

MAT 145, Spring 2020
Homework 3

Due before 12:10 on Monday, April 20

Please write the homework solutions in connected sentences and explain your work. Mark the answers to each question. Scan or take pictures of your homework and upload it to Gradescope before due time.

1. (20 points) How many anagrams can you make from the word COMBINATORICS ?
2. (20 points) In how many ways can you distribute n pennies to r children if each child is supposed to get at least 2?
3. (20 points) Find the value of k for which $k\binom{99}{k}$ is the largest.
4. (20 points) Find the coefficient at x^2yzw^7 in the expansion of

$$(x + y + z + w)^{11}.$$

5. (20 points) Find the sum

$$\binom{3}{3} + \binom{4}{3} + \dots + \binom{n}{3}$$

for all $n \geq 3$.