

# Introduction to Computational Statistics INSH 5301

*Homework 01*

*01/01/2020*

PLEASE copy and paste the whole question number and text into submission so I can grade easily.  
When I grade easier, you might get better grade!

- 1.a. Create two vectors named `v1` and `v2`, where `v1` is the sequence of integers from 2 to 6, and `v2` is the sequence of integers from 5 to 9.
- 1.b. What is `v2` minus `v1`?
- 1.c. What is the inner product of `v1` and `v2`?
- 1.d. Replace the elements in `v1+v2` that are greater than 10 with the number 0. Show that vector

- 2.a. Create a 5 by 5 matrix with the numbers 1 to 25 as its elements, and call it `m1`.
- 2.b. What is `m1` times `v1`?
- 2.c. What is `v1` times `m1`?
- 2.d. What is `m1` times the transpose of `m1`?

- 3.a. Create a data frame with at least five rows and three columns. The first variable (column) should be dates, the second variable should be strings (characters), and the third variable should be numbers. Name each variable something appropriate and short.
- 3.b. Use `str()` to show that your data frame is appropriately structured
- 3.c. Save it as a csv file, and then reload the data from the csv file
- 3.d. Create a new data frame that is just a subset of your data: the first, third, and last rows, and the first two variables
- 3.e. Replace all the even numbers in the original data frame with 0.
- 3.f. Create a list with `v1`, `v2`, `m1`, and your data frame. Give all the items in that list a name. Now pick out the third item's second item.

4. Using latex equation notation in your `.Rmd` file, write out the quadratic formula, so that in your html file it looks pretty and like the version we all learned in high school. (Eg, see the box in the top right of this wikipedia page) Quadratic Equation)