# Homework 00

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1. No comments or questions.

2. What I learned from the Book **7**

    (a) The preface States it is recommend that a student taking this course be familiar with one year long calculus course, and gave a summary of what numerical analysis is used for approximations and this book is devoted to the techniques.

    (b) In math 24 I was introduced to matrices, solving differential equations and techniques to find roots, graphing was involved such as slope fields. In computing courses I learned how to use IDEs and languages such as Java, C, C++, and how to create functions, implement algorithms, creating loops and conditional statement.

3. Familiarize with MATLAB

    (a) version '9.2.0.556344 (R2017a)', I am planning on using it on my personal computer, it is installed, I do not plan to use the campus labs, unless I need to.

    (b) I have asked.

    (c) I have not used MATLAB before.

    (d) I typed doc on MATLAB on the getting started with MATLAB,I clicked on Desktop basics, to set up my work space and a working directory, I was given example on how to use built in functions such trigonometric functions, on Matrices and Arrays I was shown how to create single and multidimensional arrays. Array indexing on how to access elements and manipulate arrays by using the indices of elements. In graphics examples where given of how to plot and label axis, and built in functions such as polyval.

    (e) The online documentation is the same as the built in documentation in MATLAB, I learned how to initialize arrays, and store variables, multiplying arrays using the ".".

    (f) If I type "help plot" the internal documentation of plot and it gives me the function and examples. I tried "help function" and was given a description of the built in "function" and also examples.

4. I found attending class and reading beforehand useful, I was surprised since other courses do not take into consideration that attending class can be beneficial insight for success. You should give us optional homework problems that do not count for our grade.

1. mysum function

```
function [sum] = mysum(n)
sum = 0;
for i = 1:n
    sum = sum + i;
end
disp(sum)
```

2. myabsolutevalue function

```
function [val] = myabsolutevalue(a)

if a < 0
    a = (-1)*(a);
end
disp(a)
```

3. using fprintf() function

```
function [val] = myabsolutevalue(a)
if a < 0
    a = (-1)*(a);
end
fprintf("%d\n",a)
```

4. vectornorm function

```
function norm = vectornorm(x)
n = length(x);
sum = 0;
for s = 1:n
    sum = sum + x(s)^2;
end
norm = sqrt(sum);
```

5. plot sine and cosine.

```
h = .0001;
x = [-4:h:4];
y = [-2,2]
plot(x,sin(x),'-b','linewidth',2);
hold on;
plot(x,cos(x),'-r','linewidth',2);
ylim(y)
xlabel('x');ylabel('y');
legend('sin(x)','cos(x)')
```

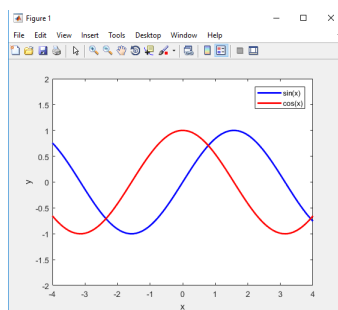

Figure 1: Fig1: Plot Sine Cosine

6. Plot $y = arctan(x)$ in MatLab.

```
h = .0001;
x = [−6:h:6];
y = [−2,2];
plot(x,atan(x), '−b',linewidth',2);
hold on;
ylim(y);
hline = refline([0,1.5]);
hline2 = refline([0,−1.5]);
hline.Color = 'r';hline2.Color = 'r';
xlabel('x');ylabel('y = arctan(x)');
```
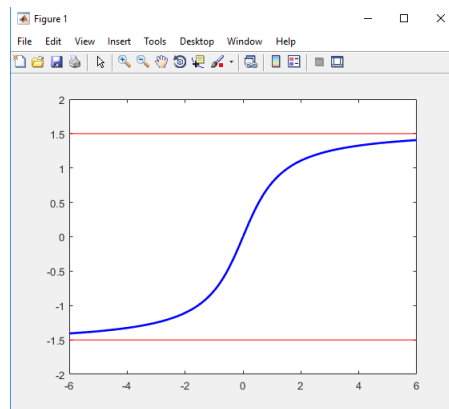


Figure 2: Fig1: Plot Arctan

7. Plotting given data

   (a) Plotting data

```
x = [1:.2:2];
y = [1.0139,.7959,.6249,.4906,.3851,.3023];
plot(x,y);
```

   (b) semilogx, semilogy, loglog.

```
semilogx(x,y);
semilogy(x,y);
loglog(x,y);
```