CS3113, Fall 2008, Assignment 3

Due October 6, 2008 (before start of class)

For this assignment, you cannot discuss any part with anyone else. You need to work all by yourself. Each problem should be done in a separate script file. Key results must be displayed. Any comments must also be displayed as a message.

When you write a computer program, you should always write it so that it is easy to be modified. For example, you should store the sizes of a matrix in variables rather than directly enter their values in a program. You need to keep this in mind through out this course (and hopefully for the rest of you life). Results that the problems ask for should all be displayed by omitting the semicolons at the end of the relevant statements. Thus by running your submitted programs, one can see all the answers for the problem.

You should use the same file naming convention as before. For example, if your last name is Bush, then you must name the file for homework 2 problem 3 as `BushHW02P03.m`. Submit them using the electronic dropbox in Blackboard.

Problem 1

Write a script to accomplish the following task.

For any given point in 2D, write a script to convert the coordinates from Cartesian to polar representation. Input the Cartesian coordinates, x and y of the point from the keyboard separately. Work with only one input point at a time. Compute and display the radius, r, and the angle, θ, in polar coordinates.

The output angle must be given in degrees, and is required to be in the semi-open interval: $[0, 360^\circ)$. Note that there must be no negative angles, and no angles greater than or equal to 360°. Make sure that your program works for **any** point in the finite 2D plane. Check to make sure that your program works for any special or unusual input point.

You may use these two built-in functions: `sqrt` (the positive square root) and `atand` (the arctan of a number measured in degrees). You need to be aware of the precise domain and range of the `atand` function in MATLAB.