**REPORT**

**Homework 1: Linear Algebra and Floating Point Arithmetic**

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***Direct Methods for the solution of Linear Systems.***

* RANDOM MATRIX

Given n=100, we get the following graphs:

* VANDERMONDE MATRIX

Given n=15:



For n>=20, we get a singular matrix, which cannot be solved using Numpy’s function *solve()*

Vandermore Matrix's values, by definition gets exponentially bigger with increasing n, so with n=20 we have x^20 which in binary will overflow

* HILBERT MATRIX

Given n=12:



The condition number (both k2 and kinf) starts to rise at n=10

It's the opposite of vandermore, wher evalues gets smaller and smaller for increasing n, reaching the poin where we have underflow

***Floating point operations***

* NEPERO’S NUMBER



