**Mathematica Assignment #4 – due Wednesday, 12/9**

1. READ Section 4.6 in the textbook; try the examples yourself on Mathematica. (Do NOT turn this part in; this is just background work that you should do to understand the issues involved in graphing “difficult” functions.)

2. Look at practice exercises 1-7 in section 4.6. Try them yourself first, but then take some time to read the answers in the back (and make sure you can reproduce those answers yourself) to see what you need to do.

3. **DO #6 and #8 from Section 4.6.** For each of these, print out and turn in the graph(s) that clearly demonstrate the “important aspects” of the curves. On the printout, label the local extreme(s) and inflection point(s) of the graph(s), and write in their coordinates, rounded to the nearest thousandth.

In addition to the printouts of the graphs, print out the Mathematica worksheet you used to find these coordinates, and turn them in with your graph printouts. (Note: you WILL need to use a computer to find the precise locations of some of these points.)

SUGGESTION: When using the “NSolve” command to find solutions to an equation (e.g., setting a function equal to zero to find its x-intercepts), use the extra option “Reals” to make sure to generate *all* real-valued solutions and avoid complex-valued solutions.

For example: to find all values of x where $y=e^{x}$ and $y=x^{4}$ intersect, use the NSolve command as follows:

**Input: NSolve[E^x == x^4, x, Reals]**

**Output: {{x -> -0.8155534188}, {x -> 1.429611825}, {x -> 8.613169456}}**

Note – compare the preceding result to the result without the “Reals” option…

**Input: NSolve[E^x == x^4, x]**

**Output: {{x -> -0.8155534188}, {x -> -0.2164856257 -
0.9222492295 i},**

**{x -> -0.2164856257 + 0.9222492295 i}, {x -> 1.429611825}}**

What differences do you notice?