ESC 251 **HW 9** **Due: Sep. 22**

Remember to indent the bodies of your `IF-THEN` blocks. Print out your MATLAB files and remember to include the output from your test runs.

1) (3 pts) Write a program that will ask the user to input the x and y coordinates of a point in the x-y plane. It should then test to see if the point is inside (or on the boundary of) the circle with center at the origin and radius 4. The program should print out appropriate messages like 'point is inside circle' or 'point is not inside circle.' Test your program using the points $(1, 2)$ and $(5, -4)$.

2) (2 pts) An important application of `IF-THEN` statements is *error checking*. Error checking means that you take steps to ensure that a calculation won't fail before attempting to perform it. Examples of this include dividing by zero, taking the square root of a negative number, taking the log of a negative number, etc.

   Write a MATLAB script program that will ask the user to input 2 values a and b. If (and only if) it is feasible to do so, the program should compute the quotient $\frac{a}{b}$ and display the result. Otherwise, the program should print out an appropriate error message. Devise 2 test cases that will test each branch of your `IF-THEN` statement.

3) (3 pts) Write a MATLAB script that will read in a value from the keyboard and print out a message telling the user whether the value is either even or odd. The `mod` function will be useful here.

4) (4 pts) NOTE: You should assume that you are working only with real (not complex) numbers for this problem. Write a program that will ask the user to input a value x and test if the function

$$y = \ln\left(\frac{1}{x^2 + x - 6}\right)$$

   can be computed for that value of x. If y can be computed, the program should print the corresponding value of y. If y cannot be evaluted, the program should print out an appropriate error message. Test your program for two values of x that work and one that does not.