MA310 – Homework #2

Due Thursday, February 5

- By Tuesday, January 27, carefully read Chapter 2 of the textbook.

- Read the handout "Review of Problem Solutions" (which will be posted on the course website) for guidance on how to evaluate write-ups of solutions of problems. This will help you in your own solution writing.

1. Suppose you have a number of (normally configured) ducks and cows, with a total of H heads and F feet. How many ducks and how many cows do you have? (Express your answer in terms of H and F.)

2. Write out a solution of the Elevator Problem (#2, textbook, p. 7).

3. Suppose you have a collection of 3^n coins, where n is a positive integer. Assume all coins are of equal weight, except for one that is counterfeit and a little bit heavier. Explain how you can use a two-pan balance scale to perform (at most) n weighings of various piles of coins to determine which coin is counterfeit.

4. Suppose C is a circle with center O and radius r. Assume A and B are two points on the circumference. If angle $\angle AOB$ has measure x, what is the length of chord (line segment) $\overline{AB}$?

5. Find and justify a formula for the sum $1 + 2 + 3 + \cdots + n$, where n is a positive integer.

6. Try out some of the National Library of Virtual Manipulative activities, nlvm.usu.edu. Choose one that you particularly like and write one or two sentences on which one you chose and why.