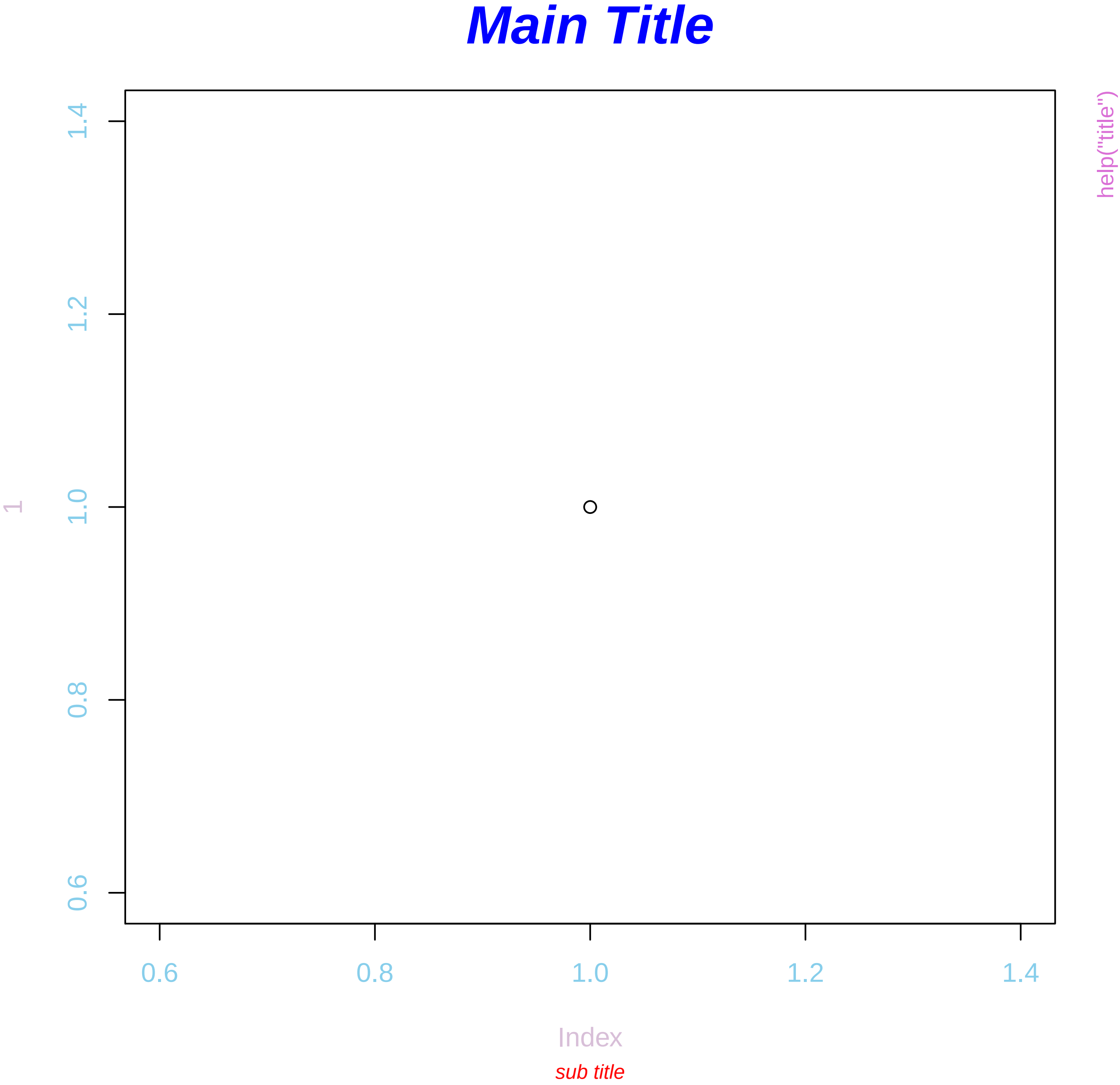

Trees' Girth
Volume
80
60
40
20
60
65
70
75
80
85
90
Height
help("symbols")

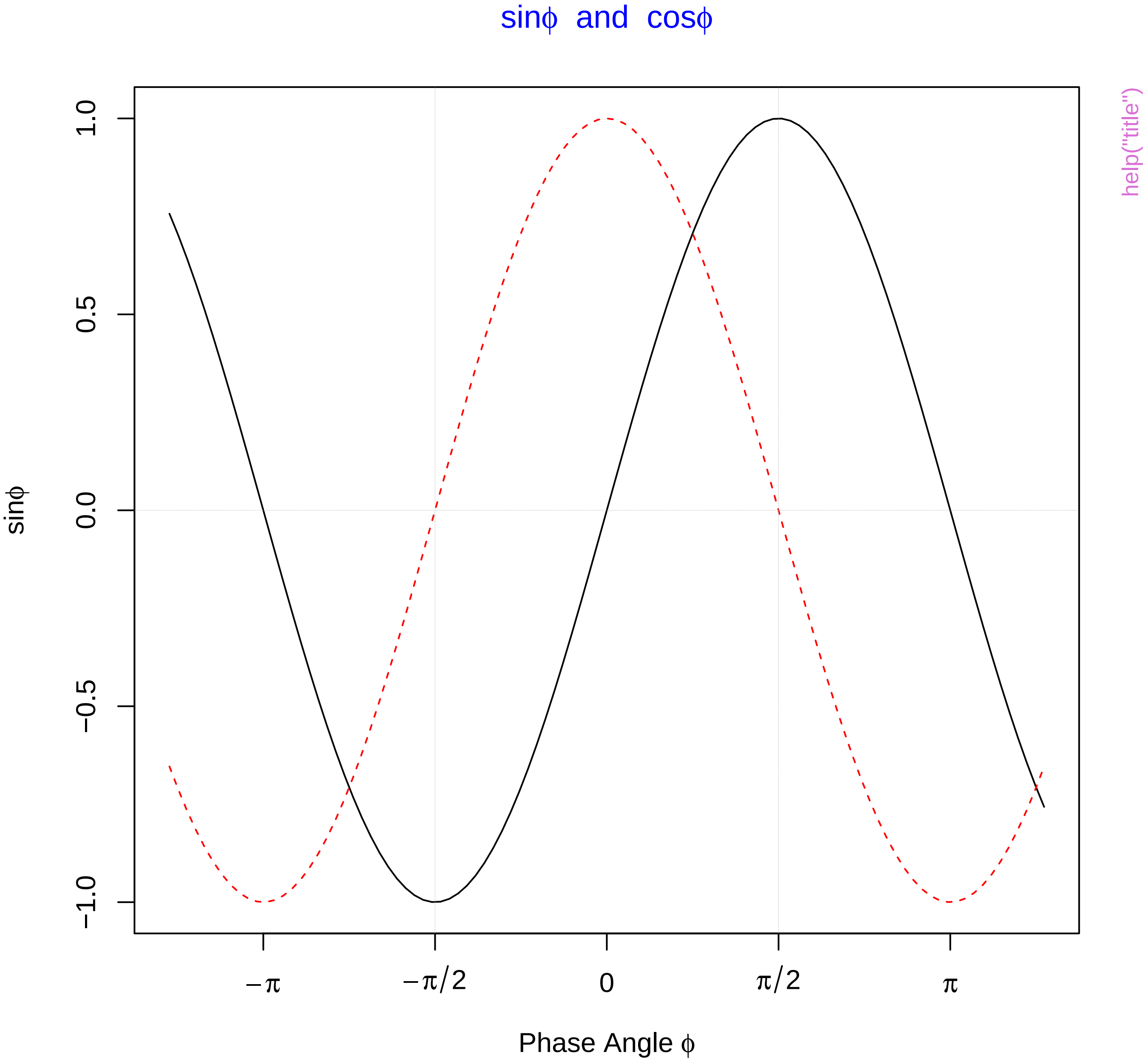


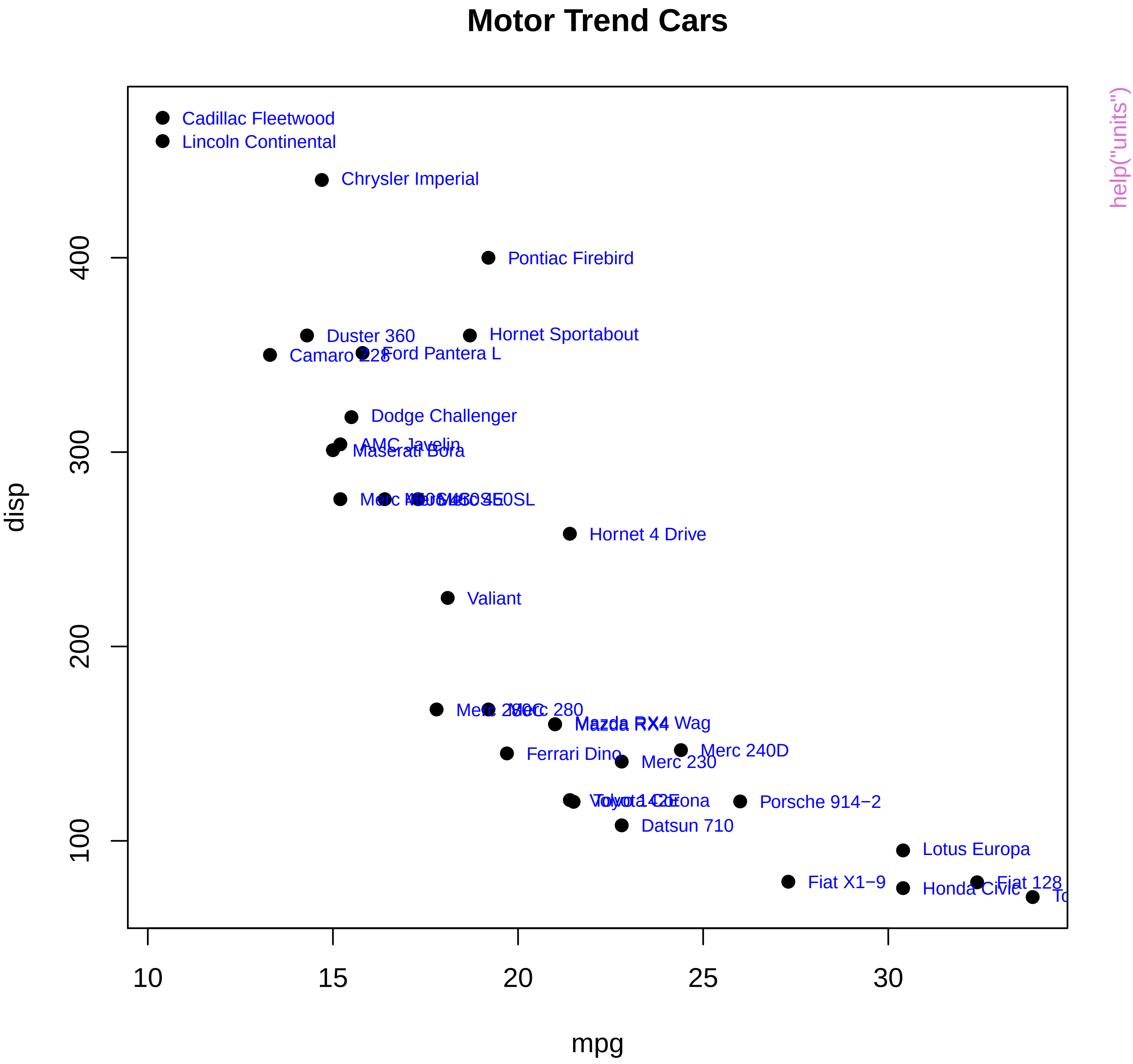
symbols(*, circles = Girth/16, bg = 1:N)


Stopping Distance versus Speed
dist
0
20
40
60
80
100
120
speed
5
10
15
20
25
help("title")

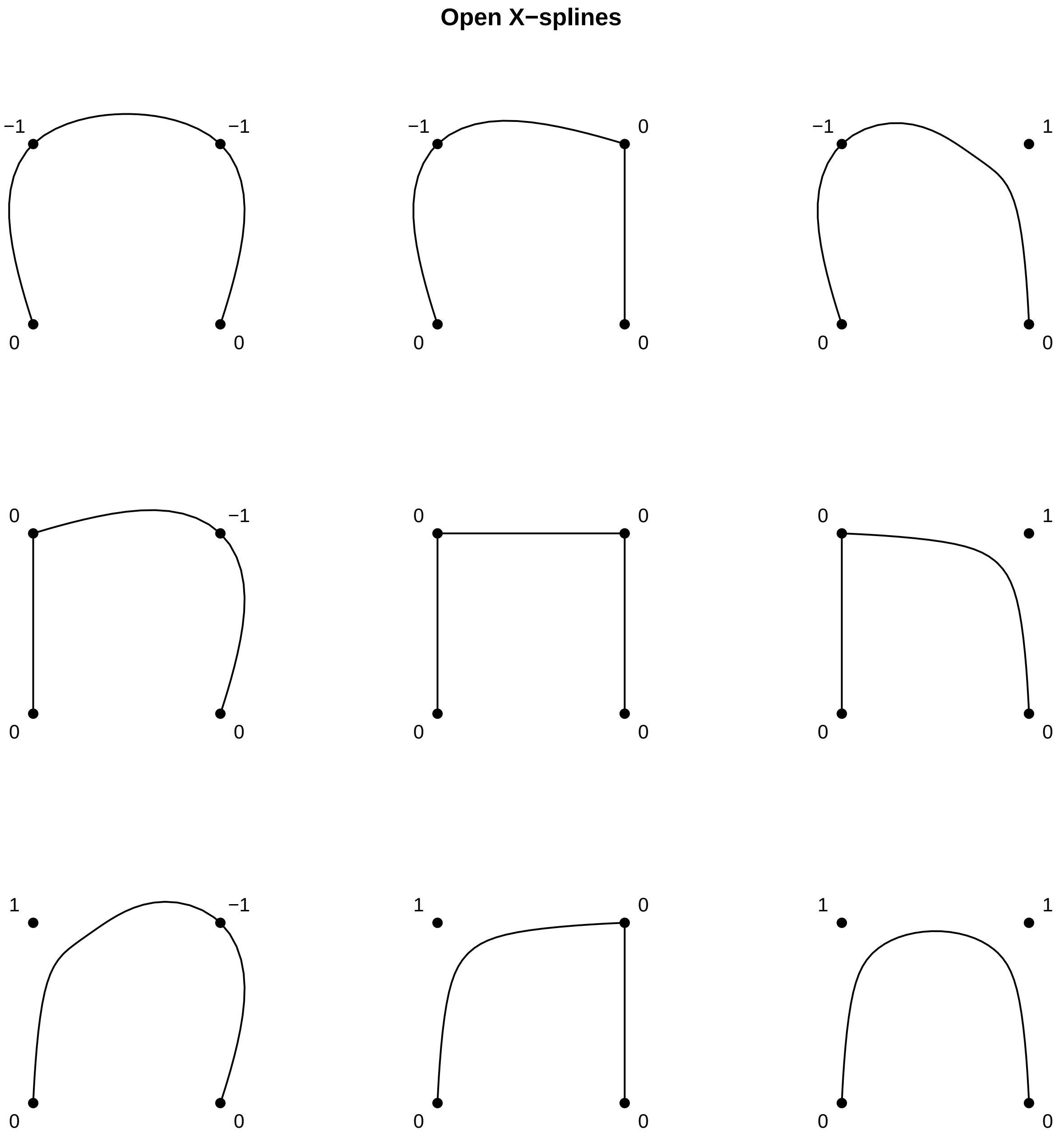

Stopping Distance versus Speed
dist
0
20
40
60
80
100
120
speed
5
10
15
20
25
help("title")


Main Title
1.4
1.2
1.0
0.8
0.6
1
help("title")
0.6
0.8
1.0
1.2
1.4
Index
sub title


sinϕ and cosϕ
help("title")
sinϕ
1.0
0.5
0.0
−0.5
−1.0
−π
−π/2
0
π/2
π
Phase Angle ϕ

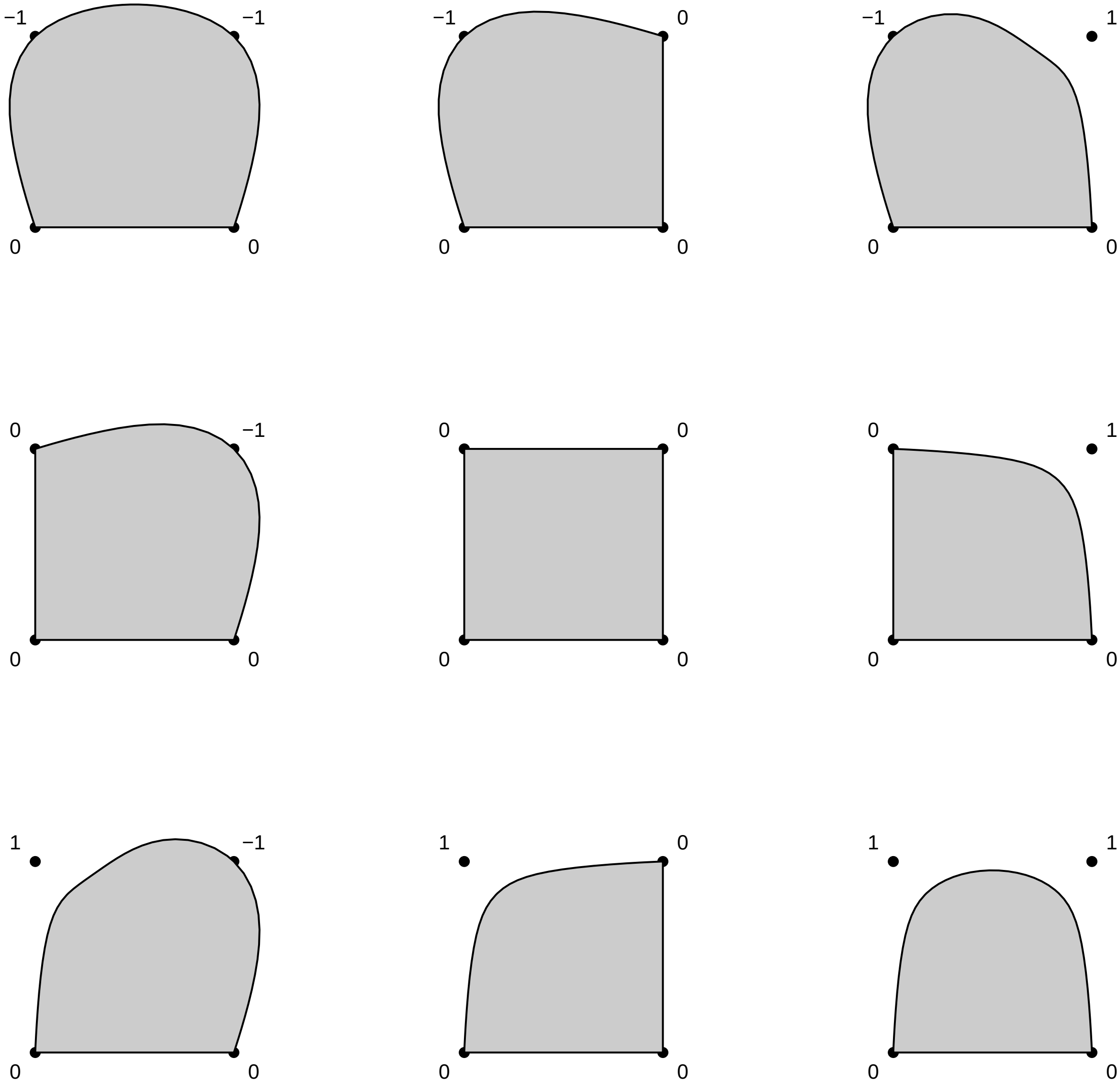


Motor Trend Cars

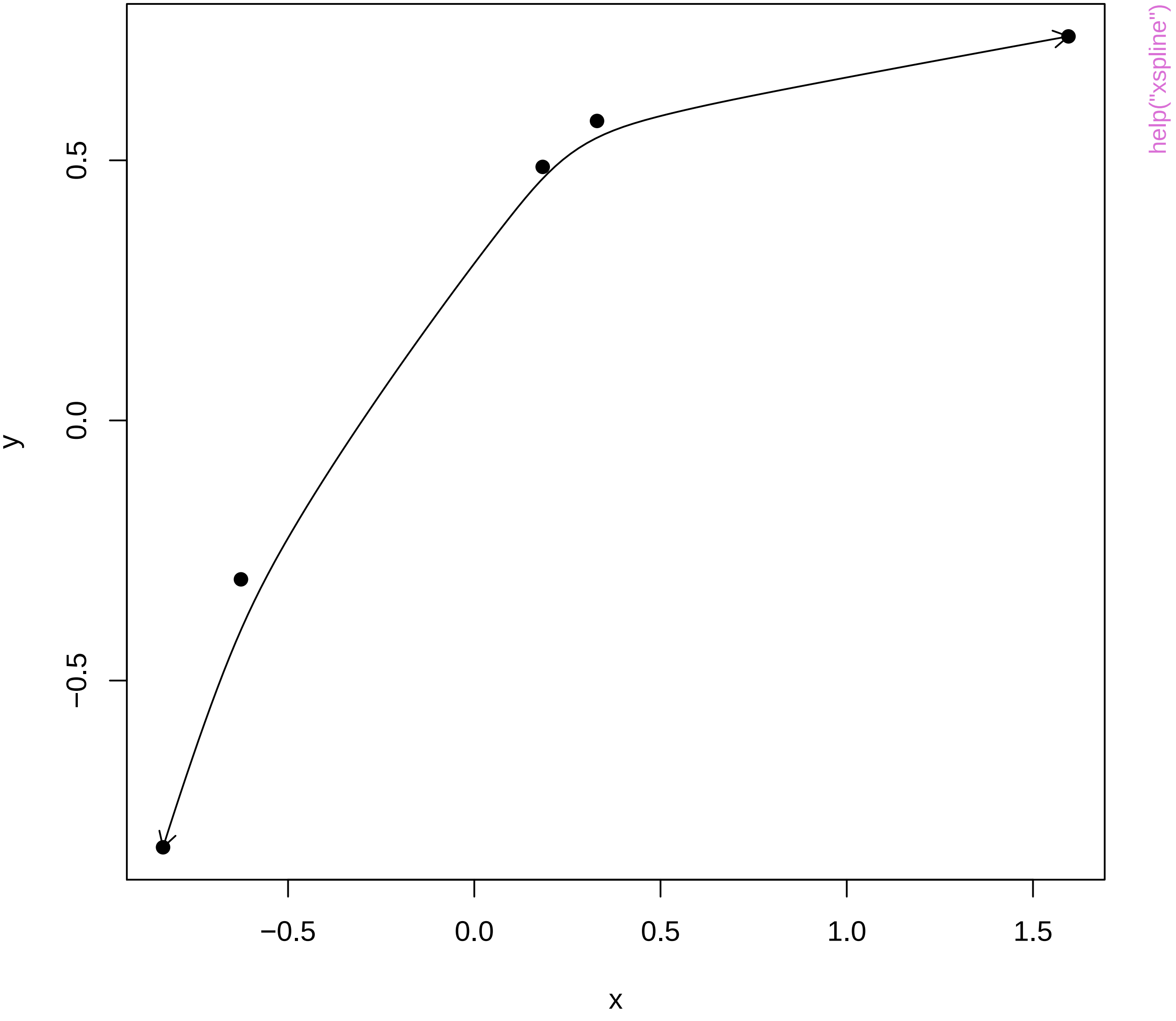

Open X−splines
−1
−1
0
0
−1
0
0
0
−1
1
0
0
0
−1
0
0
0
0
0
0
0
1
0
0
1
−1
0
0
1
0
0
0
1
1
0
0

help("xspline")

Closed X−splines


−1
−1
0
0
−1
0
0
0
−1
1
0
0
0
−1
0
0
0
0
0
0
0
1
0
0
1
−1
0
0
1
0
0
0
1
1
0
0

help("xspline")


help("xspline")
y
0.5
0.0
−0.5
−0.5
0.0
0.5
1.0
1.5
x