1. For every equation *E*, if *E* is quadratic then *E* has at most two real solutions.
   1. All quadratic equation has at most two real solution.
   2. Every quadratic equation has at most two real solution.
   3. If an equation is quadratic, then it has at most two real solution.
   4. If *E is quadratic equation, then E has at most two real solution.*
   5. For every quadratic equation *E*, E has at most two real solution.

2. There is a real number whose product with every real number equals zero.

a. Some real number has the property that its product with every real number is Zero.

b. There is a real number such that the product of every real number equals zero.

c. There is a real number a with the property that for every real number b, ab=0.

3. Let R = {a}, S = {x,y} and T = {p, q, r}. Find each of the following sets.

a. R \* (S\*T)

= {a} \* ({x , y} \* {p, q, r}

= {(a,(x, p)), (a,(x, q)), (a,(x, r)), (a,(y, p)), (a,(y, q)), (a,(y, r))}

b. (R x S) x T

= ({a} \* {x, y}) \* {p, q, r}

= {(a, x), (a, y)} \* {p, q, r}

= {((a, x), p), ((a, x), q), ((a, x), q), ((a, x), r), ((a, y), p), ((a, y), q), ((a, y), r)}

c. R x S x T

={a}\*{x, y} \* {p, q, r}

= {(a, x, p), (a, x, q), (a, x, r), (a, y, p), (a, y, q), (a, y, r)}

4. Answer

All the strings of length 5 over T that have exactly one y are:

{y, x, x, x, x}, {x, y, x, x, x}, {x, x, y, x, x}, {x, x, x, y, x}, {x, x, x, x, y}.

5.

The Cartesian Product of A and B is:

A x B = {(4, 5), (4,6), (4,7), (5, 5), (5,6), (5,7), (6, 5), (6,6), (6,7)}

Now,

For (x, y) ∈ R, x y gives the value of R:

R = {(5,5), (6, 5), (6, 6)}

Similarly,

For (x,y) ∈ S, is an integer then it gives the value of S.

S= {(4, 6), (5, 5), (5, 7), (6, 6)}

T= {(4, 7), (6, 5), (6, 7)}

= Here, none of the relations R, S, and T are function because they don't satisfy the property of function and two distinct ordered pairs have the same first elements.

6. Answers:

(s, n) ∈ L means that the length of s in n

i.e., L(s) = n

L (0201) would be:

The length of string 0201 is 4.

I.e., L (0202) = 4, since (0201,4) ∈ L

L (12) would be:

The length of string 12 is 2.

I.e., L (12) =2, since (12,2) ∈L

7. Answer,

H(x) = (x-2)

Now,

K(x)= (x-1) (x-3) + 1

= (x-4x+4)

= (x-2)

From the above equation, we can say, H(x) = K(x).

Representing above in formation in the graph:

|  |  |  |
| --- | --- | --- |
| x | H=x^2-4x+4 | K=x^2-4x+4 |
| 0 | 4 | 4 |
| 1 | 1 | 1 |
| 2 | 0 | 0 |
| 3 | 1 | 1 |
| 4 | 4 | 4 |
| 5 | 9 | 9 |

