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Relation & function

WORKSheet NO: 1

Q.N. 1 → Relation on the set {1,2,3} given by $R = \{(1,1), (2,2), (3,3), (1,2), (2,3)\}$. Show that R is reflexive, but neither symmetric nor transitive.

Q.N 2 → Let L be the set of all the lines in a plane and R be the relation on L defined as $R = \{(L_1, L_2) : L_1 \text{ is perpendicular to } L_2\}$. Show that R is symmetric but neither reflexive nor transitive.

Q.N 3 → Relation R in set $A = \{1,2,3, \ldots 14\}$ defined as
$R = \{(x,y) : 3x - y = 0\}$
Check whether R is symmetric, reflexive or transitive

Q.N 4 → Relation R on the set $A = \{1,2,3,4,5,6\}$ defined as
$R = \{(x,y) : y \text{ is divisible by } x\}$
Check whether R is symmetric, reflexive or transitive.

Q.N. 5 → Relation R on the set N (natural NO.S) defined as
$R = \{(x,y) : y = x+5 \text{ and } x < 4\}$
Check whether R is symmetric, reflexive or transitive.

Q.N. 6 → Relation R on the set A of human beings in a town at a particular time given by
(i) $R = \{(x,y) : x \text{ is wife of } y\}$
(ii) $R = \{(x,y) : x \text{ a father of } y\}$
Check in both the cases, whether R is symmetric, reflexive or transitive.

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R&F (worksheet No: 1) (2)

Q1. 7 → Show that the relation R on the set R of real numbers, defined as $R = \{(a, b): a \leq b^2\}$ is neither, reflexive, nor symmetric, nor transitive.

Q1. 8 → Check whether the relation R defined in the set $\{1, 2, 3, 4, 5, 6\}$ as $R = \{(a, b): b = a + 1\}$ is reflexive, symmetric, or transitive.

Q1. 9 → Show that the relation R in set R of real numbers defined as $R = \{(a, b): a \leq b\}$ is reflexive and transitive but not symmetric

Q1. 10 → Show that the relation R defined on the set A all of the triangles as $R = \{(T_1, T_2): T_1$ is similar to $T_2\}$ is an equivalence relation. Consider three right angle triangles T_1 with sides 3, 4, 5, T_2 with sides 5, 12, 13 and T_3 with sides 6, 8, 10. which triangles among T_1, T_2 and T_3 are related?

Q1. 11 → Show that the relation R on the set A of points on a plane given by $R = \{(P, Q):$ distance of the point P from the origin is same as the distance of the point Q from the origin$\}$ is an equivalence relation. Further show that the set of all points related to a point P is the circle passing through P with origin as centre.

Q1. 12 → Relation R on the set $A = \{x \in Z; 0 \leq x \leq 14\}$

CLASSTIME

RTF Worksheet No: 1

given by

$R = \{(a,b) : |a-b) \text{ is multiply of } 5\}$

Show that R is an equivalence relation Also find equivalence class [4]

Qn 13→ Let $A = \{0,1,2,3\}$, Relation on A defined as

$R = \{(0,0), (0,1) (0,3) (1,0) (1,1) (2,2), (3,0), (3,3)\}$

Is R is reflexive? Symmetric? transitive?

Q.n. 14→ Let R be a relation on the set N of natural numbers defined by $R = \{(n,m) : n \text{ divides } m\}$ then R is

(a) Reflexive and Symmetric (b) Transitive & Symmetric

(c) equivalence (d) Reflexive, transitive but not Symmetric

Qn 15→

(i) Let R be the relation on set N given by

aRb if $2a+3b=30$ then $R =$ _____

_____

(2) Let R be the relation on set $A = \{1,2,3,4,5\}$ given by

$R = \{(a,b) : |a^2-b^2| < 8\}$ then $R =$ _____

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