Math 112 - Quiz 8

April 12, 2017

Name Key

Score

Show all work to receive full credit. Supply explanations when necessary.

1. (2 points) A restaurant customer orders the soup and salad combo from which she can choose from 5 kinds of soup, 4 types of salad, and 7 drinks. How many different meals are there?

$5 \times 4 \times 7 = 140$

2. (3 points) The letters $\underbrace{\text{A, B, C, D, E, F, and G}}_{\text{7 LETTERS}}$ are used to form a 3-letter code.

   (a) How many possible codes are there if letters cannot be reused?

   $7 \times 6 \times 5 = 210$

   (b) How many possible codes are there if letters can be reused?

   $7 \times 7 \times 7 = 343$

3. (3 points) Compute each of the following.

   (a) 5!

   $5 \times 4 \times 3 \times 2 = 120$

   (b) $\frac{100!}{98!} = \frac{100 \times 99 \times \cancel{98!}}{\cancel{98!}} = 9900$

   (c) $\frac{15!}{3!\,12!} = \frac{\overset{5}{\cancel{15}} \times \overset{7}{\cancel{14}} \times 13 \times \cancel{12!}}{\cancel{3} \times \cancel{2} \times \cancel{12!}} = 5 \times 7 \times 13 = 455$

4. (2 points) List two different permutations of the $(1, 2, 3, 4)$. How many different permutations are there?

$(4, 3, 2, 1)$

$(3, 4, 1, 2)$

THERE ARE $4 \times 3 \times 2 \times 1$

$= 24$ PERMUTATIONS