**Mathematica Problems 1**

Use Mathematica (or Wolfram Alpha if you prefer) to solve the following problems. Please type (or better: use copy-and-paste) your answers into this document if possible. Then submit the finished document via email attachment to me on or before next week Friday.

1. Consider . Find the roots (or zeros or x-intersects) of the function as well as all critical points. Note: Make sure to use **==** to indicate an *equal* sign in Mathematica. Also, you can use either the **Solve** command (to find exact answers if possible) or **NSolve** to find decimal numbers as answers. To find the critical points, you need to set the derivative equal to zero, of course (using **==** as before).
2. If find
3. (b) (c) (d)

Note: Make sure to use the *underscore* after the variable when defining a function on the left side, but the *regular variable only* on the right side (as in **f[x\_] = x^2-1**)

1. Find the first, second, and third derivatives of . Note: make sure your answers are simplified
2. Find all critical and possible inflection points of . Note: make sure to use **NSolve** to find any answers as decimals; ignore any complex numbers.
3. Find the graphs of
4. (Make sure to select a range for so that you can clearly see the max/mins of this graph)