

**CSCI- B609**  
**Homework 1**

Due 01/31/13 in class.

1. Show that in CS inequality, equality occurs if and only if  $(a_1, \dots, a_N) = k(b_1, \dots, b_N)$  for some constant  $k$ .
2. Give algebraic proofs for the following identities:
  - (a)  $\binom{n}{k} = \binom{n}{n-k}$
  - (b) Pascal Triangle
3. Prove identities 1.11, 1.12 on page 9 of the textbook.
4. Problems 1.2,1.5,1.9,1.10,1.12,1.14,1.15 from the textbook.