

POLYNOMIALS ASSIGNMENT - 1

CLASS - 9

Q1. Factorize

1. $3 - 12(a - b)^2$
2. $t^6 - 7t^3 - 8$
3. $x^3 + 3x^2 + 3x - 7$
4. $1 - 64a^3 - 12a + 48a^2$
5. $25x^3y - 121xy^3$
6. $216p^3 + \frac{1}{125}$
7. $x^2 + \frac{1}{x^2} + 2 - 2x - \frac{2}{x}$
8. $(ax + by)^2 + (ay - bx)^2$
9. $x^6 - 64$
10. $(a + 2b)^2 + 101(a + 2b) + 100$
11. $(x - y)^2 - 7(x^2 - y^2) + 12(x + y)^2$
12. $1 - 2ab - (a^2 + b^2)$
13. $x^4 + 4x^2 + 3$
14. $p^3(q - r)^3 + q^3(n - p)^3 + r^3(p - q)^3$
15. $8(a + 1)^2 + 2(a + 1)(b + 2) - 15(b + 2)^2$
16. $9x^2 + 6x + 1 - 25y^2$
17. $x^4 + x^2 + 1$
18. $14x^3y^3 - 28xy^2z + 35xy$
19. $a^2b^2 - (ab^2 - 5)b - 5a$
20. $3xy - 243xy^5$
21. $(p^2 - 2p)^2 - 11(p^2 - 2p) + 24$
22. $250x^3 - 432y^3$
23. $m(m - 1) - n(m - 1)$
24. $x^{12} - y^{12}$
25. $3x^2 + 4y^2 + 25z^2 - 4\sqrt{3}xy - 20yz + 10\sqrt{3}zx$

Q2. Factorize $9x^2 + 4y^2 + z^2 - 12xy + 4yz - 5zx$, hence find the value of the expression when $x = 1, y = 2, z = -1$

Q3. Factorize $x^3 - 23x^2 + 142x - 120$, using factor theorem and long division method.

Q4. If $x^2 - 1$ is a factor of $ax^3 + bx^2 + cx + d$ show that $a + c = 0$

Q5. For what value of m , is the polynomial $3x^3 + 2mx^2 + 3x + 6$ exactly divisible by $(x + 2)$? Hence factorize the polynomial.

Q6. If $2x + y = -5$, prove that $8x^3 + y^3 - 30xy + 125 = 0$

Q7. If $a - b = 7$, $a^2 + b^2 = 85$ find $a^3 - b^3$

Q8. If both $(x - 2)$ and $(x - \frac{1}{2})$ are the factors of $px^2 + 5x + r$, show that $p = r$.

Q9. Evaluate using suitable identity $(106)^3 - (94)^3$

Q10. If $f(x) = x^2 - 5x + 7$, evaluate $f(2) - f(-1) + f(\frac{1}{3})$

POLYNOMIAL ASSIGNMENT – 2 (HOTS)

CLASS – 9

Q1. If $a^3 + b^3 + c^3 = 3abc$ and $a + b + c = 0$, prove that $\frac{(b+c)^2}{3bc} + \frac{(c+a)^2}{3ac} + \frac{(a+b)^2}{3ab} = 1$

Q2. Find the value of $(x-a)^3 + (x-b)^3 + (x-c)^3 - 3(x-a)(x-b)(x-c)$ if $a + b + c = 3x$

Q3. If $\sqrt{p} + \sqrt{q} - \sqrt{r} = 0$ then find the value of $(p + q - r)^2$

Q4. The polynomial $ax^3 - 3x^2 + 4$ and $2x^3 - 5x + a$, when divided by $(x-2)$ leaves the remainder p and q respectively. If $p - 2q = 4$, find the value of a .

Q5. Determine what must be added to $x^3 - 3x^2 + 4x - 13$ to obtain a polynomial which is exactly divisible by $(x-3)$.

Q6. Find what must be subtracted from the polynomial $2x^4 - 4x^3 + 4x^2 - 4x + 3$ so that the obtained polynomial is exactly divisible by $x^2 + x + 1$.

Q7. Simplify

1) $\frac{9-2\sqrt{3}x-x^2}{3-x^2}$

2) $(\frac{x}{3} + \frac{y}{5})^3 - (\frac{x}{3} - \frac{y}{5})^3$

3) $(a + b + c)^2 - (a - b - c)^2$

4) $\frac{6-2\sqrt{2}x-x^2}{2-x^2}$

5) $\frac{(x^2-y^2)^3 + (y^2-z^2)^3 + (z^2-x^2)^3}{(x-y)^3 + (y-z)^3 + (z-x)^3}$

VALUE BASED QUESTIONS

__Q. The expenditure polynomial of a person on two items is $64x^2 - 48x + 5$. It contains two factors of which one is expense on education and the other is expense on entertainment. Find the two factors. Guess the factor that should be education factor. Why? What value is indicated from it?

NOTE : ALWAYS DO PRACTICE FROM YOUR NCERT BOOK AND EXAMPLER QUESTIONS.