

① Guido Grandi,

father gives a thing to two sons, and sons can keep thing one year at a time, then one son ~~has~~ have a half

② Voltaire

③ Joseph Lagrange

④ false — 1 to 1 |  $\phi$  mener  
 2 to 2 | 1 iteration  
 3 to 3 | 1 iteration  
 4 to 4 | 2 iteration  
 5 to 1 | 2 im  
 Report  
 memo

so gcd of (1, 2) is  $\mathbb{Z}^2$  is identity matrix

⑤ look at rank space of linear at inversions

row number + column - 2 ≤

$$3 + 3 - 2 = 4$$

If you exchange any two entries, row space and column space and all other stay same. It's always odd

There are two types of moves

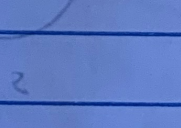
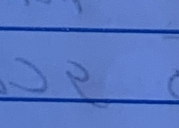
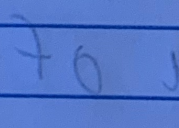
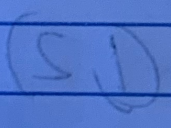
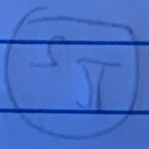
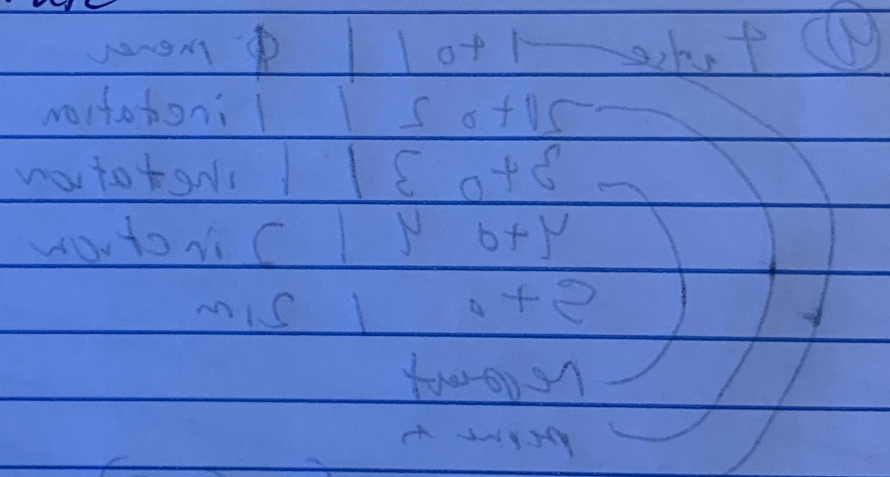
(i) swapping horizontal particles

taxi cab changes parity

so parity is same

(ii) it remains the same and permutation  
to say same so Le even

Therefore it's impossible, even  
initial state



Look at the diagram

row number + column - 1

$$(1) = 1 - 1 = 0$$

If number of changes is odd then it's impossible