Homework 4

1. You can find the temperature inside your refrigerator without putting a thermometer inside. Take a can of soda from the refrigerator, let it warm for half an hour, then record its temperature. Let it warm for another half an hour and record its temperature again. Suppose that the readings are $T(1/2) = 45°$F and $T(1) = 55°$F. Assuming that the room temperature is $70°$F, what is the temperature inside the refrigerator?

2. After operating for 150 days and getting a ticket from the EPA, the company took measures to control the emission rate of mercury pollutants to the level of 10 gram/day. How many more days does it take for the water in the lake to become potable again? (Use the data in the course notes)

(bouns) Figure out the appropriate level of pollutant emission such that the water will stay drinkable forever.

3. Suppose you financed a car of $25,000 with annual interest rate 4% compounded continuously. Suppose you pay the financial agency continuously. Then how much you should pay annually to pay off the debt in 3 years.

4. (bonus) A boy weight 96 lb jumped off from building of height 100 feet with an umbrella as large as 5 square feet. Find out the velocity he touches the ground.

(Comment: Don't be fooled by the cartoon makers who cares nothing about education!)