

CHAPTER-2 | Polynomials

QUIZ PART-06

1. If $x - 1$ is a factor of the polynomial $x^3 - 3x^2 + 2x + 1$, what is the remainder when the polynomial is divided by $x - 1$?
- A. 1
B. 0
C. 2
D. -1 (B)

Explanation: By the Factor Theorem, if $x - 1$ is a factor, the remainder when the polynomial is divided by $x - 1$ must be 0.

2. If $x + 2$ is a factor of $3x^2 + 7x + k$, then the value of k is:
- A. 10
B. 11
C. -5
D. -15 (B)

Explanation: By substituting $x = -2$ in the polynomial and setting the result equal to 0 (since $x + 2$ is a factor), we find $k = 11$

3. What should be subtracted from the polynomial $x^2 - 16x + 30$ so that $x - 15$ is a factor of the polynomial?
- A. 30
B. 14
C. 15
D. 16 (A)

Explanation: Using the Factor Theorem, substituting $x = 15$ into $x^2 - 16x + 30$ gives the remainder. The value to subtract is 14.

4. If $x - 2$ is a factor of the polynomial $p(x)$, then the value of $p(2)$ will be:
- A. -2
B. 2
C. 0
D. 3 (C)

Explanation: According to the Factor Theorem, if $x - 2$ is a factor of $p(x)$, then $p(2) = 0$.

5. When dividing $x^4 - 3x^2 + 2x + 1$ by $x - 1$ what is the remainder?
- A. 1
B. -1
C. 2
D. -2 (C)

Explanation: By the Remainder Theorem, the remainder when dividing $x^4 - 3x^2 + 2x + 1$ by $x - 1$ is $p(1) = 0$.

6. Which of the following polynomials can be factored as $(x - 1)(x + 2)$?

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

Explanation: The factorization $(x - 1)(x + 2) = x^2 + x - 2$

7. If $x - 1$ is a factor of the polynomial $p(x) = x^3 - x^2 - 4x + 4$, then the value of $p(1)$ is:
- A. 4
B. 3
C. 0
D. -1 (C)

Explanation: Since $x - 1$ is a factor, by the Factor Theorem, $p(1) = 0$.

8. The polynomial $4x^3 - 12x^2 + 8x - 24$ can be factored as:
- A. $4(x^3 - 3x^2 + 2x - 6)$
B. $4(x - 2)(x^2 + 3x - 12)$
C. $4(x - 3)(x^2 + 2x + 6)$
D. $(4x - 2)(x^2 - 3x + 6)$ (B)

Explanation: Factoring $4x^3 - 12x^2 + 8x - 24$ we get $4(x - 2)(x^2 + 3x - 12)$

9. What is the result when dividing the polynomial $3x^3 + 5x^2 - 4x + 6$ by $x - 2$?
- A. A quotient of $3x^2 + 11x + 18$ and remainder 0
B. A quotient of $3x^2 + 11x - 10$ and remainder 0
C. A quotient of $3x^2 + 2x - 10$ and remainder 4
D. A quotient of $3x^2 + 2x + 4$ and remainder -10 (A)

Explanation: Using synthetic division or polynomial division, dividing $3x^3 + 5x^2 - 4x + 6$ by $x - 2$ results in the quotient $3x^2 + 11x - 10$ with a remainder of 0.

10. Which of the following is a factor of the polynomial $x^2 + 5x + 6$?
- A. $x + 2$
B. $x - 2$
C. $x + 3$
D. $x - 3$ (A)

Explanation: The factorization of $x^2 + 5x + 6$ is $(x + 2)(x + 3)$ so $x + 2$ a factor.