Assignment 4

Due on 2021-02-17, 23:39 IST.

The due date for submitting this assignment has passed.

As per our notice, you have already submitted this assignment.

Point: 1

1. Let \( X = \{x \in \mathbb{R} : x^2 + 1 \neq 0\} \). Choose the correct option.
   - (A) It is the splitting field of \( x^2 + 1 \).
   - (B) It is the splitting field of \( x^2 + 1 \).
   - (C) It is the splitting field of \( x^2 + 1 \).
   - (D) It is the splitting field of \( x^2 + 1 \).

2. (A) Let \( A \) be an abelian group.
   (B) Let \( A \) be a finite abelian group.
   (C) Let \( A \) be a free abelian group.
   (D) Let \( A \) be a finitely generated abelian group.

3. Let \( G \) be a group and \( H \) be a normal subgroup of \( G \). Choose the correct options.
   - (A) \( G/H \) is a group.
   - (B) \( G/H \) is a normal subgroup of \( G \).
   - (C) \( G/H \) is a group.
   - (D) \( G/H \) is a finitely generated group.

4. Let \( k \) be a field.
   (A) \( k \) is a field.
   (B) \( k \) is a field.
   (C) \( k \) is a field.
   (D) \( k \) is a field.

5. Choose the correct options.
   - (A) \( x^2 + 1 \) is irreducible over \( \mathbb{Q} \).
   - (B) \( x^2 + 1 \) is irreducible over \( \mathbb{Q} \).
   - (C) \( x^2 + 1 \) is irreducible over \( \mathbb{Q} \).
   - (D) \( x^2 + 1 \) is irreducible over \( \mathbb{Q} \).

6. (A) Let \( K \) be a field.
   (B) Let \( K \) be an algebraically closed field.
   (C) Let \( K \) be a field.
   (D) Let \( K \) be a field.

7. Let \( K \) be a field.
   (A) \( K \) is a field.
   (B) \( K \) is a field.
   (C) \( K \) is a field.
   (D) \( K \) is a field.

8. Choose the correct option.
   - (A) \( \mathbb{Q} \) is a subfield of \( \mathbb{R} \).
   - (B) \( \mathbb{Q} \) is a subfield of \( \mathbb{R} \).
   - (C) \( \mathbb{Q} \) is a subfield of \( \mathbb{R} \).
   - (D) \( \mathbb{Q} \) is a subfield of \( \mathbb{R} \).

9. Let \( x \) be a real number, where \( x \in \mathbb{R} \). Consider the following two statements.
   (A) \( x^2 + 1 \) is an even integer.
   (B) \( x^2 + 1 \) is an odd integer.

10. Let \( K \) be a field.
   (A) \( K \) is a field.
   (B) \( K \) is a field.
   (C) \( K \) is a field.
   (D) \( K \) is a field.