1. We want to make a rectangular box such that the length is 3 times the width, of volume 5 cubic meters. The material costs $1/m^2$ except the top of the box costs $2/m^2$. What dimensions of the box would minimize the cost? Be sure to prove that you have an absolute minimum.
2. A farmer has 240 ft of fence to make 4 side by side identical rectangular pig pens. What dimensions would maximize the total area?

3. Using Newton’s method to find a numerical solution to $x^4 + x - 1 = 0$, write down the recursion, and then use it to find $x_2$ starting with $x_0 = 0$. (Just for fun, if time permits, find a solution to at least 4 decimal places. This requires a calculator or a smart phone.)