

Homework 2, Math 167R

1.
 - a. Use an appropriate r-function to list the arguments of function **runif()**.
 - b. Write r-code that generates 10 random numbers from $U[-1,1]$, the uniform distribution on $[-1, 1]$, using position matching.
 - c. Write a line that generates 10 random numbers from $U[-1,1]$, the uniform distribution on $[-1, 1]$ using exact matching.
2. Review algebraic and logical operators in r (“Introduction to Functions”). Write r-code that evaluates the following expression.

$2^{-9 \bmod 4}$ is the same as $\sqrt{64}$ and $2^{-9 \bmod 4}$ is not equal to $\log_2 32$

Note: This is a single (not two or more) expression whose value is either true or false.

3. Create the following function:

$$G(u) = \begin{cases} u, & u \leq 2 \\ u + 1, & 2 < u \end{cases}$$

Evaluate (in R) $G(0), G(2), G(3)$ and display the results.

4.
 - a. In the global environment, create a new environment called **my_env**. Within **my_env** create variable x with value 2 and function $f(y) = x^y$. Once again, x and f are the objects of **my_env** (not the global one). Next, evaluate $f(5)$.
 - b. Write r-code that lists the objects of **my_env**.
 - c. Write r-code that displays the enclosing environment for f .
 - e. What is the binding environment for f ? You are welcome to provide its memory address.
 - d. Let's explore function **rm()**. It helps to remove objects from an environment. For example,

`rm(list=ls())`

removes all objects of the global environment. Functions **rm()** and **ls()** both have option **envir**. Find a way to remove all objects of **my_env** (without of course deleting the environment) using **rm()** with options **envir**, **list**, and function **ls()**. Check your work by listing the objects of **my_env**.