Assignment #1, Physics 274
Due In Class: Tuesday 25 Jan 2011

For each question, provide a written discussion of how you went about solving the problem. You can use the solutions to the in-class problems as a format model. Don't just write down the final answer! No credit will be given unless to justify how you obtained your answer.

1. Determine the first four isotopes in the decay chain for the following radioactive elements:
   (a) Sr-90
   (b) U-230
   (c) Pb-206
   (d) O-15
   (e) Give a short discussion on which of these would be the “most” radioactive, and which would be the “least” radioactive (and when!). Be sure to explain your reasoning.

2. (a) Determine the decay chain of $^{232}_{90}$Th.
   (b) Argue why it isn’t possible for the final decay product to be Pb-206.

3. A Fermi problem! How many atoms are there in the Earth? Provide a detailed argument, supported with numerical estimates.