MATH 102: IDEAS OF MATH

WORKSHEET 13

Problem 1. Prove that the minimum number of moves in the problem of tower of Hanoi is
$$2^n - 1\,.$$

Problem 2. Given n lines, what is the maximum number of regions can the lines divide into?

Prove the formula that you conjecture using induction.

Problem 3.
(1) How many ways can you arrange 2 people into 2 chairs? 3 people into 3 chairs? How about 5 people into 5 chairs?
(2) How many ways can you arrange 5 people into 3 chairs?

Problem 4. Typically, a basketball team has 12 members. However, in a game, there can be only 5 people on the court. How many ways can the coach choose 5 people from 12 for the starting line-up?