

Math 2001: Homework P7

Due: October 21, 2009

1. From the book do problems:
 - (a) 1.3: 4, 7
 - (b) 4.2: 4, 7, 8 (Note you may leave answers in terms of binomial coefficients).
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 ℓ 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 ℓ tasks is $m_1 m_2 \cdots m_\ell$.