

Board – CBSE

Class – 9

Topic – Polynomial

Multiple Choice Question Type

- Which one is not a polynomial?
(A) $4x^2 + 2x - 1$ (B) $y + \frac{3}{y}$
(C) $x^3 - 1$ (D) $y^2 + 5y + 1$
- The polynomial $px^2 + rx^4 + 5$ is of type of
(A) Linear (B) Quadratic
(C) Cubic (D) Biquadratic
- Identify the polynomial
(A) $x^{-2} + x^{-1} + 5$ (B) $x^2 + 5\sqrt{x} + 7$
(C) $\frac{1}{x^3} + 7$ (D) $3x^2 + 7$
- The zero of the polynomial $p(x) = 2x + 5$ is
(A) 2 (B) 5
(C) $\frac{2}{5}$ (D) $-\frac{5}{2}$
- The number of zeros of $x^2 + 4x + 2$
(A) 1 (B) 2
(C) 3 (D) None of these
- The polynomial of type $ax^2 + bx + c$, $a = 0$ is of type
(A) Linear (B) Quadratic
(C) Cubic (D) Biquadratic
- The value of k , if $(x - 1)$ is a factor of $4x^3 + 3x^2 - 4x + k$, is
(A) 1 (B) 2
(C) -3 (D) 3
- The degree of polynomial $p(x) = x + \sqrt{x^2 + 1}$ is
(A) 0 (B) 2
(C) 1 (D) 3
- If $3 + 5 - 8 = 0$, then the value of $(3)^3 + (5)^3 - (8)^3$ is
(A) 260 (B) -360
(C) -160 (D) 160

10. If value of 104×96 is
(A) 9984 (B) 9469
(C) 10234 (D) 11324
11. The value of $5.63 \times 5.63 + 11.26 \times 2.37 + 2.37 \times 2.37$ is
(A) 237 (B) 126
(C) 56 (D) 64
12. The value of $\frac{(361)^3 + (139)^3}{(361)^2 - 361 \times 139 + (139)^2}$ is
(A) 300 (B) 500
(C) 400 (D) 600
13. If $x + y = 3$, $x^2 + y^2 = 5$ then xy is
(A) 1 (B) 3
(C) 2 (D) 5
14. If $x + 2$ is a factor of $x^3 - 2ax^2 + 16$, then value of a is
(A) 3 (B) 1
(C) 4 (D) 2
15. If one of the factor of $x^2 + x - 20$ is $(x + 5)$. Find the other
(A) $x - 4$ (B) $x + 2$
(C) $x + 4$ (D) $x - 5$

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|-----|-----|-----|-----|-----|
| 1. | 2. | 3. | 4. | 5. |
| (b) | (d) | (d) | (d) | (b) |
| 6. | 7. | 8. | 9. | 10. |
| (a) | (c) | (c) | (b) | (a) |
| 11. | 12. | 13. | 14. | 15. |
| (d) | (b) | (c) | (b) | (a) |

Long Answer Type

1. If $x^2 + \frac{1}{x^2} = 18$, then find the value of $x - \frac{1}{x}$
2. Factorize: $(a - b)^3 + (b - c)^3 + (c - a)^3$
3. Factorize: $14x^6 - 45x^3y^3 - 14y^6$
4. Find the product: $(x - 3y)(x + 3y)(x^2 + 9y^2)$
5. If $x^2 - 3x + 2$ divides $x^3 - 6x^2 + ax + b$ exactly, then find the value of 'a' and 'b'
6. If $x + y = 12$ and $xy = 32$, Find the value of $x^2 + y^2$.
7. If $3x + 2y = 12$ and $xy = 6$, find the value of $9x^2 + 4y^2$.
8. Write the following cubes in the expanded form:
 - (i) $(3a + 4b)^3$
 - (ii) $(5p - 3q)^3$
9. If $x^2 + \frac{1}{x^2} = 27$ find the values of each of the following:
 - (i) $x + \frac{1}{x}$
 - (ii) $x - \frac{1}{x}$
10. If $a + b + c = 15$ and $a^2 + b^2 + c^2 = 83$, find the value of $a^3 + b^3 + c^3 - 3abc$.
11. Factorize:
 - (i) $6ab - b^2 + 12ac - 2bc$
 - (ii) $9(2a - b)^2 - 4(2a - b) - 13$
12. If $x^3 + ax^2 - bx + 10$ is divisible by $x^2 - 3x + 2$, find the values of a and b.
13. Using factor theorem, factorize each of the following polynomials:
 - (i) $x^3 - 6x^2 + 3x + 10$
 - (ii) $2y^3 - 5y^2 - 19y + 42$
14. The polynomials $P(t) = 4t^3 - st^2 + 7$ and $Q(t) = t^2 + st + 8$ leave the same remainder when divided by $(t - 1)$. Find the value of s.
15. Find the value of k for which the cubic polynomial $3y^3 - \frac{3}{2}y^2 + ky + 5$ is exactly divisible by $(y - \frac{1}{2})$.

16. Verify whether the indicated numbers are zeroes of their corresponding polynomials.

(a) $Q(s) = -4s^3 + 7s^2 - 24$; $s = -4$ and 1

(b) $P(t) = 8t^2 + 4t - 4$; $t = \frac{1}{2}$ and -1

17. If $x = -2$ is a root of the polynomial $P(x) = -2x^4 - 7x^3 - 3x^2 - tx - 10$, then find the value of t .

18. State whether the following statements are true or false. Give reasons to justify your answers.

(a) The degree of polynomial $-5x^5 - 6x^4 - 8x^2$ is 4 .

(b) The algebraic expression $x^3 + \frac{1}{x^3} - 2x + 1$ is a polynomial.

(c) The polynomial $\sqrt{x^4} 4x + 1$ is a quadratic trinomial.

19. Using the long division method, determine the remainder when the polynomial $4x^5 + 2x^4 - x^3 + 4x^2 - 7$ is divided by $(x - 1)$.

20. Evaluate the following products using algebraic identities.

(a) 993^3

(b) 1002^3

21. If $t + \frac{1}{t} = 8$, then find the value of $t^3 + \frac{1}{t^3}$

22. Using a suitable identity, determine the value of $(17)^3 + (-12)^3 + (-5)^3$ and $64m^3 - 343n^3$

23. Factorise:

(a) $2y^3 - 4y^2 - 2y + 4$

(b) $2x^2 + 7x + 3$

(c) $x^3 + 13x^2 + 32x + 20$