CSC 4-151 Discrete Mathematics for Computer Science

Quiz 6 December 17, 2014

Solution

Name

No calculators are allowed. You may leave your answer in power, factorial, or combinations format.

1. (4 pts.) Let A = {1,2,3} and B={a,b,c,d,e}.

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

5^3

b. How many 1-1 functions are there from A to B?

$5 \cdot 4 \cdot 3 = P(5,3)$

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

0

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

$3^5 - 3 \cdot 2^5 + 3 \cdot$ see p561

2. (2 pts.) a. How many strings of six English capital letters are there that start with T, if letters can be repeated?

26^5

b. How many strings of six English capital letters are there that start with SO, if letters cannot be repeated?

$24 \cdot 23 \cdot 22 \cdot 21 = P(24,4)$

3. (2 pts.) What is the coefficient of a^9b^7 in the expansion of $(a + b)^{16}$?

$C(16,7)$

4. (2 pts) What is the smallest number of people that can be in a room so that you can guarantee at least 3 share birthday months?

25 since $\lceil \frac{25}{12} \rceil = 3$