Notes

March 24, 2014

homework

#10

looking for solutions to $x_1 + x_2 + \cdots + x_k = r, 0 \leq x_i \leq n_i$. If there is a solution to this equation that satisfies this, then you should be able to use in/ex principle to show that the intersection is $\emptyset$. $A_i =$ solutions to plynomial such that $x_i > n_i$. Show that $A_1 \cap A_2 \cap \cdots \cap A_k = \emptyset$

#24a

find # of ways to place 6 nonattacking rooks on the board shown. $= 6! - r_1 5! + r_2 4! - r_3 3! + r_4 2! - r_5 1! + r_6 0!$

$$r_i = \qquad \text{# of ways to place } i \text{ rooks on forbidden positions}$$
$$r_1 = 6 \qquad \text{number of forbidden positions}$$
$$r_2 = \binom{3}{2} \cdot 2^2 \qquad \text{pick 2 rows, pick one of 2 spots in each row}$$
$$r_3 = 2^3$$
$$r_4 = 0$$
$$r_5 = 0$$
$$r_6 = 0$$

project fun time

inverse of a permutation.

$$321547896$$
$$123456789$$
$$321549678$$

use combinatorial collection template to edit.

resources

sage reference manual, wolfram mathworld, wikipedia, arxiv.org
    links in statistic thingie to oeis
    link from wiki to statistics page.
    dyck paths and permutations are most well developed examples. example: [[St000013]]