Assignment 3

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

1) \( \mathbb{Z} \) is a group under the operation of ______.
   A. Addition
   B. Multiplication
   C. Division
   D. Subtraction

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

2) Let us consider the following statements
   (i) \( (\mathbb{R}, +) \) is a cyclic group.
   (ii) \( (\mathbb{Z}_n, +) \) is a cyclic group.

Select the correct option from below.
   A. (i) and (ii) both are true.
   B. Only (ii) is true.
   C. Only (i) is true.
   D. (i) and (ii) both are false.

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

3) Let \( G = \left\{ \begin{bmatrix} a & b \\ c & d \end{bmatrix} : a, b, c, d \in \mathbb{Z}_2 \text{ and } ad - bc \neq 0 \right\} \) then the number of elements in the set \( G \) is ___
   A. 4
   B. 3
   C. 8
   D. 6
No, the answer is incorrect.
Score: 0
Accepted Answers:

The multiplicative inverse of 5 in \( \mathbb{Z}_7 \) is _____.

A. 2
B. 3
C. 6
D. 5

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

Order of 2 in the group \( \langle \mathbb{Z}_6, + \rangle \) is _____.

A. 2
B. 5
C. 6
D. 3

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

Let us consider the following statements, where +, * are the usual addition and multiplication operations.

(i) \( \langle \mathbb{Z}_6, +, \ast \rangle \) is a field and \( \langle \mathbb{R}, +, \ast \rangle \) is not a ring.
(ii) \( \langle \mathbb{Z}_7, +, \ast \rangle \) is a ring and \( \langle \mathbb{R}, +, \ast \rangle \) is a field.

Select the correct option from below.

A. (i) and (ii) both are true.
B. Only (ii) is true.
C. Only (i) is true.
D. (i) and (ii) both are false.

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

The greatest common divisor of 2740 and 1760 is _____.

A. 20
B. 10
C. 30
D. 40
8) The solution of equation $14x \equiv 12 \pmod{18}$ is ______.
   A. 6
   B. 8
   C. 10
   D. 12

9) $\mathbb{Z}_n$ is a field if $n = ______$.
   A. 15
   B. 71
   C. 91
   D. 25

10) Let us consider the following statements
    (i) $[(a \pmod{n}) - (b \pmod{n})] \pmod{n} = (a - b) \pmod{n}$.
    (ii) $[(a \pmod{n}) + (b \pmod{n})] \pmod{n} = (a + b) \pmod{n}$.

    Select the correct option from below.
    A. (i) and (ii) both are true.
    B. Only (ii) is true.
    C. Only (i) is true.
    D. (i) and (ii) both are false.