Math 252   **Area Between Curves Lab**

Goal: To practice setting up integrals to find areas between curves.

F1: Quick Help List   Ctrl F1: Help   F5: Toggle between Math and Text

You will be turning in the worksheet, not a maple document for this lab.

1. Starting in Maple (do this at the top of every Maple worksheet)

   >with(student):   (Loads needed Maple commands
   >with(plots):   : suppresses a display of what loads)

2. To plot multiple functions at once, enclose the list of functions between brackets. For example to plot $y = x - 2$ and $y = -x^2 + 2$ type:

$$plot\left(\left[x - 2, -x^2 + 2\right], x = -5..5\right)$$

3. Plotting graphs implicitly. Some of your formulas will not be in the form y=f(x), but may have both x's and y's or may have x in terms of y. To plot these graphs, you use the command "implicitplots" where you can specify your equation(s), but you also need to specify your x and y ranges. For example, the following makes a graph of $x = y^2$ and $x^2 + y - 4 = 0$ between the range of values

   $x = -5$ to $x = 5$ and $y = $ -10 to $y = 10$

$$implicitplot\left(\left[x = y^2, x^2 + y - 4 = 0\right], x = -5..5, y = -10..10\right)$$

4. Changing the scale on the graph axes:
   a. Put your cursor over the graph and right click.
   b. Choose "Axes" then "Properties"
   c. There is a tab for each of the horizontal and vertical axes where there is a spot to type in the min and max values. If "use data extents" is checked, then you need to first uncheck that box before it will let you type in values for the min and max.
   d. Hit "Apply" when ready.

5. Estimating points on graphs. To see the coordinates of points on a graph (for example if you are trying to estimate the point where two graphs intersect), then do the following:
   a. Put your cursor over the graph and right click.
   b. Choose "Probe Info" then "Nearest point on line"
   c. You should then be able to see the coordinates of the point on the graph.