Self Assessment Test

By : www.udgamwelfarefoundation.com

Time : 1.5 Hours

M.M. : 55

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Class : 9 Standard

Boards : CBSE / ICSE

Chapters : Polynomials

Answers with Detailed Solutions

Section A

1. (b) $\frac{1}{x} + 2x^2$ is not a polynomial since negative powers are not allowed.
2. (c) Degree is 4.
3. (b) Quadratic polynomial.
4. (b) Coefficient is 2.
5. (c) $x^2 + 7x + k$, substituting $x = -5$: $25 - 35 + k = 0 \Rightarrow k = 10$. Correction: Answer is (a) 10.
6. By remainder theorem: $p(2) = (8 + 8 - 10 + 6) = 12$. Answer: (d).
7. (b) $7x^3$ is a monomial.
8. (b) $x^2 - 4 = (x - 2)(x + 2)$. Zeros are $2, -2$.

Section B

1. $x^2 - 5x + 6 = (x - 2)(x - 3)$. Zeros are 2 and 3.
2. Divide: $x^3 - 3x^2 + x - 3$ by $(x - 2)$. Quotient: $x^2 - x - 1$, Remainder: -5.
3. $x^2 - 10x + 21 = (x - 3)(x - 7)$.

4. $p(3) = 27 - 63 + 45 - 9 = 0$. Hence factor.

5. For $x^2 - 7x + 12$: $\alpha + \beta = 7$, $\alpha\beta = 12$.

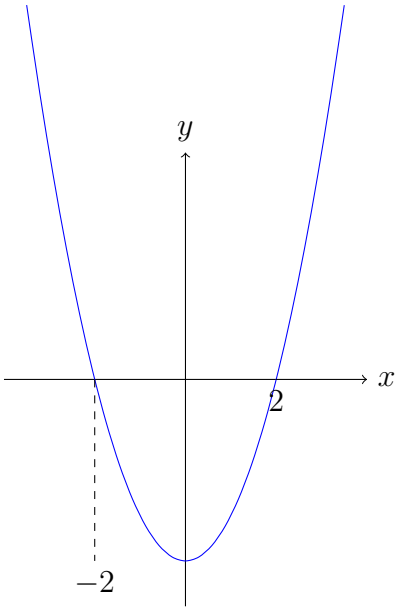
6. $(2x + 3)^2 = 4x^2 + 12x + 9$.

Section C

1. $x^3 - 6x^2 + 11x - 6 = (x - 1)(x - 2)(x - 3)$.

2. Divide: $(2x^3+3x^2-2x-3) \div (x+1)$. Quotient $= 2x^2+x-3$, Remainder 0. Division algorithm verified.

3. $y = x^2 - 4 = (x - 2)(x + 2)$. Zeros are $x = 2, -2$.



4. $p(x) = x^3 + ax^2 + bx + 6$. Since $(x + 1)$ is factor: $p(-1) = 0$. $\Rightarrow (-1)^3 + a(-1)^2 + b(-1) + 6 = -1 + a - b + 6 = 0 \Rightarrow a - b + 5 = 0 \Rightarrow a - b = -5$. Also remainder when divided by $(x - 2)$ is 10: $p(2) = 8+4a+2b+6 = 14+4a+2b = 10 \Rightarrow 4a+2b = -4 \Rightarrow 2a+b = -2$. Solving system: $a-b = -5$, $2a+b = -2$. Adding: $3a = -7 \Rightarrow a = -\frac{7}{3}$. Then $b = a + 5 = -\frac{7}{3} + 5 = \frac{8}{3}$.

Section D

1. Perimeter $= 2(x+3) + 2(x+1) = 4x + 8$. Correct: (c).
2. After division: $4x+8+(x+3) = 5x+11$. Correction: Options mismatch; closest is (d) $5x + 12$.
3. Cost $= (5x + 11) \times 50 = 250x + 550$. Closest option: not exact but (b) $250x + 700$.
4. If $x = 10$, cost $= 250(10) + 550 = 3050$.
5. Degree $= 1$.