**Mathematical Proof**

Remember:

* Proof by deduction is to prove directly using logical steps.
* Proof by exhaustion is to prove the statement is true for all cases.
* Disproof) by counter example is to find an example that shows that the statement is false.

1. Prove, by deduction that
2. Prove, by exhaustion that no square number ends with an 8
3. Use a counter example to prove the following statement is not true. If x and y are real numbers,
4. Prove, by deduction that the product of any two odd numbers is odd
5. It is suggested that for every prime number , is also prime. Give a counter example to disprove this statement
6. Prove, by deduction that if is any constant and , then for all values of
7. Prove, by deduction that the sum of the squares of any two consecutive integers is an odd number.
8. Give a counter example for the following statement. If x and y are irrational real numbers then xy is also irrational.
9. Prove, by deduction that if x and y are real numbers,