

## Math 2001: PHW6

1. From the book do:
  - 3.1: 2, 6
  - 3.2: 6
  - 10: 2, 6
2. The genetic code can be viewed as a sequence of four letters  $T$ ,  $A$ ,  $G$ , and  $C$ .
  - (a) How many 6-letter sequences are there?
  - (b) How many 6-letter sequences are palindromic (the same when read in the reverse order)?
3. How many ways can 6 men and 6 women be seated at a table with 12 place settings such that gender alternates as one goes around the table?
4. Suppose one has  $\ell$  tasks, and suppose for  $1 \leq j \leq \ell$  task  $j$  has  $m_j$  different ways of being completed. Use induction to show that the total number of ways to complete a sequence these  $\ell$  tasks is  $m_1 m_2 \cdots m_\ell$ .