Parentheses are for functions, brackets are for indicating the position of items in a vector or matrix. (Here, items with numbers like \( x_1 \) are user-supplied variables.)

Miscellaneous

\( q() \): quit
\( \leftarrow \): assign
\( \text{install.packages("package1"}) \): install package1
\( m1[,2] \) or \( m1[c(2,3,4,5)] \): columns 2–5
\( m1$a1 \): variable \( a1 \) in data frame \( m1 \)
\( \text{NA} \): missing data
\( \text{is.na} \): true if data missing
\( \text{library(mva)} \): load (e.g.) the mva package

Help

\( \text{help(command1)} \): get help with command1 (NOTE: USE THIS FOR MORE DETAIL THAN THIS CARD CAN PROVIDE.)
\( \text{help.start()} \): start browser help
\( \text{help(package=mva)} \): help with (e.g.) package mva
\( \text{apropos("topic1") and help.search("topic1")}: commands relevant to topic1
\( \text{example(command1)} \): examples of command1

Input and output

\( \text{source("file1")} \): run the commands in file1.
\( \text{read.table("file1")} \): read in data from file1
\( \text{scan(x1)} \): read a vector \( x1 \)
\( \text{download.file("url1"}, \text{url.show("url1")}, \text{read.table.url("url1")} \): remote input
\( \text{sink("file1")} \): output to file1, until \( \text{sink()} \)
\( \text{write(object1, "file1")} \): writes object1 to file1
\( \text{write.table(dataframe1,"file1")} \): writes a table

Managing variables and objects

\( \text{attach(x1)} \) \( \text{detach(x1)} \): put (remove) \( x1 \) in search path
\( \text{ls()} \): lists all the active objects.
\( \text{str(object1)} \): print useful information about object1
\( \text{rm(object1)} \): remove object1
\( \text{dim(matrix1)} \): dimensions of matrix1
\( \text{dimnames(x1)} \): names of dimensions of \( x1 \)
\( \text{length(vector1)} \): length of vector1
\( 1:3 \): the vector 1, 2, 3
\( c(1,2,3) \): creates the same vector
\( \text{rep(x1,n1)} \): repeats the vector \( x1 \) \( n1 \) times
\( \text{cbind(a1,b1,c1), rbind(a1,b1,c1)} \): binds columns or rows into a matrix
\( \text{merge(df1,df2)} \): merge data frames
\( \text{matrix(vector1,r1,c1)} \): make vector1 into a matrix with \( r1 \) rows and \( c1 \) columns

Statistics

\( \text{max()}, \text{min()}, \text{mean()}, \text{median()}, \text{sum()}, \text{var()}: \) as named
\( \text{summary(data.frame)} \): prints statistics
\( \text{rank()}, \text{sort()}: \) rank and sort
\( \text{ave(x1,y1)} \): averages of \( x1 \) grouped by factor \( y1 \)
\( \text{by()}: \) apply function to data frame by factor
\( \text{apply(x1,n1,function1)} \): apply \( \text{function1} \) (e.g. mean) to \( x \) by rows (\( n1=1 \)) or columns (\( n1=2 \))
\( \text{tapply(x1,list1,function1)} \): apply \( \text{function} \) to \( x1 \) by \( \text{list1} \)
\( \text{table()} \): make a table
\( \text{tabulate()} \): tabulate a vector

Basic statistical analysis

\( \text{aov()}, \text{anova()}, \text{lm()}, \text{glm()}: \) (generalized) linear models, anova
\( \text{t.test()} \): \( t \) test
\( \text{prop.test()}, \text{binom.test()}: \) sign test
\( \text{chisq.test(x1)}, \text{chi-square test on matrix x1} \)
\( \text{fisher.test()} \): Fisher exact test
\( \text{cor(a)} \): show correlations
\( \text{cor.test(a,b)} \): test correlation
\( \text{friedman.test()} \): Friedman test
\( \text{prcomp()}: \) principal components
\( \text{kmeans()} \): kmeans cluster analysis
\( \text{factanal()}: \) factor analysis
\( \text{cancor()}: \) canonical correlation

Graphics

\( \text{plot(), barplot(), boxplot(), stem(), hist()}: \) basic plots
\( \text{matplot()}: \) matrix plot
\( \text{pairs(matrix)} \): scatterplots
\( \text{coplot()}: \) conditional plot
\( \text{stripplot(): strip plot} \)
\( \text{qqplot()}: \) quantile-quantile plot
\( \text{qqnorm(), qqline()}: \) fit normal distribution