

Worksheet 9.1-3

Max's Lecture
MATH 55

July 29, 2019

Exercise A. For every function $f : A \rightarrow B$, the set of ordered pairs $(a, f(a))$ is a binary relation from A to B .

1. Give an example of such a relation.
2. Are there relations that cannot be expressed in this way?

- Exercise B.**
1. How many relations are there on a set of n elements?
 2. How many reflexive relations are there?
 3. How many symmetric relations are there?

Exercise C. Determine whether the relation R on the set of all integers is reflexive, symmetric, antisymmetric, and/or transitive, where $(x, y) \in R$ if and only if:

1. $x \neq y$
2. $xy \geq 1$
3. $x = y + 1$ or $x = y - 1$
4. $x \equiv y \pmod{7}$
5. $y = x^2$