MATH 113: DISCRETE STRUCTURES
HOMEWORK 13

Due: Friday, February 27 at 10pm.

Problem 1. In a class, 18 students like to play chess , 23 like to play soccer, 21 like baking and 17 like video games. The number of those who like to both play chess and soccer is 9. We also know that 7 students like chess and baking, 6 like chess and video games, 12 like soccer and baking, 9 like soccer and video games, and finally 12 students like baking and video games. There are 4 students who like chess, soccer and baking, 3 who like chess, soccer and video games, 5 who like chess, baking and video games, and 7 who like soccer, baking and video games. Finally, there are 3 students who like all four activities. In addition, we know what every student likes at least one of these activities. How many students are in the class (with explanation)?

Problem 2. Use the principle of inclusion/exclusion to find how many numbers in
$$[200] = \{1, 2, \ldots, 200\}$$
are multiples of 2, 3, 5, or 7? (Show your work.)

Problem 3. Your Reed account requires a password that uses only the letters X, Y, and Z and must use each letter at least once. How many possible passwords of length 10 are there?