Math 299
Fall 2014

Homework 1

Due: Wednesday, September 3.

Directions:

- Do not hand in scratch work.[1] The final version of your solution to each problem should be collocated and stapled.
- Always label every plot if you have any (title, x-label, y-label, and legend).

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1. Finish reading Chaper 0.
2. Find the Find the maximum and minimum values of the function $f(x) = x^3 - 6x^2 + 9x$ on the interval $[0, 4]$. **Prove** that your answer is correct. Use complete sentences, and provide detailed explanations of each step. Remember, this course is about excellent mathematical writing!
3. Finish reading Chapter 2, sections 1-3.
4. For each of the following sentences, determine whether or not each of them constitutes a valid *mathematical statement*
   (a) Go State!
   (b) The number 3 is really cool.
   (c) Fractals are mathematical objects that generate interesting pictures.
   (d) The Cantor set has dimension $\log_2(3)$.
   (e) The number 9 is prime.

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[1] Yes, doing math will require a lot of scratch work! You will rarely be able to correctly answer each question on your first try. For each problem, figure out what the solution is, and then write-up a *final draft* that you hand in.