

# Math 262 Reading Guide

Section 4.3

NAME \_\_\_\_\_

Read from the beginning of Section 4.3 up to the Section 4.3.1 heading (pages 264–268 in the Second Edition). Answer the following questions. *Hand in this worksheet at the next class.*

1. Let  $X_1, \dots, X_n$  be random variables, and  $a_1, \dots, a_n, b$  be constants.

(a) What can you say about  $E(a_1X_1 + \dots + a_nX_n + b)$ ? Does it matter whether the  $X_i$  are independent?

(b) What can you say about  $\text{Var}(a_1X_1 + \dots + a_nX_n + b)$  if the  $X_i$  are not independent?

(c) If the  $X_i$  are independent, how does your answer to (b) simplify?

2. How does Example 4.18 use the Theorem on the previous page?

3. How does Example 4.19 use the Theorem to easily find the mean of a hypergeometric random variable?

4. What does the Corollary say about  $E(X_1 - X_2)$  and  $\text{Var}(X_1 - X_2)$ ?