Graph Theory and Combinatorics MATH-42021/52021.
Home Work 8, due on Saturday, July 4
Instructor: Prof. Artem Zvavitch
8 problems, 2pts each, YES 6 points extra!

Problem 1. *How many 8-digit sequences are there involving exactly six diferent digits?*

Problem 2. *Show that*
$$\sum P(10; k_1, k_2, k_3) = 3^{10}$$
where k_1, k_2, k_3 are non-negative integer numbers such that $k_1 + k_2 + k_3 = 10$

Problem 3. *How many arrangements are there of TINKERER with two but not three consecutive vowels?*

Problem 4. *How many ways there to distribute 20 different toys among five children? What if two children get 7 toys and three children get 2 toys? What if each child getting 4 toys?*

Problem 5. *Hoe many distributions of 24 different objects into three different boxes are there with twice as many objects in one box as in the other two combined?*

Problem 6. *How many numbers between 0 and 10000 have a sum of digits equal to 7? Less than or equal to 7?*

Problem 7. *How many integer non-negative solutions are there to $x_1 + x_2 + x_3 + x_4 + x_5 = 28$? what if we assume that all solutions are positive?*

Problem 8. *How many nonnegative integer solutions are there to the pair of equations $x_1 + x_2 + x_3 + x_4 + x_5 + x_6 = 29$ and $x_1 + x_2 + x_3 = 13$.*