Question 4

Teng Long

February 10, 2017

proposition: every odd natural number has the form 4n+1 or 4n+3

proof: we prove by using division theorem.

1. According to division theorem. every natural number is one of 4 forms of $4n, 4n+1, 4n+2, 4n+3$

2. $4n, 4n+2$ are even numbers. as $4n = 2*2n$ and $4n+2 = 2(2n+1)$ 3. $4n+1, 4n+3$ are odd numbers as $4n+1 = 2*2n+1$ and $4n+3 = 2(2n+1)+1$

4. Therefore, we proved that any natural number is one of 4 forms, 2 of them are even and 2 of them are odd.

5.**conclusion:** every odd natural number has the form $4n+1$ or $4n+3$