PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY
Department of Applied Science & Humanities
3rd Semester B. Tech (CSE, IT)
Discrete Mathematics (203191202)
Tutorial -3b Proof Technique

1	Use a direct proof to show that, If x is an even integer then x^2 is an even integer
2	Prove that if n is an integer and $3n + 2$ is even, then n is even using a) a proof by contraposition. b) a proof by contradiction.
3	Prove that $\sqrt{2}$ is irrational by giving a proof by contradiction.
4	Show that these statements about the integer n are equivalent: $P_1: n \text{ is even.}$ $P_2: n - 1 \text{ is odd.}$ $P_3: n^2 \text{ is even.}$
5	Use a direct proof to show that the product of two odd numbers is odd.
6	Prove that there are no positive perfect cubes less than 1000 that are the sum of the cubes of two positive integers.
7	Prove that the sum of 5 consecutive integers is always divisible by 5.