

Quiz 1

Quiz, 6 questions

1
point

1.

Which of the following are true?

- ☐ A finite extension of fields is algebraic.
 - ☐ An algebraic extension of fields is finite.
 - ☐ A finitely generated and algebraic extension of fields is finite.
-

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2.

Which of the following pairs is an extension of fields?

- ☐ $\mathbf{Q}(i), \mathbf{C}$
 - ☐ \mathbf{Z}, \mathbf{Q}
 - ☐ $\mathbf{Q}(i), \mathbf{R}$
 - ☐ \mathbf{Q}, \mathbf{R}
-

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3.

What is the minimal polynomial of $e^{\frac{2\pi i}{3}}$ over \mathbf{Q} ?

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(please write as a polynomial in the variable x , starting with the highest degree term. example: $x^4+x^3+2x-10$)

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Preview

$$x^3 - 1$$

x^3-1

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4.

Which of the following polynomials f is irreducible over the specified field K ?

- ☐ $f = x^2 - 2, K = \mathbf{Q}$
- ☐ $f = x^2 + x + 1, K = \mathbf{Q}$
- ☐ $f = x^2 - 2, K = \mathbf{R}$
- ☐ $f = x^3 - 1, K = \mathbf{Q}$
- ☐ $f = x^4 + 6x^2 + 2, K = \mathbf{Q}$
- ☐ $f = x^2 + x + 1, K = \mathbf{F}_3$

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5.

Which of the following quotient rings is a field?

- ☐ $\mathbf{F}_3[x]/(x^2 + x + 1)$
- ☐ $\mathbf{R}[x]/(x^2 - 2)$

Quiz 1 $\mathbf{R}[x]/(x^2 + 1)$

Quiz, 6 questions $\mathbf{Q}[x]/(x^2 - 2)$

☐ $\mathbf{R}[x]/(x^2 - 1)$

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6.

What is the degree of the field extension $\mathbf{Q} \subseteq \mathbf{Q}(\sqrt{2}, \sqrt{3})$?

☐ 4.

☐ 3

☐ 2

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