

## 5. Problem Statement

1. Create an  $m \times n$  matrix with `replicate(m, rnorm(n))` with  $m=10$  column vectors of  $n=10$  elements each, constructed with `rnorm(n)`, which creates random normal numbers.

### NOT Discussed in the Class

Then we transform it into a dataframe (thus 10 observations of 10 variables) and perform an algebraic operation on each element using a nested for loop: at each iteration, every element referred by the two indexes is incremented by a sinusoidal function, compare the vectorized and non-vectorized form of creating the solution and report the system time differences.