

Math 6409 - Fall 2008

Homework # 2

Due September 11, 2008

1. Let A be a set with m -elements and B be a set with n -elements.

a. How many functions from A to B are there?

b. How many *one-to-one* functions from A to B are there?

c. How many *onto* functions from A to B are there?

d. How many *bijective (one-to-one & onto)* functions from A to B are there?

2. Consider the state MISSISSIPPI.

a. How many permutations of the letters are there?

b. How many 10-permutations of the letters are there?

c. How many 9-permutations of the letters are there?

3. Show that $C(n+2, r+2) = C(n, r+2) + 2 \cdot C(n, r+1) + C(n, r)$;

a. Combinatorially;

b. Algebraically.