Assignment 5

The due date is Sunday, February 28, 2022.

Due on 2021-03-04, 23:59:59 IST.

1. Let \( E \) be a field. Suppose \( E \) is a subset of \( \mathbb{R} \) which is isomorphic to \( \mathbb{R} \). If \( K \) is the fixed field of \( E \), what is \( [K : E] \)?

2. Let \( E \) be a field. Suppose \( E \) is a finite subset of \( \mathbb{R} \). Let \( F = E^{\text{Ker}(\sigma)} \) be the fixed field of \( \sigma \). Choose all the correct options.

3. Let \( E \) be a field. Suppose \( E \) is a finite subset of \( \mathbb{C} \). Let \( F = E^{\text{Ker}(\sigma)} \) be the fixed field of \( \sigma \). Choose all the correct options.

4. Let \( E \) be a field. Suppose \( E \) is a finite subset of \( \mathbb{C} \). Let \( F = E^{\text{Ker}(\sigma)} \) be the fixed field of \( \sigma \). Choose all the correct options.

5. Let \( E \) be a field. Suppose \( E \) is a finite subset of \( \mathbb{C} \). Let \( F = E^{\text{Ker}(\sigma)} \) be the fixed field of \( \sigma \). Choose all the correct options.

6. Let \( G = \text{Aut}(Q_2) \), \( M = \text{Aut}(Q_4) \) and \( N = \text{Aut}(Q_8) \). Choose all the correct options.

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13. Let \( G = \text{Aut}(Q_2) \), \( M = \text{Aut}(Q_4) \) and \( N = \text{Aut}(Q_8) \). Choose all the correct options.

14. Let \( G = \text{Aut}(Q_2) \), \( M = \text{Aut}(Q_4) \) and \( N = \text{Aut}(Q_8) \). Choose all the correct options.

15. Let \( G = \text{Aut}(Q_2) \), \( M = \text{Aut}(Q_4) \) and \( N = \text{Aut}(Q_8) \). Choose all the correct options.

16. Let \( G = \text{Aut}(Q_2) \), \( M = \text{Aut}(Q_4) \) and \( N = \text{Aut}(Q_8) \). Choose all the correct options.

17. Let \( G = \text{Aut}(Q_2) \), \( M = \text{Aut}(Q_4) \) and \( N = \text{Aut}(Q_8) \). Choose all the correct options.

18. Let \( G = \text{Aut}(Q_2) \), \( M = \text{Aut}(Q_4) \) and \( N = \text{Aut}(Q_8) \). Choose all the correct options.