Homework 12

Math 302 (section 501), Fall 2016

This homework is due on Thursday, November 17.

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

   (a) Read Sections 6.2–6.3

   (b) (Practice Problems) Section 6.2 # 1–3, 6, 8, 15, 20, 27, 28

   (c) (Practice Problems) Section 6.3 # 1–6, 23–25, 32, 36

1. Section 6.2 # 4, 16, 22

2. Section 6.3 # 18(c), 22(a,c,d)

3. *Prove or disprove*: If there are 30 students in a class, at least 6 will receive the same grade (the possibilities are A, B, C, D, and F).

4. How many ways are there to assign grades (A, B, C, D, F) to 4 students? What if no 2 students receive the same grade?

5. *Prove or disprove*: Consider a group of 5 people, where any 2 are either friends with each other or enemies of each other; then there are 3 mutual friends (3 people any 2 of which are friends) or 3 mutual enemies.

6. How many bit strings of length 8 contain six 1's or six 0's?

7. (a) In how many orders can 4 runners finish a race if no ties are allowed?

   (b) In how many orders can 4 runners finish a race if ties *are* allowed? (Two-way, three-way, and four-way ties are permitted.)