TUTORIAL I
Discrete Structures (CS21001)

Autumn Semester 2014

(a) Is this relation transitive and symmetric

{(1,2), (2,3), (1,3), (2,1)}

(b) Prove that power set of a transitive set is transitive.

(c) Let A, B, and C be 3 events associated with a random experiment. Express the following verbal statements both in set theory notation and by means of Venn diagrams:

(a) At least 1 of the events occurs;
(b) Exactly 1 of the events occurs;
(c) Exactly 2 of the events occur;
(d) Not more than 2 of the events occur simultaneously;
(e) All of the events occur;
(f) None of the events occur.

(d) Prove that for all sets A, B, and C,

$A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

(e) Give an example of a relation which is not reflexive, not symmetric, not antisymmetric, and not transitive on a set {1,2,3}