**1.**   
The sum of an even number and odd number is odd.

The product of two odd numbers is odd.

The square of an even number is even.

**2.**

Show that does not have positive integer solutions.

or

Prove by Mathematical Induction that for any positive integer number is divisible by 3.

Step 1. Show that is divisible by 3 when

, 3 is divisible by3.

Step 2. Assume = 3m is true for

Step 3. Prove is true for

h. n.