

Math 311 — Homework 2

SEPTEMBER 8, 2008

Instructions.

Provide complete solutions to the following problems. Show your work:

- **Problems:** Pages 15–18 numbers 4, 6, 8, 11, 13, 15, and 18.
- **Theoretical Exercises:** Pages 19–22 number 10e.

- Show

$$\sum_{k=1}^n k \binom{n}{k} = n2^{n-1}$$

Hint: Review the binomial theorem, use differentiation, and remember that $1 + 1 = 2$.

- Show

$$\binom{n}{r} = \binom{n}{n-r}$$

Explain what this means in terms of the groups of items you are selecting.