

1. Guido Grandi

He proved it by looking at the case when a father gives his two sons a gem and asks them to each split it for half the year.

2. Pierre de mairpertsins ; D'Alembert

3. Friedrich the Great

4. $(19)(28)(37)(456) \quad i = \text{lcm}(2,3) = 6$

Since the cycles are of orders 2 and 3.

5. The number of inversions is 1, but the taxicab distance of the blank space remains the same. It has been concluded that on any move, the taxicab distance would change by an odd number as well as the number of inversions, hence the invariant (taxicab distance + number of inversions) would be even. But, in this case it is $4 + 1 = 5$. So, there is no legal move that would allow this to happen.