Assignment 4

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-02-27, 23:59 IST.

1) Let $A = \{0, 2, 4, 6, 8, 10\}$, $B = \{0, 1, 2, 3, 4, 5, 6\}$, and $C = \{4, 5, 6, 7, 8, 9, 10\}$. The set $(A \cap B) \cup C$ is:

a. $\{0, 4, 5, 6, 7, 8, 9, 10\}$
b. $\{0, 2, 4, 6\}$
c. $\{0, 2, 4, 5, 6, 7, 8, 9, 10\}$
d. None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

2) Let $A = \{0, 2, 4, 6, 8, 10\}$, $B = \{0, 1, 2, 3, 4, 5, 6\}$, and $C = \{4, 5, 6, 7, 8, 9, 10\}$. The set $A \cap (B \cap C)$ is:

a. $\{0, 1, 2, 3, 4, 5, 6\}$
b. $\{0, 1, 2, 3\}$
c. $\{0, 2, 4, 6\}$
d. $\{0, 2\}$

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.
Consider the set of natural numbers \( \mathbb{N} = \{0, 1, 2, 3, \ldots\} \). List the elements of the set \( A = \{ x \in \mathbb{N}, \text{ and } 1 + x + \frac{1}{x} = 0 \} \):

a. \( A = \{0, 1, 2, 3, 4, 5, 6\} \)

b. \( A = \{0, 1, 2, 3\} \)

c. \( A = \{0, 1, 2, 3, \ldots\} \)

d. \( A = \emptyset \), the empty set.

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

4) Let \( A \) and \( B \) be two sets. \( A \ cap B = B \ cap A \) if and only if

a. \( A = B \)

b. \( A \subseteq B \)

c. \( B \subseteq A \)

d. \( A = \emptyset \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

5) Find the cardinality of the set \( A = \{ x \mid x \in \mathbb{N}, \text{ and } x^3 = x^2 + x + 2 \} \).

a. \( |A| = 3 \)

b. \( |A| = 2 \)

c. \( |A| = 1 \)

d. \( |A| = 0 \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

6)
Find the sets \( A \) and \( B \) if \( A - B = \{1, 5, 7, 8\} \), \( B - A = \{2, 10\} \), and \( A \cap B = \{3, 6, 9\} \).

- a. \( A = \{1, 5, 7, 8\} \), \( B = \{2, 3, 6, 9\} \)
- b. \( A = \{1, 3, 5, 6, 7, 8, 9\} \), \( B = \{2, 3, 6, 9\} \)
- c. \( A = \{1, 3, 5, 6, 7, 8, 9\} \), \( B = \{2, 10\} \)
- d. None of the above.

No, the answer is incorrect.
Score: 0
Accepted Answers: b.

7) If \( |A \cup B| = 50 \) and \( |A| = 40 \), then \( |A \cap B| \) is

- a. Equal to 40
- b. Less than or equal to 40
- c. Equal to 10
- d. Less than or equal to 10

No, the answer is incorrect.
Score: 0
Accepted Answers: b.

8) The number of subsets of \( \{1, 2, ..., 10\} \) having at least two elements is

- a. 511
- b. 512
- c. 1013
- d. 1014

No, the answer is incorrect.
Score: 0
Accepted Answers: c.

9) If \( S = \{\phi, \{\phi\}\} \), which one of the following is FALSE?

- a. \( \phi \in \mathcal{P}(S) \)
- b. \( \{\phi\} \in \mathcal{P}(S) \)
- c. \( \{\phi\} \subseteq \mathcal{P}(S) \)
- d. None of these
10) The number of functions from an $m$-element set to an $n$-element set is
   a. $m^n$
   b. $n^m$
   c. $mn$
   d. $n^2$

No, the answer is incorrect.
Score: 0
Accepted Answers: d.

11) The number of one-to-one functions from an $n$-element set to itself is
   a. $n^n$
   b. $2^n$
   c. $n!$
   d. None of these

No, the answer is incorrect.
Score: 0
Accepted Answers: b.

12) Which of these functions from $\mathbb{Z}$ to $\mathbb{Z}$ is one-to-one?
   a. $f(x) = x + x^2$
   b. $f(x) = x - 1$
   c. $f(x) = x^2 + 1$
   d. $f(x) = x^2 + x - 6$

No, the answer is incorrect.
Score: 0
13) Which of these functions from \( \mathbb{Z} \) to \( \mathbb{Z} \) is onto?

- a. \( f(x) = x^2 \)
- b. \( f(x) = 2x + 1 \)
- c. \( f(x) = x + 2 \)
- d. \( f(x) = x^3 \)

No, the answer is incorrect.

Score: 0

14) Which of these functions from \( \mathbb{R} \) to \( \mathbb{R} \) is bijective?

- a. \( f(x) = x^2 + x - 3 \)
- b. \( f(x) = x^2 - 1 \)
- c. \( f(x) = (x^2 + 1) / (x^2 + 2) \)
- d. \( f(x) = x^3 \)

No, the answer is incorrect.

Score: 0

15) Which of the following formulae are not functions?

(i) \( f(x) = \forall x \text{ with } f: \mathbb{Z} \to \mathbb{Z} \)
(ii) \( f(x) = 2x + 1 \text{ with } f: \mathbb{Z} \to \mathbb{Z} \)
(iii) \( f(x) = \frac{1}{(x^2 - 4)} \text{ with } f: \mathbb{Z} \to \mathbb{Z} \)
(iv) \( f(x) = \sqrt{x^2 + 1} \text{ with } f: \mathbb{Z} \to \mathbb{Z} \)

- a. Both (i) and (ii).
- b. Both (ii) and (iii).
- c. (i), (iii), and (iv).
- d. All the formulae.

No, the answer is incorrect.

Score: 0