```
R version 4.3.1 (2023-06-16 ucrt) -- "Beagle Scouts"
Copyright (C) 2023 The R Foundation for Statistical Computing
Platform: x86 64-w64-mingw32/x64 (64-bit)
R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.
         Natural language support but running in an English locale
R is a collaborative project with many contributors.
Type 'contributors()' for more information and
 'citation()' on how to cite R or R packages in publications.
Type 'demo()' for some demos, 'help()' for on-line help, or
 'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.
[Previously saved workspace restored]
> rm(list = ls())
> x <- c(-76.17,-70.26,-79.16,-75.1,-75.62,-53.39,-65.75,-45.79,-61.79,-34.85,-36.08,-31.14,-34.9
3, -38.46, -57.29, -48.4, -59.43, -54.53, -51.34, -108.78, -108.02, -110.19, -109.69, -117.09, -101.07, -100.69, -101.07, -100.69, -101.07, -100.69, -101.07, -100.69, -101.07, -100.69, -101.07, -100.69, -101.07, -100.69, -101.07, -100.69, -101.07, -100.69, -101.07, -100.69, -101.07, -100.69, -101.07, -100.69, -101.07, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.69, -100.
9, -101.44, -103.12, -103.59, -102.64, -105.78, -100.46, -101.43, -105.72, -95.55, -98.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -94.99, -95.28, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -91.26, -
 .3, -19.36, -17.71, -18.49, -20.69, -19.31, -43.03, -43.51, -41.55, -33.43, -41.78, -93.73, -118.68, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69, -126.69,
145.02, -118.25, -81.98, -83.32, -71.87, -80.41, -72.93)
> y < c(-14.4,-12.9,-13.9,-13.9,-14.4,-14.6,-14.4,-12.9,-14.4,-15.7,-15.6,-16.3,-15.7,-15.7,-15.
9, -15.7, -15.9, -16.2, -16.4, -18.1, -18.4, -18.2, -17.6, -18.4, -17.7, -17.8, -17.7, -18.2, -17.8, -17.1, -17.1
 ,-17,-16.8,-16.9,-16.8,-16.8,-17.2,-17,-16.8,-13.1,-13.6,-13.9,-13.2,-13.7,-13.3,-13.3,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-13.8,-
1,-13.1,-15.6,-15.5,-15.3,-15.8,-15.2,-15.1,-15.6,-15.1,-15.2,-15.6)
> cor.test(x, y,alternative = "two.sided", method = "spearman", exact=FALSE )
                                     Spearman's rank correlation rho
data: x and y
S = 11452, p-value = 9.006e-09
alternative hypothesis: true rho is not equal to 0
sample estimates:
                           rho
0.6653313
> # ---- Confidence interval ----
> if(!"RVAideMemoire" %in% installed.packages()) {install.packages("RVAideMemoire")}
> library(RVAideMemoire)
*** Package RVAideMemoire v 0.9-83-3 ***
> spearman.ci(x,y)
                                     Spearman's rank correlation
data: x and y
1000 replicates
95 percent confidence interval:
  0.4840591 0.8046880
sample estimates:
                          rho
0.6653313
```