



Holiday Assignment -5

Session-2021-22

Mathematics

Class -IX

Q1. Write an example of an algebraic expression that is polynomial.

Q2. $p(x) = \sqrt{x^3} + 1$ is not a polynomial. Give reason

Q3. Find the value of polynomial $8x^3 - 6x^2 + 2$ at $x = 1$

Q4. If $p(x) = 6x^3 + 5x^2 - 3x + 2$ find $p(-1)$

Q5. Find the zero of the polynomial $p(y) = 2y + 7$

Q6. Find the remainder when $x^{101} - 1$ is divided by $x - 1$

Q7. Find whether $x^n + y^n$ is divisible by $x - y$ ($y \neq 0$) or not.

Q8. Write the following polynomials in standard form

i. $4y - 4y^3 + 3 - y^4$

ii. $5m^3 - 6m + 7 - 2m^2$

Q9. Write the integral zeroes of the following polynomials

i. $(x - 3)(x - 7)$

ii. $(x + 1)(3x + 2)$

Q10. If $y = -1$ is a zero of the polynomial $q(y) = 4y^3 + ky^2 - y - 1$, then find the value of k

Q11. For what value of m is $x^3 - 2mx^2 + 16$ divisible by $x + 2$

Q12. Prove that $(a + b + c)^3 - a^3 - b^3 - c^3 = 3(a + b)(b + c)(c + a)$

Q13. If $x + 1/x = 5$, find the value of $x^3 + 1/x^3$

Q14. The polynomials $x^3 + 2x^2 - 5ax - 7$ and $x^3 + ax^2 - 12x + 6$ when divided by $x + 1$ and $x - 2$ respectively, leave remainders R_1 and R_2 respectively. Find the value of a in each of the following cases:

- i. $R_1 = R_2$
- ii. $R_1 + R_2 = 0$
- iii. $2R_1 + R_2 = 0$

Q15. If $a + b + c = 9$ and $ab + bc + ca = 26$, find $a^2 + b^2 + c^2$

Q16. If $a + b + c = 0$, prove that :

$$\frac{a^2}{bc} + \frac{b^2}{ab} + \frac{c^2}{ca} = 3$$

Q17. Find the zeroes of $(x - 2)^2 - (x + 2)^2$

Q18. Factorise $p(x) = x^4 + x^3 - 7x^2 - x + 6$ by factor theorem

Q19. Prove that $2x^4 - 6x^3 + 3x^2 + 3x - 2$ is exactly divisible by $x^2 - 3x + 2$

- i. By actual division
- ii. Without actual division

Q20. When a polynomial $p(x) = x^4 - 2x^3 + 3x^2 - ax + b$ is divisible by $x - 1$ and $x + 1$, the remainders are 5 and 19 respectively. Find the remainder when $p(x)$ is divided by $x - 2$.

