

QUIZ 2

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A function from the set U to the set V is a triple (U, V, G) where G is a subset of $U \times V$ that satisfies the following property:

(i) For any element (u, v_1, v_2) of $U \times V \times V$, if both (u, v_1) and (u, v_2) belong to G then $v_1 = v_2$.

(ii) For any element u of U , there exists one and only one element v of V such that (u, v) belongs to G .

(iii) For any element u of U , there exists at most one element v of V such that (u, v) belongs to G .

How many of the three properties above are correct?

- A. 0
- B. 1
- C. 2
- D. 3

Consider the four statements below:

- (i)** If U and V are two sets and $W \subseteq U \times V$ then (U, V, W) is a relation.
- (ii)** If U and V are two sets and $W \subseteq U \times V$ then (U, V, W) is a function.
- (iii)** If (U, V, W) is a relation then (U, V, W) is a function.
- (iv)** If (U, V, W) is a function then (U, V, W) is a relation.

How many of these statements are correct?

- A.** 0
 - B.** 1
 - C.** 2
 - D.** 3
 - E.** 4
-

Consider a function f .

Assume its domain is U and its domain of definition is V .

- (i)** U may be equal to V .
- (ii)** U may be a proper subset of V .
- (iii)** U may be a proper superset of V .

How many of the three statements above are correct?

- A.** 0
 - B.** 1
 - C.** 2
 - D.** 3
-

Consider the function $f :]-5,5[\rightarrow]2,20]$
 $x \mapsto 2 - \sqrt{x}$

- (i) -1 has an image under f .
- (ii) 0 has an image under f .
- (iii) 4 has an image under f .
- (iv) 9 has an image under f .

How many of the four statements above are correct?

- A. 0
 - B. 1
 - C. 2
 - D. 3
 - E. 4
-

Consider the function $f : \mathbb{Z}^+ \rightarrow]0,5[$
 $x \mapsto x^2 + 1$

- (i) 0 has a preimage under f .
- (ii) 1 has a preimage under f .
- (iii) 2 has a preimage under f .
- (iv) 5 has a preimage under f .

How many of the four statements above are correct?

- A. 0
 - B. 1
 - C. 2
 - D. 3
 - E. 4
-

Consider the five statements below:

- (i) $13 = 3 \times 2^2 + 0 \times 2^1 + 1 \times 2^0$
- (ii) $13 = (301)_2$
- (iii) $13 = 1 \times 3^2 + 1 \times 3^1 + 1 \times 3^0$
- (iv) $13 = (111)_3$

How many of these statements are correct?

- A. 0
 - B. 1
 - C. 2
 - D. 3
 - E. 4
-

Let x and y be real numbers.
Consider the four statements below:

- (i) If $1/x = y$ then $x = 1/y$
- (ii) If $x^2 = y$ then $y = \sqrt{x}$
- (iii) If $\sqrt{x} = y$ then $x = y^2$
- (iv) If $|x| = y$ then $x = y$

How many of these statements are correct?

- A. 0
 - B. 1
 - C. 2
 - D. 3
 - E. 4
-

Let x , y and z be real numbers.
Consider the four statements below:

- (i) $1/x = y$ iff $x = 1/y$
- (ii) $\sqrt{x} = y$ iff $x = y^2$
- (iii) $|x| = |y|$ iff $x = y$
- (iv) $xz = yz$ iff $x = y$

How many of these statements are correct?

- A. 0
 - B. 1**
 - C. 2
 - D. 3
 - E. 4
-

Let S be the solution set of some equation.
Assume that **if** x is a solution of that equation **then** $x=1$ or $x=2$.
Consider the four statements below:

- (i) $S = \{\}$
- (ii) $S = \{1\}$
- (iii) $S = \{1,2\}$
- (iv) $S = \{1,2,3\}$

How many of these statements may be correct?

- A. 0
 - B. 1
 - C. 2
 - D. 3**
 - E. 4
-

Let S be the solution set of some equation.
Assume that x is a solution of that equation **iff** $x=1$ or $x=2$.
Consider the four statements below:

- (i) $S = \{\}$
- (ii) $S = \{1\}$
- (iii) $S = \{1,2\}$**
- (iv) $S = \{1,2,3\}$

How many of these statements may be correct?

- A. 0
 - B. 1**
 - C. 2
 - D. 3
 - E. 4
-

Consider the following three statements:

- $0..0 = (0,0)$
- $0..0 = \{0,0\}$**
- $0..0 = [0,0]$**

How many of these statements are correct?

- A. 0
 - B. 1
 - C. 2**
 - D. 3
-

Consider the following three statements:

$$-\infty..+\infty = \mathbb{R}$$

$$1..+\infty = \mathbb{N}$$

$$1..2 = 2..1$$

How many of these statements are correct?

A. 0

B. 1

C. 2

D. 3
