Properties of Equality

Let us consider a, b and c as any real numbers.

Addition Property of Equality

- If a = b, then a + c = b + c

Subtraction Property of Equality

- If a = b, then a - c = b - c

Multiplication Property of Equality

- If a = b, then a × c = b × c

Division Property of Equality

- If a = b, then a / c = b / c as long as c is not equal to 0

Commutative Property of Equality

For real number a and b

1. a + b = b + a
2. a × b = b × a

Associative Property of Equality

For real numbers a, b and c

1. (a + b) + c = a + (b + c)
2. (a × b) × c = a × (b × c)

Distributive Property of Equality

For any real numbers a, b and c

a × (b + c) = a × b + a × c

Additive Identity:

For any real number a,

a + 0 = 0 + a = a

Here, '0' is the additive identity.

Multiplicative Identity:

For any real number a,

a * 1 = 1 * a = a

Here, '1' is the multiplicative identity.

Substitution Property of Equality

Substitution property states that if two values are equivalent, then we can substitute one for another in an expression. If x = y, x can replace y or y can replace x in any expression.

Reflexive Property of Equality

Reflexive property of equality is one of the equivalence properties of equality. Any number is equal to itself is the reflexive property of the equality.

If a is any real number, then a = a.

Symmetric Property of Equality

Symmetric property of equality states that if first number is equal to second number, then second number is equal to first number.

For real numbers, x and y

If x = y, then y = x.

Transitive Property of Equality

If first number is equal to second and second number is equal to third, then first number is equal to third. The transitive property of equality for any real numbers a, b, and c is as follows:

If a = b and b = c, then a = c