Mathematica Eterna

Extended Abstract 2020

Extended Abstract on Properties of Relations

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In math, the relation is between the x-values and y-values of ordered pairs. The set of all x-values is known as the domain, and so therefore the set of all y-values is known as the range. Different kinds of Relation: Empty Relation: A relation R on a group A is termed Empty if the set A is empty set. Full Relation: A binary relation R on a collection A and B is termed full if AXB. Reflexive Relation: A relation R on a set A is termed reflexive if (a,a) € R holds for every element a € A . The identity relation consists of ordered pairs of the form (a,a), where a∈A. In other words, aRb if and on condition that a=b. Then "membership" could also be a relation R from X to Y: i.e., we've got xRy if x ∈ y. After all the above way of intelligent about relations is definitely formalized, as was suggested at school by Adam Osborne: namely, we will think about a relation R as a function from X ×Y to the two-element set {TRUE, FALSE}.

CLASSES OF RELATIONS:

Using properties of relations we'll consider some important classes of relations.

Equivalence relation:

An equivalence relation could also be a relation which is reflexive, symmetric and transitive. For every equivalence relation there's a natural method to divide the attack which it's defined into mutually exclusive (disjoint) subsets which are called equivalence classes. We write [[x]] for the set of all y such Œ R. Thus, when R is an equivalence relation, [[x]] is that the equivalence class which contains x. A relation R in an exceedingly very termed a tolerance (or a tolerance relation) if it's reflexive and symmetric. So tolerance is weaker than equivalence; it doesn't need to be transitive. The notion of tolerance relation is an explication of similarity or closeness. Relations "neighbor of", "friend of" are often considered as examples if we hold that every person is also a neighbor and a disciple to him (her) self.

Relation or Binary relation R from set A to B is also a subset of AxB which can be defined as aRb ↔ (a,b) € R ↔ R(a,b). A Binary relation R on one set A is defined as a subset of AxA.

Full Relation: A binary relation R on a bunch A and B is termed full if AXB. Reflexive Relation: A relation R on a bunch A is termed reflexive if (a,a) € R holds for each element a € A .i.e. The relation R={(4,5),(5,4),(6,5),(5,6)} on set A={4,5,6} is symmetric. A relation R on a gaggle A is termed asymmetric if no (b,a) € R when (a,b) € R.

Reflexive Relation: Let AA be a set and let rr be a relation on A.A. Then rr is reflexive if and only if araara for all a∈A.a∈A.

Antisymmetric Relation: Let AA be a set and let rr be a relation on A.A. Then rr is antisymmetric if and only if whenever arbarb and a≠ba≠b then brabra is false.

Consider the set B={1,2,3,4,6,12,36,48}B={1,2,3,4,6,12,36,48} and the relations "divides" and ≤≤ on B.B. We notice that these two relations on BB have three properties in common:

- ` Every element in BB divides itself and is less than or equal to itself. This is called the reflexive property.
- If we search for two elements from BB where the first divides the second and the second divides the first, then we are forced to choose the two numbers to be the same. In other words, no two different numbers are related in both directions. The reader can verify that a similar fact is true for the relation ≤≤ on B.B. This is called the antisymmetric property.
- Next if we choose three values (not necessarily distinct) from BB such that the first divides the second and the second divides the third, then we always find that the first number divides the third. Again, the same is true if we replace "divides" with "is less than or equal to." This is called the transitive property.

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Received July 20, 2020; Accepted July 23, 2020; Published July 30, 2020

Citation: Hussein (2020) Extended Abstract on Properties of Relations. Mathematica Eterna. 10: 107. 10.35248/1314-3344.20.10.107.