Assignment 1

Theory Of Computation

Unit - 1

1. Define Mathematical Induction Principle and Prove that for every $n \geq 1$,,$n \Sigma i^2 = n (n+1)(2n+1) / 6$.
2. Define one-to-one, onto and bijection function .
3. Explain reflexivity, symmetry, and transitivity properties of relations.
4. Write the principle of Mathematical Induction. Prove using mathematical induction that for every $n \geq 0$,

$$\sum_{i=1}^{n} \frac{1}{i\,(i+1)} = \frac{n}{n+1}$$

(Consider the sum on the left is 0 for n = 0)