1. $f(x) = ax^2 + bx + c$, where a, b, c are known integers. For odd number m, $am^2 + bm + c$ is odd number and c is also odd number. Please prove for $ax^2 + bx + c = 0$, x would not be an odd number.
2. a, b, c, d are 4 natural numbers, and a + b + c + d = 1989, please prove $a^3 + b^3 + c^3 + d^3$ are not even number.
3. a, b are two integers and b would not equal 0. If integer q, then a = b * q, then we can say a is divisible by b, written as b|a. Now we know 7|(13x + 8y), please prove 7|(9x + 5y).
4. We know m and n are odd numbers. When 4|k, please prove $8|(m^k - n^k)$.