Homework 14

Math 302 (section 501), Fall 2016

This homework is due on Thursday, December 1.

0. *(This problem is not to be turned in.)*

   (a) Read Sections 6.6 and 8.5.

   (b) (Practice Problems) Section 6.6 # 7–9, 12

   (c) (Practice Problems) Section 8.5 # 12, 20

1. Section 6.6 # 2, 6(a,b,c), 12

2. Section 8.5 # 6, 8, 10, 16

3. 7 pennies are placed in 3 containers: a bucket, a cup, and a hat.

   (a) *Prove or disprove*: One of the containers will have at most 2 pennies.

   (b) *Prove or disprove*: All of the containers will have at least 2 pennies.

   (c) *Prove or disprove*: One of the containers will have at least 3 pennies.

   (d) *Prove or disprove*: One of the containers will have at least 4 pennies.

   (e) How many possible outcomes are there?

   (f) How many possible outcomes are there, if each container must have at least 1 penny? (*Hint*: First place 1 penny in each container.)

4. Consider the inclusion-exclustion formula for the number of elements in the union of 10 sets A_i. How many terms (such as $|A_1|$) are added, and how many are subtracted?