

## Part 1

$$n_{\text{real}} = \frac{N!}{\prod_{j=1}^k j^{\alpha_j} \alpha_j!}$$

$\uparrow$  within cycles                       $\leftarrow$  permutations of whole cycles.

## Part 2

$$N=4$$

(i) Partition long

$$[\lambda_1, \lambda_2, \lambda_3, \lambda_4]$$

$$\lambda_i \geq \lambda_{i+1} \geq 0$$

(ii) Partition short

$$[4]$$

(iv) cycle structure

$$(\cdot) (\cdot) (\cdot) (\cdot)$$

(iii) Young frame



(v) Parity +

$$(vi) \# \text{ in conjugacy class } \frac{4!}{1^4 4!} = 1$$

$$(vii) e = (1)(2)(3)(4)$$

List of elements in conjugacy class

(1)  $[3, \downarrow, 00]$

(2)  $[3, 1]$

(3) 

(4)

(5)

(6)

(7)