# Hand in date 17th January 2014

Assignment 1

Using Matlab plot the function sin(x)cos(x) and the tangent of the function at a user defined point. Plot both of these data sets on the same graph using symbols for the function and a solid line for the tangent. Set suitable axis and label the plot.

Guide for marks
You should write a Matlab function to take a number between 0 and 2 * pi (or 0 and 360 degrees if you wish) and produce a plot of the function sin(x)cos(x) and the tangent at the value supplied to the function.
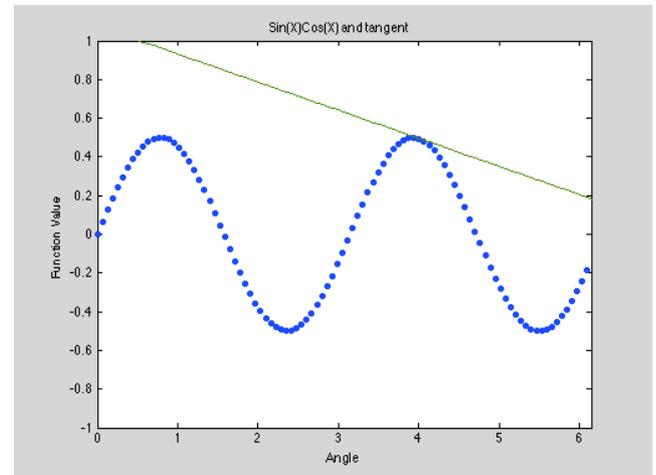
To achieve the maximum marks for this assignment you should make complete use of functions. The original function should call another function, to calculate the data required to build the tangent, this data should be passed back to the original function in order to plot both the tangent and the original function together.
The plotted graph should include a title and have the X and Y axis clearly labelled. The code should also define a sensible area of the plot to display.

Pseudo code
Make sure users input is between 0 and 2 * pi.
Plot the function
Pass the users input to a second function.
      ->The second function should calculate the tangent
The data from the second function is passed back to the original function
The Tangent in plotted on the original graph
The axes are set to make the plot easily readable
The axes are labelled, a title is added and a legend
The function finishes

Hint: The tangent of a function is the straight line passing through the same point with the same gradient and the gradient is dy/dx.

The assignment requires a cover sheet to be handed in with the assignment.
This assignment will consist of;
1.) The Matlab functions you create with each line being annotated.
2.) A short outline of the problem and the solution, as in a normal laboratory report.
3.) A print out of the plot produced by your code.

As well as your assignment, you should also hand in solutions to **two** of the class problems these will have to be annotated showing that you understand how to solve the problems, any output from the code (such as plots or answers to specific questions) should also be included. This will not be marked but you are still expected to hand them in with the assignment.