Stephen Hanna

109097796

HW #1

Problem 1:

Code:

```
%Calculates the distance between two coordinates
a = input('Enter the first coordinate in brackets as [x-
coordinate y-coordinate] > ');
%Takes user input of first coordinate
b = input('Enter the second coordinate in brackets as [x-
coordinate y-coordinate] > ');
%Takes user input of second coordinate
x1 = a(1);
y1 = a(2);
x2 = b(1);
y2 = b(2);
%Assigns values to all variables
d = sqrt((((x2-x1)^2)+(y2-y1)^2));
%Solves for the distance
disp(d)
%Displays value to user
```

Execution:

Enter the first coordinate in brackets as [x-coordinate y-coordinate] > [2 -3]

Enter the second coordinate in brackets as [x-coordinate y-coordinate] > [-8 5]

12.8062

Problem 2:

Code:

```
%Calculates the natural log of 1/(1-x)
x = input('Enter the value of x > ');
%Takes the value of x from the user
while x==x
%This is a while loop to continue to ask the user if they
have an x value
%to input
    if (0<x)&&(x<1)
```

```
        %This is an if statement to confirm the user has
entered a valid
        %value and run the function
        w = log(1/(1-x));
        %This equation determines the value the user
requested
        disp(w)
        %This displays the value the user requested
        x = input('Enter the value of x > ');
        %This requests another x value, if the user desires
one
    else
        x=0;
        %This returns a value of x that stops the while
loop
        disp('That is an invalid value for x')
        %This displays to the user that the value they
entered is invalid
        break
        %This stops the program from running
    end
    %This stops the if statement
end
%This stops the while loop
```

Execution:

Enter the value of x > .5

0.6931

Enter the value of x > 2

That is an invalid value for x

Problem 3:

Code:

```
%This program reads a set of values from a text file and
determines the
%root-mean-square of said values
x = load('-ascii','HW1.txt');
%This loads the matrix in the text file and assigns the
matrix to variable
```

```
%x
s = sum(x.^2);
%This sums the squares of the elements in matrix x
n = numel(x);
%This counts the number of elements in matrix x
ravg = sqrt(1/n*s);
%This calculates the root-mean-square average
disp(ravg)
%This displays the rmsavg to the user
```

Execution:

6.2048

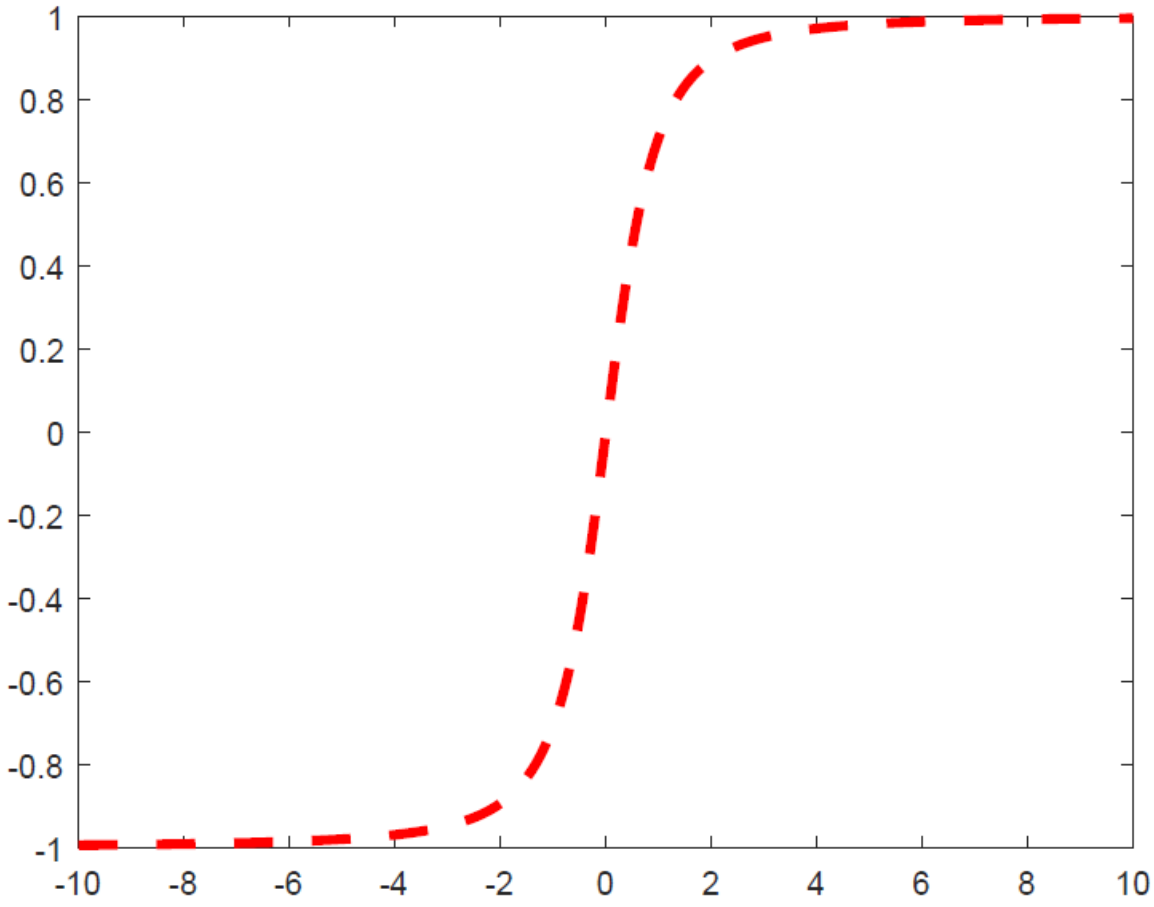
Problem 4:

Code:

```
%This program determines the requested values for the
equation on question
%4 of homework 1 using both a for loop and with vector and
dot operators
for x = -10:.05:10
    %This creates a for loop to run the equation for each
value of x
    y = x/sqrt((x^2)+1)
    %This equation determines the value of y for each x
end
%This ends the for loop
a = -10:.05:10;
%This creates a vector matrix for all necessary values
b = a./sqrt((a.^2)+1)
%This creates a vector matrix for all values of y given
each value of x
plot(a,b,'--r','LineWidth',3.0)
%This creates a plot for all values of a vs b with the
requested parameters
fig = figure(1);
%This changes the handle of the plotted figure to fig
print(fig,'linegraph','-depsc2')
%This creates an eps document of the plot
print(fig,'linegraph','-dpdf')
%This creates a pdf document of the plot, which I did
because my computer
```

```
%couldn't open the eps file format to save the picture in a
word document
%for handing in the assignment
```

Execution:



*****This image was copied from the pdf file that was created of the graph**