

Unit 4 - Week 3: Mathematical Logic And Set Theory

Course outline

How to access the portal

Week 1: Mathematical Logic

Week 2: Mathematical Logic

Week 3: Mathematical Logic And Set Theory

- Lec 1: Soundness and Completeness of the First Order Proof System
- Lec 2: Sets, Relations, Functions
- Lec 3: Functions, Embedding of the theories of naturals numbers and integers in Set Theory
- Lec 4: Embedding of the theories of integers and rational numbers in Set Theory; Countable Sets

Quiz : Assignment 3

Feedback form

Week 4: Graph Theory

Week 5: Graph Theory-II

Week 6: Set Theory & Number Theory

Week 7: Set Theory & Number Theory

Week 8: Combinatorics

Week 9: Combinatorics

Live Session-1

Week 10: Number Theory

Live Session-2

Week 11: Algebra

Week 12: Algebra-II

Assignment 3

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

Due on 2019-08-21, 23:59 IST.

1) Which of the following sets is/are equal to $\{1,2\}$? 1 point

(P) $\{x|x^2 - 5x + 6 = 0\}$

(Q) $\{x|x^3 - 7x^2 + 16x - 12 = 0\}$

(R) $\{x|x \text{ is a prime factor of } 108\}$

only P and Q

all of P, Q and R

only P and R

only Q and R

No, the answer is incorrect.
Score: 0

Accepted Answers:

all of P, Q and R

2) Gödel's completeness theorem asserts that --- 1 point

The first order proof system with Peano's axioms proves every statement true in the standard model

Peano's axioms form a consistent set of formulae

The first order proof system can prove all logical consequences of the proper axioms

The first order proof system proves only logical consequences of the proper axioms

No, the answer is incorrect.
Score: 0

Accepted Answers:

The first order proof system can prove all logical consequences of the proper axioms

3) The first order proof system is sound because --- 1 point

The first order proof system with Peano's axioms proves every statement true in the standard model

All the logical axioms of the first order proof system are logically valid

The first order proof system can prove all logical consequences of the proper axioms

The first order proof system proves only logical consequences of the proper axioms

No, the answer is incorrect.
Score: 0

Accepted Answers:

The first order proof system proves only logical consequences of the proper axioms

4) If $A = \{1,2,3\}$ and $B = \{2,3,4\}$, then which of the following is a member of $2^A - 2^B$? 1 point

$\{2,3\}$

$\{1,3\}$

$\{2\}$

$\{3\}$

No, the answer is incorrect.
Score: 0

Accepted Answers:

$\{1,3\}$

5) What is $|P \times Q \times R|$, if 1 point

$P = \{x|x^2 - 3x + 2 = 0\}$,

$Q = \{3,4\}$ and

$R = \{x|x \text{ is a natural number and } x^2 + 3x + 2 = 0\}$?

8

4

0

2

No, the answer is incorrect.
Score: 0

Accepted Answers:

0

6) If $Q = \{\{2,3\}, \{3,4\}, \{8,3\}, 3\}$, then $\cap A$ is --- 1 point

undefined

\emptyset

$\{3\}$

3

No, the answer is incorrect.
Score: 0

Accepted Answers:

\emptyset

7) If the successor of a set a is $a^+ = a \cup \{a\}$, and $0 = \emptyset$, and for every natural number n , 1 point

$n + 1 = n^+$, then which of the following is true?

$3 = \{0,1,2\}$

$4 = 2^2$

$2 \in 3$

$2 \subseteq 3$

No, the answer is incorrect.
Score: 0

Accepted Answers:

$4 = 2^2$

8) Suppose for natural numbers x and y , xRy iff 11 divides $x-y$. Then which of the following is FALSE? 1 point

R is anti-symmetric

R is symmetric

R is transitive

R is reflexive

No, the answer is incorrect.
Score: 0

Accepted Answers:

R is anti-symmetric