

Introduction to R — Fall 2007

Homework Set # 4

Begin the homework session by executing the following command in *R*:

```
source("http://www.nd.edu/~steve/Rcourse/hmwrkData/hmwrk4Data.R")
```

This will define the variables x_1 , x_2 , x_3 , z_1 , z_2 .

Exer. 4.1. Test the null hypothesis that x_1 and x_2 have the same mean. Use a test that is appropriate for the distributions and variances of the two variables. I do not expect you to submit any graphics you produce, however you must show that you generated them.

Exer. 4.2. Same as above but use x_3 and x_2 . In addition, what does the t test estimate as the mean of x_3 ?

Exer. 4.3. Repeat for z_1 , z_2 .

Exer. 4.4. Write a function that, given a vector v computes the product of all the entries in v . (There is a function in *R* that does this, but I want you to write one yourself.)

Exer. 4.5. Write a function that, given a list L , each of whose components is a vector, returns an integer vector len , such that for each i , $len[i]$ is the length of $L[[i]]$.

Exer. 4.6. Write a function in one variable n that randomly samples n numbers from a normal distribution with mean 2 and standard deviation 2.