

**Math 301**  
**Quiz 3**  
**Fall 2007**

20 points possible. (You may leave your answers unsimplified and unevaluated.)

1. (2 pts.) Determine the number of ways of arranging the letters of the following word.

HUMUHUMUNUKUNUKUAPUAA

2. (3 pts.) How many different equivalence relations are possible on a three-element set?

3. (3 pts.) How many different anagrams (including nonsensical words) can be made from ZACEFRON given that all three vowels must remain in alphabetical order (but not necessarily contiguous with each other).

4. (3 pts.) How many different partitions with exactly two parts can be made of the set  $\{1, 2, 3, \dots, 30\}$ , if each part must have 15 elements?

5. (3 pts.) How many subsets of  $\{1, 2, 3, \dots, 8\}$  contain exactly 3 elements?

6. (3 pts.) In how many ways can one choose 10 people from 25 people and seat them in a circle?

7. (3 pts.) Using an ordinary 52-card deck, how many 7-card hands are there with 3 cards of one rank, 3 cards of another rank, and one card of yet another rank?