

ASSIGNMENT 8

ECE 103 (Spring 2009)

Due in tutorial on Monday, July 13.

1. How many distinct strings of five letters can be made from each of the following words? (You may use a given letter at most the number of times it appears in the original word.)
 - (a) FIRST
 - (b) COMPUTER
 - (c) CLASS
 - (d) [bonus problem] ENGINEERING
2. Determine the values of each of the following:
 - (a) $\binom{10}{0}$
 - (b) $\binom{12}{1}$
 - (c) $\binom{13}{4}$
 - (d) $\binom{11}{9}$
3. How many possible hands of 5 cards each can be dealt to 4 players using a deck of 52 cards?
4. What is the coefficient of x^{10} in $(2x^2 - \frac{3}{x})^8$?
5. Prove by induction that for any $n, r \in \mathbb{N}$ with $n \geq r$, $\sum_{j=r}^n \binom{j}{r} = \binom{n+1}{r+1}$.