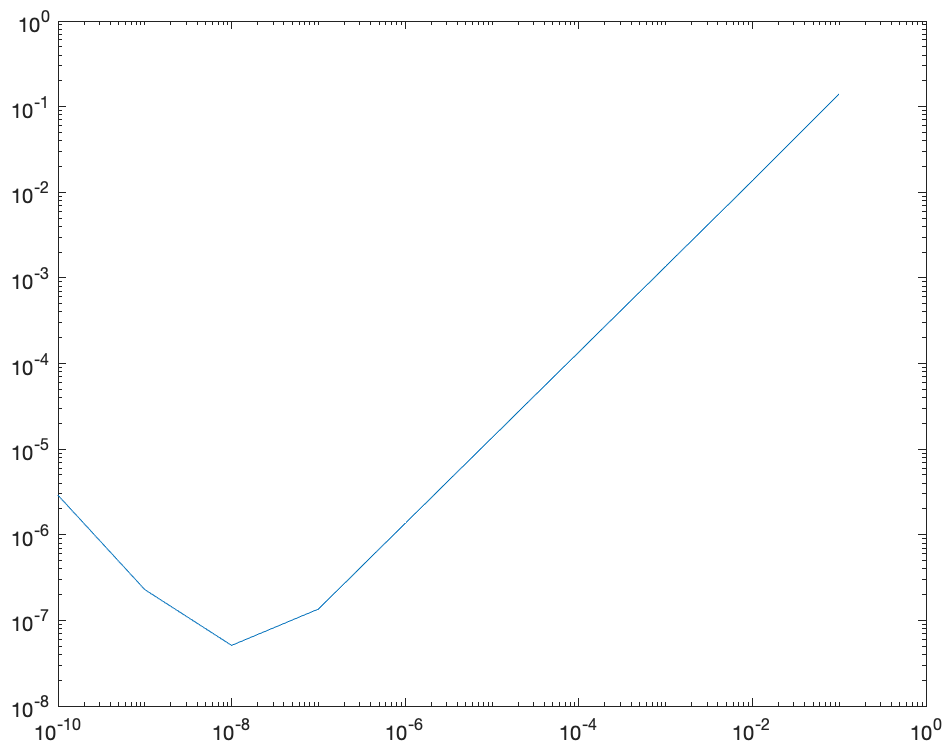# Table of Contents

Assignment 2

Name: Stefano Gonçalves Simao

Date: 02/04/2021

```
clc
clear
```

-----Problem 3-----

```
% a) & b)

% Initialization
x0 = 1;
d = [];
h = [];
err = [];

% Difference quotient
for i = 1:10
    h(i) = 10^(-i);
    d(i) = (exp(x0 + h(i)) - exp(x0))/h(i);
    err(i) = abs(exp(x0) - d(i));
end


% c)

% Visualize
loglog(h,err);
```

-----Problem 6-----

```
% b)

% Test
n = 3000;
A = rand(n,n);
B = rand(n,n);
tic
[C] = matTimesMat_classical(A, B);
toc
norm(C - A * B) / norm(C)
tic
[C] = matTimesMat_column(A, B);
toc
norm(C - A * B) / norm(C)
tic
[C] = matTimesMat_outerProd(A, B);
toc
norm(C - A * B) / norm(C)

Elapsed time is 124.278542 seconds.

ans =

    5.6459e-17
```

```
Elapsed time is 23.321470 seconds.

ans =

   5.6459e-17

Elapsed time is 59.036444 seconds.

ans =

   5.6459e-17
```

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