

Discrete Mathematics — Tutorial Sheet 04 — Relations

BSc (H) in App Comp, Ent Sys, Comp Foren, and the IoT

Intro/Onto and One-to-One

See questions in notes.

Question 1

For each of the following relations R defined on set $A = \{1, 2, 3, \dots\}$, determine which of the given ordered pairs belong to R

(a) $(x, y) \in R$ iff $x|y$; $(2, 3), (2, 4), (2, 8), (2, 17)$

(b) $(x, y) \in R$ iff $x \leq y$; $(2, 3), (3, 2), (2, 4), (5, 8)$

(c) $(x, y) \in R$ iff $y = x^2$; $(1,1), (2, 3), (2, 4), (2, 6)$

Properties of Relation on a Set

Question 2

Consider the relations represented in the following graphs.

- Determine whether the given relations are reflexive, symmetric, antisymmetric, or transitive.
- Determine which relations are asymmetric, irreflexive.
- Which of the graphs are of equivalence relations?
- Construct the transitive closure of each relation.



