

CLASS: X

TOPIC: POLYNOMIALS

SUBJECT: MATHEMATICS

1. Show that $x^2 - 3$ is a factor of $2x^4 + 3x^3 - 2x^2 - 9x - 12$
2. Divide: $4x^3 + 2x^2 + 5x - 6$ by $2x^2 + 3x + 1$ (2x-2, 9x-4)
3. Find other zeroes of the polynomial $p(x) = 2x^4 + 7x^3 - 19x^2 - 14x + 30$ if two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$ (3/2, -5)
4. Find all the zeroes of the polynomial $3x^4 + 6x^3 - 2x^2 - 10x - 5$, if two of its zeroes are $\sqrt{5}/3$ and $-\sqrt{5}/3$ (-1,-1)
5. Find all the zeroes of $2x^4 - 3x^3 - 3x^2 + 6x - 2$, if it is known that two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$ (1, 1/2)
6. If the polynomial $f(x) = x^4 - 6x^3 + 16x^2 - 25x + 10$, is divided by another polynomial $x^2 - 2x + k$ the remainder comes out to be $x + a$, find k and a (k = 5, a = -5)
7. Find the polynomial, whose zeroes are $2 + \sqrt{3}$ and $2 - \sqrt{3}$ ($x^2 - 4x + 1$)
8. Form a quadratic polynomial, one of whose zero is $2 + \sqrt{5}$ and the sum of zeroes is 4
9. If α and β are zeroes of the polynomial $x^2 - 2x - 15$, then form a quadratic polynomial whose zeroes are 2α and 2β
10. Write a quadratic polynomial, the sum and product of whose zeroes are 3 and -2 ($x^2 - 3x - 2$)
11. Find the zeroes of the polynomial and verify the relationship between the zeroes and the coefficient
 - a) $4x^2 - 4x + 1$
 - b) $x^2 - 3$
 - c) $\sqrt{3}x^2 - 8x + 4\sqrt{3}$
12. If α and β are the zeroes of the polynomial $2y^2 + 7y + 5$, write the value of $\alpha + \beta + \alpha\beta$ (-1)
13. If one root of the polynomial $5x^3 + 13x + k$ is reciprocal of the other, then find the value of k ?
14. What must be subtracted from $2x^4 - 11x^3 + 29x^2 - 40x + 29$, so that the resulting polynomial is exactly divisible by $x^2 - 3x + 4$ (-2x + 5)
15. If the polynomial $6x^4 + 8x^3 - 5x^2 + ax + b$ is exactly divisible by the polynomial $2x^2 - 5$, then find the values of a and b (-20, -25)
16. If the zeroes of the polynomial $x^3 - 3x^2 + x + 1$ are $a - b$, a , $a + b$, find a and b (1, $\pm\sqrt{2}$)
17. On dividing $x^3 - 3x^2 + x + 2$ by a polynomial $g(x)$, the quotient and remainder were $x - 2$ and $-2x + 4$, respectively. Find $g(x)$ ($x^2 - x + 1$)
18. If α and β are the zeroes of the polynomial $f(x) = 6x^2 + x - 2$, find the value of $\frac{1}{\alpha} + \frac{1}{\beta} - \alpha\beta$ (5/6)
19. If α and β are the zeroes of the quadratic polynomial $2x^2 + 3x - 5$, find the value of $\frac{1}{\alpha} + \frac{1}{\beta}$ (-3/5)
20. If α and β are the zeroes of the polynomial $f(x) = x^2 - 5x + k$ such that $\alpha - \beta = 1$, find k (6)
21. If the product of zeroes of the polynomial $ax^2 - 6x - 6$ is 4, find the value of a (-3/2)
22. If α, β are the zeroes of quadratic polynomial $2x^2 + 5x + k$, find the value of k such that $(\alpha + \beta)^2 - \alpha\beta = 24$