Math 210, Fall 2015

Collected Homework Assignment #1 – due Tuesday, September 8

Please write all work and answers on a separate sheet(s) of paper. See the class policies for further guidelines on acceptable standards for written work in this class.

1. Let U = {1, 2, … , 29, 30} be the universal set. Define sets A, B, and C as follows:
   A = {2, 3, 8, 9, 14, 15, 20, 21, 26, 27}
   B = the set of numbers that are divisible by 5
   C = {x | x+1 is divisible by 4}

   a) List the elements of B. Separately, list the elements of C.

   b) Describe set C verbally.

   c) Describe set B using set-builder notation.

   d) Draw a Venn diagram for sets A, B, and C with universal set U. Write each element of U in the correct region of the Venn diagram. (Note: make sure to draw your diagram large enough so that all the numbers in U are legible. Use plenty of space – no "postage stamp" diagrams, please!)

   e) List the elements of each of the following sets:
   $$B \cup C \qquad B' \cap C' \qquad (A \cup B)' \qquad A \cup (B \cap C) \qquad (A \cup B) \cap C$$

2. If you were asked to list the elements of the set "$A \cup B \cap C$" (without parentheses), different students might give different answers. Why is this? In other words, why are the parentheses necessary?

Write two different answers that students might reasonably give if asked to list the elements of the set "$A \cup B \cap C$." Briefly (one or two sentences) explain.