1. Reflexive Relation:

A relation R on a set A is sad to be a reflexive relation if **∀ a** **∈ A, (a, a) ∈ R.**

R1 = {(1,1), (1,3), (2,2), (3,1)}

Not a reflexive relation.

Because (3, 3) is not present.

**R2 = {(1,1), (2,2), (3,1), (3,3)}**

**A reflexive Relation.**

(1, 1), (2, 2) and (3, 3) are present for set {1, 2, 3}

R3 = {(1,2), (2,1), (3,3)}

Not a reflexive relation.

(1, 1) and (2, 2) are not present.

R4 = {(1,3), (2,3)}

Not a reflexive relation.

(1, 1), (2, 2) and (3, 3) are not present for set {1, 2, 3}

1. Symmetric Relation:

A relation R on a set A is sad to be a symmetric relation if **∀ a, b** **∈ A, (a, b) ∈ R then (b, a) ∈ R.**

**R1 = {(1,1), (1,3), (2,2), (3,1)}**

**A symmetric relation.**

R2 = {(1,1), (2,2), (3,1), (3,3)}

Not a symmetric relation.

Because (3, 1) is present but (1, 3) is not present.

**R3 = {(1,2), (2,1), (3,3)}**

**A symmetric relation.**

R4 = {(1,3), (2,3)}

Not a symmetric relation.

1. Antisymmetric Relation:

A relation R on a set A is sad to be a Antisymmetric relation if **∀ a, b** **∈ A, (a, b) ∈ R and a = b.**

R1 = {(1,1), (1,3), (2,2), (3,1)}

Not Antisymmetric relation.

Because (1, 3) and (3, 1) are present and 1 is not equal to 3

**R2 = {(1,1), (2,2), (3,1), (3,3)}**

**Yes, this is Antisymmetric relation.**

R3 = {(1,2), (2,1), (3,3)}

Not Antisymmetric relation

**R4 = {(1,3), (2,3)}**

**Yes, this is Antisymmetric relation.**