

CHAPTER-2 | Polynomials

QUIZ
PART-08

1. Which of the following is the factorization of the cubic polynomial $x^3 - 23x^2 + 142x - 120$?

- A. $(x - 5)(x - 4)(x - 6)$
- B. $(x + 5)(x - 2)(x - 6)$
- C. $(x - 1)(x - 2)(x - 6)$
- D. $(x + 4)(x - 3)(x - 5)$ (A)

Explanation: The factorization of $x^3 - 23x^2 + 142x - 120$ is $(x-5)(x-4)(x-6)$, as the values $x = 5, 4, 6$ satisfy the equation.

2. What is the factorized form of the polynomial $x^3 - 2x^2 - x + 2$?

- A. $(x - 1)(x^2 - x - 2)$
- B. $(x - 1)(x^2 + x - 2)$
- C. $(x - 2)(x^2 + x - 2)$
- D. $(x - 2)(x^2 - x + 2)$ (B)

Explanation: The correct factorization of $x^3 - 2x^2 - x + 2$ is $(x - 1)(x^2 + x - 2)$

3. Which method is used to factorize polynomials like $x^3 - 2x^2 - x + 2$?

- A. Middle Term Splitting
- B. Factor Theorem
- C. Long Division
- D. Polynomial Expansion (B)

Explanation: The Factor Theorem is used to factorize polynomials by finding the roots or zeroes of the polynomial and then using them to split the polynomial.

4. What is the result of the factorization of $x^3 - 6x^2 + 11x - 6$?

- A. $(x - 1)(x - 2)(x - 3)$
- B. $(x - 2)(x + 3)(x - 1)$
- C. $(x - 3)(x + 2)(x - 1)$
- D. $(x + 1)(x - 2)(x - 3)$ (A)

Explanation: The factorization of $x^3 - 6x^2 + 11x - 6$ is $(x - 1)(x - 2)(x - 3)$ as the roots are $x = 1, 2, 3$

5. Which of the following is true for the polynomial $x^2 + 5x + 6$?

- A. It is factorable.
- B. It is irreducible.
- C. It has no real roots.
- D. It is a cubic polynomial. (A)

Explanation: The polynomial $x^2 + 5x + 6$ can be factorized as $(x + 2)(x + 3)$, so it is factorable.

6. What is the factorization of $x^2 - 16$

- A. $(x - 4)(x + 4)$
- B. $(x - 8)(x + 2)$
- C. $(x + 4)(x - 2)$
- D. $(x + 8)(x - 2)$ (A)

Explanation: $x^2 - 16$ is a difference of squares and can be factored as $(x - 4)(x + 4)$

7. For the polynomial $x^3 - 6x^2 + 11x - 6$ the correct factorization is:

- A. $(x - 1)(x^2 - 5x + 6)$
- B. $(x - 2)(x^2 - 4x + 3)$
- C. $(x - 1)(x - 2)(x - 3)$
- D. $(x - 3)(x - 1)(x - 2)$ (C)

Explanation: The factorization of $x^3 - 6x^2 + 11x - 6$ is $(x - 1)(x - 2)(x - 3)$

8. Which of the following is the correct factorization of $x^3 + 4x^2 - 5x - 20$?

- A. $(x + 5)(x^2 - x - 4)$
- B. $(x - 4)(x^2 + x + 5)$
- C. $(x - 5)(x^2 + 4x + 4)$
- D. $(x + 4)(x^2 - x - 5)$ (A)

Explanation: The factorization of $x^3 + 4x^2 - 5x - 20$ is $(x + 5)(x^2 - x - 4)$

9. Which of the following is a polynomial factor of $x^3 - 2x^2 - x + 2$?

- A. $x - 2$
- B. $x + 2$
- C. $x - 1$
- D. $x + 1$ (A)

Explanation: $x - 2$ is a factor of $x^3 - 2x^2 - x + 2$ since substituting $x = 2$ gives a remainder of 0.

10. Which of the following polynomials is factorable using the Factor Theorem?

- A. $x^3 - 6x^2 + 11x - 6$
- B. $x^3 - 4x^2 + 5x - 6$
- C. $x^2 - 3x + 1$
- D. $x^3 + 2x^2 + 3x - 6$ (A)

Explanation: By the Factor Theorem, $x^3 - 6x^2 + 11x - 6$ is factorable, and its factors are $(x - 1)(x - 2)(x - 3)$